



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				D01_061213_JG	TS	TB	TSC	----
				06-DEC-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1327432-022	ES1327432-023	ES1327432-024	ES1327432-025	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	17.7	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	8	----	----	----	----
Copper	7440-50-8	5	mg/kg	6	----	----	----	----
Lead	7439-92-1	5	mg/kg	7	----	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg	20	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----



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Client sampling date / time

				D01_061213_JG	TS	TB	TSC	----
				06-DEC-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1327432-022	ES1327432-023	ES1327432-024	ES1327432-025	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	<10	----	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	0.6	----
Toluene	108-88-3	0.5	mg/kg	<0.5	5.6	<0.5	17.1	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	0.7	<0.5	2.1	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	3.5	<0.5	10.3	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1.5	<0.5	4.1	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				D01_061213_JG	TS	TB	TSC	----
				06-DEC-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1327432-022	ES1327432-023	ES1327432-024	ES1327432-025	----
EP080: BTEXN - Continued								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	<0.2	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	5.0	----	14.4	----
^ Sum of BTEX	----	0.2	mg/kg	----	11.3	----	34.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	103	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	102	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	81.4	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	94.5	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	80.5	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	75.6	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	99.8	96.4	106	100	----
Toluene-D8	2037-26-5	0.1	%	93.1	91.7	96.2	97.4	----
4-Bromofluorobenzene	460-00-4	0.1	%	99.3	97.0	101	97.0	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

QUALITY CONTROL REPORT

Work Order	: ES1327432	Page	: 1 of 11
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 13-DEC-2013
C-O-C number	: ----	Issue Date	: 24-DEC-2013
Sampler	: HC	No. of samples received	: 24
Order number	: 0224193	No. of samples analysed	: 14
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



General Comments

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

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

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

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

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Di-An Dao		Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA002 : pH (Soils) (QC Lot: 3215969)									
ES1327147-004	Anonymous	EA002: pH Value	----	0.1	pH Unit	5.3	5.3	0.0	0% - 20%
ES1327432-021	BF_MW05_3.0	EA002: pH Value	----	0.1	pH Unit	5.9	5.9	0.0	0% - 20%
EA032: Electrical Conductivity (saturated paste) (QC Lot: 3217409)									
ES1327035-001	Anonymous	EA032: Electrical Conductivity (Saturated Paste)	----	1	µS/cm	2050	2050	0.3	0% - 20%
EA055: Moisture Content (QC Lot: 3218281)									
ES1327373-015	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	23.7	23.2	1.8	0% - 20%
ES1327428-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	27.6	23.4	16.7	0% - 20%
EA055: Moisture Content (QC Lot: 3218282)									
ES1327432-020	BF_MW07_2.4	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	18.2	20.8	13.6	0% - 20%
EA055: Moisture Content (QC Lot: 3219099)									
ES1327403-024	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	40.4	41.4	2.5	0% - 20%
ED007: Exchangeable Cations (QC Lot: 3215649)									
ES1327324-025	Anonymous	ED007: Exchangeable Calcium	----	0.1	meq/100g	2.7	2.8	0.0	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	5.7	5.8	2.9	0% - 20%
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.2	0.2	0.0	0% - 20%
		ED007: Exchangeable Sodium	----	0.1	meq/100g	1.0	1.0	0.0	0% - 20%
		ED007: Cation Exchange Capacity	----	0.1	meq/100g	9.6	9.8	2.6	0% - 20%
		ED007: Exchangeable Aluminium	----	0.1	meq/100g	<0.1	<0.1	0.0	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 3218964)									
ES1327423-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	20	15	28.6	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	4	44.5	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	16.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	11	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	22	20	10.2	No Limit
ES1327432-021	BF_MW05_3.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	14	28.9	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	3	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	8	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	9	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	27	29	4.6	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3218963)									
ES1327097-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3218963) - continued									
ES1327373-016	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3218965)									
ES1327423-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1327432-021	BF_MW05_3.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3214189)									
ES1327432-001	BF_MW07_0.15	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1327432-014	BF_SB06_0.5	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3214189)									
ES1327432-001	BF_MW07_0.15	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3214189) - continued											
ES1327432-001	BF_MW07_0.15	EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
ES1327432-014	BF_SB06_0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3214188)									
		ES1327432-001	BF_MW07_0.15	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
EP071: C29 - C36 Fraction	----			100	mg/kg	<100	<100	0.0	No Limit		
EP071: C10 - C14 Fraction	----			50	mg/kg	<50	<50	0.0	No Limit		
ES1327432-014	BF_SB06_0.5	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit		
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit		
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3216017)											
ES1327432-001	BF_MW07_0.15	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit		
ES1327432-014	BF_SB06_0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit		
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3214188)											
ES1327432-001	BF_MW07_0.15	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3214188) - continued									
ES1327432-001	BF_MW07_0.15	EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1327432-014	BF_SB06_0.5	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3216017)									
ES1327432-001	BF_MW07_0.15	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1327432-014	BF_SB06_0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 3216017)									
ES1327432-001	BF_MW07_0.15	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1327432-014	BF_SB06_0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA032: Electrical Conductivity (saturated paste) (QCLot: 3217409)									
EA032: Electrical Conductivity (Saturated Paste)	----	1	µS/cm	<1	1412 µS/cm	101	96	104	
ED007: Exchangeable Cations (QCLot: 3215649)									
ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	----	----	----	----	
ED007: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	----	----	----	----	
ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	----	----	----	----	
ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	----	----	----	----	
ED007: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	----	----	----	----	
ED007: Exchangeable Aluminium	----	0.1	meq/100g	<0.1	----	----	----	----	
EG005T: Total Metals by ICP-AES (QCLot: 3218964)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	111	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	111	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	118	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	120	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	110	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	120	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	115	81	133	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3218963)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	102	66	112	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3218965)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	89.8	66	112	
EP075(SIM)A: Phenolic Compounds (QCLot: 3214189)									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	102	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	99.2	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	95.5	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	104	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	79.3	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	100	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	90.6	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	95.2	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	89.0	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	84.5	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	84.0	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	38.4	3.9	57	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3214189)									



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3214189) - continued									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	102	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	97.9	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	100	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	101	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	106	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	105	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	107	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	109	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	98.3	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	107	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	95.5	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	109	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	101	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	96.9	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	101	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	90.6	72.4	114	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3214188)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	117	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	117	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	108	64	128	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216017)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	68.8	68.4	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3214188)									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	118	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	112	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	116	63	131	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216017)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	69.2	68.4	128	
EP080: BTEXN (QCLot: 3216017)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	71.0	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	77.7	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	82.8	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	80.1	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	85.0	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	92.8	62	138	



Matrix Spike (MS) Report

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

Sub-Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3218964)							
ES1327423-005	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	107	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	101	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	113	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	108	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	111	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	126	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3218963)							
ES1327097-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	92.0	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3218965)							
ES1327423-005	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	94.4	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3214189)							
ES1327432-001	BF_MW07_0.15	EP075(SIM): Phenol	108-95-2	10 mg/kg	106	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	99.0	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	84.0	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	90.9	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	83.9	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3214189)							
ES1327432-001	BF_MW07_0.15	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	97.1	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	103	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3214188)							
ES1327432-001	BF_MW07_0.15	EP071: C10 - C14 Fraction	----	640 mg/kg	86.7	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	85.6	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	73.9	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216017)							
ES1327432-001	BF_MW07_0.15	EP080: C6 - C9 Fraction	----	32.5 mg/kg	96.1	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3214188)							
ES1327432-001	BF_MW07_0.15	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	108	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	78.4	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	56.8	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216017)							
ES1327432-001	BF_MW07_0.15	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	89.9	70	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 3216017)							
ES1327432-001	BF_MW07_0.15	EP080: Benzene	71-43-2	2.5 mg/kg	85.0	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	93.4	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	98.1	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	98.7	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	102	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	95.2	70	130

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: SOIL

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3214188)										
ES1327432-001	BF_MW07_0.15	EP071: C10 - C14 Fraction	----	640 mg/kg	86.7	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	85.6	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	73.9	----	52	132	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3214188)										
ES1327432-001	BF_MW07_0.15	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	108	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	78.4	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	56.8	----	52	132	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3214189)										
ES1327432-001	BF_MW07_0.15	EP075(SIM): Phenol	108-95-2	10 mg/kg	106	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	99.0	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	84.0	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	90.9	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	83.9	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3214189)										
ES1327432-001	BF_MW07_0.15	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	97.1	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	103	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216017)										
ES1327432-001	BF_MW07_0.15	EP080: C6 - C9 Fraction	----	32.5 mg/kg	96.1	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216017)										
ES1327432-001	BF_MW07_0.15	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	89.9	----	70	130	----	----
EP080: BTEXN (QCLot: 3216017)										
ES1327432-001	BF_MW07_0.15	EP080: Benzene	71-43-2	2.5 mg/kg	85.0	----	70	130	----	----



Sub-Matrix: SOIL

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
EP080: BTEXN (QCLot: 3216017) - continued											
ES1327432-001	BF_MW07_0.15	EP080: Toluene	108-88-3	2.5 mg/kg	93.4	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	98.1	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	98.7	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	102	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	95.2	----	70	130	----	----	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3218963)											
ES1327097-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	92.0	----	70	130	----	----	
EG005T: Total Metals by ICP-AES (QCLot: 3218964)											
ES1327423-005	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	107	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	101	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	113	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	108	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	111	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	126	----	70	130	----	----	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3218965)											
ES1327423-005	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	94.4	----	70	130	----	----	

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1327432	Page	: 1 of 7
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 13-DEC-2013
C-O-C number	: ----	Issue Date	: 24-DEC-2013
Sampler	: HC	No. of samples received	: 24
Order number	: 0224193	No. of samples analysed	: 14
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA002 : pH (Soils)							
Soil Glass Jar - Unpreserved (EA002) BF_MW05_3.0	06-DEC-2013	17-DEC-2013	13-DEC-2013	*	17-DEC-2013	17-DEC-2013	✓
EA032: Electrical Conductivity (saturated paste)							
Soil Glass Jar - Unpreserved (EA032) BF_MW05_3.0	06-DEC-2013	----	----	----	18-DEC-2013	04-JUN-2014	✓
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103) BF_MW07_0.15, BF_MW05_0.5, D01_051213_HC	05-DEC-2013	----	----	----	18-DEC-2013	19-DEC-2013	✓
Soil Glass Jar - Unpreserved (EA055-103) BF_MW06_0.2, BF_SB06_0.5, BF_SB07_1.5, BF_MW05_3.0, BF_SB05_0.5, BF_SB07_0.75, BF_MW07_2.4, D01_061213_JG	06-DEC-2013	----	----	----	18-DEC-2013	20-DEC-2013	✓
EA150: Particle Sizing							
Soil Glass Jar - Unpreserved (EA150) BF_MW05_3.0	06-DEC-2013	---	04-JUN-2014	----	23-DEC-2013	17-JUN-2014	✓
EA150: Soil Classification based on Particle Size							
Soil Glass Jar - Unpreserved (EA150) BF_MW05_3.0	06-DEC-2013	---	04-JUN-2014	----	23-DEC-2013	17-JUN-2014	✓
EA150: Particle Sizing							
Snap Lock Bag (EA150H) BF_SB07_1.5	06-DEC-2013	---	04-JUN-2014	----	23-DEC-2013	04-JUN-2014	✓
EA150: Soil Classification based on Particle Size							
Snap Lock Bag (EA150H) BF_SB07_1.5	06-DEC-2013	---	04-JUN-2014	----	23-DEC-2013	04-JUN-2014	✓
ED007: Exchangeable Cations							
Soil Glass Jar - Unpreserved (ED007) BF_MW05_3.0	06-DEC-2013	17-DEC-2013	03-JAN-2014	✓	18-DEC-2013	03-JAN-2014	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) BF_MW07_0.15, D01_051213_HC	BF_MW05_0.5,	05-DEC-2013	18-DEC-2013	03-JUN-2014	✓	19-DEC-2013	03-JUN-2014	✓
Soil Glass Jar - Unpreserved (EG005T) BF_MW06_0.2, BF_SB06_0.5, BF_SB07_1.5, BF_MW05_3.0,	BF_SB05_0.5, BF_SB07_0.75, BF_MW07_2.4, D01_061213_JG	06-DEC-2013	18-DEC-2013	04-JUN-2014	✓	19-DEC-2013	04-JUN-2014	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) BF_MW07_0.15, D01_051213_HC	BF_MW05_0.5,	05-DEC-2013	18-DEC-2013	02-JAN-2014	✓	19-DEC-2013	02-JAN-2014	✓
Soil Glass Jar - Unpreserved (EG035T) BF_MW06_0.2, BF_SB06_0.5, BF_SB07_1.5, BF_MW05_3.0,	BF_SB05_0.5, BF_SB07_0.75, BF_MW07_2.4, D01_061213_JG	06-DEC-2013	18-DEC-2013	03-JAN-2014	✓	19-DEC-2013	03-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Soil Glass Jar - Unpreserved (EP071) BF_MW07_0.15, D01_051213_HC	BF_MW05_0.5,	05-DEC-2013	18-DEC-2013	19-DEC-2013	✓	18-DEC-2013	27-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP071) BF_MW06_0.2, BF_SB06_0.5, BF_SB07_1.5, BF_MW05_3.0,	BF_SB05_0.5, BF_SB07_0.75, BF_MW07_2.4, D01_061213_JG	06-DEC-2013	18-DEC-2013	20-DEC-2013	✓	18-DEC-2013	27-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075(SIM)) BF_MW07_0.15, D01_051213_HC	BF_MW05_0.5,	05-DEC-2013	18-DEC-2013	19-DEC-2013	✓	18-DEC-2013	27-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) BF_MW06_0.2, BF_SB06_0.5, BF_SB07_1.5, BF_MW05_3.0,	BF_SB05_0.5, BF_SB07_0.75, BF_MW07_2.4, D01_061213_JG	06-DEC-2013	18-DEC-2013	20-DEC-2013	✓	18-DEC-2013	27-JAN-2014	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) BF_MW07_0.15, D01_051213_HC	BF_MW05_0.5,	05-DEC-2013	18-DEC-2013	19-DEC-2013	✔	18-DEC-2013	27-JAN-2014	✔
Soil Glass Jar - Unpreserved (EP075(SIM)) BF_MW06_0.2, BF_SB06_0.5, BF_SB07_1.5, BF_MW05_3.0,	BF_SB05_0.5, BF_SB07_0.75, BF_MW07_2.4, D01_061213_JG	06-DEC-2013	18-DEC-2013	20-DEC-2013	✔	18-DEC-2013	27-JAN-2014	✔
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) BF_MW07_0.15, D01_051213_HC	BF_MW05_0.5,	05-DEC-2013	18-DEC-2013	19-DEC-2013	✔	18-DEC-2013	19-DEC-2013	✔
Soil Glass Jar - Unpreserved (EP080) BF_MW06_0.2, BF_SB06_0.5, BF_SB07_1.5, BF_MW05_3.0,	BF_SB05_0.5, BF_SB07_0.75, BF_MW07_2.4, D01_061213_JG	06-DEC-2013	18-DEC-2013	20-DEC-2013	✔	18-DEC-2013	20-DEC-2013	✔
Soil Glass Jar - Unpreserved (EP080) TS, TSC	TB,	28-NOV-2013	18-DEC-2013	12-DEC-2013	✖	18-DEC-2013	12-DEC-2013	✖
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Soil Glass Jar - Unpreserved (EP080) BF_MW07_0.15, D01_051213_HC	BF_MW05_0.5,	05-DEC-2013	18-DEC-2013	19-DEC-2013	✔	18-DEC-2013	19-DEC-2013	✔
Soil Glass Jar - Unpreserved (EP080) BF_MW06_0.2, BF_SB06_0.5, BF_SB07_1.5, BF_MW05_3.0,	BF_SB05_0.5, BF_SB07_0.75, BF_MW07_2.4, D01_061213_JG	06-DEC-2013	18-DEC-2013	20-DEC-2013	✔	18-DEC-2013	20-DEC-2013	✔
Soil Glass Jar - Unpreserved (EP080) TB		28-NOV-2013	18-DEC-2013	12-DEC-2013	✖	18-DEC-2013	12-DEC-2013	✖



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Electrical Conductivity (Saturated Paste)	EA032	1	10	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Exchangeable Cations	ED007	1	6	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	12	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
pH (1:5)	EA002	2	15	13.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	35	11.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Electrical Conductivity (Saturated Paste)	EA032	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Exchangeable Cations	ED007	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	35	5.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Electrical Conductivity (Saturated Paste)	EA032	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Exchangeable Cations	ED007	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	35	5.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	35	5.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH (1:5)	EA002	SOIL	(APHA 21st ed., 4500H+) pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Electrical Conductivity (Saturated Paste)	EA032	SOIL	USEPA 600/2 - 78 - 054 - conductivity determined on a saturated paste.
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis (Sieving)	EA150	SOIL	Particle Size Analysis by Sieving according to AS1289.3.6.1 - 2009
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Exchangeable Cations	ED007	SOIL	Rayment & Lyons (2011) Method 15A1. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM (2013) Schedule B(3) (Method 301)
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Exchangeable Cations Preparation Method	ED007PR	SOIL	Rayment & Higginson (1992) method 15A1. A 1M NH ₄ Cl extraction by end over end tumbling at a ratio of 1:20. There is no pretreatment for soluble salts. Extracts can be run by ICP for cations.
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

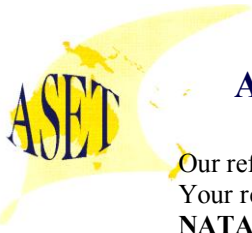
Matrix: SOIL

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA002 : pH (Soils)						
Soil Glass Jar - Unpreserved BF_MW05_3.0	17-DEC-2013	13-DEC-2013	4	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
Soil Glass Jar - Unpreserved TB	18-DEC-2013	12-DEC-2013	6	18-DEC-2013	12-DEC-2013	6
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013						
Soil Glass Jar - Unpreserved TB	18-DEC-2013	12-DEC-2013	6	18-DEC-2013	12-DEC-2013	6
EP080: BTEXN						
Soil Glass Jar - Unpreserved TS, TB, TSC	18-DEC-2013	12-DEC-2013	6	18-DEC-2013	12-DEC-2013	6

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET36616/ 39796 / 1 - 11

Your ref : ES1327521

NATA Accreditation No: 14484

31 December 2013

Australian Laboratory Services Pty Ltd
277, Woodpark Road
Smithfield
NSW 2164

Attn: Ms Nanthini Coilparampil

Dear Nanthini

Asbestos Identification

This report presents the results of samples, forwarded by Australian Laboratory Services Pty Ltd on 17 December 2013, for analysis for asbestos.

1. Introduction: Eleven samples forwarded were examined and analysed for the presence of asbestos.

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method (**Safer Environment Method 1.**)

3. Results : **Sample No. 1. ASET36616/ 39796/ 1. ES1327521 - 002 - BM - SB01 - 2 - 0.8.**

Approx dimensions 8.0 cm x 8.0 cm x 2.25 cm

The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of plaster and cement.

No asbestos detected.

Sample No. 2. ASET36616/ 39796/ 2. ES1327521 - 003 - BM - MW01 - 0.2.

Approx dimensions 8.0 cm x 8.0 cm x 2.5 cm

The sample consisted of a mixture of clayish soil, stones, fragments of plaster and glass.

No asbestos detected.

Sample No. 3. ASET36616/ 39796/ 3. ES1327521 - 004- BM - MW02 - 0.5.

Approx dimensions 7.0 cm x 8.0 cm x 2.25 cm

The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of plaster and cement.

No asbestos detected.

Sample No. 4. ASET36616/ 39796/ 4. ES1327521 - 005 - BM - MW02 - 0.1.

Approx dimensions 8.0 cm x 8.0 cm x 2.5 cm

The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of plaster.

No asbestos detected.

Sample No. 5. ASET36616/ 39796/ 5. ES1327521 - 006 - BM - MW03 - 0.2.

Approx dimensions 6.0 cm x 7.0 cm x 2.25 cm

The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of plaster.

No asbestos detected.

SUITE 710 / 90 GEORGE STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY WESTFIELD NSW 1635

PHONE: (02) 99872183 FAX: (02) 99872151 EMAIL: aset@bigpond.net.au WEBSITE: www.Ausset.com.au

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ASBESTOS DETECTION & IDENTIFICATION • REPAIR & CALIBRATION OF SCIENTIFIC EQUIPMENT • AIRBORNE FIBRE & SILICA MONITORING

The logo for ASET (Asbestos Sampling and Testing) features the word "ASET" in a bold, blue, sans-serif font. The letters are set against a yellow background that is shaped like a stylized map of Sri Lanka.

Sample No. 6. ASET36616 / 39796 / 6. ES1327521 - 007 - BM - MW05 - 0.2.

Approx dimensions 7.0 cm x 7.0 cm x 2.5 cm

The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of plaster.

No asbestos detected.

Sample No. 7. ASET36616 / 39796 / 7. ES1327521 - 00008 - BM - MW05 - 1.5.

Approx dimensions 7.0 cm x 7.0 cm x 1.75 cm

The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of plaster.

No asbestos detected.

Sample No. 8. ASET36616 / 39796 / 8. ES1327521 - 019 - - BF - MW08 - 0.2.

Approx dimensions 8.0 cm x 8.0 cm x 2.65 cm

The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of plaster.

No asbestos detected.

Sample No. 9. ASET36616 / 39796 / 9. ES1327521 - 020 - BF - MW09 - 0.2.

Approx dimensions 8.0 cm x 7.0 cm x 2.25 cm

The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of plaster.

No asbestos detected.

Sample No. 10. ASET36616 / 39796 / 10. ES1327521 - 021 - BF - MW10 - 0.1.

Approx dimensions 8.0 cm x 8.0 cm x 3.25 cm

The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of plaster.

No asbestos detected.

Sample No. 11. ASET36616 / 39796 / 11. ES1327521 - 022 - BF - MW11 - 0.2.

Approx dimensions 8.0 cm x 7.5 cm x 3.0 cm

The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of plaster.

No asbestos detected.

Analysed and reported by,

A handwritten signature in black ink, appearing to read "Mahen De Silva". The signature is written in a cursive style with a long horizontal stroke at the end.

**Mahen De Silva. BSc, MSc, Grad Dip (Occ Hyg)
Occupational Hygienist / Approved Identifier.
Approved Signatory**



**This document is issued in accordance with
NATA's Accreditation requirements. Accredited
for compliance with ISO/IEC 17025.**

Sydney Melbourne Brisbane Perth Hunter Valley North Coast Other
 Grand Floor, 33 Saunders Street, Pymont, NSW, 2008. (ph) 02 8584 8888 (fax) 02 8584 8800
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 Level 1, 60 Leichhardt Street, Spring Hill QLD, 4004. (ph) 07 3839 8393 (fax) 07 3839 8381
 Level 6, Grain Pool Bld, 172 St Georges Ter, WA, 6850. (ph) 08 9321 5200 (fax) 08 9321 5262
 53 Bonville Avenue, Thornton, NSW, 2322. (ph) 02 4964 2150 (fax) 02 4964 2152
 Suite 3/148 Gordon Street, Port Macquarie, NSW, 2444. (ph) 02 6584 7155 (fax) 02 6584 7160

Project No: 0224193
 Project Name: Symphony
 Project Location: Baywater
 Project Manager: Joe Fanning
 Sampler: Gavin Powell

COC Number: A 11741
 Laboratory: ALS

Laboratory Number	Sample ID	Sample Depth	Sample Date	Sample Time	Matrix		Preservation			Yes (tick)		TPH (C10-C36) & T+	Speciated TPH	VOC Scan (USEPA 8260 List)	SVOC Scan (USEPA 8270 List)	OC OP Pesticides	PAH	Phenols	PCB	Metals* (dissolved / total)	Asbestos P/A	PH, GEC	VOCs, PSD, TOC	Other Comments on sample (eg: high voc, highly contaminated, special detection limits etc etc)
					Soil	Water	Acid	Filter	Other	Containers (number/type)	TRH													
1	BM-S001(2)	0.2	6/12		X						X						X	X	X	X	X	X	ON HOLD VS	
2	BM-S001(2)	0.8									X						X	X	X	X	X	X		
3	BM-MW01	0.2									X						X	X	X	X	X	X		
4	BM-MW01	0.5									X						X	X	X	X	X	X		
5	BM-MW02	1.0									X						X	X	X	X	X	X		
6	BM-MW03	0.2									X						X	X	X	X	X	X		
7	BM-MW05	0.2									X						X	X	X	X	X	X		
8	BM-MW05	1.5									X						X	X	X	X	X	X		
9	DO1-061213_CP										X						X	X	X	X	X	X		
10	DO1-061213_CP		6/12								X						X	X	X	X	X	X		
11	BY-MW11	0.2									X						X	X	X	X	X	X		
12	BY-MW12	0.2									X						X	X	X	X	X	X		
13	BY-MW23	0.2									X						X	X	X	X	X	X		
14	BY-MW24	0.1									X						X	X	X	X	X	X		
15	BY-MW25	0.1									X						X	X	X	X	X	X		
16	BY-MW26	0.1									X						X	X	X	X	X	X		
17	BY-MW27	0.1									X						X	X	X	X	X	X		
18	BY-MW29	0.1	9/12								X						X	X	X	X	X	X		

Comments: email symphony-macqen@erm.com
 Relinquished by: gavin powell
 Relinquished by: KL
 Date/Time: 10/12/17 0600
 Date/Time: 13/12/17 1700
 Signed: [Signature]
 Signed: [Signature]
 Received by: KL
 Received by: Sarin
 Date/Time: 13/12/17 1630
 Date/Time: 14.12.15 10:00

Subcon / Forward Lab / Split WO
 Lab / Analysis: RSD - Nickel
 Organised By / Date: Asbestos - Asst
 Relinquished by / Date: Joe Fanning
 Connote / Courier: to Enviro Lab, Macquarie
 WO No: [Blank]
 Attach By PO / Internal Sheet: [Blank]

Environmental Division
 Sydney
 Work Order
ES1327521



Telephone: +61-2-8784 8555

*Metals (circle)

As Cd Cr Cu Hg Ni Pb Zn

Project No: 0224193
 Project Name: Symphony
 Project Location: Bayswater
 Project Manager: Joe Feiring
 Sampler: Gavin Powell

Gnd Floor, 33 Saunders Street, Pymont, NSW, 2009. (ph) 02 8584 8888 (fax) 02 8584 8800
 Level 3, Yarra Tower, WTC, 18-38 Siddaley Street, Docklands, VIC, 3005. (ph) 03 9696 8011 (fax) 03 9696 8022
 Level 1, 60 Leichhardt Street, Spring Hill, QLD, 4004. (ph) 07 3839 8393 (fax) 07 3839 8381
 Level 6, Grain Pool Bld, 172 St Georges Ter, WA, 6850. (ph) 08 9321 5200 (fax) 08 9321 5262
 53 Bonville Avenue, Thornton, NSW, 2322. (ph) 02 4964 2150 (fax) 02 4964 2152
 Suite 3/146 Gordon Street, Port Macquarie, NSW, 2444. (ph) 02 6584 7155 (fax) 02 6584 7160



Laboratory Number	Sample ID	Sample Depth	Sample Date	Sample Time	Matrix		Preservation			Containers (number/type)	BTEX + TPH	Speciated TPH	VOC Scan (USEPA 8260 List)	SVOC Scan (USEPA 8270 List)	DC OP Pesticides	PAH	Phenols	PCB	Metals* (dissolved / total)	Asbestos P/A	VOCs	BTEX + G-6	Other Comments on sample (eg: high voc, highly contaminated, special detection limits etc etc)
					Water	Soil	Ice	Other	Acid														
19	BF-MN08-0.2		9/12		X			X		2						X			X				
20	BF-MN09-0.2									2						X			X				
21	BF-MN10-0.1									2						X			X				
22	BF-MN11-0.2		9/12		X			X		2						X			X				
23	BL-MN12-8.0		9/12		X			X		1						X			X				
24	LV-MN06-0.05		10/12		X			X		2						X			X				
25	Spike		11/2																				
26	Blank		0/2																				

TAT

Comments: Email symphony.margen@erm.com
 Relinquished by: gavin powell
 Relinquished by: KA
 Received by: TA
 Received by: (100)
 Date/Time: 10/12/13 0600
 Date/Time: 13/12/13 1630

Wael Saleh

From: Fadi Soro
Sent: Monday, 16 December 2013 1:52 PM
To: Wael Saleh
Cc: Clea.Henderson@erm.com
Subject: FW: ERM Samples BY_MW08_1.5 and BM_SB01(2)_0.2
Attachments: img-Z16121212-0001.pdf

Hey Wael,

Can you please delete samples #1 & #37 as per clients email below?

Regards

Fadi

From: Clea Henderson [mailto:Clea.Henderson@erm.com]
Sent: Monday, 16 December 2013 1:25 PM
To: Fadi Soro; Joseph Ferring
Cc: ERM Australia Project Symphony MacGen; Barbara Hanna
Subject: RE: ERM Samples BY_MW08_1.5 and BM_SB01(2)_0.2

Thanks Fadi,

Yes, samples 001 and 037 should be placed on hold. Please send through SRN asap.

Clea Henderson
Chemical Engineer

Environmental Resources Management
Level 3, Tower 3, 13-38 Siddeley Street,
World Trade Centre, Docklands Victoria 3005

Tel: +61 3 8606 4188 (Direct)
Tel: +61 3 9696 8011 (switchboard)
Fax: +61 3 9696 8022

www.erm.com
clea.henderson@erm.com

From: Fadi Soro [mailto:fadi.soro@alsglobal.com]
Sent: Monday, December 16, 2013 1:06 PM
To: Clea Henderson; Joseph Ferring
Cc: ERM Australia Project Symphony MacGen
Subject: RE: ERM Samples BY_MW08_1.5 and BM_SB01(2)_0.2

Hi,

COC attached.

Regards

Environmental Division
Sydney

Work Order

ES1327521



Telephone : +61-2-8784 8555

TAT

Fadi

From: Clea Henderson [<mailto:Clea.Henderson@erm.com>]
Sent: Monday, 16 December 2013 12:55 PM
To: Fadi Soro; Joseph Ferring
Cc: ERM Australia Project Symphony MacGen
Subject: RE: ERM Samples BY_MW08_1.5 and BM_SB01(2)_0.2

Hi Fadi,

Can you please send through a scan of the COC (to the ERM Symphony MacGen mailbox) so I can have a look and get back to you?

Thanks,

Clea Henderson
Chemical Engineer

Environmental Resources Management
Level 3, Tower 3, 13-38 Siddeley Street,
World Trade Centre, Docklands Victoria 3005

Tel: +61 3 8606 4188 (Direct)
Tel: +61 3 9696 8011 (switchboard)
Fax: +61 3 9696 8022

www.erm.com
clea.henderson@erm.com

From: Fadi Soro [<mailto:fadi.soro@alsglobal.com>]
Sent: Monday, December 16, 2013 12:39 PM
To: Joseph Ferring
Cc: Clea Henderson
Subject: RE: ERM Samples BY_MW08_1.5 and BM_SB01(2)_0.2

Hi Joe,

The batch number for these 2 samples is ES1327521 ALS samples #1 & #37.

Sample ID BM_SB01(2)-0.2 requires PH,CEC,PSD & TOC
Sample ID BY_MW08-1.5 requires PH,CEC,TOC & PSD

Therefore you want these 2 samples placed on hold?

Regards

Fadi

From: Joseph Ferring [mailto:Joseph.Ferring@erm.com]
Sent: Monday, 16 December 2013 12:34 PM
To: Fadi Soro
Cc: Clea Henderson
Subject: ERM Samples BY_MW08_1.5 and BM_SB01(2)_0.2

Hi Fadi, please cancel the PSD, pH, CEC and TOC analysis for these two samples. If there are other analytes (TRH, BTEX, metals, etc) requested, please proceed with these analyses.

Can you please reply with the batch number once committed so we can track on our end?

cheers

Joe Ferring
Senior Environmental Scientist

ERM
Building C, 33 Saunders Street Pyrmont NSW 2009
Locked Bag 24, Broadway NSW 2007 AUSTRALIA

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joseph.ferring@erm.com

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Jacob Waugh

From: Barbara Hanna
Sent: Thursday, 19 December 2013 10:03 AM
To: Jacob Waugh
Subject: FW: ES1327251

Hi Jacob,

Could you please arrange this ASAP and add 3 days to the SRN.

Thanks!

Kind Regards

Barbara Hanna

Client Services Manager
ALS | Environmental Division

277-289 Woodpark Road
Smithfield NSW 2164 Australia

How was your customer experience? [Please send us your feedback](#)

Please see our latest [EnviroMail 68 - Sampling and Analysis Implications of the new NEPM - July 2013](#)

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Winner of the inaugural CARE Award 2011 – Sustainable Technology & Innovation:
Reduction in Sample Volumes – Improving quality, safety, efficiency and sustainability in environmental practices



Please consider the environment before printing this email.

From: Clea Henderson [mailto:Clea.Henderson@erm.com]
Sent: Thursday, 19 December 2013 9:27 AM
To: Barbara Hanna
Cc: Joseph Ferring; ERM Australia Project Symphony MacGen
Subject: ES1327251

Hi Barbara,

I was wondering if I could please add some analysis to batch ES1327521?

I know this batch is due but can we please urgently add VOC and PCB analysis to samples:

002
003
004
005
006
007
008
019

Let me know if it is possible. Thanks!

Clea Henderson
Chemical Engineer

Environmental Resources Management
Level 3, Tower 3, 13-38 Siddeley Street,
World Trade Centre, Docklands Victoria 3005

Tel: +61 3 8606 4188 (Direct)
Tel: +61 3 9696 8011 (switchboard)
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clea.henderson@erm.com

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SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: ES1327521		
Amendment	: 1		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0224193 SYMPHONY	Page	: 1 of 4
Order number	: ----		
C-O-C number	: 11741	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: BAYSWATER		
Sampler	: GAVIN POWELL	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 13-DEC-2013	Issue Date	: 06-JAN-2014 16:03
Client Requested Due Date	: 24-DEC-2013	Scheduled Reporting Date	: 24-DEC-2013

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.4°C SYD - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 37
Security Seal	: Intact.	No. of samples analysed	: 32

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.
- Asbestos analysis will be subcontracted to ASET.
- Sample T01_061213_GP to be forwarded to Envirolab.
- Samples TS01 and TB01 were not received.
- Sample BY_MW8_0.2 was received extra and placed on hold.
- **Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **VOC scan and PCB's added to samples 2, 3, 4, 5, 6, 7, 8 & 19 on 19/12/2013 as per Clea Henderson.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

Method	Sample Container Received	Preferred Sample Container for Analysis
EP071 : TPH - Semivolatile Fraction		
BY_MW11_0.2	- Snap Lock Bag	- Soil Glass Jar - Unpreserved
EP074 : Volatile Organic Compounds		
BY_MW11_0.2	- Snap Lock Bag	- Soil Glass Jar - Unpreserved
EP075(SIM) : PAH/Phenols (SIM)		
BY_MW11_0.2	- Snap Lock Bag	- Soil Glass Jar - Unpreserved
EP080 : TPH Volatiles/BTEX		
BY_MW11_0.2	- Snap Lock Bag	- Soil Glass Jar - Unpreserved

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - ASB-SOL (Subcontracted) Asbestos - Count (Solid)	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP074 (solids) Volatile Organic Compounds	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-27 TRH(BTEXN)/PAH/Phenols/8Metals
ES1327521-001	06-DEC-2013 15:00	BM_SB01 (2)_0.2	✓					
ES1327521-002	06-DEC-2013 15:00	BM_SB01 (2)_0.8		✓	✓	✓		✓
ES1327521-003	06-DEC-2013 15:00	BM_MW01_0.2		✓	✓	✓		✓
ES1327521-004	06-DEC-2013 15:00	BM_MW02_0.5		✓	✓	✓		✓
ES1327521-005	06-DEC-2013 15:00	BM_MW02_1.0		✓	✓	✓		✓
ES1327521-006	06-DEC-2013 15:00	BM_MW03_0.2		✓	✓	✓		✓
ES1327521-007	06-DEC-2013 15:00	BM_MW05_0.2		✓	✓	✓		✓
ES1327521-008	06-DEC-2013 15:00	BM_MW05_1.5			✓	✓		✓
ES1327521-009	06-DEC-2013 15:00	D01_061213_GP						✓
ES1327521-011	09-DEC-2013 15:00	BY_MW11_0.2				✓		✓
ES1327521-012	09-DEC-2013 15:00	BY_MW12_0.2				✓		✓
ES1327521-013	09-DEC-2013 15:00	BY_MW23_0.2				✓		✓
ES1327521-014	09-DEC-2013 15:00	BY_MW24_0.1				✓		✓
ES1327521-015	09-DEC-2013 15:00	BY_MW25_0.1				✓		✓
ES1327521-016	09-DEC-2013 15:00	BY_MW26_0.1				✓		✓
ES1327521-017	09-DEC-2013 15:00	BY_MW27_0.1				✓		✓
ES1327521-018	09-DEC-2013 15:00	BY_MW29_0.1				✓		✓
ES1327521-019	09-DEC-2013 15:00	BF_MW08_0.2		✓	✓	✓		✓
ES1327521-020	09-DEC-2013 15:00	BF_MW09_0.2		✓				✓
ES1327521-021	09-DEC-2013 15:00	BF_MW10_0.1		✓				✓
ES1327521-022	09-DEC-2013 15:00	BF_MW11_0.2		✓				✓
ES1327521-023	09-DEC-2013 15:00	BY_MW12_8.0						✓
ES1327521-024	10-DEC-2013 15:00	LV_MW06_0.05				✓		✓
ES1327521-025	11-DEC-2013 15:00	SPIKE					✓	
ES1327521-026	11-DEC-2013 15:00	BLANK					✓	
ES1327521-027	12-DEC-2013 15:00	BF_MW09_3.9						✓
ES1327521-028	12-DEC-2013 15:00	BF_MW08_2.6						✓
ES1327521-029	12-DEC-2013 15:00	BY_MW18_0.2						✓
ES1327521-030	12-DEC-2013 15:00	BY_MW32_0.2						✓



			(On Hold) SOIL No analysis requested	SOIL - ASB-SOIL (Subcontracted) Asbestos - Count (Solid)	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP074 (solids) Volatile Organic Compounds	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-27 TRH/BTEXN/PAH/Phenols/8Metals
ES1327521-034	13-DEC-2013 15:00	BF_MW11_4.0						✓
ES1327521-035	13-DEC-2013 15:00	BF_MW11_5.0						✓
ES1327521-036	12-DEC-2013 15:00	BY_MW09_2.6	✓					
ES1327521-037	12-DEC-2013 15:00	BY_MW08_1.5	✓					
ES1327521-038	12-DEC-2013 15:00	TSC 9				✓		
ES1327521-039	12-DEC-2013 15:00	BY_MW8_0.2	✓					

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) WATER No analysis requested	WATER - W-27 TRH/BTEXN/PAH/Phenols/8 Metals
ES1327521-010	09-DEC-2013 15:00	R01_091213_GP		✓
ES1327521-031	12-DEC-2013 15:00	R01_121213_GP	✓	

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL**

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

Method		Due for extraction	Due for analysis	Samples Received		Instructions Received	
Client Sample ID(s)	Container			Date	Evaluation	Date	Evaluation
EP074: Volatile Organic Compounds							
BM_MW01_0.2	Soil Glass Jar - Unpreserved	13-DEC-2013	----	13-DEC-2013	✔	16-DEC-2013	✖
BM_MW02_0.5	Soil Glass Jar - Unpreserved	13-DEC-2013	----	13-DEC-2013	✔	16-DEC-2013	✖
BM_MW02_1.0	Soil Glass Jar - Unpreserved	13-DEC-2013	----	13-DEC-2013	✔	16-DEC-2013	✖
BM_MW03_0.2	Soil Glass Jar - Unpreserved	13-DEC-2013	----	13-DEC-2013	✔	16-DEC-2013	✖
BM_MW05_0.2	Soil Glass Jar - Unpreserved	13-DEC-2013	----	13-DEC-2013	✔	16-DEC-2013	✖
BM_MW05_1.5	Soil Glass Jar - Unpreserved	13-DEC-2013	----	13-DEC-2013	✔	16-DEC-2013	✖
BM_SB01 (2)_0.8	Soil Glass Jar - Unpreserved	13-DEC-2013	----	13-DEC-2013	✔	16-DEC-2013	✖



Requested Deliverables

MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.ferring@erm.com
- Attachment - Report (SUBCO)	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) (COC)	Email	joseph.ferring@erm.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	joseph.ferring@erm.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.ferring@erm.com
- EDI Format - XTab (XTAB)	Email	joseph.ferring@erm.com

SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA (COA)	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	symphony.macgen@erm.com
- Attachment - Report (SUBCO)	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) (COC)	Email	symphony.macgen@erm.com
- EDI Format - ENMRG (ENMRG)	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	symphony.macgen@erm.com
- EDI Format - ESDAT (ESDAT)	Email	symphony.macgen@erm.com
- EDI Format - XTab (XTAB)	Email	symphony.macgen@erm.com

THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
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CERTIFICATE OF ANALYSIS

Work Order : ES1327521 Amendment : 1 Client : ENVIRO RESOURCES MANAGEMENT Contact : MR JOSEPH FERRING Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007 E-mail : joseph.ferring@erm.com Telephone : +61 02 8584 8888 Facsimile : +61 02 8584 8800 Project : 0224193 SYMPHONY Order number : ---- C-O-C number : 11741 Sampler : GAVIN POWELL Site : BAYSWATER Quote number : SY/794/13	Page : 1 of 35 Laboratory : Environmental Division Sydney Contact : Barbara Hanna Address : 277-289 Woodpark Road Smithfield NSW Australia 2164 E-mail : Barbara.Hanna@alsglobal.com Telephone : +61 2 8784 8555 Facsimile : +61 2 8784 8555 QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement Date Samples Received : 13-DEC-2013 Issue Date : 06-JAN-2014 No. of samples received : 37 No. of samples analysed : 32
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics



General Comments

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

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

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

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

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

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

LOR = Limit of reporting

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

- **EP080; The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BM_SB01 (2)_0.8	BM_MW01_0.2	BM_MW02_0.5	BM_MW02_1.0	BM_MW03_0.2
				06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-002	ES1327521-003	ES1327521-004	ES1327521-005	ES1327521-006
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	7.2	6.6	23.3	14.7	17.3
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	13	10	8	12	11
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	14	11	18	17	22
Copper	7440-50-8	5	mg/kg	23	16	15	23	29
Lead	7439-92-1	5	mg/kg	18	14	16	24	22
Nickel	7440-02-0	2	mg/kg	24	22	15	22	27
Zinc	7440-66-6	5	mg/kg	133	66	101	127	86
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	<5	<5	<5
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5	<5	<5
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	<5	<5	<5
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BM_SB01 (2)_0.8	BM_MW01_0.2	BM_MW02_0.5	BM_MW02_1.0	BM_MW03_0.2
				06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-002	ES1327521-003	ES1327521-004	ES1327521-005	ES1327521-006
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	<5	<5	<5
Chloromethane	74-87-3	5	mg/kg	<5	<5	<5	<5	<5
Vinyl chloride	75-01-4	5	mg/kg	<5	<5	<5	<5	<5
Bromomethane	74-83-9	5	mg/kg	<5	<5	<5	<5	<5
Chloroethane	75-00-3	5	mg/kg	<5	<5	<5	<5	<5
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	<5	<5	<5
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BM_SB01 (2)_0.8	BM_MW01_0.2	BM_MW02_0.5	BM_MW02_1.0	BM_MW03_0.2
				06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-002	ES1327521-003	ES1327521-004	ES1327521-005	ES1327521-006
EP074E: Halogenated Aliphatic Compounds - Continued								
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074H: Naphthalene								
Naphthalene	91-20-3	5	mg/kg	<5	<5	<5	<5	<5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BM_SB01 (2)_0.8	BM_MW01_0.2	BM_MW02_0.5	BM_MW02_1.0	BM_MW03_0.2
				06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-002	ES1327521-003	ES1327521-004	ES1327521-005	ES1327521-006
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BM_SB01 (2)_0.8	BM_MW01_0.2	BM_MW02_0.5	BM_MW02_1.0	BM_MW03_0.2
				06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-002	ES1327521-003	ES1327521-004	ES1327521-005	ES1327521-006
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	78.8	81.5	83.4	61.1	76.7
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	79.2	79.2	73.4	76.0	76.7
Toluene-D8	2037-26-5	0.1	%	110	108	106	109	105
4-Bromofluorobenzene	460-00-4	0.1	%	101	103	103	101	98.3
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	112	104	111	109	106
2-Chlorophenol-D4	93951-73-6	0.1	%	109	110	110	115	111
2,4,6-Tribromophenol	118-79-6	0.1	%	68.7	75.0	69.3	77.0	79.1
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	108	112	107	114	113
Anthracene-d10	1719-06-8	0.1	%	97.6	97.8	97.2	100	98.4
4-Terphenyl-d14	1718-51-0	0.1	%	84.9	83.6	80.8	83.8	83.3
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	110	105	106	88.1	89.4
Toluene-D8	2037-26-5	0.1	%	109	96.0	102	87.4	90.6
4-Bromofluorobenzene	460-00-4	0.1	%	97.7	90.9	94.0	87.6	91.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BM_MW05_0.2	BM_MW05_1.5	D01_061213_GP	BY_MW11_0.2	BY_MW12_0.2
				06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-007	ES1327521-008	ES1327521-009	ES1327521-011	ES1327521-012
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	25.4	11.9	18.1	9.6	14.8
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	10	8	15	11	12
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	33	20	12	8	7
Copper	7440-50-8	5	mg/kg	22	32	20	18	20
Lead	7439-92-1	5	mg/kg	18	17	18	14	13
Nickel	7440-02-0	2	mg/kg	19	30	20	12	13
Zinc	7440-66-6	5	mg/kg	48	89	175	56	65
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	----	<5	<5
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	----	<5	<5
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	----	<5	<5
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	----	<5	<5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

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				BM_MW05_0.2	BM_MW05_1.5	D01_061213_GP	BY_MW11_0.2	BY_MW12_0.2
				06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-007	ES1327521-008	ES1327521-009	ES1327521-011	ES1327521-012
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	----	<5	<5
Chloromethane	74-87-3	5	mg/kg	<5	<5	----	<5	<5
Vinyl chloride	75-01-4	5	mg/kg	<5	<5	----	<5	<5
Bromomethane	74-83-9	5	mg/kg	<5	<5	----	<5	<5
Chloroethane	75-00-3	5	mg/kg	<5	<5	----	<5	<5
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	----	<5	<5
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BM_MW05_0.2	BM_MW05_1.5	D01_061213_GP	BY_MW11_0.2	BY_MW12_0.2
				06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-007	ES1327521-008	ES1327521-009	ES1327521-011	ES1327521-012
EP074E: Halogenated Aliphatic Compounds - Continued								
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
EP074H: Naphthalene								
Naphthalene	91-20-3	5	mg/kg	<5	<5	----	<5	<5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BM_MW05_0.2	BM_MW05_1.5	D01_061213_GP	BY_MW11_0.2	BY_MW12_0.2
				06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-007	ES1327521-008	ES1327521-009	ES1327521-011	ES1327521-012
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BM_MW05_0.2	BM_MW05_1.5	D01_061213_GP	BY_MW11_0.2	BY_MW12_0.2
				06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-007	ES1327521-008	ES1327521-009	ES1327521-011	ES1327521-012
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	76.8	70.1	----	----	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	70.3	79.3	----	93.2	105
Toluene-D8	2037-26-5	0.1	%	104	108	----	96.8	108
4-Bromofluorobenzene	460-00-4	0.1	%	101	103	----	88.3	101
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	97.4	101	97.7	98.3	102
2-Chlorophenol-D4	93951-73-6	0.1	%	99.7	104	100	104	107
2,4,6-Tribromophenol	118-79-6	0.1	%	90.8	86.9	88.9	85.5	90.1
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	101	102	99.7	100	104
Anthracene-d10	1719-06-8	0.1	%	85.9	86.4	88.4	86.6	90.3
4-Terphenyl-d14	1718-51-0	0.1	%	82.3	82.8	83.4	82.6	85.2
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	94.7	98.1	87.4	92.8	105
Toluene-D8	2037-26-5	0.1	%	92.9	97.2	86.9	85.4	94.8
4-Bromofluorobenzene	460-00-4	0.1	%	95.8	102	91.2	81.4	93.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW23_0.2	BY_MW24_0.1	BY_MW25_0.1	BY_MW26_0.1	BY_MW27_0.1
				09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-013	ES1327521-014	ES1327521-015	ES1327521-016	ES1327521-017
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	21.6	20.4	15.7	25.3	12.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	5	16	24	10	11
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	11	39	34	12	12
Copper	7440-50-8	5	mg/kg	<5	12	13	9	7
Lead	7439-92-1	5	mg/kg	9	24	19	17	15
Nickel	7440-02-0	2	mg/kg	4	8	28	9	6
Zinc	7440-66-6	5	mg/kg	13	37	47	58	41
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	<5	<5	<5
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5	<5	<5
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	<5	<5	<5
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	<5	<5	<5
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	BY_MW23_0.2	BY_MW24_0.1	BY_MW25_0.1	BY_MW26_0.1	BY_MW27_0.1
				09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
				ES1327521-013	ES1327521-014	ES1327521-015	ES1327521-016	ES1327521-017
EP074D: Fumigants - Continued								
1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	<5	<5	<5
Chloromethane	74-87-3	5	mg/kg	<5	<5	<5	<5	<5
Vinyl chloride	75-01-4	5	mg/kg	<5	<5	<5	<5	<5
Bromomethane	74-83-9	5	mg/kg	<5	<5	<5	<5	<5
Chloroethane	75-00-3	5	mg/kg	<5	<5	<5	<5	<5
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	<5	<5	<5
1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW23_0.2	BY_MW24_0.1	BY_MW25_0.1	BY_MW26_0.1	BY_MW27_0.1
				09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-013	ES1327521-014	ES1327521-015	ES1327521-016	ES1327521-017
EP074F: Halogenated Aromatic Compounds - Continued								
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074H: Naphthalene								
Naphthalene	91-20-3	5	mg/kg	<5	<5	<5	<5	<5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW23_0.2	BY_MW24_0.1	BY_MW25_0.1	BY_MW26_0.1	BY_MW27_0.1
				09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-013	ES1327521-014	ES1327521-015	ES1327521-016	ES1327521-017
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW23_0.2	BY_MW24_0.1	BY_MW25_0.1	BY_MW26_0.1	BY_MW27_0.1
				09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-013	ES1327521-014	ES1327521-015	ES1327521-016	ES1327521-017
EP080: BTEXN - Continued								
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	92.8	93.0	108	106	97.2
Toluene-D8	2037-26-5	0.1	%	95.9	93.6	108	102	92.4
4-Bromofluorobenzene	460-00-4	0.1	%	86.9	88.2	95.2	91.8	86.8
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	105	93.8	102	94.0	94.4
2-Chlorophenol-D4	93951-73-6	0.1	%	102	94.6	108	97.5	97.8
2,4,6-Tribromophenol	118-79-6	0.1	%	72.4	85.4	89.0	82.0	81.3
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	108	97.9	106	96.0	96.0
Anthracene-d10	1719-06-8	0.1	%	96.2	85.2	91.5	83.1	82.2
4-Terphenyl-d14	1718-51-0	0.1	%	78.8	80.7	86.3	79.2	77.8
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	92.4	93.1	108	106	96.5
Toluene-D8	2037-26-5	0.1	%	85.7	82.8	94.9	90.6	81.0
4-Bromofluorobenzene	460-00-4	0.1	%	82.1	83.9	90.5	88.4	80.8



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW29_0.1	BF_MW08_0.2	BF_MW09_0.2	BF_MW10_0.1	BF_MW11_0.2
				09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-018	ES1327521-019	ES1327521-020	ES1327521-021	ES1327521-022
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	17.3	19.3	18.2	16.5	15.3
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	10	10	<5	<5	11
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	20	32	94	<2	14
Copper	7440-50-8	5	mg/kg	14	6	40	10	9
Lead	7439-92-1	5	mg/kg	17	14	6	8	10
Nickel	7440-02-0	2	mg/kg	14	16	59	<2	13
Zinc	7440-66-6	5	mg/kg	64	34	60	78	42
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	----	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	----	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	----	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	----	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	----	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	----	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	----	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	----	----	----
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	----	----	----
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	----	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW29_0.1	BF_MW08_0.2	BF_MW09_0.2	BF_MW10_0.1	BF_MW11_0.2
				09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-018	ES1327521-019	ES1327521-020	ES1327521-021	ES1327521-022
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	----	----	----
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	----	----	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	----	----	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	----	----	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	----	----	----
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	----	----	----
Chloromethane	74-87-3	5	mg/kg	<5	<5	----	----	----
Vinyl chloride	75-01-4	5	mg/kg	<5	<5	----	----	----
Bromomethane	74-83-9	5	mg/kg	<5	<5	----	----	----
Chloroethane	75-00-3	5	mg/kg	<5	<5	----	----	----
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	----	----	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	----	----	----
Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	----	----	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	----	----	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	----	----	----
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	----	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	----	----	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	----	----	----
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	----	----	----
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	----	----	----
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	----	----	----
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	----	----	----
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	----	----	----
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	----	----	----
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW29_0.1	BF_MW08_0.2	BF_MW09_0.2	BF_MW10_0.1	BF_MW11_0.2
				09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-018	ES1327521-019	ES1327521-020	ES1327521-021	ES1327521-022
EP074E: Halogenated Aliphatic Compounds - Continued								
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	----	----	----
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	----	----	----
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	----	----	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	----	----	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	----	----	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	----	----	----
Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	5	mg/kg	<5	<5	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW29_0.1	BF_MW08_0.2	BF_MW09_0.2	BF_MW10_0.1	BF_MW11_0.2
				09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-018	ES1327521-019	ES1327521-020	ES1327521-021	ES1327521-022
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW29_0.1	BF_MW08_0.2	BF_MW09_0.2	BF_MW10_0.1	BF_MW11_0.2
				09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00	09-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-018	ES1327521-019	ES1327521-020	ES1327521-021	ES1327521-022
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	61.0	----	----	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	97.4	72.6	----	----	----
Toluene-D8	2037-26-5	0.1	%	90.0	105	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	81.4	96.6	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	98.8	99.0	98.2	91.8	98.4
2-Chlorophenol-D4	93951-73-6	0.1	%	101	103	102	92.4	102
2,4,6-Tribromophenol	118-79-6	0.1	%	83.1	86.7	83.1	83.9	85.6
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	97.3	99.4	99.2	97.2	98.3
Anthracene-d10	1719-06-8	0.1	%	83.4	85.8	85.9	84.4	84.8
4-Terphenyl-d14	1718-51-0	0.1	%	78.5	80.7	80.2	79.0	79.4
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	97.8	94.6	93.9	96.1	101
Toluene-D8	2037-26-5	0.1	%	79.3	90.3	90.7	93.1	93.4
4-Bromofluorobenzene	460-00-4	0.1	%	75.5	93.4	93.9	95.9	93.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BY_MW12_8.0	LV_MW06_0.05	SPIKE	BLANK	BF_MW09_3.9
				09-DEC-2013 15:00	10-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	12-DEC-2013 15:00
				ES1327521-023	ES1327521-024	ES1327521-025	ES1327521-026	ES1327521-027
Compound	CAS Number	LOR	Unit	Client sampling date / time				
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	13.5	20.2	----	----	11.2
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	20	<5	----	----	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	<1
Chromium	7440-47-3	2	mg/kg	15	6	----	----	23
Copper	7440-50-8	5	mg/kg	34	<5	----	----	49
Lead	7439-92-1	5	mg/kg	78	7	----	----	<5
Nickel	7440-02-0	2	mg/kg	16	<2	----	----	68
Zinc	7440-66-6	5	mg/kg	73	11	----	----	58
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	0.5	mg/kg	----	<0.5	----	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	----	<0.5	----	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	----	<0.5	----	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	----	<0.5	----	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	----	<0.5	----	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	----	<0.5	----	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	----	<0.5	----	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	----	<0.5	----	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg	----	<0.5	----	----	----
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	5	mg/kg	----	<5	----	----	----
2-Butanone (MEK)	78-93-3	5	mg/kg	----	<5	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	----	<5	----	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg	----	<5	----	----	----
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	0.5	mg/kg	----	<0.5	----	----	----
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	----	<0.5	----	----	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg	----	<0.5	----	----	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	----	<0.5	----	----	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	----	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW12_8.0	LV_MW06_0.05	SPIKE	BLANK	BF_MW09_3.9
				09-DEC-2013 15:00	10-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	12-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-023	ES1327521-024	ES1327521-025	ES1327521-026	ES1327521-027
EP074D: Fumigants - Continued								
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	----	<0.5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	5	mg/kg	----	<5	----	----	----
Chloromethane	74-87-3	5	mg/kg	----	<5	----	----	----
Vinyl chloride	75-01-4	5	mg/kg	----	<5	----	----	----
Bromomethane	74-83-9	5	mg/kg	----	<5	----	----	----
Chloroethane	75-00-3	5	mg/kg	----	<5	----	----	----
Trichlorofluoromethane	75-69-4	5	mg/kg	----	<5	----	----	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg	----	<0.5	----	----	----
Iodomethane	74-88-4	0.5	mg/kg	----	<0.5	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	----	<0.5	----	----	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg	----	<0.5	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	----	<0.5	----	----	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	----	<0.5	----	----	----
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	----	<0.5	----	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg	----	<0.5	----	----	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg	----	<0.5	----	----	----
Trichloroethene	79-01-6	0.5	mg/kg	----	<0.5	----	----	----
Dibromomethane	74-95-3	0.5	mg/kg	----	<0.5	----	----	----
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	----	<0.5	----	----	----
1,3-Dichloropropane	142-28-9	0.5	mg/kg	----	<0.5	----	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg	----	<0.5	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	----	<0.5	----	----	----
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	----	<0.5	----	----	----
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	----	<0.5	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	----	<0.5	----	----	----
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	----	<0.5	----	----	----
Pentachloroethane	76-01-7	0.5	mg/kg	----	<0.5	----	----	----
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	----	<0.5	----	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg	----	<0.5	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.5	mg/kg	----	<0.5	----	----	----
Bromobenzene	108-86-1	0.5	mg/kg	----	<0.5	----	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	----	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW12_8.0	LV_MW06_0.05	SPIKE	BLANK	BF_MW09_3.9
				09-DEC-2013 15:00	10-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	12-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-023	ES1327521-024	ES1327521-025	ES1327521-026	ES1327521-027
EP074F: Halogenated Aromatic Compounds - Continued								
4-Chlorotoluene	106-43-4	0.5	mg/kg	----	<0.5	----	----	----
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	----	<0.5	----	----	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	----	<0.5	----	----	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	----	<0.5	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	----	<0.5	----	----	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	----	<0.5	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.5	mg/kg	----	<0.5	----	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg	----	<0.5	----	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg	----	<0.5	----	----	----
Bromoform	75-25-2	0.5	mg/kg	----	<0.5	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	5	mg/kg	----	<5	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	----	----	<2
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW12_8.0	LV_MW06_0.05	SPIKE	BLANK	BF_MW09_3.9
				09-DEC-2013 15:00	10-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	12-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-023	ES1327521-024	ES1327521-025	ES1327521-026	ES1327521-027
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	56	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	62	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	35	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.6	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW12_8.0	LV_MW06_0.05	SPIKE	BLANK	BF_MW09_3.9
				09-DEC-2013 15:00	10-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	12-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-023	ES1327521-024	ES1327521-025	ES1327521-026	ES1327521-027
EP080: BTEXN - Continued								
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	14.2	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	1.6	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	7.6	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	3.1	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	27.1	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	10.7	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	95.9	----	----	----
Toluene-D8	2037-26-5	0.1	%	----	89.0	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	80.6	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	88.1	94.8	----	----	88.1
2-Chlorophenol-D4	93951-73-6	0.1	%	90.4	94.2	----	----	89.3
2,4,6-Tribromophenol	118-79-6	0.1	%	48.8	61.4	----	----	44.1
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	91.8	93.6	----	----	90.2
Anthracene-d10	1719-06-8	0.1	%	86.5	90.4	----	----	87.8
4-Terphenyl-d14	1718-51-0	0.1	%	87.4	88.9	----	----	87.1
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	102	95.2	96.5	102	106
Toluene-D8	2037-26-5	0.1	%	95.7	75.9	94.9	95.0	99.8
4-Bromofluorobenzene	460-00-4	0.1	%	98.7	73.7	92.0	96.5	99.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BF_MW08_2.6	BY_MW18_0.2	BY_MW32_0.2	BF_MW11_4.0	BF_MW11_5.0
				12-DEC-2013 15:00	12-DEC-2013 15:00	12-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-028	ES1327521-029	ES1327521-030	ES1327521-034	ES1327521-035
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	10.6	25.7	28.8	15.3	22.5
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	16	9	18	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	18	7	22	72	62
Copper	7440-50-8	5	mg/kg	10	9	36	55	55
Lead	7439-92-1	5	mg/kg	15	10	24	<5	<5
Nickel	7440-02-0	2	mg/kg	21	7	25	63	57
Zinc	7440-66-6	5	mg/kg	84	50	70	64	66
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BF_MW08_2.6	BY_MW18_0.2	BY_MW32_0.2	BF_MW11_4.0	BF_MW11_5.0
				12-DEC-2013 15:00	12-DEC-2013 15:00	12-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327521-028	ES1327521-029	ES1327521-030	ES1327521-034	ES1327521-035
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BF_MW08_2.6	BY_MW18_0.2	BY_MW32_0.2	BF_MW11_4.0	BF_MW11_5.0
				12-DEC-2013 15:00	12-DEC-2013 15:00	12-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00
				ES1327521-028	ES1327521-029	ES1327521-030	ES1327521-034	ES1327521-035
Compound	CAS Number	LOR	Unit					
EP080: BTEXN - Continued								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	91.2	91.9	88.4	85.1	86.2
2-Chlorophenol-D4	93951-73-6	0.1	%	93.9	92.6	87.0	83.4	86.4
2,4,6-Tribromophenol	118-79-6	0.1	%	46.4	44.7	45.0	38.5	41.3
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	91.4	90.8	89.7	87.3	88.4
Anthracene-d10	1719-06-8	0.1	%	87.4	87.0	84.9	85.0	84.4
4-Terphenyl-d14	1718-51-0	0.1	%	86.8	86.4	84.7	83.8	83.9
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	94.8	101	94.2	107	100
Toluene-D8	2037-26-5	0.1	%	86.0	100	89.8	101	88.8
4-Bromofluorobenzene	460-00-4	0.1	%	86.9	98.5	92.3	102	83.5



Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Client sample ID

				TSC 9	----	----	----	----
				12-DEC-2013 15:00	----	----	----	----
				ES1327521-038	----	----	----	----
<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>					
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	73	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	80	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	42	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	0.8	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	20.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	2.2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	10.7	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	4.2	----	----	----	----
Sum of BTEX	----	0.2	mg/kg	38.4	----	----	----	----
Total Xylenes	1330-20-7	0.5	mg/kg	14.9	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	107	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	89.5	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	87.6	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01_091213_GP

Client sampling date / time

09-DEC-2013 15:00

Compound	CAS Number	LOR	Unit	ES1327521-010	---	---	---	---
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EG020F: Dissolved Metals by ICP-MS

Arsenic	7440-38-2	0.001	mg/L	<0.001	---	---	---	---
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	---	---	---	---
Chromium	7440-47-3	0.001	mg/L	<0.001	---	---	---	---
Copper	7440-50-8	0.001	mg/L	<0.001	---	---	---	---
Lead	7439-92-1	0.001	mg/L	<0.001	---	---	---	---
Nickel	7440-02-0	0.001	mg/L	<0.001	---	---	---	---
Zinc	7440-66-6	0.005	mg/L	<0.005	---	---	---	---

EG035F: Dissolved Mercury by FIMS

Mercury	7439-97-6	0.0001	mg/L	<0.0001	---	---	---	---
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EP075(SIM)A: Phenolic Compounds

Phenol	108-95-2	1.0	µg/L	<1.0	---	---	---	---
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	---	---	---	---
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	---	---	---	---
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	---	---	---	---
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	---	---	---	---
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	---	---	---	---
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	---	---	---	---
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	---	---	---	---
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	---	---	---	---
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	---	---	---	---
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	---	---	---	---
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	---	---	---	---

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	1.0	µg/L	<1.0	---	---	---	---
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	---	---	---	---
Acenaphthene	83-32-9	1.0	µg/L	<1.0	---	---	---	---
Fluorene	86-73-7	1.0	µg/L	<1.0	---	---	---	---
Phenanthrene	85-01-8	1.0	µg/L	<1.0	---	---	---	---
Anthracene	120-12-7	1.0	µg/L	<1.0	---	---	---	---
Fluoranthene	206-44-0	1.0	µg/L	<1.0	---	---	---	---
Pyrene	129-00-0	1.0	µg/L	<1.0	---	---	---	---
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	---	---	---	---
Chrysene	218-01-9	1.0	µg/L	<1.0	---	---	---	---



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01_091213_GP

Client sampling date / time

09-DEC-2013 15:00

Compound	CAS Number	LOR	Unit	ES1327521-010	---	---	---	---
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EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued

Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	---	---	---	---
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	---	---	---	---
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	---	---	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	---	---	---	---
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	---	---	---	---
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	---	---	---	---
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	---	---	---	---
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	---	---	---	---

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	20	µg/L	<20	---	---	---	---
C10 - C14 Fraction	----	50	µg/L	<50	---	---	---	---
C15 - C28 Fraction	----	100	µg/L	<100	---	---	---	---
C29 - C36 Fraction	----	50	µg/L	<50	---	---	---	---
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	---	---	---	---

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013

C6 - C10 Fraction	C6_C10	20	µg/L	<20	---	---	---	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	---	---	---	---
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	---	---	---	---
>C16 - C34 Fraction	----	100	µg/L	<100	---	---	---	---
>C34 - C40 Fraction	----	100	µg/L	<100	---	---	---	---
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	---	---	---	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	---	---	---	---

EP080: BTEXN

Benzene	71-43-2	1	µg/L	<1	---	---	---	---
Toluene	108-88-3	2	µg/L	<2	---	---	---	---
Ethylbenzene	100-41-4	2	µg/L	<2	---	---	---	---
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	---	---	---	---
ortho-Xylene	95-47-6	2	µg/L	<2	---	---	---	---
^ Total Xylenes	1330-20-7	2	µg/L	<2	---	---	---	---
^ Sum of BTEX	----	1	µg/L	<1	---	---	---	---
Naphthalene	91-20-3	5	µg/L	<5	---	---	---	---

EP075(SIM)S: Phenolic Compound Surrogates



Analytical Results

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

Client sample ID

R01_091213_GP

Client sampling date / time

09-DEC-2013 15:00

Compound	CAS Number	LOR	Unit	ES1327521-010	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	0.1	%	34.1	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	84.6	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	94.0	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	48.5	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	78.9	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	71.4	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	124	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	121	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	105	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	64	130
Toluene-D8	2037-26-5	66	136
4-Bromofluorobenzene	460-00-4	60	122
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QUALITY CONTROL REPORT

Work Order	: ES1327521	Page	: 1 of 32
Amendment	: 1		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0224193 SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER		
C-O-C number	: 11741	Date Samples Received	: 13-DEC-2013
Sampler	: GAVIN POWELL	Issue Date	: 06-JAN-2014
Order number	: ----		
Quote number	: SY/794/13	No. of samples received	: 37
		No. of samples analysed	: 32

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics



General Comments

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

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

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

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

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



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 3216839)									
ES1327439-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.1	17.5	8.3	0% - 50%
ES1327521-002	BM_SB01 (2)_0.8	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	7.2	7.3	1.5	No Limit
EA055: Moisture Content (QC Lot: 3216840)									
ES1327521-012	BY_MW12_0.2	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	14.8	16.6	11.2	0% - 50%
ES1327521-023	BY_MW12_8.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	13.5	13.2	2.4	0% - 50%
EA055: Moisture Content (QC Lot: 3216841)									
EW1303650-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	<1.0	<1.0	0.0	No Limit
EW1303657-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	14.1	13.4	5.1	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 3216123)									
ES1327433-013	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	23	29	23.3	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	14	8	53.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	14	34	85.2	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	15	6.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	19	17	9.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	42	36	15.4	No Limit
ES1327433-023	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	17	22	22.8	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	26	32	22.5	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	11	12	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	22	21	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	114	101	12.0	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	719	682	5.4	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 3216125)									
ES1327521-011	BY_MW11_0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	7	14.2	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	14	19.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	11	13	16.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	17	6.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	14	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	56	68	19.3	0% - 50%
ES1327521-021	BF_MW10_0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 3216125) - continued									
ES1327521-021	BF_MW10_0.1	EG005T: Copper	7440-50-8	5	mg/kg	10	11	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	6	25.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	78	77	2.5	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3216124)									
ES1327433-013	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1327433-023	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3216126)									
ES1327521-011	BY_MW11_0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1327521-021	BF_MW10_0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3220859)									
ES1327521-002	BM_SB01 (2)_0.8	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3216013)									
ES1327422-025	Anonymous	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1327521-016	BY_MW26_0.1	EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1327521-002	BM_SB01 (2)_0.8	EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP074: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3221397)									
ES1327521-002	BM_SB01 (2)_0.8	EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3221397) - continued									
ES1327521-002	BM_SB01 (2)_0.8	EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 3216013)									
ES1327422-025	Anonymous	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.0	No Limit
ES1327521-016	BY_MW26_0.1	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 3221397)									
ES1327521-002	BM_SB01 (2)_0.8	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 3216013)									
ES1327422-025	Anonymous	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1327521-016	BY_MW26_0.1	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 3221397)									
ES1327521-002	BM_SB01 (2)_0.8	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074D: Fumigants (QC Lot: 3216013)									
ES1327422-025	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1327521-016	BY_MW26_0.1	EP074: 2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074D: Fumigants (QC Lot: 3221397)									
ES1327521-002	BM_SB01 (2)_0.8	EP074: 2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074D: Fumigants (QC Lot: 3221397) - continued									
ES1327521-002	BM_SB01 (2)_0.8	EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3216013)									
ES1327422-025	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.0	No Limit
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.0	No Limit		
ES1327521-016	BY_MW26_0.1	EP074: 1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3216013) - continued									
ES1327521-016	BY_MW26_0.1	EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.0	No Limit
EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.0	No Limit		
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.0	No Limit		
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3221397)									
ES1327521-002	BM_SB01 (2)_0.8	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3221397) - continued									
ES1327521-002	BM_SB01 (2)_0.8	EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 3216013)									
ES1327422-025	Anonymous	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1327521-016	BY_MW26_0.1	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 3221397)									
ES1327521-002	BM_SB01 (2)_0.8	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 3216013)									
ES1327422-025	Anonymous	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EP074G: Trihalomethanes (QC Lot: 3216013) - continued											
ES1327422-025	Anonymous	EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
ES1327521-016	BY_MW26_0.1	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP074G: Trihalomethanes (QC Lot: 3221397)											
ES1327521-002	BM_SB01 (2)_0.8	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP074H: Naphthalene (QC Lot: 3216013)											
ES1327422-025	Anonymous	EP074: Naphthalene	91-20-3	5	mg/kg	<5	<5	0.0	No Limit		
ES1327521-016	BY_MW26_0.1	EP074: Naphthalene	91-20-3	5	mg/kg	<5	<5	0.0	No Limit		
EP074H: Naphthalene (QC Lot: 3221397)											
ES1327521-002	BM_SB01 (2)_0.8	EP074: Naphthalene	91-20-3	5	mg/kg	<5	<5	0.0	No Limit		
EP075(SIM)A: Phenolic Compounds (QC Lot: 3215994)											
ES1327521-002	BM_SB01 (2)_0.8	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit		
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
		ES1327521-013	BY_MW23_0.2	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
				EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2-Nitrophenol	88-75-5			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2.4-Dimethylphenol	105-67-9			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2.4-Dichlorophenol	120-83-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2.6-Dichlorophenol	87-65-0			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 3215994) - continued									
ES1327521-013	BY_MW23_0.2	EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3216003)									
ES1327422-025	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1327422-036	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3215994)									
ES1327521-002	BM_SB01 (2)_0.8	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3215994) - continued									
ES1327521-002	BM_SB01 (2)_0.8	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1327521-013	BY_MW23_0.2	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3216003)									
ES1327422-025	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3216003) - continued									
ES1327422-025	Anonymous	EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1327422-036	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3215831)									
ES1327521-002	BM_SB01 (2)_0.8	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1327521-021	BF_MW10_0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3215993)									
ES1327521-002	BM_SB01 (2)_0.8	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1327521-013	BY_MW23_0.2	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3216002)									
ES1327422-025	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1327422-036	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3216002) - continued										
ES1327422-036	Anonymous	EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3216012)										
ES1327422-025	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
ES1327521-016	BY_MW26_0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3215831)										
ES1327521-002	BM_SB01 (2)_0.8	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
ES1327521-021	BF_MW10_0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3215993)										
ES1327521-002	BM_SB01 (2)_0.8	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
ES1327521-013	BY_MW23_0.2	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3216002)										
ES1327422-025	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
ES1327422-036	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3216012)										
ES1327422-025	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
ES1327521-016	BY_MW26_0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
EP080: BTEXN (QC Lot: 3215831)										
ES1327521-002	BM_SB01 (2)_0.8	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
ES1327521-021	BF_MW10_0.1	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit			



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP080: BTEXN (QC Lot: 3215831) - continued										
ES1327521-021	BF_MW10_0.1	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
EP080: BTEXN (QC Lot: 3216012)										
ES1327422-025	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
ES1327521-016	BY_MW26_0.1	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
Sub-Matrix: WATER										
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3215723)										
ES1327029-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0001	0.0	No Limit	
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.001	0.0	No Limit	
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.0	No Limit	
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.109	0.109	0.0	0% - 20%	
ES1327029-011	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0002	0.0	No Limit	
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.003	0.004	0.0	No Limit	
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.002	0.003	0.0	No Limit	
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.147	0.144	2.3	0% - 20%	
EG035F: Dissolved Mercury by FIMS (QC Lot: 3215725)										
ES1327141-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3216129)										
ES1326963-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
ES1327521-010	R01_091213_GP	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3216129)										

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 Work Order : ES1327521 Amendment 1
 Client : ENVIRO RESOURCES MANAGEMENT
 Project : 0224193 SYMPHONY



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3216129) - continued									
ES1326963-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1327521-010	R01_091213_GP	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 3216129)									
ES1326963-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES1327521-010	R01_091213_GP	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 3216123)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	116	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	108	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	121	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	118	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	109	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	118	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	119	81	133	
EG005T: Total Metals by ICP-AES (QCLot: 3216125)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	120	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	113	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	132	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	120	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	114	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	127	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	123	81	133	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3216124)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	91.5	66	112	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3216126)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	103	66	112	
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3220859)									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	89.6	57.4	117	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3216013)									
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	91.7	64	126	
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	90.9	66	128	
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	89.8	63	129	
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	87.8	63	129	
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	90.2	64	130	
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	88.7	63	129	
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	90.6	63	129	
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	88.2	62	130	
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	85.2	61	131	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3221397)									
EP074: Benzene	71-43-2	0.5	mg/kg	<0.5	1 mg/kg	104	64	118	
EP074: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	110	65	133	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3221397) - continued									
EP074: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	112	65	127	
EP074: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	116	69	127	
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	111	64	126	
EP074: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	110	65	119	
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	118	66	128	
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	119	63	129	
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	117	63	129	
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	121	64	130	
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	121	63	129	
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	121	63	129	
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	123	62	130	
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	118	61	131	
EP074B: Oxygenated Compounds (QCLot: 3216013)									
EP074: Vinyl Acetate	108-05-4	1	mg/kg	----	10 mg/kg	30.1	29.6	156	
		5	mg/kg	<5	----	----	----	----	
EP074: 2-Butanone (MEK)	78-93-3	1	mg/kg	----	10 mg/kg	113	58	136	
		5	mg/kg	<5	----	----	----	----	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	1	mg/kg	----	10 mg/kg	95.2	54	138	
		5	mg/kg	<5	----	----	----	----	
EP074: 2-Hexanone (MBK)	591-78-6	1	mg/kg	----	10 mg/kg	91.1	54	136	
		5	mg/kg	<5	----	----	----	----	
EP074B: Oxygenated Compounds (QCLot: 3221397)									
EP074: Vinyl Acetate	108-05-4	1	mg/kg	----	10 mg/kg	94.2	29.6	156	
		5	mg/kg	<5	----	----	----	----	
EP074: 2-Butanone (MEK)	78-93-3	1	mg/kg	----	10 mg/kg	88.2	58	136	
		5	mg/kg	<5	----	----	----	----	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	1	mg/kg	----	10 mg/kg	87.8	54	138	
		5	mg/kg	<5	----	----	----	----	
EP074: 2-Hexanone (MBK)	591-78-6	1	mg/kg	----	10 mg/kg	85.7	54	136	
		5	mg/kg	<5	----	----	----	----	
EP074C: Sulfonated Compounds (QCLot: 3216013)									
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	87.2	54	126	
EP074C: Sulfonated Compounds (QCLot: 3221397)									
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	115	54	126	
EP074D: Fumigants (QCLot: 3216013)									
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	86.5	55	133	
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	90.7	69	127	
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	71.7	54	124	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP074D: Fumigants (QCLot: 3216013) - continued									
EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	71.0	51	125	
EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	94.9	66	126	
EP074D: Fumigants (QCLot: 3221397)									
EP074: 2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	111	55	133	
EP074: 1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	95.0	69	127	
EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	88.4	54	124	
EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	84.9	51	125	
EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	107	66	126	
EP074E: Halogenated Aliphatic Compounds (QCLot: 3216013)									
EP074: Dichlorodifluoromethane	75-71-8	1	mg/kg	----	10 mg/kg	135	30	148	
		5	mg/kg	<5	----	----	----	----	
EP074: Chloromethane	74-87-3	1	mg/kg	----	10 mg/kg	118	41	141	
		5	mg/kg	<5	----	----	----	----	
EP074: Vinyl chloride	75-01-4	1	mg/kg	----	10 mg/kg	144	43	147	
		5	mg/kg	<5	----	----	----	----	
EP074: Bromomethane	74-83-9	1	mg/kg	----	10 mg/kg	109	47	141	
		5	mg/kg	<5	----	----	----	----	
EP074: Chloroethane	75-00-3	1	mg/kg	----	10 mg/kg	116	49	143	
		5	mg/kg	<5	----	----	----	----	
EP074: Trichlorofluoromethane	75-69-4	1	mg/kg	----	10 mg/kg	113	49	135	
		5	mg/kg	<5	----	----	----	----	
EP074: 1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	102	54	126	
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	80.1	43	129	
EP074: trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	94.0	62	130	
EP074: 1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	98.6	66	132	
EP074: cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	94.4	66	132	
EP074: 1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	94.4	62	126	
EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	95.2	64	128	
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	79.3	59	125	
EP074: 1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	97.8	65	123	
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	94.4	64	120	
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	96.9	65	127	
EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	94.7	70	130	
EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	97.1	72	128	
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	96.2	67	143	
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	78.7	62	122	
EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	80.1	54	128	
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	78.4	55	129	
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	96.1	56	132	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP074E: Halogenated Aliphatic Compounds (QCLot: 3216013) - continued									
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	91.5	65	135	
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	85.2	19.8	134	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	92.2	53	129	
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	80.8	48	136	
EP074E: Halogenated Aliphatic Compounds (QCLot: 3221397)									
EP074: Dichlorodifluoromethane	75-71-8	1	mg/kg	----	10 mg/kg	85.0	30	148	
		5	mg/kg	<5	----	----	----	----	
EP074: Chloromethane	74-87-3	1	mg/kg	----	10 mg/kg	86.0	41	141	
		5	mg/kg	<5	----	----	----	----	
EP074: Vinyl chloride	75-01-4	1	mg/kg	----	10 mg/kg	66.6	43	147	
		5	mg/kg	<5	----	----	----	----	
EP074: Bromomethane	74-83-9	1	mg/kg	----	10 mg/kg	75.4	47	141	
		5	mg/kg	<5	----	----	----	----	
EP074: Chloroethane	75-00-3	1	mg/kg	----	10 mg/kg	88.7	49	143	
		5	mg/kg	<5	----	----	----	----	
EP074: Trichlorofluoromethane	75-69-4	1	mg/kg	----	10 mg/kg	92.6	49	135	
		5	mg/kg	<5	----	----	----	----	
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	102	54	126	
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	77.9	43	129	
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	107	62	130	
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	98.9	66	132	
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	103	66	132	
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	107	62	126	
EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	107	64	128	
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	98.4	59	125	
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	92.6	65	123	
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	109	64	120	
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	96.8	65	127	
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	100	70	130	
EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	97.6	72	128	
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	126	67	143	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	101	62	122	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	96.9	54	128	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	94.2	55	129	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	102	56	132	
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	87.8	65	135	
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	125	19.8	134	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	117	53	129	
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	121	48	136	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP074F: Halogenated Aromatic Compounds (QCLot: 3216013)									
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	95.8	70	128	
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	93.5	67	127	
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	94.6	64	130	
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	91.1	62	130	
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	87.6	63	129	
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	85.2	63	129	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	91.4	66	128	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	78.2	54	134	
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	86.3	60	132	
EP074F: Halogenated Aromatic Compounds (QCLot: 3221397)									
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	110	70	128	
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	114	67	127	
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	114	64	130	
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	114	62	130	
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	113	63	129	
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	117	63	129	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	106	66	128	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	118	54	134	
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	102	60	132	
EP074G: Trihalomethanes (QCLot: 3216013)									
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	99.0	62	120	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	71.1	61	121	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	85.4	63	121	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	83.8	60	126	
EP074G: Trihalomethanes (QCLot: 3221397)									
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	95.7	62	120	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	86.7	61	121	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	116	63	121	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	110	60	126	
EP074H: Naphthalene (QCLot: 3216013)									
EP074: Naphthalene	91-20-3	0.5	mg/kg	----	1 mg/kg	117	63	133	
		5	mg/kg	<5	----	----	----	----	
EP074H: Naphthalene (QCLot: 3221397)									
EP074: Naphthalene	91-20-3	0.5	mg/kg	----	1 mg/kg	102	63	133	
		5	mg/kg	<5	----	----	----	----	
EP075(SIM)A: Phenolic Compounds (QCLot: 3215994)									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	109	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	102	74	116	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP075(SIM)A: Phenolic Compounds (QCLot: 3215994) - continued									
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	99.4	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	103	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	87.1	60.3	117	
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	95.9	69	117	
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	96.0	68	112	
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	103	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	95.5	76.4	114	
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	85.2	57	111	
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	96.0	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	33.6	3.9	57	
EP075(SIM)A: Phenolic Compounds (QCLot: 3216003)									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	89.9	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	95.6	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	90.0	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	88.9	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	92.8	60.3	117	
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	77.1	69	117	
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	90.1	68	112	
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	90.9	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	89.3	76.4	114	
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	81.0	57	111	
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	78.8	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	43.2	3.9	57	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3215994)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	114	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	116	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	114	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	113	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	108	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	110	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	111	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	114	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	112	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	106	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	99.8	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	107	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	102	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	94.7	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	99.1	71.7	113	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3215994) - continued									
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	85.4	72.4	114	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3216003)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	93.8	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	99.7	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	96.3	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	96.6	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	97.3	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	98.1	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	96.8	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	98.0	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	98.0	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	101	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	97.0	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	96.2	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	92.0	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	89.1	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	86.5	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	90.9	72.4	114	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3215831)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	90.4	68.4	128	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3215993)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	103	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	97.9	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	83.1	64	128	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216002)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	96.4	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	102	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	97.1	64	128	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216012)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	80.4	68.4	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3215831)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	90.6	68.4	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3215993)									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	104	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	91.2	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	71.6	63	131	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216002)									



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216002) - continued									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	97.3	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	102	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	84.9	63	131	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216012)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	81.4	68.4	128	
EP080: BTEXN (QCLot: 3215831)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	95.7	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	90.9	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	94.0	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	95.4	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	102	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	97.6	62	138	
EP080: BTEXN (QCLot: 3216012)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	81.3	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	84.8	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	92.4	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	87.2	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	91.0	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	90.6	62	138	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020F: Dissolved Metals by ICP-MS (QCLot: 3215723)									
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	88.5	80	118	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	91.4	82	112	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	93.1	81	111	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	85.3	80	112	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	92.9	83	111	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	91.6	81	113	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	86.7	80	116	
EG035F: Dissolved Mercury by FIMS (QCLot: 3215725)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	81.8	78	114	
EP075(SIM)A: Phenolic Compounds (QCLot: 3216312)									
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	20 µg/L	39.3	24.5	61.9	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 3216312) - continued								
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	20 µg/L	86.3	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	20 µg/L	75.2	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	40 µg/L	74.2	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	20 µg/L	89.6	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	20 µg/L	96.8	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	20 µg/L	91.0	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	20 µg/L	93.1	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	20 µg/L	90.5	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	20 µg/L	91.9	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	20 µg/L	92.6	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	40 µg/L	# 100	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3216312)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	20 µg/L	92.0	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	20 µg/L	96.0	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	20 µg/L	98.9	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	20 µg/L	99.4	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	20 µg/L	102	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	20 µg/L	101	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	20 µg/L	107	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	20 µg/L	100	63.1	118
		1	µg/L	<1.0	----	----	----	----



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					LCS	Low	High	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3216312) - continued								
EP075(SIM): Benz(a)anthracene	56-55-3	0.2 1	µg/L µg/L	---- <1.0	20 µg/L ----	101 ----	64.1 ----	117 ----
EP075(SIM): Chrysene	218-01-9	0.2 1	µg/L µg/L	---- <1.0	20 µg/L ----	103 ----	62.5 ----	116 ----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2 1	µg/L µg/L	---- <1.0	20 µg/L ----	99.4 ----	61.7 ----	119 ----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2 1	µg/L µg/L	---- <1.0	20 µg/L ----	106 ----	61.7 ----	117 ----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2 0.5	µg/L µg/L	---- <0.5	20 µg/L ----	99.2 ----	63.3 ----	117 ----
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2 1	µg/L µg/L	---- <1.0	20 µg/L ----	99.5 ----	59.9 ----	118 ----
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2 1	µg/L µg/L	---- <1.0	20 µg/L ----	105 ----	61.2 ----	117 ----
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2 1	µg/L µg/L	---- <1.0	20 µg/L ----	94.8 ----	59.1 ----	118 ----
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216129)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	98.3	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216313)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	120	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	126	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	102	62	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216129)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	98.1	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216313)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	111	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	111	73.9	138
EP071: >C34 - C40 Fraction	----	100 50	µg/L µg/L	<100 ----	---- 1500 µg/L	---- 91.2	---- 67	---- 127
EP080: BTEXN (QCLot: 3216129)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	118	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	109	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	99.8	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	101	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	94.6	70	124



Matrix Spike (MS) Report

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

Sub-Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3216123)							
ES1327433-013	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	107	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	104	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	107	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	108	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	104	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	103	70	130
EG005T: Total Metals by ICP-AES (QCLot: 3216125)							
ES1327521-011	BY_MW11_0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	112	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	108	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	106	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	115	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	107	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	114	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	109	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3216124)							
ES1327433-013	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	93.4	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3216126)							
ES1327521-011	BY_MW11_0.2	EG035T: Mercury	7439-97-6	5 mg/kg	94.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3220859)							
ES1327521-002	BM_SB01 (2)_0.8	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	91.8	70	130
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3221397)							
ES1327521-002	BM_SB01 (2)_0.8	EP074: Benzene	71-43-2	2.5 mg/kg	75.1	70	130
		EP074: Toluene	108-88-3	2.5 mg/kg	86.7	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3216013)							
ES1327422-025	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	80.3	70	130
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	87.7	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3221397)							
ES1327521-002	BM_SB01 (2)_0.8	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	73.1	70	130
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	78.6	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3216013)							
ES1327422-025	Anonymous	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	96.1	70	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074F: Halogenated Aromatic Compounds (QCLot: 3221397)							
ES1327521-002	BM_SB01 (2)_0.8	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	91.0	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3215994)							
ES1327521-002	BM_SB01 (2)_0.8	EP075(SIM): Phenol	108-95-2	10 mg/kg	111	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	114	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	72.4	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	97.6	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	36.8	20	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3216003)							
ES1327422-025	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	83.6	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	93.0	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	75.0	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	89.8	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	38.2	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3215994)							
ES1327521-002	BM_SB01 (2)_0.8	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	116	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	110	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3216003)							
ES1327422-025	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	91.4	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.2	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3215831)							
ES1327521-002	BM_SB01 (2)_0.8	EP080: C6 - C9 Fraction	----	32.5 mg/kg	91.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3215993)							
ES1327521-002	BM_SB01 (2)_0.8	EP071: C10 - C14 Fraction	----	640 mg/kg	88.2	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	81.1	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	68.5	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216002)							
ES1327422-025	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	78.3	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	80.6	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	74.6	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216012)							
ES1327422-025	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	83.1	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3215831)							
ES1327521-002	BM_SB01 (2)_0.8	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	91.6	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3215993)							
ES1327521-002	BM_SB01 (2)_0.8	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	107	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	73.5	53	131



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3215993) - continued								
ES1327521-002	BM_SB01 (2)_0.8	EP071: >C34 - C40 Fraction	----	2400 mg/kg	53.0	52	132	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216002)								
ES1327422-025	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	102	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	76.5	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	61.9	52	132	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216012)								
ES1327422-025	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	82.6	70	130	
EP080: BTEXN (QCLot: 3215831)								
ES1327521-002	BM_SB01 (2)_0.8	EP080: Benzene	71-43-2	2.5 mg/kg	86.2	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	85.5	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	91.4	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	89.6	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	93.8	70	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	83.1	70	130		
EP080: BTEXN (QCLot: 3216012)								
ES1327422-025	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	90.5	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	88.9	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	89.2	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	86.0	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	91.9	70	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	83.2	70	130		

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3215723)							
ES1327029-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	125	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	116	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	115	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	113	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	109	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	105	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	116	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3215725)							
ES1327141-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	79.5	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216129)							



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report				
				Spike	Spike Recovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216129) - continued								
ES1326963-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	120	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216129)								
ES1326963-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	116	70	130	
EP080: BTEXN (QCLot: 3216129)								
ES1326963-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	116	70	130	
		EP080: Toluene	108-88-3	25 µg/L	109	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	112	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	111	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	115	70	130	
	EP080: Naphthalene	91-20-3		25 µg/L	100	70	130	

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3215831)											
ES1327521-002	BM_SB01 (2)_0.8	EP080: C6 - C9 Fraction	----	32.5 mg/kg	91.9	----	70	130	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3215831)											
ES1327521-002	BM_SB01 (2)_0.8	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	91.6	----	70	130	----	----	
EP080: BTEXN (QCLot: 3215831)											
ES1327521-002	BM_SB01 (2)_0.8	EP080: Benzene	71-43-2	2.5 mg/kg	86.2	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	85.5	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	91.4	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	89.6	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	93.8	----	70	130	----	----	
	EP080: Naphthalene	91-20-3		2.5 mg/kg	83.1	----	70	130	----	----	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3215993)											
ES1327521-002	BM_SB01 (2)_0.8	EP071: C10 - C14 Fraction	----	640 mg/kg	88.2	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	81.1	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	68.5	----	52	132	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3215993)											
ES1327521-002	BM_SB01 (2)_0.8	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	107	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	73.5	----	53	131	----	----	



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3215993) - continued										
ES1327521-002	BM_SB01 (2)_0.8	EP071: >C34 - C40 Fraction	----	2400 mg/kg	53.0	----	52	132	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3215994)										
ES1327521-002	BM_SB01 (2)_0.8	EP075(SIM): Phenol	108-95-2	10 mg/kg	111	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	114	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	72.4	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	97.6	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	36.8	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3215994)										
ES1327521-002	BM_SB01 (2)_0.8	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	116	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	110	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216002)										
ES1327422-025	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	78.3	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	80.6	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	74.6	----	52	132	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216002)										
ES1327422-025	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	102	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	76.5	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	61.9	----	52	132	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3216003)										
ES1327422-025	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	83.6	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	93.0	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	75.0	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	89.8	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	38.2	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3216003)										
ES1327422-025	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	91.4	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.2	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216012)										
ES1327422-025	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	83.1	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216012)										
ES1327422-025	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	82.6	----	70	130	----	----
EP080: BTEXN (QCLot: 3216012)										
ES1327422-025	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	90.5	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	88.9	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	89.2	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	86.0	----	70	130	----	----
					106-42-3					



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP080: BTEXN (QCLot: 3216012) - continued										
ES1327422-025	Anonymous	EP080: ortho-Xylene	95-47-6	2.5 mg/kg	91.9	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	83.2	----	70	130	----	----
EP074E: Halogenated Aliphatic Compounds (QCLot: 3216013)										
ES1327422-025	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	80.3	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	87.7	----	70	130	----	----
EP074F: Halogenated Aromatic Compounds (QCLot: 3216013)										
ES1327422-025	Anonymous	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	96.1	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3216123)										
ES1327433-013	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	107	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	104	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	107	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	108	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	104	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	103	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3216124)										
ES1327433-013	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	93.4	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3216125)										
ES1327521-011	BY_MW11_0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	112	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	108	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	106	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	115	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	107	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	114	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	109	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3216126)										
ES1327521-011	BY_MW11_0.2	EG035T: Mercury	7439-97-6	5 mg/kg	94.8	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3220859)										
ES1327521-002	BM_SB01 (2)_0.8	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	91.8	----	70	130	----	----
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3221397)										
ES1327521-002	BM_SB01 (2)_0.8	EP074: Benzene	71-43-2	2.5 mg/kg	75.1	----	70	130	----	----
		EP074: Toluene	108-88-3	2.5 mg/kg	86.7	----	70	130	----	----
EP074E: Halogenated Aliphatic Compounds (QCLot: 3221397)										
ES1327521-002	BM_SB01 (2)_0.8	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	73.1	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	78.6	----	70	130	----	----
EP074F: Halogenated Aromatic Compounds (QCLot: 3221397)										
ES1327521-002	BM_SB01 (2)_0.8	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	91.0	----	70	130	----	----



Sub-Matrix: WATER

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG020F: Dissolved Metals by ICP-MS (QCLot: 3215723)										
ES1327029-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	125	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	116	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	115	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	0.2 mg/L	113	----	70	130	----	----
		EG020A-F: Lead	7439-92-1	0.2 mg/L	109	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	105	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	116	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3215725)										
ES1327141-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	79.5	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216129)										
ES1326963-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	120	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216129)										
ES1326963-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	116	----	70	130	----	----
EP080: BTEXN (QCLot: 3216129)										
ES1326963-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	116	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	109	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	112	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	111	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	25 µg/L	115	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	100	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1327521	Page	: 1 of 21
Amendment	: 1		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0224193 SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER		
C-O-C number	: 11741	Date Samples Received	: 13-DEC-2013
Sampler	: GAVIN POWELL	Issue Date	: 06-JAN-2014
Order number	: ----		
Quote number	: SY/794/13	No. of samples received	: 37
		No. of samples analysed	: 32

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Snap Lock Bag (EA055-103) BY_MW11_0.2	09-DEC-2013	----	----	----	17-DEC-2013	23-DEC-2013	✓
Soil Glass Jar - Unpreserved (EA055-103) BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5, D01_061213_GP	06-DEC-2013	----	----	----	17-DEC-2013	20-DEC-2013	✓
Soil Glass Jar - Unpreserved (EA055-103) BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1, BF_MW08_0.2, BF_MW09_0.2, BF_MW10_0.1, BF_MW11_0.2, BY_MW12_8.0	09-DEC-2013	----	----	----	17-DEC-2013	23-DEC-2013	✓
Soil Glass Jar - Unpreserved (EA055-103) LV_MW06_0.05	10-DEC-2013	----	----	----	17-DEC-2013	24-DEC-2013	✓
Soil Glass Jar - Unpreserved (EA055-103) BF_MW09_3.9, BF_MW08_2.6, BY_MW18_0.2, BY_MW32_0.2	12-DEC-2013	----	----	----	17-DEC-2013	26-DEC-2013	✓
Soil Glass Jar - Unpreserved (EA055-103) BF_MW11_4.0, BF_MW11_5.0	13-DEC-2013	----	----	----	17-DEC-2013	27-DEC-2013	✓



Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG005T: Total Metals by ICP-AES								
Snap Lock Bag (EG005T) BY_MW11_0.2	09-DEC-2013	17-DEC-2013	07-JUN-2014	✓	18-DEC-2013	07-JUN-2014	✓	
Soil Glass Jar - Unpreserved (EG005T) BM_SB01 (2)_0.8, BM_MW02_0.5, BM_MW03_0.2, BM_MW05_1.5,	BM_MW01_0.2, BM_MW02_1.0, BM_MW05_0.2, D01_061213_GP	06-DEC-2013	17-DEC-2013	04-JUN-2014	✓	18-DEC-2013	04-JUN-2014	✓
Soil Glass Jar - Unpreserved (EG005T) BY_MW12_0.2, BY_MW24_0.1, BY_MW26_0.1, BY_MW29_0.1, BF_MW09_0.2, BF_MW11_0.2,	BY_MW23_0.2, BY_MW25_0.1, BY_MW27_0.1, BF_MW08_0.2, BF_MW10_0.1, BY_MW12_8.0	09-DEC-2013	17-DEC-2013	07-JUN-2014	✓	18-DEC-2013	07-JUN-2014	✓
Soil Glass Jar - Unpreserved (EG005T) LV_MW06_0.05		10-DEC-2013	17-DEC-2013	08-JUN-2014	✓	18-DEC-2013	08-JUN-2014	✓
Soil Glass Jar - Unpreserved (EG005T) BF_MW09_3.9, BY_MW18_0.2,	BF_MW08_2.6, BY_MW32_0.2	12-DEC-2013	17-DEC-2013	10-JUN-2014	✓	18-DEC-2013	10-JUN-2014	✓
Soil Glass Jar - Unpreserved (EG005T) BF_MW11_4.0,	BF_MW11_5.0	13-DEC-2013	17-DEC-2013	11-JUN-2014	✓	18-DEC-2013	11-JUN-2014	✓
EG035T: Total Recoverable Mercury by FIMS								
Snap Lock Bag (EG035T) BY_MW11_0.2		09-DEC-2013	17-DEC-2013	06-JAN-2014	✓	18-DEC-2013	06-JAN-2014	✓
Soil Glass Jar - Unpreserved (EG035T) BM_SB01 (2)_0.8, BM_MW02_0.5, BM_MW03_0.2, BM_MW05_1.5,	BM_MW01_0.2, BM_MW02_1.0, BM_MW05_0.2, D01_061213_GP	06-DEC-2013	17-DEC-2013	03-JAN-2014	✓	18-DEC-2013	03-JAN-2014	✓
Soil Glass Jar - Unpreserved (EG035T) BY_MW12_0.2, BY_MW24_0.1, BY_MW26_0.1, BY_MW29_0.1, BF_MW09_0.2, BF_MW11_0.2,	BY_MW23_0.2, BY_MW25_0.1, BY_MW27_0.1, BF_MW08_0.2, BF_MW10_0.1, BY_MW12_8.0	09-DEC-2013	17-DEC-2013	06-JAN-2014	✓	18-DEC-2013	06-JAN-2014	✓
Soil Glass Jar - Unpreserved (EG035T) LV_MW06_0.05		10-DEC-2013	17-DEC-2013	07-JAN-2014	✓	18-DEC-2013	07-JAN-2014	✓
Soil Glass Jar - Unpreserved (EG035T) BF_MW09_3.9, BY_MW18_0.2,	BF_MW08_2.6, BY_MW32_0.2	12-DEC-2013	17-DEC-2013	09-JAN-2014	✓	18-DEC-2013	09-JAN-2014	✓
Soil Glass Jar - Unpreserved (EG035T) BF_MW11_4.0,	BF_MW11_5.0	13-DEC-2013	17-DEC-2013	10-JAN-2014	✓	18-DEC-2013	10-JAN-2014	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066) BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	06-DEC-2013	19-DEC-2013	20-DEC-2013	✓	20-DEC-2013	28-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP066) BF_MW08_0.2	09-DEC-2013	19-DEC-2013	23-DEC-2013	✓	20-DEC-2013	28-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Snap Lock Bag (EP071) BY_MW11_0.2	09-DEC-2013	17-DEC-2013	23-DEC-2013	✓	17-DEC-2013	26-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP071) BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5, D01_061213_GP	06-DEC-2013	17-DEC-2013	20-DEC-2013	✓	17-DEC-2013	26-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP071) BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1, BF_MW08_0.2, BF_MW09_0.2, BF_MW10_0.1, BF_MW11_0.2, BY_MW12_8.0	09-DEC-2013	17-DEC-2013	23-DEC-2013	✓	17-DEC-2013	26-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP071) LV_MW06_0.05	10-DEC-2013	17-DEC-2013	24-DEC-2013	✓	17-DEC-2013	26-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP071) BF_MW09_3.9, BF_MW08_2.6, BY_MW18_0.2, BY_MW32_0.2	12-DEC-2013	17-DEC-2013	26-DEC-2013	✓	17-DEC-2013	26-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP071) BF_MW11_4.0, BF_MW11_5.0	13-DEC-2013	17-DEC-2013	27-DEC-2013	✓	17-DEC-2013	26-JAN-2014	✓



Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074D: Fumigants							
Snap Lock Bag (EP074) BY_MW11_0.2	09-DEC-2013	17-DEC-2013	16-DEC-2013	✘	17-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	06-DEC-2013	19-DEC-2013	13-DEC-2013	✘	22-DEC-2013	13-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1	09-DEC-2013	17-DEC-2013	16-DEC-2013	✘	17-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BF_MW08_0.2	09-DEC-2013	19-DEC-2013	16-DEC-2013	✘	22-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) LV_MW06_0.05	10-DEC-2013	17-DEC-2013	17-DEC-2013	✔	17-DEC-2013	17-DEC-2013	✔
EP074E: Halogenated Aliphatic Compounds							
Snap Lock Bag (EP074) BY_MW11_0.2	09-DEC-2013	17-DEC-2013	16-DEC-2013	✘	17-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	06-DEC-2013	19-DEC-2013	13-DEC-2013	✘	22-DEC-2013	13-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1	09-DEC-2013	17-DEC-2013	16-DEC-2013	✘	17-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BF_MW08_0.2	09-DEC-2013	19-DEC-2013	16-DEC-2013	✘	22-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) LV_MW06_0.05	10-DEC-2013	17-DEC-2013	17-DEC-2013	✔	17-DEC-2013	17-DEC-2013	✔



Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074F: Halogenated Aromatic Compounds							
Snap Lock Bag (EP074) BY_MW11_0.2	09-DEC-2013	17-DEC-2013	16-DEC-2013	✘	17-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	06-DEC-2013	19-DEC-2013	13-DEC-2013	✘	22-DEC-2013	13-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1	09-DEC-2013	17-DEC-2013	16-DEC-2013	✘	17-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BF_MW08_0.2	09-DEC-2013	19-DEC-2013	16-DEC-2013	✘	22-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) LV_MW06_0.05	10-DEC-2013	17-DEC-2013	17-DEC-2013	✔	17-DEC-2013	17-DEC-2013	✔
EP074A: Monocyclic Aromatic Hydrocarbons							
Snap Lock Bag (EP074) BY_MW11_0.2	09-DEC-2013	17-DEC-2013	16-DEC-2013	✘	17-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	06-DEC-2013	19-DEC-2013	13-DEC-2013	✘	22-DEC-2013	13-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1	09-DEC-2013	17-DEC-2013	16-DEC-2013	✘	17-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BF_MW08_0.2	09-DEC-2013	19-DEC-2013	16-DEC-2013	✘	22-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) LV_MW06_0.05	10-DEC-2013	17-DEC-2013	17-DEC-2013	✔	17-DEC-2013	17-DEC-2013	✔



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene							
Snap Lock Bag (EP074) BY_MW11_0.2	09-DEC-2013	17-DEC-2013	16-DEC-2013	✘	17-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	06-DEC-2013	19-DEC-2013	13-DEC-2013	✘	22-DEC-2013	13-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1	09-DEC-2013	17-DEC-2013	16-DEC-2013	✘	17-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BF_MW08_0.2	09-DEC-2013	19-DEC-2013	16-DEC-2013	✘	22-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) LV_MW06_0.05	10-DEC-2013	17-DEC-2013	17-DEC-2013	✔	17-DEC-2013	17-DEC-2013	✔
EP074B: Oxygenated Compounds							
Snap Lock Bag (EP074) BY_MW11_0.2	09-DEC-2013	17-DEC-2013	16-DEC-2013	✘	17-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	06-DEC-2013	19-DEC-2013	13-DEC-2013	✘	22-DEC-2013	13-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1	09-DEC-2013	17-DEC-2013	16-DEC-2013	✘	17-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) BF_MW08_0.2	09-DEC-2013	19-DEC-2013	16-DEC-2013	✘	22-DEC-2013	16-DEC-2013	✘
Soil Glass Jar - Unpreserved (EP074) LV_MW06_0.05	10-DEC-2013	17-DEC-2013	17-DEC-2013	✔	17-DEC-2013	17-DEC-2013	✔



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074C: Sulfonated Compounds							
Snap Lock Bag (EP074) BY_MW11_0.2	09-DEC-2013	17-DEC-2013	16-DEC-2013	✖	17-DEC-2013	16-DEC-2013	✖
Soil Glass Jar - Unpreserved (EP074) BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	06-DEC-2013	19-DEC-2013	13-DEC-2013	✖	22-DEC-2013	13-DEC-2013	✖
Soil Glass Jar - Unpreserved (EP074) BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1	09-DEC-2013	17-DEC-2013	16-DEC-2013	✖	17-DEC-2013	16-DEC-2013	✖
Soil Glass Jar - Unpreserved (EP074) BF_MW08_0.2	09-DEC-2013	19-DEC-2013	16-DEC-2013	✖	22-DEC-2013	16-DEC-2013	✖
Soil Glass Jar - Unpreserved (EP074) LV_MW06_0.05	10-DEC-2013	17-DEC-2013	17-DEC-2013	✔	17-DEC-2013	17-DEC-2013	✔
EP074G: Trihalomethanes							
Snap Lock Bag (EP074) BY_MW11_0.2	09-DEC-2013	17-DEC-2013	16-DEC-2013	✖	17-DEC-2013	16-DEC-2013	✖
Soil Glass Jar - Unpreserved (EP074) BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	06-DEC-2013	19-DEC-2013	13-DEC-2013	✖	22-DEC-2013	13-DEC-2013	✖
Soil Glass Jar - Unpreserved (EP074) BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1	09-DEC-2013	17-DEC-2013	16-DEC-2013	✖	17-DEC-2013	16-DEC-2013	✖
Soil Glass Jar - Unpreserved (EP074) BF_MW08_0.2	09-DEC-2013	19-DEC-2013	16-DEC-2013	✖	22-DEC-2013	16-DEC-2013	✖
Soil Glass Jar - Unpreserved (EP074) LV_MW06_0.05	10-DEC-2013	17-DEC-2013	17-DEC-2013	✔	17-DEC-2013	17-DEC-2013	✔



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080: BTEXN								
Snap Lock Bag (EP080) BY_MW11_0.2	09-DEC-2013	17-DEC-2013	23-DEC-2013	✓	17-DEC-2013	23-DEC-2013	✓	
Soil Glass Jar - Unpreserved (EP080) BM_SB01 (2)_0.8, BM_MW02_0.5, BM_MW03_0.2, BM_MW05_1.5,	BM_MW01_0.2, BM_MW02_1.0, BM_MW05_0.2, D01_061213_GP	06-DEC-2013	17-DEC-2013	20-DEC-2013	✓	17-DEC-2013	20-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080) BY_MW12_0.2, BY_MW24_0.1, BY_MW26_0.1, BY_MW29_0.1, BF_MW09_0.2, BF_MW11_0.2,	BY_MW23_0.2, BY_MW25_0.1, BY_MW27_0.1, BF_MW08_0.2, BF_MW10_0.1, BY_MW12_8.0	09-DEC-2013	17-DEC-2013	23-DEC-2013	✓	17-DEC-2013	23-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080) LV_MW06_0.05		10-DEC-2013	17-DEC-2013	24-DEC-2013	✓	17-DEC-2013	24-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080) SPIKE,	BLANK	11-DEC-2013	17-DEC-2013	25-DEC-2013	✓	17-DEC-2013	25-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080) BF_MW09_3.9, BY_MW18_0.2, TSC 9	BF_MW08_2.6, BY_MW32_0.2,	12-DEC-2013	17-DEC-2013	26-DEC-2013	✓	17-DEC-2013	26-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080) BF_MW11_4.0,	BF_MW11_5.0	13-DEC-2013	17-DEC-2013	27-DEC-2013	✓	17-DEC-2013	27-DEC-2013	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Snap Lock Bag (EP080)								
BY_MW11_0.2	09-DEC-2013	17-DEC-2013	23-DEC-2013	✓	17-DEC-2013	23-DEC-2013	✓	
Soil Glass Jar - Unpreserved (EP080)								
BM_SB01 (2)_0.8, BM_MW02_0.5, BM_MW03_0.2, BM_MW05_1.5,	BM_MW01_0.2, BM_MW02_1.0, BM_MW05_0.2, D01_061213_GP	06-DEC-2013	17-DEC-2013	20-DEC-2013	✓	17-DEC-2013	20-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080)								
BY_MW12_0.2, BY_MW24_0.1, BY_MW26_0.1, BY_MW29_0.1, BF_MW09_0.2, BF_MW11_0.2,	BY_MW23_0.2, BY_MW25_0.1, BY_MW27_0.1, BF_MW08_0.2, BF_MW10_0.1, BY_MW12_8.0	09-DEC-2013	17-DEC-2013	23-DEC-2013	✓	17-DEC-2013	23-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080)								
LV_MW06_0.05		10-DEC-2013	17-DEC-2013	24-DEC-2013	✓	17-DEC-2013	24-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080)								
SPIKE,	BLANK	11-DEC-2013	17-DEC-2013	25-DEC-2013	✓	17-DEC-2013	25-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080)								
BF_MW09_3.9, BY_MW18_0.2, TSC 9	BF_MW08_2.6, BY_MW32_0.2,	12-DEC-2013	17-DEC-2013	26-DEC-2013	✓	17-DEC-2013	26-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080)								
BF_MW11_4.0,	BF_MW11_5.0	13-DEC-2013	17-DEC-2013	27-DEC-2013	✓	17-DEC-2013	27-DEC-2013	✓

Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
R01_091213_GP	09-DEC-2013	---	07-JUN-2014	----	17-DEC-2013	07-JUN-2014	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
R01_091213_GP	09-DEC-2013	---	06-JAN-2014	----	17-DEC-2013	06-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber Glass Bottle - Unpreserved (EP071)							
R01_091213_GP	09-DEC-2013	17-DEC-2013	16-DEC-2013	*	17-DEC-2013	26-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
R01_091213_GP	09-DEC-2013	17-DEC-2013	16-DEC-2013	*	18-DEC-2013	26-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
R01_091213_GP	09-DEC-2013	17-DEC-2013	16-DEC-2013	*	18-DEC-2013	26-JAN-2014	✓

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Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) R01_091213_GP	09-DEC-2013	17-DEC-2013	23-DEC-2013	✓	17-DEC-2013	23-DEC-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber VOC Vial - Sulfuric Acid (EP080) R01_091213_GP	09-DEC-2013	17-DEC-2013	23-DEC-2013	✓	17-DEC-2013	23-DEC-2013	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	6	53	11.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	3	24	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	24	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	24	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	24	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	3	33.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TPH - Semivolatle Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
Volatile Organic Compounds	EP074	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)



Analytical Methods	Method	Matrix	Method Descriptions
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na ₂ SO ₄ and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)A: Phenolic Compounds	3839371-002	----	Pentachlorophenol	87-86-5	100 %	8.7-95%	Recovery greater than upper control limit

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	ES1327521-034	BF_MW11_4.0	2.4.6-Tribromophenol	118-79-6	38.5 %	40-138 %	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP074A: Monocyclic Aromatic Hydrocarbons							
Snap Lock Bag							
BY_MW11_0.2		17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved							
BM_SB01 (2)_0.8, BM_MW02_0.5, BM_MW03_0.2, BM_MW05_1.5	BM_MW01_0.2, BM_MW02_1.0, BM_MW05_0.2,	19-DEC-2013	13-DEC-2013	6	22-DEC-2013	13-DEC-2013	9
Soil Glass Jar - Unpreserved							
BY_MW12_0.2, BY_MW24_0.1, BY_MW26_0.1, BY_MW29_0.1	BY_MW23_0.2, BY_MW25_0.1, BY_MW27_0.1,	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1



Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP074A: Monocyclic Aromatic Hydrocarbons - Analysis Holding Time Compliance						
Soil Glass Jar - Unpreserved BF_MW08_0.2	19-DEC-2013	16-DEC-2013	3	22-DEC-2013	16-DEC-2013	6
EP074B: Oxygenated Compounds						
Snap Lock Bag BY_MW11_0.2	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	19-DEC-2013	13-DEC-2013	6	22-DEC-2013	13-DEC-2013	9
Soil Glass Jar - Unpreserved BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved BF_MW08_0.2	19-DEC-2013	16-DEC-2013	3	22-DEC-2013	16-DEC-2013	6
EP074C: Sulfonated Compounds						
Snap Lock Bag BY_MW11_0.2	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	19-DEC-2013	13-DEC-2013	6	22-DEC-2013	13-DEC-2013	9
Soil Glass Jar - Unpreserved BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved BF_MW08_0.2	19-DEC-2013	16-DEC-2013	3	22-DEC-2013	16-DEC-2013	6
EP074D: Fumigants						
Snap Lock Bag BY_MW11_0.2	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	19-DEC-2013	13-DEC-2013	6	22-DEC-2013	13-DEC-2013	9



Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP074D: Fumigants - Analysis Holding Time Compliance						
Soil Glass Jar - Unpreserved BY_MW12_0.2, BY_MW24_0.1, BY_MW26_0.1, BY_MW29_0.1 BY_MW23_0.2, BY_MW25_0.1, BY_MW27_0.1	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved BF_MW08_0.2	19-DEC-2013	16-DEC-2013	3	22-DEC-2013	16-DEC-2013	6
EP074E: Halogenated Aliphatic Compounds						
Snap Lock Bag BY_MW11_0.2	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved BM_SB01 (2)_0.8, BM_MW02_0.5, BM_MW03_0.2, BM_MW05_1.5 BM_MW01_0.2, BM_MW02_1.0, BM_MW05_0.2	19-DEC-2013	13-DEC-2013	6	22-DEC-2013	13-DEC-2013	9
Soil Glass Jar - Unpreserved BY_MW12_0.2, BY_MW24_0.1, BY_MW26_0.1, BY_MW29_0.1 BY_MW23_0.2, BY_MW25_0.1, BY_MW27_0.1	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved BF_MW08_0.2	19-DEC-2013	16-DEC-2013	3	22-DEC-2013	16-DEC-2013	6
EP074F: Halogenated Aromatic Compounds						
Snap Lock Bag BY_MW11_0.2	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved BM_SB01 (2)_0.8, BM_MW02_0.5, BM_MW03_0.2, BM_MW05_1.5 BM_MW01_0.2, BM_MW02_1.0, BM_MW05_0.2	19-DEC-2013	13-DEC-2013	6	22-DEC-2013	13-DEC-2013	9
Soil Glass Jar - Unpreserved BY_MW12_0.2, BY_MW24_0.1, BY_MW26_0.1, BY_MW29_0.1 BY_MW23_0.2, BY_MW25_0.1, BY_MW27_0.1	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved BF_MW08_0.2	19-DEC-2013	16-DEC-2013	3	22-DEC-2013	16-DEC-2013	6
EP074G: Trihalomethanes						
Snap Lock Bag BY_MW11_0.2	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1



Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP074G: Trihalomethanes - Analysis Holding Time Compliance						
Soil Glass Jar - Unpreserved BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	19-DEC-2013	13-DEC-2013	6	22-DEC-2013	13-DEC-2013	9
Soil Glass Jar - Unpreserved BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved BF_MW08_0.2	19-DEC-2013	16-DEC-2013	3	22-DEC-2013	16-DEC-2013	6
EP074H: Naphthalene						
Snap Lock Bag BY_MW11_0.2	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved BM_SB01 (2)_0.8, BM_MW01_0.2, BM_MW02_0.5, BM_MW02_1.0, BM_MW03_0.2, BM_MW05_0.2, BM_MW05_1.5	19-DEC-2013	13-DEC-2013	6	22-DEC-2013	13-DEC-2013	9
Soil Glass Jar - Unpreserved BY_MW12_0.2, BY_MW23_0.2, BY_MW24_0.1, BY_MW25_0.1, BY_MW26_0.1, BY_MW27_0.1, BY_MW29_0.1	17-DEC-2013	16-DEC-2013	1	17-DEC-2013	16-DEC-2013	1
Soil Glass Jar - Unpreserved BF_MW08_0.2	19-DEC-2013	16-DEC-2013	3	22-DEC-2013	16-DEC-2013	6

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP075(SIM)A: Phenolic Compounds						
Amber Glass Bottle - Unpreserved R01_091213_GP	17-DEC-2013	16-DEC-2013	1	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
Amber Glass Bottle - Unpreserved R01_091213_GP	17-DEC-2013	16-DEC-2013	1	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
Amber Glass Bottle - Unpreserved R01_091213_GP	17-DEC-2013	16-DEC-2013	1	----	----	----



Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013						
Amber Glass Bottle - Unpreserved R01_091213_GP	17-DEC-2013	16-DEC-2013	1	----	----	----

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

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

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : ES1327803

<p>Client : ENVIRO RESOURCES MANAGEMENT</p> <p>Contact : MR JOSEPH FERRING</p> <p>Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</p>	<p>Laboratory : Environmental Division Sydney</p> <p>Contact : Barbara Hanna</p> <p>Address : 277-289 Woodpark Road Smithfield NSW Australia 2164</p>
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<p>E-mail : joseph.ferring@erm.com</p> <p>Telephone : +61 02 8584 8888</p> <p>Facsimile : +61 02 8584 8800</p>	<p>E-mail : Barbara.Hanna@alsglobal.com</p> <p>Telephone : +61 2 8784 8555</p> <p>Facsimile : +61 2 8784 8555</p>
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<p>Project : 0229193 SYMPHONY</p> <p>Order number : ----</p> <p>C-O-C number : 11743</p> <p>Site : BAYWATER</p> <p>Sampler : GP</p>	<p>Page : 1 of 3</p> <p>Quote number : ES2013ENVRES0369 (SY/794/13)</p> <p>QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement</p>
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Dates

<p>Date Samples Received : 18-DEC-2013</p> <p>Client Requested Due Date : 20-DEC-2013</p>	<p>Issue Date : 19-DEC-2013 10:05</p> <p>Scheduled Reporting Date : 20-DEC-2013</p>
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Delivery Details

<p>Mode of Delivery : Carrier</p> <p>No. of coolers/boxes : 1 HARD</p> <p>Security Seal : Intact.</p>	<p>Temperature : 4.1' C SYD - Ice present</p> <p>No. of samples received : 11</p> <p>No. of samples analysed : 8</p>
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General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Sample T01_111213_GP to be forwarded to Envirolab.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-18 (NO MOIST)	TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-24 TRH/BTEXN/PAH + Phenols
ES1327803-001	11-DEC-2013 15:00	BY_MW25_6.0		✓			✓
ES1327803-002	11-DEC-2013 15:00	BY_MW25_2.0	✓				
ES1327803-003	11-DEC-2013 15:00	BY_MW24_2.1	✓				
ES1327803-004	11-DEC-2013 15:00	BY_MW24_6.0		✓			✓
ES1327803-005	11-DEC-2013 15:00	BY_MW23_0.9	✓				
ES1327803-006	11-DEC-2013 15:00	BY_MW23_3.5		✓			✓
ES1327803-007	11-DEC-2013 15:00	D01_111213_GP		✓			✓
ES1327803-008	11-DEC-2013 15:00	TRIP SPIKE 6				✓	
ES1327803-009	11-DEC-2013 15:00	TRIP BLANK				✓	
ES1327803-011	11-DEC-2013 15:00	TSC 6				✓	

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-02T 8 metals (Total)	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1327803-010	11-DEC-2013 15:00	RO1_111213_GP	✓	✓

Proactive Holding Time Report

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



Requested Deliverables

MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) (COC)	Email	joseph.ferring@erm.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	joseph.ferring@erm.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.ferring@erm.com
- EDI Format - XTab (XTAB)	Email	joseph.ferring@erm.com

SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA (COA)	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) (COC)	Email	symphony.macgen@erm.com
- EDI Format - ENMRG (ENMRG)	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	symphony.macgen@erm.com
- EDI Format - ESDAT (ESDAT)	Email	symphony.macgen@erm.com
- EDI Format - XTab (XTAB)	Email	symphony.macgen@erm.com

THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
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CERTIFICATE OF ANALYSIS

Work Order : ES1327803 Client : ENVIRO RESOURCES MANAGEMENT Contact : MR JOSEPH FERRING Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007 E-mail : joseph.ferring@erm.com Telephone : +61 02 8584 8888 Facsimile : +61 02 8584 8800 Project : 0229193 SYMPHONY Order number : ---- C-O-C number : 11743 Sampler : GP Site : BAYWATER Quote number : SY/794/13	Page : 1 of 10 Laboratory : Environmental Division Sydney Contact : Barbara Hanna Address : 277-289 Woodpark Road Smithfield NSW Australia 2164 E-mail : Barbara.Hanna@alsglobal.com Telephone : +61 2 8784 8555 Facsimile : +61 2 8784 8555 QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement Date Samples Received : 18-DEC-2013 Issue Date : 23-DEC-2013 No. of samples received : 11 No. of samples analysed : 8
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics



General Comments

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

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

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

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

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

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

LOR = Limit of reporting

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

- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BY_MW25_6.0	BY_MW24_6.0	BY_MW23_3.5	D01_111213_GP	TRIP SPIKE 6
				11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00
				ES1327803-001	ES1327803-004	ES1327803-006	ES1327803-007	ES1327803-008
Compound	CAS Number	LOR	Unit	Client sampling date / time				
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	16.2	15.6	14.4	14.2	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	28	17	8	30	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg	28	24	12	28	----
Copper	7440-50-8	5	mg/kg	32	22	<5	32	----
Lead	7439-92-1	5	mg/kg	23	16	8	26	----
Nickel	7440-02-0	2	mg/kg	33	4	4	34	----
Zinc	7440-66-6	5	mg/kg	132	63	46	146	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW25_6.0	BY_MW24_6.0	BY_MW23_3.5	D01_111213_GP	TRIP SPIKE 6
				11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327803-001	ES1327803-004	ES1327803-006	ES1327803-007	ES1327803-008
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	104
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	116
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	69
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	0.9
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	24.2
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	2.8
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	13.6
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	5.4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW25_6.0	BY_MW24_6.0	BY_MW23_3.5	D01_111213_GP	TRIP SPIKE 6
				11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1327803-001	ES1327803-004	ES1327803-006	ES1327803-007	ES1327803-008
EP080: BTEXN - Continued								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	46.9
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	19.0
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	79.5	88.4	69.2	90.2	----
2-Chlorophenol-D4	93951-73-6	0.1	%	76.3	85.1	65.5	85.5	----
2.4.6-Tribromophenol	118-79-6	0.1	%	96.9	97.8	76.4	82.0	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	94.3	100	78.0	96.1	----
Anthracene-d10	1719-06-8	0.1	%	89.3	94.8	87.4	93.3	----
4-Terphenyl-d14	1718-51-0	0.1	%	97.2	106	99.7	108	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	92.8	98.4	92.5	98.9	102
Toluene-D8	2037-26-5	0.1	%	102	112	102	106	110
4-Bromofluorobenzene	460-00-4	0.1	%	99.8	107	99.2	109	109



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				TRIP BLANK	TSC 6	---	---	---
				11-DEC-2013 15:00	11-DEC-2013 15:00	---	---	---
				ES1327803-009	ES1327803-011	---	---	---
Compound	CAS Number	LOR	Unit					
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	---	10	mg/kg	<10	108	---	---	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	122	---	---	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	74	---	---	---
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	0.9	---	---	---
Toluene	108-88-3	0.5	mg/kg	<0.5	24.8	---	---	---
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.9	---	---	---
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	14.0	---	---	---
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	5.6	---	---	---
^ Sum of BTEX	---	0.2	mg/kg	<0.2	48.2	---	---	---
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	19.6	---	---	---
Naphthalene	91-20-3	1	mg/kg	<1	<1	---	---	---
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	93.8	100	---	---	---
Toluene-D8	2037-26-5	0.1	%	101	109	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	96.6	108	---	---	---



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

RO1_111213_GP

Client sampling date / time

11-DEC-2013 15:00

Compound	CAS Number	LOR	Unit	ES1327803-010	---	---	---	---
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EG020T: Total Metals by ICP-MS

Arsenic	7440-38-2	0.001	mg/L	<0.001	---	---	---	---
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	---	---	---	---
Chromium	7440-47-3	0.001	mg/L	<0.001	---	---	---	---
Copper	7440-50-8	0.001	mg/L	<0.001	---	---	---	---
Nickel	7440-02-0	0.001	mg/L	<0.001	---	---	---	---
Lead	7439-92-1	0.001	mg/L	<0.001	---	---	---	---
Zinc	7440-66-6	0.005	mg/L	<0.005	---	---	---	---

EG035T: Total Recoverable Mercury by FIMS

Mercury	7439-97-6	0.0001	mg/L	<0.0001	---	---	---	---
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EP075(SIM)A: Phenolic Compounds

Phenol	108-95-2	1.0	µg/L	<1.0	---	---	---	---
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	---	---	---	---
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	---	---	---	---
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	---	---	---	---
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	---	---	---	---
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	---	---	---	---
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	---	---	---	---
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	---	---	---	---
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	---	---	---	---
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	---	---	---	---
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	---	---	---	---
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	---	---	---	---

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	1.0	µg/L	<1.0	---	---	---	---
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	---	---	---	---
Acenaphthene	83-32-9	1.0	µg/L	<1.0	---	---	---	---
Fluorene	86-73-7	1.0	µg/L	<1.0	---	---	---	---
Phenanthrene	85-01-8	1.0	µg/L	<1.0	---	---	---	---
Anthracene	120-12-7	1.0	µg/L	<1.0	---	---	---	---
Fluoranthene	206-44-0	1.0	µg/L	<1.0	---	---	---	---
Pyrene	129-00-0	1.0	µg/L	<1.0	---	---	---	---
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	---	---	---	---
Chrysene	218-01-9	1.0	µg/L	<1.0	---	---	---	---



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

RO1_111213_GP

Client sampling date / time

11-DEC-2013 15:00

Compound	CAS Number	LOR	Unit	ES1327803-010	---	---	---	---
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EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued

Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	---	---	---	---
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	---	---	---	---
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	---	---	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	---	---	---	---
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	---	---	---	---
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	---	---	---	---
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	---	---	---	---
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	---	---	---	---

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	20	µg/L	<20	---	---	---	---
C10 - C14 Fraction	----	50	µg/L	<50	---	---	---	---
C15 - C28 Fraction	----	100	µg/L	<100	---	---	---	---
C29 - C36 Fraction	----	50	µg/L	<50	---	---	---	---
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	---	---	---	---

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013

C6 - C10 Fraction	C6_C10	20	µg/L	<20	---	---	---	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	---	---	---	---
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	---	---	---	---
>C16 - C34 Fraction	----	100	µg/L	<100	---	---	---	---
>C34 - C40 Fraction	----	100	µg/L	<100	---	---	---	---
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	---	---	---	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	---	---	---	---

EP080: BTEXN

Benzene	71-43-2	1	µg/L	<1	---	---	---	---
Toluene	108-88-3	2	µg/L	<2	---	---	---	---
Ethylbenzene	100-41-4	2	µg/L	<2	---	---	---	---
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	---	---	---	---
ortho-Xylene	95-47-6	2	µg/L	<2	---	---	---	---
^ Total Xylenes	1330-20-7	2	µg/L	<2	---	---	---	---
^ Sum of BTEX	----	1	µg/L	<1	---	---	---	---
Naphthalene	91-20-3	5	µg/L	<5	---	---	---	---

EP075(SIM)S: Phenolic Compound Surrogates



Analytical Results

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

Client sample ID

RO1_111213_GP

Client sampling date / time

11-DEC-2013 15:00

Compound	CAS Number	LOR	Unit	ES1327803-010	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	0.1	%	22.0	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	48.6	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	60.9	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	67.4	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	69.9	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	78.1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	107	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	109	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	97.2	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QUALITY CONTROL REPORT

Work Order	: ES1327803	Page	: 1 of 17
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0229193 SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYWATER	Date Samples Received	: 18-DEC-2013
C-O-C number	: 11743	Issue Date	: 23-DEC-2013
Sampler	: GP	No. of samples received	: 11
Order number	: ----	No. of samples analysed	: 8
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

Signatories

Celine Conceicao
Pabi Subba
Phalak Inthaksone

Position

Senior Spectroscopist
Senior Organic Chemist
Laboratory Manager - Organics

Accreditation Category

Sydney Inorganics
Sydney Organics
Sydney Organics



General Comments

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

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

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

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

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



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 3223613)									
ES1327802-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	7.1	8.4	16.9	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 3221529)									
ES1327293-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	12	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	7	7	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	7	7	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	85	75	12.0	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	60	60	0.0	0% - 50%
ES1327293-017	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	16	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	6	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	16	40.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	18	44.3	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	47	46	2.4	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3221530)									
ES1327293-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1327293-017	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3220857)									
ES1327785-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
		ES1327803-004	BY_MW24_6.0	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5
EP075(SIM): 2-Chlorophenol	95-57-8			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Nitrophenol	88-75-5			0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 3220857) - continued									
ES1327803-004	BY_MW24_6.0	EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3220857)									
ES1327785-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1327803-004	BY_MW24_6.0	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3220857) - continued									
ES1327803-004	BY_MW24_6.0	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3220760)									
ES1327802-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1327803-007	D01_111213_GP	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3220856)									
ES1327785-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1327803-004	BY_MW24_6.0	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3220760)									
ES1327802-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1327803-007	D01_111213_GP	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3220856)									
ES1327785-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1327803-004	BY_MW24_6.0	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEXN (QC Lot: 3220760)									
ES1327802-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1327803-007	D01_111213_GP	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 3220760) - continued									
ES1327803-007	D01_111213_GP	EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3221626)									
ES1327852-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.001	0.002	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3221405)									
ES1327096-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3220885)									
ES1327787-005	Anonymous	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		ES1327787-007	Anonymous	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0
EP075(SIM): 2-Chlorophenol	95-57-8			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2-Nitrophenol	88-75-5			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4-Dimethylphenol	105-67-9			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4-Dichlorophenol	120-83-2			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,6-Dichlorophenol	87-65-0			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 3- & 4-Methylphenol	1319-77-3			2.0	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM): Pentachlorophenol	87-86-5			2.0	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3220885)									



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3220885) - continued									
ES1327787-005	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	12.6	13.0	3.5	0% - 50%
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	2.0	1.9	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	4.5	4.3	4.2	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	5.4	4.4	21.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit		
ES1327787-007	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3220884)									
ES1327787-005	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	320	330	3.5	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	460	470	3.6	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
ES1327787-007	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3222307)									



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3222307) - continued										
ES1327805-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3220884)										
ES1327787-005	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	610	640	5.4	No Limit	
		EP071: >C16 - C34 Fraction	----	100	µg/L	140	140	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
ES1327787-007	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3222307)										
ES1327805-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
EP080: BTEXN (QC Lot: 3222307)										
ES1327805-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit			



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 3221529)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	113	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	107	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	116	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	110	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	107	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	117	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	113	81	133	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3221530)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.4	66	112	
EP075(SIM)A: Phenolic Compounds (QCLot: 3220857)									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	104	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	105	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	101	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	102	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	75.4	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	92.3	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	97.7	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	97.2	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	103	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	93.4	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	84.4	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	37.0	3.9	57	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3220857)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	107	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	113	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	106	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	109	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	112	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	110	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	109	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	108	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	108	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	110	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	100	70	118	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3220857) - continued									
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	108	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	95.7	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	92.6	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	89.6	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	94.4	72.4	114	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220760)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	92.2	68.4	128	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220856)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	103	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	109	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	90.5	64	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220760)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	85.6	68.4	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220856)									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	98.2	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	106	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	69.4	63	131	
EP080: BTEXN (QCLot: 3220760)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	93.1	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	102	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	105	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	104	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	108	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	100	62	138	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020T: Total Metals by ICP-MS (QCLot: 3221626)									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	115	79	121	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.1	82	114	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.6	83	115	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.0	83	117	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.4	85	115	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	94.3	83	117	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	115	76	118	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3221405)									



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3221405) - continued									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	98.4	77	115	
EP075(SIM)A: Phenolic Compounds (QCLot: 3220885)									
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	38.0	24.5	61.9	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	77.4	63.8	110	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	96.8	55.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	67.6	42.5	114	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	83.7	62.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	99.2	59.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	90.1	59.3	122	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	91.9	64.3	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	92.3	63	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	93.8	58.7	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	95.1	50	108	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	56.7	8.7	95	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3220885)									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	87.3	58.6	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	92.1	63.6	114	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	87.9	62.2	113	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	90.7	63.9	115	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	84.4	62.6	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	89.1	64.3	116	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3220885) - continued									
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	89.9	63.6	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	94.0	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	92.0	64.1	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	88.5	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	94.9	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	83.5	61.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	95.0	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	5 µg/L	88.7	59.9	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	90.5	61.2	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	5 µg/L	79.0	59.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220884)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	80.8	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	91.2	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	76.4	62	120	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3222307)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	107	75	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220884)									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	77.8	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	108	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	86.9	67	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3222307)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	108	75	127	
EP080: BTEXN (QCLot: 3222307)									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	105	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	104	65	129	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	99.0	70	120	



Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High
EP080: BTEXN (QCLot: 3222307) - continued								
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	98.1	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	101	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	110	70	124

Matrix Spike (MS) Report

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

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low High	
EG005T: Total Metals by ICP-AES (QCLot: 3221529)							
ES1327293-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	110	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	109	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	113	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	112	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	80.4	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	113	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	113	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3221530)							
ES1327293-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	92.0	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3220857)							
ES1327785-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	97.6	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	96.3	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	118	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	100	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	83.4	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3220857)							
ES1327785-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	98.7	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	98.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220760)							
ES1327802-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	114	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220856)							
ES1327785-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	77.5	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	76.7	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	67.7	52	132



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220760)								
ES1327802-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	106	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220856)								
ES1327785-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	96.4	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	71.8	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	65.7	52	132	
EP080: BTEXN (QCLot: 3220760)								
ES1327802-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	104	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	107	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	113	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	112	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	110	70	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	92.5	70	130		

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3221626)							
ES1327562-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	108	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	99.5	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	97.2	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	118	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	101	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	92.4	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	108	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3221405)							
ES1327096-003	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	93.0	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3220885)							
ES1327787-006	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	28.8	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	81.5	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	71.7	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	85.1	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	86.5	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3220885)							
ES1327787-006	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	78.1	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	72.1	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220884)							
ES1327787-006	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	119	74	150



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report				
				Spike	Spike Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220884) - continued								
ES1327787-006	Anonymous	EP071: C15 - C28 Fraction	----	300 µg/L	126	77	153	
		EP071: C29 - C36 Fraction	----	200 µg/L	87.1	67	153	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3222307)								
ES1327805-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	123	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220884)								
ES1327787-006	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	113	74	150	
		EP071: >C16 - C34 Fraction	----	350 µg/L	95.6	77	153	
		EP071: >C34 - C40 Fraction	----	150 µg/L	133	67	153	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3222307)								
ES1327805-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	70	130	
EP080: BTEXN (QCLot: 3222307)								
ES1327805-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	104	70	130	
		EP080: Toluene	108-88-3	25 µg/L	103	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	106	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	105	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	108	70	130	
EP080: Naphthalene	91-20-3	25 µg/L	109	70	130			

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220760)											
ES1327802-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	114	----	70	130	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220760)											
ES1327802-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	106	----	70	130	----	----	
EP080: BTEXN (QCLot: 3220760)											
ES1327802-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	104	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	107	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	113	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	112	----	70	130	----	----	
			106-42-3								
EP080: ortho-Xylene	95-47-6	2.5 mg/kg	110	----	70	130	----	----			



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP080: BTEXN (QCLot: 3220760) - continued										
ES1327802-001	Anonymous	EP080: Naphthalene	91-20-3	2.5 mg/kg	92.5	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220856)										
ES1327785-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	77.5	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	76.7	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	67.7	----	52	132	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220856)										
ES1327785-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	96.4	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	71.8	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	65.7	----	52	132	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3220857)										
ES1327785-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	97.6	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	96.3	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	118	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	100	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	83.4	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3220857)										
ES1327785-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	98.7	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	98.0	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3221529)										
ES1327293-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	110	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	109	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	113	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	112	----	70	130	----	----
		EG005T: Lead	7439-92-1	250 mg/kg	80.4	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	113	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	113	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3221530)										
ES1327293-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	92.0	----	70	130	----	----

Sub-Matrix: **WATER**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220884)										
ES1327787-006	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	119	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	126	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	87.1	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220884)										
ES1327787-006	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	113	----	74	150	----	----



Sub-Matrix: WATER

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220884) - continued										
ES1327787-006	Anonymous	EP071: >C16 - C34 Fraction	----	350 µg/L	95.6	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	133	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3220885)										
ES1327787-006	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	28.8	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	81.5	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	71.7	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	85.1	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	86.5	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3220885)										
ES1327787-006	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	78.1	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	72.1	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3221405)										
ES1327096-003	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	93.0	----	70	130	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3221626)										
ES1327562-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	108	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	99.5	----	70	130	----	----
		EG020A-T: Chromium	7440-47-3	1 mg/L	97.2	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1 mg/L	118	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1 mg/L	101	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1 mg/L	92.4	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1 mg/L	108	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3222307)										
ES1327805-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	123	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3222307)										
ES1327805-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	----	70	130	----	----
EP080: BTEXN (QCLot: 3222307)										
ES1327805-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	104	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	103	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	106	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	105	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	25 µg/L	108	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	109	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1327803	Page	: 1 of 8
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0229193 SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYWATER	Date Samples Received	: 18-DEC-2013
C-O-C number	: 11743	Issue Date	: 23-DEC-2013
Sampler	: GP	No. of samples received	: 11
Order number	: ----	No. of samples analysed	: 8
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103) BY_MW25_6.0, BY_MW23_3.5,	BY_MW24_6.0, D01_111213_GP	11-DEC-2013	----	----	----	20-DEC-2013	25-DEC-2013	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) BY_MW25_6.0, BY_MW23_3.5,	BY_MW24_6.0, D01_111213_GP	11-DEC-2013	19-DEC-2013	09-JUN-2014	✓	20-DEC-2013	09-JUN-2014	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) BY_MW25_6.0, BY_MW23_3.5,	BY_MW24_6.0, D01_111213_GP	11-DEC-2013	19-DEC-2013	08-JAN-2014	✓	20-DEC-2013	08-JAN-2014	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071) BY_MW25_6.0, BY_MW23_3.5,	BY_MW24_6.0, D01_111213_GP	11-DEC-2013	19-DEC-2013	25-DEC-2013	✓	19-DEC-2013	28-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075(SIM)) BY_MW25_6.0, BY_MW23_3.5,	BY_MW24_6.0, D01_111213_GP	11-DEC-2013	19-DEC-2013	25-DEC-2013	✓	19-DEC-2013	28-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) BY_MW25_6.0, BY_MW23_3.5,	BY_MW24_6.0, D01_111213_GP	11-DEC-2013	19-DEC-2013	25-DEC-2013	✓	19-DEC-2013	28-JAN-2014	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) BY_MW25_6.0, BY_MW23_3.5, TRIP SPIKE 6, TSC 6	BY_MW24_6.0, D01_111213_GP, TRIP BLANK,	11-DEC-2013	19-DEC-2013	25-DEC-2013	✓	19-DEC-2013	25-DEC-2013	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Soil Glass Jar - Unpreserved (EP080) BY_MW25_6.0, BY_MW23_3.5, TRIP SPIKE 6, TSC 6	BY_MW24_6.0, D01_111213_GP, TRIP BLANK,	11-DEC-2013	19-DEC-2013	25-DEC-2013	✓	19-DEC-2013	25-DEC-2013	✓

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) RO1_111213_GP		11-DEC-2013	19-DEC-2013	09-JUN-2014	✓	20-DEC-2013	09-JUN-2014	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) RO1_111213_GP		11-DEC-2013	----	----	----	19-DEC-2013	08-JAN-2014	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RO1_111213_GP		11-DEC-2013	19-DEC-2013	18-DEC-2013	*	20-DEC-2013	29-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RO1_111213_GP		11-DEC-2013	19-DEC-2013	18-DEC-2013	*	20-DEC-2013	29-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RO1_111213_GP		11-DEC-2013	19-DEC-2013	18-DEC-2013	*	20-DEC-2013	29-JAN-2014	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) RO1_111213_GP		11-DEC-2013	19-DEC-2013	25-DEC-2013	✓	19-DEC-2013	25-DEC-2013	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP080) RO1_111213_GP		11-DEC-2013	19-DEC-2013	25-DEC-2013	✓	19-DEC-2013	25-DEC-2013	✓



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	1	7	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	12	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	5	20.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Mercury by FIMS	EG035T	1	5	20.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	5	20.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	5	20.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	ES1327803-006	BY_MW23_3.5	2-Chlorophenol-D4	93951-73-6	65.5 %	66-122 %	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP075(SIM)A: Phenolic Compounds						
Amber Glass Bottle - Unpreserved RO1_111213_GP	19-DEC-2013	18-DEC-2013	1	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
Amber Glass Bottle - Unpreserved RO1_111213_GP	19-DEC-2013	18-DEC-2013	1	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
Amber Glass Bottle - Unpreserved RO1_111213_GP	19-DEC-2013	18-DEC-2013	1	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013						
Amber Glass Bottle - Unpreserved RO1_111213_GP	19-DEC-2013	18-DEC-2013	1	----	----	----

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: ES1327892		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0224193 SYMPHONY	Page	: 1 of 2
Order number	: ----	Quote number	: ES2013ENVRES0354 (EN/009/13)
C-O-C number	: 11745	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER		
Sampler	: GP		

Dates

Date Samples Received	: 19-DEC-2013	Issue Date	: 19-DEC-2013 20:36
Client Requested Due Date	: 23-DEC-2013	Scheduled Reporting Date	: 23-DEC-2013

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.8°C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 4
Security Seal	: Intact.	No. of samples analysed	: 4

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- Preliminary results will be available on the scheduled reporting date listed in this report. However the final report with PSD analysis will be complete on 2/1/14.
- **Samples received in appropriately pretreated and preserved containers.**
- **PSD analysis will be conducted by ALS Newcastle.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA002 pH (1:5)	SOIL - EA150H Particle Size Analysis by Hydrometer.	SOIL - ED008 Def Exchangeable Cations with SOIL - EP004 (Carbon)	Total Organic Carbon (Calc.)	SOIL - S-18 (NO MOIST)	TRH(C6-C9)/BTEXN with No Moisture	SOIL - S-27 TRH/BTEXN/PAH/Phenols&Metals
ES1327892-001	17-DEC-2013 15:00	BY_MW32_1.5-1.8	✓	✓	✓	✓			✓
ES1327892-002	[19-DEC-2013]	TRIP SPIKE					✓		
ES1327892-003	[19-DEC-2013]	TRIP BLANK					✓		
ES1327892-004	[19-DEC-2013]	TSC					✓		

Proactive Holding Time Report

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

Requested Deliverables

MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.ferring@erm.com
- Attachment - Report (SUBCO)	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) (COC)	Email	joseph.ferring@erm.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	joseph.ferring@erm.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.ferring@erm.com
- EDI Format - XTab (XTAB)	Email	joseph.ferring@erm.com

SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA (COA)	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	symphony.macgen@erm.com
- Attachment - Report (SUBCO)	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) (COC)	Email	symphony.macgen@erm.com
- EDI Format - ENMRG (ENMRG)	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	symphony.macgen@erm.com
- EDI Format - ESDAT (ESDAT)	Email	symphony.macgen@erm.com
- EDI Format - XTab (XTAB)	Email	symphony.macgen@erm.com

THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
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CERTIFICATE OF ANALYSIS

Work Order	: ES1327892	Page	: 1 of 7
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0224193 SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 19-DEC-2013
C-O-C number	: 11745	Issue Date	: 31-DEC-2013
Sampler	: GP	No. of samples received	: 4
Site	: BAYSWATER	No. of samples analysed	: 4
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



General Comments

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

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

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

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

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

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

LOR = Limit of reporting

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

- **EA150H: Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1-2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently NATA endorsement does not apply to hydrometer results.**
- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Di-An Dao		Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BY_MW32_1.5-1.8	TRIP SPIKE	TRIP BLANK	TSC	----
Client sampling date / time				17-DEC-2013 15:00	[19-DEC-2013]	[19-DEC-2013]	[19-DEC-2013]	----
Compound	CAS Number	LOR	Unit	ES1327892-001	ES1327892-002	ES1327892-003	ES1327892-004	----

EA150: Particle Sizing

+75µm	----	1	%	9	----	----	----	----
+150µm	----	1	%	6	----	----	----	----
+300µm	----	1	%	5	----	----	----	----
+425µm	----	1	%	5	----	----	----	----
+600µm	----	1	%	5	----	----	----	----
+1180µm	----	1	%	4	----	----	----	----
+2.36mm	----	1	%	3	----	----	----	----
+4.75mm	----	1	%	2	----	----	----	----
+9.5mm	----	1	%	<1	----	----	----	----
+19.0mm	----	1	%	<1	----	----	----	----
+37.5mm	----	1	%	<1	----	----	----	----
+75.0mm	----	1	%	<1	----	----	----	----

EA002 : pH (Soils)

pH Value	----	0.1	pH Unit	8.3	----	----	----	----
----------	------	-----	---------	-----	------	------	------	------

EA055: Moisture Content

Moisture Content (dried @ 103°C)	----	1.0	%	13.8	----	----	----	----
----------------------------------	------	-----	---	------	------	------	------	------

EA150: Soil Classification based on Particle Size

Clay (<2 µm)	----	1	%	27	----	----	----	----
Silt (2-60 µm)	----	1	%	62	----	----	----	----
Sand (0.06-2.00 mm)	----	1	%	8	----	----	----	----
Gravel (>2mm)	----	1	%	3	----	----	----	----
Cobbles (>6cm)	----	1	%	<1	----	----	----	----

ED008: Exchangeable Cations

Exchangeable Calcium	----	0.1	meq/100g	19.1	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	8.9	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	0.2	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	1.7	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	30.0	----	----	----	----

EG005T: Total Metals by ICP-AES

Arsenic	7440-38-2	5	mg/kg	16	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	14	----	----	----	----
Copper	7440-50-8	5	mg/kg	39	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time	BY_MW32_1.5-1.8	TRIP SPIKE	TRIP BLANK	TSC	
17-DEC-2013 15:00		[19-DEC-2013]	[19-DEC-2013]	[19-DEC-2013]	----
	ES1327892-001	ES1327892-002	ES1327892-003	ES1327892-004	----

EG005T: Total Metals by ICP-AES - Continued

Compound	CAS Number	LOR	Unit	ES1327892-001	ES1327892-002	ES1327892-003	ES1327892-004	----
Lead	7439-92-1	5	mg/kg	28	----	----	----	----
Nickel	7440-02-0	2	mg/kg	29	----	----	----	----
Zinc	7440-66-6	5	mg/kg	98	----	----	----	----

EG035T: Total Recoverable Mercury by FIMS

Compound	CAS Number	LOR	Unit	ES1327892-001	ES1327892-002	ES1327892-003	ES1327892-004	----
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----

EP004: Organic Matter

Compound	CAS Number	LOR	Unit	ES1327892-001	ES1327892-002	ES1327892-003	ES1327892-004	----
Organic Matter	----	0.5	%	<0.5	----	----	----	----
Total Organic Carbon	----	0.5	%	<0.5	----	----	----	----

EP075(SIM)A: Phenolic Compounds

Compound	CAS Number	LOR	Unit	ES1327892-001	ES1327892-002	ES1327892-003	ES1327892-004	----
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	----	----	----

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

Compound	CAS Number	LOR	Unit	ES1327892-001	ES1327892-002	ES1327892-003	ES1327892-004	----
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BY_MW32_1.5-1.8	TRIP SPIKE	TRIP BLANK	TSC	----
Client sampling date / time				17-DEC-2013 15:00	[19-DEC-2013]	[19-DEC-2013]	[19-DEC-2013]	----
Compound	CAS Number	LOR	Unit	ES1327892-001	ES1327892-002	ES1327892-003	ES1327892-004	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	84	<10	95	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	88	<10	99	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	58	<10	68	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	0.6	<0.2	0.6	----
Toluene	108-88-3	0.5	mg/kg	<0.5	14.5	<0.5	15.2	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.0	<0.5	2.1	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	9.0	<0.5	9.2	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	3.8	<0.5	4.3	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	29.9	<0.2	31.4	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	12.8	<0.5	13.5	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BY_MW32_1.5-1.8	TRIP SPIKE	TRIP BLANK	TSC	----
				17-DEC-2013 15:00	[19-DEC-2013]	[19-DEC-2013]	[19-DEC-2013]	----
				ES1327892-001	ES1327892-002	ES1327892-003	ES1327892-004	----
Compound	CAS Number	LOR	Unit					
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	91.3	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	91.9	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	77.4	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	90.0	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	85.1	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	83.3	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	112	112	105	87.6	----
Toluene-D8	2037-26-5	0.1	%	126	116	110	115	----
4-Bromofluorobenzene	460-00-4	0.1	%	121	111	106	109	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Certificate of Analysis

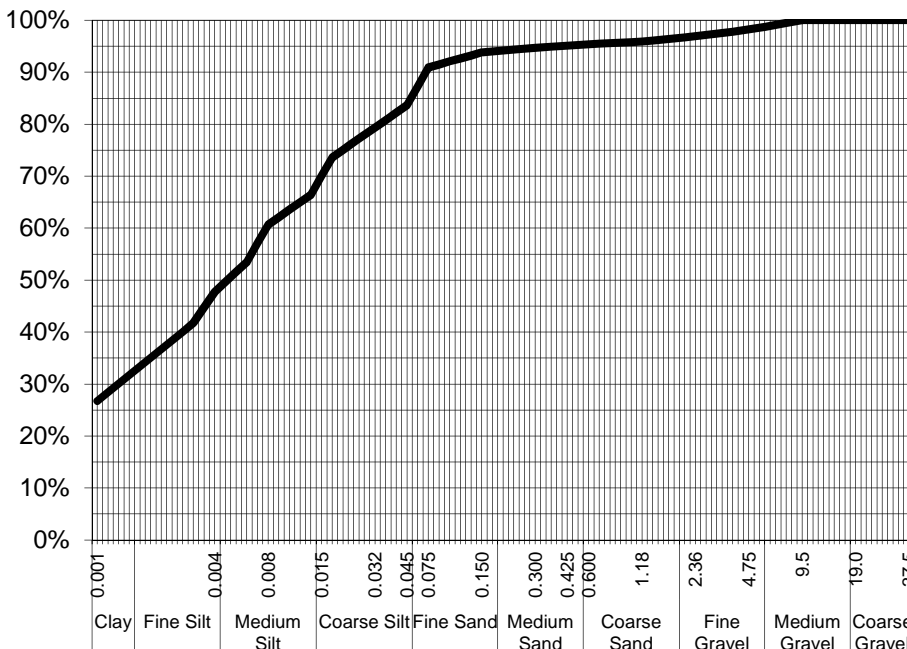
ALS Laboratory Group Pty Ltd
 5/585 Maitland Road
 Mayfield West, NSW 2304
 pH 02 4014 2500
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 31-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 19-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1327892-001 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: 0224193 Symphony **SAMPLE ID:** BY_MW32_1.5-1.8

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	98%
2.36	97%
1.18	96%
0.600	95%
0.425	95%
0.300	95%
0.150	94%
0.075	91%
Particle Size (microns)	Percent Passing
45	84%
32	79%
15	70%
8	61%
4	48%
3	42%
1	27%

Median Particle Size (mm)	0.005
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Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

NATA Accreditation: 825 Site: Newcastle
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Analysed: 24-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

QUALITY CONTROL REPORT

Work Order	: ES1327892	Page	: 1 of 11
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0224193 SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 19-DEC-2013
C-O-C number	: 11745	Issue Date	: 31-DEC-2013
Sampler	: GP	No. of samples received	: 4
Order number	: ----	No. of samples analysed	: 4
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



General Comments

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

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

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

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

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Di-An Dao		Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA002 : pH (Soils) (QC Lot: 3223431)									
ES1327839-001	Anonymous	EA002: pH Value	----	0.1	pH Unit	7.0	7.0	0.0	0% - 20%
EA055: Moisture Content (QC Lot: 3224144)									
ES1327892-001	BY_MW32_1.5-1.8	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	13.8	12.0	14.0	0% - 50%
ES1327894-011	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	29.6	29.6	0.0	0% - 20%
ED008: Exchangeable Cations (QC Lot: 3223614)									
ES1327682-001	Anonymous	ED008: Exchangeable Calcium	----	0.1	meq/100g	2.8	2.8	0.0	0% - 20%
		ED008: Exchangeable Magnesium	----	0.1	meq/100g	3.8	3.9	0.0	0% - 20%
		ED008: Exchangeable Potassium	----	0.1	meq/100g	0.2	0.2	0.0	0% - 20%
		ED008: Exchangeable Sodium	----	0.1	meq/100g	1.2	1.2	0.0	0% - 20%
		ED008: Cation Exchange Capacity	----	0.1	meq/100g	8.0	8.1	1.3	0% - 20%
ES1327719-008	Anonymous	ED008: Exchangeable Calcium	----	0.1	meq/100g	9.3	9.4	0.0	0% - 20%
		ED008: Exchangeable Magnesium	----	0.1	meq/100g	5.3	5.4	2.2	0% - 20%
		ED008: Exchangeable Potassium	----	0.1	meq/100g	<0.1	<0.1	0.0	0% - 20%
		ED008: Exchangeable Sodium	----	0.1	meq/100g	0.2	0.2	0.0	0% - 20%
		ED008: Cation Exchange Capacity	----	0.1	meq/100g	14.8	15.0	1.3	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 3224041)									
ES1327894-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	2	4	48.4	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	4	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	11	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	12	21.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	28	26	7.4	No Limit
ES1327894-010	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	10	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	42	12	110	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	<5	51.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	7	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	12	10	18.4	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3224042)									
ES1327894-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1327894-010	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP004: Organic Matter (QC Lot: 3223793)									
ES1327741-011	Anonymous	EP004: Organic Matter	----	0.5	%	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP004: Organic Matter (QC Lot: 3223793) - continued									
ES1327741-011	Anonymous	EP004: Total Organic Carbon	----	0.5	%	<0.5	<0.5	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3223582)									
ES1327894-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1327894-011	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3223582)									
ES1327894-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	1.4	1.1	25.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	2.9	2.5	13.5	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.4	1.2	14.1	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.8	0.7	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.9	0.8	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	1.0	0.8	20.1	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3223582) - continued									
ES1327894-001	Anonymous	EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	8.4	7.1	16.8	0% - 50%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1327894-011	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	1.2	0.9	26.6	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	2.1	2.0	8.2	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.2	1.0	13.1	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.7	0.6	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.7	0.6	17.1	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	0.8	0.8	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	6.7	5.9	12.7	0% - 50%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3223581)							
ES1327894-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	300	310	5.7	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	120	120	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1327894-011	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	250	240	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3224989)									
ES1328112-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1328112-012	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3223581)									
ES1327894-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	360	370	5.1	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	50	60	0.0	No Limit
ES1327894-011	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	290	280	3.8	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3223581) - continued									
ES1327894-011	Anonymous	EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3224989)									
ES1328112-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1328112-012	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 3224989)									
ES1328112-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1328112-012	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
ED008: Exchangeable Cations (QCLot: 3223614)									
ED008: Exchangeable Calcium	----	0.1	meq/100g	<0.1	0.35 meq/100g	100	90	128	
ED008: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	1.67 meq/100g	99.8	86	120	
ED008: Exchangeable Potassium	----	0.1	meq/100g	<0.1	0.51 meq/100g	118	85	135	
ED008: Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.87 meq/100g	120	86	128	
ED008: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	----	----	----	----	
EG005T: Total Metals by ICP-AES (QCLot: 3224041)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	112	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	105	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	106	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	113	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	103	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	114	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	108	81	133	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3224042)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.9	66	112	
EP004: Organic Matter (QCLot: 3223793)									
EP004: Organic Matter	----	0.5	%	<0.5	4.58 %	93.0	85	105	
EP004: Total Organic Carbon	----	0.5	%	<0.5	2.66 %	92.9	84	106	
EP075(SIM)A: Phenolic Compounds (QCLot: 3223582)									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	94.4	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	94.0	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	94.6	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	101	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	82.8	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	97.2	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	97.5	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	102	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	95.8	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	84.8	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	89.4	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	31.4	3.9	57	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223582)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	108	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	100	77	123	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223582) - continued									
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	103	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	104	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	107	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	106	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	109	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	104	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	98.9	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	108	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	90.5	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	104	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	96.6	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	85.0	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	87.9	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	82.9	72.4	114	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223581)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	80.1	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	82.8	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	74.6	64	128	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3224989)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	102	68.4	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223581)									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	77.2	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	81.8	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	66.8	63	131	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3224989)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	127	68.4	128	
EP080: BTEXN (QCLot: 3224989)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	102	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	115	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	112	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	117	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	117	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	104	62	138	

Matrix Spike (MS) Report



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

Sub-Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
					Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 3224041)							
ES1327894-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	107	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	107	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	108	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	110	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	106	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	110	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	106	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3224042)							
ES1327894-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	87.6	70	130
EP004: Organic Matter (QCLot: 3223793)							
ES1327741-011	Anonymous	EP004: Organic Matter	----	0.48 %	93.1	----	----
		EP004: Total Organic Carbon	----	0.28 %	89.3	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3223582)							
ES1327894-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	100	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	99.2	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	80.4	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	95.9	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	86.6	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223582)							
ES1327894-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	100	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.7	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223581)							
ES1327894-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	74.9	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	77.3	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	65.7	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3224989)							
ES1328112-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	120	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223581)							
ES1327894-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	101	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	69.8	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	53.9	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3224989)							
ES1328112-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	106	70	130
EP080: BTEXN (QCLot: 3224989)							



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EP080: BTEXN (QCLot: 3224989) - continued								
ES1328112-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	80.0	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	85.4	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.5	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	85.6	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	87.6	70	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	71.7	70	130		

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223581)										
ES1327894-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	74.9	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	77.3	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	65.7	----	52	132	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223581)										
ES1327894-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	101	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	69.8	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	53.9	----	52	132	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3223582)										
ES1327894-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	100	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	99.2	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	80.4	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	95.9	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	86.6	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223582)										
ES1327894-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	100	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.7	----	70	130	----	----
EP004: Organic Matter (QCLot: 3223793)										
ES1327741-011	Anonymous	EP004: Organic Matter	----	0.48 %	93.1	----	----	----	----	----
		EP004: Total Organic Carbon	----	0.28 %	89.3	----	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3224041)										
ES1327894-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	107	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	107	----	70	130	----	----



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG005T: Total Metals by ICP-AES (QCLot: 3224041) - continued										
ES1327894-001	Anonymous	EG005T: Chromium	7440-47-3	50 mg/kg	108	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	110	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	106	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	110	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	106	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3224042)										
ES1327894-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	87.6	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3224989)										
ES1328112-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	120	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3224989)										
ES1328112-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	106	----	70	130	----	----
EP080: BTEXN (QCLot: 3224989)										
ES1328112-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	80.0	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	85.4	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.5	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	85.6	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	87.6	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	71.7	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1327892	Page	: 1 of 7
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0224193 SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 19-DEC-2013
C-O-C number	: 11745	Issue Date	: 31-DEC-2013
Sampler	: GP	No. of samples received	: 4
Order number	: ----	No. of samples analysed	: 4
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA002 : pH (Soils)							
Soil Glass Jar - Unpreserved (EA002) BY_MW32_1.5-1.8	17-DEC-2013	20-DEC-2013	24-DEC-2013	✓	20-DEC-2013	20-DEC-2013	✓
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103) BY_MW32_1.5-1.8	17-DEC-2013	----	----	----	20-DEC-2013	31-DEC-2013	✓
EA150: Particle Sizing							
Snap Lock Bag (EA150H) BY_MW32_1.5-1.8	17-DEC-2013	---	15-JUN-2014	----	30-DEC-2013	15-JUN-2014	✓
EA150: Soil Classification based on Particle Size							
Snap Lock Bag (EA150H) BY_MW32_1.5-1.8	17-DEC-2013	---	15-JUN-2014	----	30-DEC-2013	15-JUN-2014	✓
ED008: Exchangeable Cations							
Soil Glass Jar - Unpreserved (ED008) BY_MW32_1.5-1.8	17-DEC-2013	23-DEC-2013	14-JAN-2014	✓	23-DEC-2013	14-JAN-2014	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) BY_MW32_1.5-1.8	17-DEC-2013	20-DEC-2013	15-JUN-2014	✓	22-DEC-2013	15-JUN-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) BY_MW32_1.5-1.8	17-DEC-2013	20-DEC-2013	14-JAN-2014	✓	21-DEC-2013	14-JAN-2014	✓
EP004: Organic Matter							
Soil Glass Jar - Unpreserved (EP004) BY_MW32_1.5-1.8	17-DEC-2013	23-DEC-2013	14-JAN-2014	✓	23-DEC-2013	14-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Soil Glass Jar - Unpreserved (EP071) BY_MW32_1.5-1.8	17-DEC-2013	20-DEC-2013	31-DEC-2013	✓	20-DEC-2013	29-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075(SIM)) BY_MW32_1.5-1.8	17-DEC-2013	20-DEC-2013	31-DEC-2013	✓	20-DEC-2013	29-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) BY_MW32_1.5-1.8	17-DEC-2013	20-DEC-2013	31-DEC-2013	✓	20-DEC-2013	29-JAN-2014	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) BY_MW32_1.5-1.8	17-DEC-2013	20-DEC-2013	31-DEC-2013	✓	21-DEC-2013	31-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080) TRIP SPIKE, TSC	TRIP BLANK, 19-DEC-2013	20-DEC-2013	02-JAN-2014	✓	21-DEC-2013	02-JAN-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) BY_MW32_1.5-1.8	17-DEC-2013	20-DEC-2013	31-DEC-2013	✓	21-DEC-2013	31-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080) TRIP SPIKE, TSC	TRIP BLANK, 19-DEC-2013	20-DEC-2013	02-JAN-2014	✓	21-DEC-2013	02-JAN-2014	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Exchangeable Cations with pre-treatment	ED008	2	12	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	6	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	15	13.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
pH (1:5)	EA002	1	7	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	14	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	14	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Exchangeable Cations with pre-treatment	ED008	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Exchangeable Cations with pre-treatment	ED008	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organic Matter	EP004	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH (1:5)	EA002	SOIL	(APHA 21st ed., 4500H+) pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Exchangeable Cations with pre-treatment	ED008	SOIL	Rayment & Higginson (1992) Method 15A2. Soluble salts are removed from the sample prior to analysis. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM (2013) Schedule B(3) (Method 301)
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Organic Matter	EP004	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3) (Method 105)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Exchangeable Cations Preparation Method	ED007PR	SOIL	Rayment & Higginson (1992) method 15A1. A 1M NH ₄ Cl extraction by end over end tumbling at a ratio of 1:20. There is no pretreatment for soluble salts. Extracts can be run by ICP for cations.
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)

Page : 6 of 7
Work Order : ES1327892
Client : ENVIRO RESOURCES MANAGEMENT
Project : 0224193 SYMPHONY



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Organic Matter	EP004-PR	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3) (Method 105)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.
-

ERM
 Sydney Melbourne Brisbane Perth Hunter Valley North Coast Other
 Gmd Floor, 33 Saunders Street, Pymont, NSW, 2009. (ph) 02 8584 8888 (fax) 02 8584 8800
 Level 3, Yarra Tower, WTC, 18-38 Siddley Street, Docklands, VIC, 3005. (ph) 03 9696 8011 (fax) 03 9696 8022
 Level 1, 60 Leichhardt Street, Spring Hill, QLD, 4004. (ph) 07 3839 8383 (fax) 07 3839 8381
 Level 6, Grain Pool Bld, 172 St Georges Tce, WA, 6880. (ph) 08 9321 5200 (fax) 08 9321 5262
 53 Bonville Avenue, Thornton, NSW, 2322. (ph) 02 4964 2150 (fax) 02 4964 2152
 Suite 3/146 Gordon Street, Port Macquarie, NSW, 2444. (ph) 02 6584 7155 (fax) 02 6584 7160

Project No: 0204193
 Project Name: Symphony
 Project Location: Bayswater
 Project Manager: Joe Farny
 Sampler: CF

Laboratory Number	Sample ID	Sample Depth	Sample Date	Sample Time	Matrix			Containers (number/type)	Yes (tick)	TPH (C6-C9 P & T) + BTEX + TRN	Speciated TPH	VOC Scan (USEPA 8260 List)	SVOC Scan (USEPA 8270 List)	OC OP Pesticides	PAH	Phenols	PCB	Metals* (dissolved / total)	Other Comments on sample (eg: high voc, highly contaminated, special detection limits etc etc)
					Water	Soil	Sediment												
6	BY-MU18-06	0.6	18/12				1												
1	BY-MU16-5-A	5-A	17/12				1												
2	001-181213-CF	CF	18/12				1												
3	Top Spike						1												
4	Top Blank						1												
5	CS						1												

Environmental Division
 Sydney
 Work Order
ES1328111
 Telephone: +61-2-8784 8555

Received by: *Harvin Powell* Date/Time: 20/12/12
 Received by: *Rayleigh* Date/Time: 20/12/12
 Received by: *Rainald* Date/Time: 20/12/12
 Received by: *ALS Syd* Date/Time: 19/12/13
 Received by: *ALS Syd* Date/Time: 20/12/13
 Received by: *ALS Syd* Date/Time: 20/12/13

Comments: Email: *symphony.maugen@erm.com*
 Relinquished by: *Harvin Powell* Signed: *[Signature]*
 Relinquished by: *Rayleigh* Signed: *[Signature]*

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : ES1328111

<p>Client : ENVIRO RESOURCES MANAGEMENT</p> <p>Contact : MR JOSEPH FERRING</p> <p>Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</p>	<p>Laboratory : Environmental Division Sydney</p> <p>Contact : Barbara Hanna</p> <p>Address : 277-289 Woodpark Road Smithfield NSW Australia 2164</p>
---	--

<p>E-mail : joseph.ferring@erm.com</p> <p>Telephone : +61 02 8584 8888</p> <p>Facsimile : +61 02 8584 8800</p> <p>Project : 0224193 SYMPHONY</p> <p>Order number : ----</p> <p>C-O-C number : 11746</p> <p>Site : BAYSWATER</p> <p>Sampler : GP</p>	<p>E-mail : Barbara.Hanna@alsglobal.com</p> <p>Telephone : +61 2 8784 8555</p> <p>Facsimile : +61 2 8784 8555</p> <p>Page : 1 of 2</p> <p>Quote number : ES2013ENVRES0369 (SY/794/13)</p> <p>QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement</p>
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Dates

<p>Date Samples Received : 20-DEC-2013</p> <p>Client Requested Due Date : 24-DEC-2013</p>	<p>Issue Date : 20-DEC-2013 20:30</p> <p>Scheduled Reporting Date : 24-DEC-2013</p>
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Delivery Details

<p>Mode of Delivery : Carrier</p> <p>No. of coolers/boxes : 1 HARD</p> <p>Security Seal : Intact.</p>	<p>Temperature : 4.4°C - Ice present</p> <p>No. of samples received : 6</p> <p>No. of samples analysed : 5</p>
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General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Sample T01 to be forwarded to Envirolab.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL	No analysis requested	SOIL - S-18 (NO MOIST)	TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-27	TRH/BTEXN/PAH/Phenols/8Metals
ES1328111-001	18-DEC-2013 15:00	BY_MW18_5.0						✓
ES1328111-002	18-DEC-2013 15:00	D01_181213_GP						✓
ES1328111-003	[20-DEC-2013]	TRIP SPIKE			✓			
ES1328111-004	[20-DEC-2013]	TRIP BLANK			✓			
ES1328111-005	[20-DEC-2013]	TSC			✓			
ES1328111-006	18-DEC-2013 15:00	BY_MW18_2.6	✓					

Proactive Holding Time Report

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

Requested Deliverables

MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) (COC)	Email	joseph.ferring@erm.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	joseph.ferring@erm.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.ferring@erm.com
- EDI Format - XTab (XTAB)	Email	joseph.ferring@erm.com

SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA (COA)	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) (COC)	Email	symphony.macgen@erm.com
- EDI Format - ENMRG (ENMRG)	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	symphony.macgen@erm.com
- EDI Format - ESDAT (ESDAT)	Email	symphony.macgen@erm.com
- EDI Format - XTab (XTAB)	Email	symphony.macgen@erm.com

THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
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CERTIFICATE OF ANALYSIS

Work Order : ES1328111 Client : ENVIRO RESOURCES MANAGEMENT Contact : MR JOSEPH FERRING Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007 E-mail : joseph.ferring@erm.com Telephone : +61 02 8584 8888 Facsimile : +61 02 8584 8800 Project : 0224193 SYMPHONY Order number : ---- C-O-C number : 11746 Sampler : GP Site : BAYSWATER Quote number : SY/794/13	Page : 1 of 6 Laboratory : Environmental Division Sydney Contact : Barbara Hanna Address : 277-289 Woodpark Road Smithfield NSW Australia 2164 E-mail : Barbara.Hanna@alsglobal.com Telephone : +61 2 8784 8555 Facsimile : +61 2 8784 8555 QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement Date Samples Received : 20-DEC-2013 Issue Date : 24-DEC-2013 No. of samples received : 6 No. of samples analysed : 5
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



General Comments

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

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

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

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

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

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

LOR = Limit of reporting

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

- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW18_5.0	D01_181213_GP	TRIP SPIKE	TRIP BLANK	TSC
				18-DEC-2013 15:00	18-DEC-2013 15:00	[20-DEC-2013]	[20-DEC-2013]	[20-DEC-2013]
Compound	CAS Number	LOR	Unit	ES1328111-001	ES1328111-002	ES1328111-003	ES1328111-004	ES1328111-005
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	16.4	15.4	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	4	4	----	----	----
Copper	7440-50-8	5	mg/kg	19	19	----	----	----
Lead	7439-92-1	5	mg/kg	10	13	----	----	----
Nickel	7440-02-0	2	mg/kg	6	6	----	----	----
Zinc	7440-66-6	5	mg/kg	94	74	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW18_5.0	D01_181213_GP	TRIP SPIKE	TRIP BLANK	TSC
				18-DEC-2013 15:00	18-DEC-2013 15:00	[20-DEC-2013]	[20-DEC-2013]	[20-DEC-2013]
Compound	CAS Number	LOR	Unit	ES1328111-001	ES1328111-002	ES1328111-003	ES1328111-004	ES1328111-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	73	<10	90
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	78	<10	94
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	52	<10	64
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.6	<0.2	0.6
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	13.0	<0.5	15.2
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	1.7	<0.5	2.0
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	7.9	<0.5	9.0
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	3.3	<0.5	3.7



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BY_MW18_5.0	D01_181213_GP	TRIP SPIKE	TRIP BLANK	TSC
				18-DEC-2013 15:00	18-DEC-2013 15:00	[20-DEC-2013]	[20-DEC-2013]	[20-DEC-2013]
Compound	CAS Number	LOR	Unit	ES1328111-001	ES1328111-002	ES1328111-003	ES1328111-004	ES1328111-005
EP080: BTEXN - Continued								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	26.5	<0.2	30.5
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	11.2	<0.5	12.7
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	97.8	117	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	102	122	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	118	114	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	97.5	114	----	----	----
Anthracene-d10	1719-06-8	0.1	%	89.8	105	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	95.2	111	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	109	94.5	89.9	92.1	82.1
Toluene-D8	2037-26-5	0.1	%	110	98.8	79.9	86.7	101
4-Bromofluorobenzene	460-00-4	0.1	%	109	96.8	76.1	90.8	100



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

QUALITY CONTROL REPORT

Work Order	: ES1328111	Page	: 1 of 9
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0224193 SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 20-DEC-2013
C-O-C number	: 11746	Issue Date	: 24-DEC-2013
Sampler	: GP	No. of samples received	: 6
Order number	: ----	No. of samples analysed	: 5
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



General Comments

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

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

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

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

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



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 3225691)									
ES1328087-010	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	17.0	20.2	17.0	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 3225869)									
ES1327843-021	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	36	30	19.5	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	5	5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	7	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	12	11.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	30	33	10.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	5570	5290	5.0	0% - 20%
ES1328089-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	29	28	4.6	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	21	20	0.0	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	101	104	2.6	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	205	181	12.3	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	371	355	4.5	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3225870)									
ES1327843-021	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1328089-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.4	0.4	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3225031)									
ES1328111-001	BY_MW18_5.0	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
		EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3225031)							
ES1328111-001	BY_MW18_5.0	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3225031) - continued										
ES1328111-001	BY_MW18_5.0	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit			
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3225030)										
ES1328111-001	BY_MW18_5.0	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3225034)										
ES1328111-001	BY_MW18_5.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3225030)										
ES1328111-001	BY_MW18_5.0	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3225034)										
ES1328111-001	BY_MW18_5.0	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
EP080: BTEXN (QC Lot: 3225034)										
ES1328111-001	BY_MW18_5.0	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit			



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 3225869)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	112	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	101	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	99.8	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	103	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	101	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	108	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	105	81	133	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225870)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	82.4	66	112	
EP075(SIM)A: Phenolic Compounds (QCLot: 3225031)									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	87.2	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	85.6	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	84.5	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	86.5	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	78.4	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	76.6	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	76.2	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	77.0	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	# 75.5	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	71.1	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	76.0	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	35.6	3.9	57	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3225031)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	82.9	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	84.8	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	80.7	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	83.0	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	84.2	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	83.0	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	82.6	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	83.7	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	84.2	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	88.0	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	78.3	70	118	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3225031) - continued									
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	84.4	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	80.3	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	72.3	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	75.5	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	77.4	72.4	114	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225030)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	106	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	110	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	106	64	128	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225034)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	123	68.4	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225030)									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	114	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	106	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	106	63	131	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225034)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	123	68.4	128	
EP080: BTEXN (QCLot: 3225034)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	97.6	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	116	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	113	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	114	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	115	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	109	62	138	

Matrix Spike (MS) Report

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

Sub-Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	High
EG005T: Total Metals by ICP-AES (QCLot: 3225869)								
ES1327843-021	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	90.3	70	130	
		EG005T: Cadmium	7440-43-9	50 mg/kg	103	70	130	
		EG005T: Chromium	7440-47-3	50 mg/kg	95.2	70	130	



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 3225869) - continued								
ES1327843-021	Anonymous	EG005T: Copper	7440-50-8	125 mg/kg	105	70	130	
		EG005T: Lead	7439-92-1	125 mg/kg	104	70	130	
		EG005T: Nickel	7440-02-0	50 mg/kg	101	70	130	
		EG005T: Zinc	7440-66-6	125 mg/kg	# Not Determined	70	130	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225870)								
ES1327843-021	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	90.2	70	130	
EP075(SIM)A: Phenolic Compounds (QCLot: 3225031)								
ES1328111-001	BY_MW18_5.0	EP075(SIM): Phenol	108-95-2	10 mg/kg	102	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	97.1	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	85.1	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	93.3	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	58.7	20	130	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3225031)								
ES1328111-001	BY_MW18_5.0	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	94.9	70	130	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	97.7	70	130	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225030)								
ES1328111-001	BY_MW18_5.0	EP071: C10 - C14 Fraction	----	640 mg/kg	120	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	122	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	104	52	132	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225034)								
ES1328111-001	BY_MW18_5.0	EP080: C6 - C9 Fraction	----	32.5 mg/kg	129	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225030)								
ES1328111-001	BY_MW18_5.0	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	124	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	122	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	92.3	52	132	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225034)								
ES1328111-001	BY_MW18_5.0	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	126	70	130	
EP080: BTEXN (QCLot: 3225034)								
ES1328111-001	BY_MW18_5.0	EP080: Benzene	71-43-2	2.5 mg/kg	89.4	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	99.2	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	103	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	103	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	102	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	94.0	70	130			



Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225030)										
ES1328111-001	BY_MW18_5.0	EP071: C10 - C14 Fraction	----	640 mg/kg	120	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	122	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	104	----	52	132	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225030)										
ES1328111-001	BY_MW18_5.0	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	124	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	122	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	92.3	----	52	132	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3225031)										
ES1328111-001	BY_MW18_5.0	EP075(SIM): Phenol	108-95-2	10 mg/kg	102	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	97.1	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	85.1	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	93.3	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	58.7	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3225031)										
ES1328111-001	BY_MW18_5.0	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	94.9	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	97.7	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225034)										
ES1328111-001	BY_MW18_5.0	EP080: C6 - C9 Fraction	----	32.5 mg/kg	129	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225034)										
ES1328111-001	BY_MW18_5.0	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	126	----	70	130	----	----
EP080: BTEXN (QCLot: 3225034)										
ES1328111-001	BY_MW18_5.0	EP080: Benzene	71-43-2	2.5 mg/kg	89.4	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	99.2	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	103	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	103	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	102	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	94.0	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3225869)										
ES1327843-021	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	90.3	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	103	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	95.2	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	105	----	70	130	----	----



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
EG005T: Total Metals by ICP-AES (QCLot: 3225869) - continued										
ES1327843-021	Anonymous	EG005T: Lead	7439-92-1	125 mg/kg	104	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	101	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	# Not Determined	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225870)										
ES1327843-021	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	90.2	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1328111	Page	: 1 of 5
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0224193 SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 20-DEC-2013
C-O-C number	: 11746	Issue Date	: 24-DEC-2013
Sampler	: GP	No. of samples received	: 6
Order number	: ----	No. of samples analysed	: 5
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103) BY_MW18_5.0,	D01_181213_GP	18-DEC-2013	----	----	----	22-DEC-2013	01-JAN-2014	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) BY_MW18_5.0,	D01_181213_GP	18-DEC-2013	23-DEC-2013	16-JUN-2014	✓	23-DEC-2013	16-JUN-2014	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) BY_MW18_5.0,	D01_181213_GP	18-DEC-2013	23-DEC-2013	15-JAN-2014	✓	24-DEC-2013	15-JAN-2014	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071) BY_MW18_5.0,	D01_181213_GP	18-DEC-2013	23-DEC-2013	01-JAN-2014	✓	23-DEC-2013	01-FEB-2014	✓
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075(SIM)) BY_MW18_5.0,	D01_181213_GP	18-DEC-2013	23-DEC-2013	01-JAN-2014	✓	23-DEC-2013	01-FEB-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) BY_MW18_5.0,	D01_181213_GP	18-DEC-2013	23-DEC-2013	01-JAN-2014	✓	23-DEC-2013	01-FEB-2014	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) BY_MW18_5.0,	D01_181213_GP	18-DEC-2013	21-DEC-2013	01-JAN-2014	✓	22-DEC-2013	01-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP080) TRIP SPIKE, TSC	TRIP BLANK,	20-DEC-2013	21-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Soil Glass Jar - Unpreserved (EP080) BY_MW18_5.0,	D01_181213_GP	18-DEC-2013	21-DEC-2013	01-JAN-2014	✓	22-DEC-2013	01-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP080) TRIP SPIKE, TSC	TRIP BLANK,	20-DEC-2013	21-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	1	10	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	14	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)A: Phenolic Compounds	3850143-007	----	4-Chloro-3-methylphenol	59-50-7	75.5 %	76.4-114%	Recovery less than lower control limit
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	ES1327843-021	Anonymous	Zinc	7440-66-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	ES1328111-002	D01_181213_GP	2-Chlorophenol-D4	93951-73-6	122 %	66-122 %	Recovery greater than upper data quality objective

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



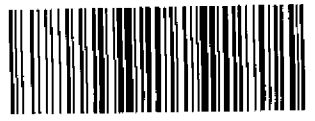
CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT: ERM	TURNAROUND REQUIREMENTS: <input checked="" type="checkbox"/> Standard TAT (List due date): (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	FOR LABORATORY USE ONLY (Circle)	
OFFICE: Sydney	<input type="checkbox"/> Non Standard or urgent TAT (List due date):	Custody Seal Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
PROJECT: Project Symphony	ALS QUOTE NO.: SY704/13	Free ice / frozen ice bricks present upon receipt? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
ORDER NUMBER: 0224193	SITE: RATSWATER / LIDDELL	Random Sample Temperature on Receipt: _____ °C	
PROJECT MANAGER: J. Percing	CONTACT PH: _____	Other comment: _____	
SAMPLER: T. ARNANI	SAMPLER MOBILE: _____	RECEIVED BY: [Signature]	RECEIVED BY: [Signature]
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): _____	DATE/TIME: 29/11 18:00	DATE/TIME: 29/11 17:00
Email Reports to (will default to PM if no other addresses are listed): Symphony.Arnani@erm.com	RELINQUISHED BY: T. ARNANI	DATE/TIME: 28-11-13 / 7AM	DATE/TIME: 29/11/13 19:00
Email Invoice to (will default to PM if no other addresses are listed):			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:														
ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION			ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).					Additional Information		
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <i>(to codes below)</i>	(refer)	TOTAL CONTAINERS	W-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (As, Ba, Br, Ca, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, Mo, Ti)	Selenium (Freshwater ORC)	VOC Target Scan	PCB	PFOS/PFOA	W-21 TRIHCS-CA10/BTEXN, PAH, Phenols	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	BW-SS40	27.11.13	W			S		X					X	
2	BW-SS41													
3	BW-SS42													
4	BW-SS43													
5	BW-SS45													
6	BW-SS46													
7	BW-SS47													
8	BW-SS48													
9	BW-SS49													
10	BW-SS50													
11	BW-SS51													
12	BW-SS52													

Environmental Division
Sydney
Work Order
ES1326081



Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Salts; B = Unpreserved Bag.



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

CLIENT:	TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date): <small>(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)</small>		FOR LABORATORY USE ONLY (Circle)	
OFFICE:	<input type="checkbox"/> Non Standard or urgent TAT (List due date):		Custody Seal Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
PROJECT: Project Symphony	ALS QUOTE NO.: SY794/13	COC SEQUENCE NUMBER (Circle)		<input checked="" type="checkbox"/> frozen ice bricks present upon receipt? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
ORDER NUMBER:	SITE: BAYSWATER / LIDDELL	COC: 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Random Sample Temperature on Receipt: 4.7 °C	
PROJECT MANAGER:	CONTACT PH:	OF: 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Other comment: 4-7	
SAMPLER:	SAMPLER MOBILE:	RELINQUISHED BY:		RECEIVED BY: [Signature]
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):	DATE/TIME:		RECEIVED BY:
Email Reports to (will default to PM if no other addresses are listed):		DATE/TIME: 29/11/13 1900		DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed):				DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)				CONTAINER INFORMATION			ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <small>(refer to codes below)</small>	TOTAL CONTAINERS	W-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (As, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Ti)	Selenium (Freshwater ORC)	VOC Target Scan	PCB	PFOS/PFOA	W-21 TRHCG- CAPP/BTEX, PAH, Phenols	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
	13	BW-SS53	27.11.13	W		5		X					X		
	14	BW-SS54													
	15	BW-SS11													
	16	BW-SS12													
	17	BW-SS13													
	18	BW-SS14													
	19	BW-SS15													
	20	BW-SS16													
	21	BW-SS17													
	22	BW-SS18													

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

CLIENT:		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):			FOR LABORATORY USE ONLY (Circle)		
OFFICE:		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) <input type="checkbox"/> Non Standard or urgent TAT (List due date):			Custody Seal Intact? <input checked="" type="checkbox"/> Yes No N/A		
PROJECT: Project Symphony		ALS QUOTE NO.: SY794/13			Frog Ice / Frozen Ice bricks present upon receipt? <input checked="" type="checkbox"/> Yes No N/A		
ORDER NUMBER:		SITE: BAYSWATER / LIDDELL			Random Sample Temperature on Receipt: °C		
PROJECT MANAGER:		CONTACT PH:			Other comment:		
SAMPLER:		SAMPLER MOBILE:			RECEIVED BY: <i>SO [Signature]</i>		
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):			RECEIVED BY:		
Email Reports to (will default to PM if no other addresses are listed):		DATE/TIME:			DATE/TIME:		
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME:			DATE/TIME:		

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION			ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (to codes below) (refer)	TOTAL CONTAINERS	W-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (As, Ba, Bi, Br, Ca, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Tl)	Selenium (Freshwater ORC)	VOC Target Scan	PCB	PFOA/PFOA	W-24 TRN/Cs- Cd/BTEXN, PAH, Phenols	
	23	ADL 27113 TA/W	27113	W		5		X					X	
	24	T/BLANK				1								TAN/STEX
	25	T/SPIKE				1								BTEX
	26	ADL 27113 TA	27113			5		X					X	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Gd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bactlin; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Hi Loren, can you please schedule the samples below for the requested additional analyses? Will you need to re-analyse or is it possible to just pull the data from the ICP?

We will need 48-72 hour turnaround on these. Can you let me know if there are likely to be delays?

I've also attached this in Excel if you need it.

Matrix	ERM Sample ID	Sample Date	ALS Sample Code	Additional Analysis
Sediment	BW_SS06	6/12/2013	ES1327428001	Barium, Beryllium, Boron, Cobalt, Manganese, Me Molybdenum, Selenium, Thallium, Vanadium
Sediment	BW_SS10	6/12/2013	ES1327428002	Barium, Beryllium, Boron, Cobalt, Manganese, Me Molybdenum, Selenium, Thallium, Vanadium
Sediment	BW_SS35	26/11/2013	ES1326082009	Selenium
Sediment	BW_SS36	26/11/2013	ES1326082010	Selenium
Sediment	BW_SS37	26/11/2013	ES1326082011	Selenium
Sediment	BW_SS38	26/11/2013	ES1326082012	Selenium
Sediment	BW_SS39	26/11/2013	ES1326082013	Selenium
Water	BW_SS01	28/11/2013	ES1326163001	Mercury, Selenium
Water	BW_SS07	28/11/2013	ES1326163002	Mercury, Selenium
Water	BW_SS08	28/11/2013	ES1326163003	Mercury, Selenium
Water	BW_SS09	28/11/2013	ES1326163004	Mercury, Selenium
Water	BW_SS11	27/11/2013	ES1326081015	Mercury, Selenium
Water	BW_SS12	27/11/2013	ES1326081016	Mercury, Selenium
Water	BW_SS13	27/11/2013	ES1326081017	Mercury, Selenium
Water	BW_SS14	27/11/2013	ES1326081018	Mercury, Selenium
Water	BW_SS15	27/11/2013	ES1326081019	Mercury, Selenium
Water	BW_SS16	27/11/2013	ES1326081020	Mercury, Selenium
Water	BW_SS17	27/11/2013	ES1326081021	Mercury, Selenium
Water	BW_SS18	27/11/2013	ES1326081022	Mercury, Selenium
Water	BW_SS19	28/11/2013	ES1326163005	Mercury, Selenium
Water	BW_SS20	28/11/2013	ES1326163006	Mercury, Selenium
Water	BW_SS21	28/11/2013	ES1326163007	Mercury, Selenium
Water	BW_SS22	28/11/2013	ES1326163008	Mercury, Selenium
Water	BW_SS23	28/11/2013	ES1326163009	Mercury, Selenium
Water	BW_SS24	28/11/2013	ES1326163010	Mercury, Selenium

Water	BW_SS25	29/11/2013	ES1326639001	Selenium
Water	BW_SS26	28/11/2013	ES1326163011	Mercury, Selenium
Water	BW_SS27	29/11/2013	ES1326639002	Selenium
Water	BW_SS28	29/11/2013	ES1326639003	Selenium
Water	BW_SS29	29/11/2013	ES1326639004	Selenium
Water	BW_SS30	29/11/2013	ES1326639005	Selenium
Water	BW_SS31	29/11/2013	ES1326639006	Selenium
Water	BW_SS32	29/11/2013	ES1326639007	Selenium
Water	BW_SS33	28/11/2013	ES1326163012	Mercury, Selenium
Water	BW_SS34	29/11/2013	ES1326639008	Selenium
Water	BW_SS40	27/11/2013	ES1326081001	Mercury, Selenium
Water	BW_SS41	27/11/2013	ES1326081002	Mercury, Selenium
Water	BW_SS42	27/11/2013	ES1326081003	Mercury, Selenium
Water	BW_SS43	27/11/2013	ES1326081004	Mercury, Selenium
Water	BW_SS45	27/11/2013	ES1326081005	Mercury, Selenium
Water	BW_SS46	27/11/2013	ES1326081006	Mercury, Selenium
Water	BW_SS47	27/11/2013	ES1326081007	Mercury, Selenium
Water	BW_SS48	27/11/2013	ES1326081008	Mercury, Selenium
Water	BW_SS49	27/11/2013	ES1326081009	Mercury, Selenium
Water	BW_SS50	27/11/2013	ES1326081010	Mercury, Selenium
Water	BW_SS51	27/11/2013	ES1326081011	Mercury, Selenium
Water	BW_SS52	27/11/2013	ES1326081012	Mercury, Selenium
Water	BW_SS53	27/11/2013	ES1326081013	Mercury, Selenium
Water	BW_SS54	27/11/2013	ES1326081014	Mercury, Selenium

Cheers,

JoeJoe Ferring

Senior Environmental Scientist

ERM

Building C, 33 Saunders Street Pyrmont NSW 2009

Locked Bag 24, Broadway NSW 2007 AUSTRALIA

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : ES1326081

Amendment : 1

Client : ENVIRO RESOURCES MANAGEMENT **Laboratory** : Environmental Division Sydney

Contact Address : SYMPHONY MACGEN
 33 SAUNDERS STREET, PYRMONT
 NSW 2009
 LOCKED BAG 24
 BROADWAY NSW, AUSTRALIA 2007

Contact Address : Barbara Hanna
 277-289 Woodpark Road Smithfield
 NSW Australia 2164

E-mail : symphony.macgen@erm.com **E-mail** : Barbara.Hanna@alsglobal.com
Telephone : +61 02 8584 8888 **Telephone** : +61 2 8784 8555
Facsimile : +61 02 8584 8800 **Facsimile** : +61 2 8784 8555

Project : PROJECT SYMPHONY **Page** : 1 of 3

Order number : 0224193

C-O-C number : ---- **Quote number** : ES2013ENVRES0369 (SY/794/13)

Site : BAYWATER **QC Level** : NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Sampler : T.A

Dates

Date Samples Received : 29-NOV-2013 **Issue Date** : 30-DEC-2013 16:14
Client Requested Due Date : 03-JAN-2014 **Scheduled Reporting Date** : **06-DEC-2013**

Delivery Details

Mode of Delivery : Carrier **Temperature** : 4.6°C - Ice present
No. of coolers/boxes : 1 HARD **No. of samples received** : 26
Security Seal : Intact. **No. of samples analysed** : 26

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020T Total Recoverable Metals by ICPMS	WATER - EG035T Total Mercury by FIMS	WATER - EP080 BTEXN	WATER - W-01T 7 metals (Total)	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1326081-001	27-NOV-2013 15:00	BW_SS40	✓	✓		✓		✓
ES1326081-002	27-NOV-2013 15:00	BW_SS41	✓	✓		✓		✓
ES1326081-003	27-NOV-2013 15:00	BW_SS42	✓	✓		✓		✓
ES1326081-004	27-NOV-2013 15:00	BW_SS43	✓	✓		✓		✓
ES1326081-005	27-NOV-2013 15:00	BW_SS45	✓	✓		✓		✓
ES1326081-006	27-NOV-2013 15:00	BW_SS46	✓	✓		✓		✓
ES1326081-007	27-NOV-2013 15:00	BW_SS47	✓	✓		✓		✓
ES1326081-008	27-NOV-2013 15:00	BW_SS48	✓	✓		✓		✓
ES1326081-009	27-NOV-2013 15:00	BW_SS49	✓	✓		✓		✓
ES1326081-010	27-NOV-2013 15:00	BW_SS50	✓	✓		✓		✓
ES1326081-011	27-NOV-2013 15:00	BW_SS51	✓	✓		✓		✓
ES1326081-012	27-NOV-2013 15:00	BW_SS52	✓	✓		✓		✓
ES1326081-013	27-NOV-2013 15:00	BW_SS53	✓	✓		✓		✓
ES1326081-014	27-NOV-2013 15:00	BW_SS54	✓	✓		✓		✓
ES1326081-015	27-NOV-2013 15:00	BW_SS11	✓	✓		✓		✓
ES1326081-016	27-NOV-2013 15:00	BW_SS12	✓	✓		✓		✓
ES1326081-017	27-NOV-2013 15:00	BW_SS13	✓	✓		✓		✓
ES1326081-018	27-NOV-2013 15:00	BW_SS14	✓	✓		✓		✓
ES1326081-019	27-NOV-2013 15:00	BW_SS15	✓	✓		✓		✓
ES1326081-020	27-NOV-2013 15:00	BW_SS16	✓	✓		✓		✓
ES1326081-021	27-NOV-2013 15:00	BW_SS17	✓	✓		✓		✓
ES1326081-022	27-NOV-2013 15:00	BW_SS18	✓	✓		✓		✓
ES1326081-023	27-NOV-2013 15:00	D01_271113_TAW	✓			✓		✓
ES1326081-024	27-NOV-2013 15:00	T/BLANK					✓	
ES1326081-025	27-NOV-2013 15:00	T/SPIKE			✓			
ES1326081-026	27-NOV-2013 15:00	R01_271113_TA	✓			✓		✓

Proactive Holding Time Report

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



Requested Deliverables

SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA (COA)	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) (COC)	Email	symphony.macgen@erm.com
- EDI Format - ENMRG (ENMRG)	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	symphony.macgen@erm.com
- EDI Format - ESDAT (ESDAT)	Email	symphony.macgen@erm.com
- EDI Format - XTab (XTAB)	Email	symphony.macgen@erm.com

THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
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CERTIFICATE OF ANALYSIS

Work Order : ES1326081 Amendment : 1 Client : ENVIRO RESOURCES MANAGEMENT Contact : SYMPHONY MACGEN Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007 E-mail : symphony.macgen@erm.com Telephone : +61 02 8584 8888 Facsimile : +61 02 8584 8800 Project : PROJECT SYMPHONY Order number : 0224193 C-O-C number : ---- Sampler : T.A Site : BAYWATER Quote number : SY/794/13	Page : 1 of 21 Laboratory : Environmental Division Sydney Contact : Barbara Hanna Address : 277-289 Woodpark Road Smithfield NSW Australia 2164 E-mail : Barbara.Hanna@alsglobal.com Telephone : +61 2 8784 8555 Facsimile : +61 2 8784 8555 QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement Date Samples Received : 29-NOV-2013 Issue Date : 31-DEC-2013 No. of samples received : 26 No. of samples analysed : 26
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



General Comments

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

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

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

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

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

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

LOR = Limit of reporting

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

- **EG020: Positive result for sample ES1326081-26 has been confirmed by reanalysis.**
- **EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.**
- **This report has been amended and re-released to allow the reporting of additional analytical data.**



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS40	BW_SS41	BW_SS42	BW_SS43	BW_SS45
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-001	ES1326081-002	ES1326081-003	ES1326081-004	ES1326081-005
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.005	0.006	0.006	0.005	0.005
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.098	0.096	0.092	0.095	0.092
Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.004	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.005	0.005	0.005	0.005	0.005
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.005	0.005	0.004
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	0.013	0.009	<0.005	0.006	0.009
Manganese	7439-96-5	0.001	mg/L	0.008	0.007	0.006	0.007	0.015
Molybdenum	7439-98-7	0.001	mg/L	0.105	0.099	0.098	0.098	0.096
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.01	<0.01	<0.01
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	0.01	0.02	0.01	0.01	0.01
Boron	7440-42-8	0.05	mg/L	0.90	0.90	0.88	0.92	0.85
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				BW_SS40	BW_SS41	BW_SS42	BW_SS43	BW_SS45
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-001	ES1326081-002	ES1326081-003	ES1326081-004	ES1326081-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS40	BW_SS41	BW_SS42	BW_SS43	BW_SS45
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-001	ES1326081-002	ES1326081-003	ES1326081-004	ES1326081-005
EP080: BTEXN - Continued								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	31.6	32.5	24.3	23.4	26.3
2-Chlorophenol-D4	93951-73-6	0.1	%	69.0	73.4	66.2	60.7	63.1
2,4,6-Tribromophenol	118-79-6	0.1	%	81.9	85.3	82.5	79.4	75.0
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	79.4	84.8	81.8	80.8	73.8
Anthracene-d10	1719-06-8	0.1	%	80.0	85.3	82.4	80.0	74.6
4-Terphenyl-d14	1718-51-0	0.1	%	75.1	81.4	77.8	77.0	69.8
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	110	108	117	116	113
Toluene-D8	2037-26-5	0.1	%	105	112	125	98.5	103
4-Bromofluorobenzene	460-00-4	0.1	%	103	105	115	100	93.3



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS46	BW_SS47	BW_SS48	BW_SS49	BW_SS50
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-006	ES1326081-007	ES1326081-008	ES1326081-009	ES1326081-010
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.005	0.005	0.005	0.004	0.005
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.095	0.094	0.095	0.100	0.092
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.005	0.005	0.005	0.004	0.005
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.005	0.004	0.005	0.004	0.004
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	0.006	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.016	0.017	0.014	0.010	0.011
Molybdenum	7439-98-7	0.001	mg/L	0.099	0.098	0.095	0.099	0.096
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.01
Boron	7440-42-8	0.05	mg/L	0.91	0.89	0.90	0.90	0.86
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS46	BW_SS47	BW_SS48	BW_SS49	BW_SS50
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-006	ES1326081-007	ES1326081-008	ES1326081-009	ES1326081-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS46	BW_SS47	BW_SS48	BW_SS49	BW_SS50
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-006	ES1326081-007	ES1326081-008	ES1326081-009	ES1326081-010
EP080: BTEXN - Continued								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	24.7	29.1	26.0	24.6	26.7
2-Chlorophenol-D4	93951-73-6	0.1	%	64.3	66.6	72.1	65.4	70.7
2,4,6-Tribromophenol	118-79-6	0.1	%	80.7	77.5	86.4	75.9	88.9
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	78.4	76.4	83.4	75.5	87.6
Anthracene-d10	1719-06-8	0.1	%	78.0	75.1	81.8	75.6	89.1
4-Terphenyl-d14	1718-51-0	0.1	%	75.1	71.5	76.2	71.3	83.3
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	117	97.7	121	115	98.6
Toluene-D8	2037-26-5	0.1	%	109	112	104	115	116
4-Bromofluorobenzene	460-00-4	0.1	%	102	95.5	96.3	111	98.6



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS51	BW_SS52	BW_SS53	BW_SS54	BW_SS11
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-011	ES1326081-012	ES1326081-013	ES1326081-014	ES1326081-015
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.005	0.004	0.006	0.005	0.005
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.090	0.092	0.093	0.093	0.092
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.004	0.005	0.004	0.006	0.005
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.004	0.005	0.005
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.012	<0.005	0.009
Manganese	7439-96-5	0.001	mg/L	0.007	0.016	0.007	0.014	0.014
Molybdenum	7439-98-7	0.001	mg/L	0.096	0.095	0.100	0.098	0.096
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.01	0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.87	0.83	0.94	0.88	0.87
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS51	BW_SS52	BW_SS53	BW_SS54	BW_SS11
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-011	ES1326081-012	ES1326081-013	ES1326081-014	ES1326081-015
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS51	BW_SS52	BW_SS53	BW_SS54	BW_SS11
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-011	ES1326081-012	ES1326081-013	ES1326081-014	ES1326081-015
EP080: BTEXN - Continued								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	26.1	35.7	35.0	22.0	25.5
2-Chlorophenol-D4	93951-73-6	0.1	%	67.2	81.4	71.4	46.4	53.0
2,4,6-Tribromophenol	118-79-6	0.1	%	78.9	88.8	84.6	53.1	65.0
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	76.7	85.7	82.3	33.0	67.2
Anthracene-d10	1719-06-8	0.1	%	76.2	82.1	82.4	33.5	56.8
4-Terphenyl-d14	1718-51-0	0.1	%	72.3	83.7	77.3	33.2	54.7
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	104	102	90.4	102	96.2
Toluene-D8	2037-26-5	0.1	%	111	109	95.6	103	102
4-Bromofluorobenzene	460-00-4	0.1	%	102	96.1	88.8	89.0	91.1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS12	BW_SS13	BW_SS14	BW_SS15	BW_SS16
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-016	ES1326081-017	ES1326081-018	ES1326081-019	ES1326081-020
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.004	0.005	<0.001	0.001	0.006
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.090	0.093	0.053	0.052	0.094
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	0.004	<0.001
Copper	7440-50-8	0.001	mg/L	0.006	0.005	0.001	0.002	0.004
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.001	0.002	0.005
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	0.006	<0.005	0.010	0.009	<0.005
Manganese	7439-96-5	0.001	mg/L	0.014	0.016	0.073	0.081	0.011
Molybdenum	7439-98-7	0.001	mg/L	0.096	0.098	0.004	0.003	0.102
Selenium	7782-49-2	0.01	mg/L	0.01	0.01	<0.01	<0.01	0.01
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	0.01	<0.01	<0.01	<0.01	0.01
Boron	7440-42-8	0.05	mg/L	0.88	0.85	0.09	0.08	0.87
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS12	BW_SS13	BW_SS14	BW_SS15	BW_SS16
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-016	ES1326081-017	ES1326081-018	ES1326081-019	ES1326081-020
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS12	BW_SS13	BW_SS14	BW_SS15	BW_SS16
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-016	ES1326081-017	ES1326081-018	ES1326081-019	ES1326081-020
EP080: BTEXN - Continued								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	42.2	36.7	38.7	31.0	35.1
2-Chlorophenol-D4	93951-73-6	0.1	%	78.2	75.8	78.3	67.6	70.8
2,4,6-Tribromophenol	118-79-6	0.1	%	101	98.8	108	90.8	93.8
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	84.3	79.1	82.2	71.2	75.5
Anthracene-d10	1719-06-8	0.1	%	89.8	83.9	86.0	74.6	77.7
4-Terphenyl-d14	1718-51-0	0.1	%	88.0	82.2	86.0	75.4	78.8
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	102	89.2	89.1	98.1	91.8
Toluene-D8	2037-26-5	0.1	%	116	106	97.7	99.1	113
4-Bromofluorobenzene	460-00-4	0.1	%	96.0	100	94.4	95.8	110



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS17	BW_SS18	D01_271113_TA/W	T/BLANK	T/SPIKE
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-021	ES1326081-022	ES1326081-023	ES1326081-024	ES1326081-025
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.004	0.005	0.007	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Barium	7440-39-3	0.001	mg/L	0.092	0.089	0.095	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.004	0.004	0.006	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.004	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	0.006	0.005	0.024	----	----
Manganese	7439-96-5	0.001	mg/L	0.006	0.010	0.007	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.098	0.098	0.104	----	----
Selenium	7782-49-2	0.01	mg/L	0.01	<0.01	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	0.01	0.01	----	----
Boron	7440-42-8	0.05	mg/L	0.84	0.86	0.89	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS17	BW_SS18	D01_271113_TA/W	T/BLANK	T/SPIKE
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-021	ES1326081-022	ES1326081-023	ES1326081-024	ES1326081-025
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----
EP080: BTEXN								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS17	BW_SS18	D01_271113_TAW	T/BLANK	T/SPIKE
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326081-021	ES1326081-022	ES1326081-023	ES1326081-024	ES1326081-025
EP080: BTEXN - Continued								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	16
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	15
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	15
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	15
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	15
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	30
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	76
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	16
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	27.9	25.7	28.7	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	68.9	69.8	67.9	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	85.7	74.3	85.0	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	73.8	65.2	71.4	----	----
Anthracene-d10	1719-06-8	0.1	%	70.6	63.2	69.1	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	63.6	56.4	62.0	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	89.9	102	98.1	89.1	98.8
Toluene-D8	2037-26-5	0.1	%	96.2	106	108	79.3	94.1
4-Bromofluorobenzene	460-00-4	0.1	%	90.6	89.7	92.2	81.8	84.4



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01_271113_TA

Client sampling date / time

27-NOV-2013 15:00

Compound	CAS Number	LOR	Unit	ES1326081-026	---	---	---	---
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EG020T: Total Metals by ICP-MS

Arsenic	7440-38-2	0.001	mg/L	<0.001	---	---	---	---
Beryllium	7440-41-7	0.001	mg/L	<0.001	---	---	---	---
Barium	7440-39-3	0.001	mg/L	0.011	---	---	---	---
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	---	---	---	---
Chromium	7440-47-3	0.001	mg/L	<0.001	---	---	---	---
Copper	7440-50-8	0.001	mg/L	<0.001	---	---	---	---
Cobalt	7440-48-4	0.001	mg/L	<0.001	---	---	---	---
Nickel	7440-02-0	0.001	mg/L	<0.001	---	---	---	---
Lead	7439-92-1	0.001	mg/L	<0.001	---	---	---	---
Zinc	7440-66-6	0.005	mg/L	<0.005	---	---	---	---
Manganese	7439-96-5	0.001	mg/L	0.008	---	---	---	---
Molybdenum	7439-98-7	0.001	mg/L	<0.001	---	---	---	---
Thallium	7440-28-0	0.001	mg/L	<0.001	---	---	---	---
Vanadium	7440-62-2	0.01	mg/L	<0.01	---	---	---	---
Boron	7440-42-8	0.05	mg/L	<0.05	---	---	---	---

EP075(SIM)A: Phenolic Compounds

Phenol	108-95-2	1.0	µg/L	<1.0	---	---	---	---
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	---	---	---	---
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	---	---	---	---
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	---	---	---	---
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	---	---	---	---
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	---	---	---	---
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	---	---	---	---
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	---	---	---	---
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	---	---	---	---
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	---	---	---	---
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	---	---	---	---
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	---	---	---	---

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	1.0	µg/L	<1.0	---	---	---	---
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	---	---	---	---
Acenaphthene	83-32-9	1.0	µg/L	<1.0	---	---	---	---
Fluorene	86-73-7	1.0	µg/L	<1.0	---	---	---	---
Phenanthrene	85-01-8	1.0	µg/L	<1.0	---	---	---	---



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01_271113_TA

Client sampling date / time

27-NOV-2013 15:00

Compound	CAS Number	LOR	Unit	ES1326081-026				
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EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued

Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	----	----	----	----

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013

C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----

EP080: BTEXN

Benzene	71-43-2	1	µg/L	<1	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01_271113_TA

Client sampling date / time

27-NOV-2013 15:00

Compound	CAS Number	LOR	Unit	ES1326081-026	----	----	----	----
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EP080: BTEXN - Continued

ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----

EP075(SIM)S: Phenolic Compound Surrogates

Phenol-d6	13127-88-3	0.1	%	28.5	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	74.8	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	78.3	----	----	----	----

EP075(SIM)T: PAH Surrogates

2-Fluorobiphenyl	321-60-8	0.1	%	66.8	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	64.5	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	58.2	----	----	----	----

EP080S: TPH(V)/BTEX Surrogates

1.2-Dichloroethane-D4	17060-07-0	0.1	%	75.0	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	83.2	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	72.8	----	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM): Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM): PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QUALITY CONTROL REPORT

Work Order	: ES1326081	Page	: 1 of 20
Amendment	: 1		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: SYMPHONY MACGEN	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: symphony.macgen@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYWATER		
C-O-C number	: ----	Date Samples Received	: 29-NOV-2013
Sampler	: T.A	Issue Date	: 31-DEC-2013
Order number	: 0224193		
Quote number	: SY/794/13	No. of samples received	: 26
		No. of samples analysed	: 26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



General Comments

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

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

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

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

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



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3192361)									
ES1326077-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.106	0.107	1.2	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	1.54	1.53	0.5	0% - 20%
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.0	No Limit		
ES1326081-002	BW_SS41	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.006	0.007	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.096	0.094	1.2	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.005	0.004	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.007	0.006	0.0	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.099	0.102	3.4	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.0	No Limit
		EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.009	0.006	32.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	0.02	0.01	0.0	No Limit
EG020A-T: Boron	7440-42-8	0.05	mg/L	0.90	0.90	0.0	0% - 50%		
EG020T: Total Metals by ICP-MS (QC Lot: 3192363)									
ES1326081-012	BW_SS52	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.004	0.006	38.4	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3192363) - continued									
ES1326081-012	BW_SS52	EG020A-T: Barium	7440-39-3	0.001	mg/L	0.092	0.092	0.0	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.005	0.005	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.016	0.015	0.0	0% - 50%
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.095	0.097	1.7	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.0	No Limit
		EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.01	0.0	No Limit
EG020A-T: Boron	7440-42-8	0.05	mg/L	0.83	0.87	4.2	0% - 50%		
ES1326081-022	BW_SS18	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.005	0.006	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.089	0.095	5.9	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.004	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.010	0.010	0.0	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.098	0.102	4.1	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.004	0.005	0.0	No Limit
		EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.005	<0.005	0.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	0.01	0.01	0.0	No Limit
EG020A-T: Boron	7440-42-8	0.05	mg/L	0.86	0.90	4.3	0% - 50%		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3233034)									
ES1326081-001	BW_SS40	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1326081-011	BW_SS51	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3233035)									
ES1326081-021	BW_SS17	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3191192)									
ES1326081-001	BW_SS40	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 3191192) - continued									
ES1326081-001	BW_SS40	EP075(SIM): 2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
ES1326081-011	BW_SS51	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM)A: Phenolic Compounds (QC Lot: 3193975)							
ES1326163-001	Anonymous	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		ES1326163-007	Anonymous	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0
EP075(SIM): 2-Chlorophenol	95-57-8			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2-Nitrophenol	88-75-5			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4-Dimethylphenol	105-67-9			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4-Dichlorophenol	120-83-2			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,6-Dichlorophenol	87-65-0			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit		



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 3193975) - continued									
ES1326163-007	Anonymous	EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3191192)									
ES1326081-001	BW_SS40	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
ES1326081-011	BW_SS51	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3193975)									
ES1326163-001	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3193975) - continued									
ES1326163-001	Anonymous	EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
ES1326163-007	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit		
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3191045)									
ES1326080-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1326081-009	BW_SS49	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3191191)									
ES1326081-001	BW_SS40	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
ES1326081-011	BW_SS51	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3192001)										
ES1326081-019	BW_SS15	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
ES1326082-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3193974)										
ES1326163-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit	
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit	
ES1326163-007	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit	
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3191045)										
ES1326080-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
ES1326081-009	BW_SS49	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3191191)										
ES1326081-001	BW_SS40	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
ES1326081-011	BW_SS51	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3192001)										
ES1326081-019	BW_SS15	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
ES1326082-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3193974)										
ES1326163-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
ES1326163-007	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
EP080: BTEXN (QC Lot: 3191045)										
ES1326080-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
ES1326081-009	BW_SS49	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit	
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 3191045) - continued									
ES1326081-009	BW_SS49	EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP080: BTEXN (QC Lot: 3192001)									
ES1326081-019	BW_SS15	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES1326082-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



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

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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020T: Total Metals by ICP-MS (QCLot: 3192361)									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	112	79	121	
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	94.2	76	120	
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	102	84	116	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.8	82	114	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	109	83	115	
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	108	84	116	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	105	83	117	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.9	85	115	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	94.8	83	115	
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	99.2	81	125	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	110	83	117	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	99.2	68	128	
EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	0.1 mg/L	92.1	86	116	
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	106	84	114	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	93.4	76	118	
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.1 mg/L	97.4	73	127	
EG020T: Total Metals by ICP-MS (QCLot: 3192363)									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	79	121	
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	92.1	76	120	
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	94.8	84	116	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.0	82	114	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	104	83	115	
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	104	84	116	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.2	83	117	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	89.6	85	115	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	95.8	83	115	
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	90.6	81	125	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	106	83	117	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	68	128	
EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	0.1 mg/L	89.8	86	116	
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	103	84	114	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	90.2	76	118	
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.1 mg/L	108	73	127	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3233034)									



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					LCS	Low	High	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3233034) - continued								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	105	77	115
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3233035)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	104	77	115
EP075(SIM)A: Phenolic Compounds (QCLot: 3191192)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	20 µg/L	39.9	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	20 µg/L	73.7	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	20 µg/L	71.1	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	40 µg/L	66.1	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	20 µg/L	92.1	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	20 µg/L	92.2	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	20 µg/L	88.3	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	20 µg/L	85.7	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	20 µg/L	78.8	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	20 µg/L	87.5	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	20 µg/L	90.5	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	40 µg/L	48.4	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3193975)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	20 µg/L	46.4	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	20 µg/L	98.2	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	20 µg/L	97.4	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	40 µg/L	96.6	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	20 µg/L	106	62.7	117
		1	µg/L	<1.0	----	----	----	----



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP075(SIM)A: Phenolic Compounds (QCLot: 3193975) - continued									
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	20 µg/L	103	59.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	20 µg/L	105	59.3	122	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	20 µg/L	105	64.3	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	20 µg/L	98.1	63	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	20 µg/L	85.2	58.7	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	20 µg/L	84.9	50	108	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	40 µg/L	44.8	8.7	95	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3191192)									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	20 µg/L	81.9	58.6	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	20 µg/L	91.0	63.6	114	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	20 µg/L	85.7	62.2	113	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	20 µg/L	94.2	63.9	115	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	20 µg/L	92.6	62.6	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	20 µg/L	89.7	64.3	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	20 µg/L	98.0	63.6	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	20 µg/L	99.2	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	20 µg/L	89.5	64.1	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	20 µg/L	88.5	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	20 µg/L	87.5	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	20 µg/L	88.3	61.7	117	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3191192) - continued									
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	20 µg/L	91.4	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	20 µg/L	76.9	59.9	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	20 µg/L	78.7	61.2	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	20 µg/L	78.8	59.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193975)									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	20 µg/L	104	58.6	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	20 µg/L	92.8	63.6	114	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	20 µg/L	91.5	62.2	113	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	20 µg/L	92.9	63.9	115	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	20 µg/L	99.9	62.6	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	20 µg/L	96.9	64.3	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	20 µg/L	98.9	63.6	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	20 µg/L	102	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	20 µg/L	106	64.1	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	20 µg/L	107	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	20 µg/L	102	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	20 µg/L	97.2	61.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	20 µg/L	105	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	20 µg/L	103	59.9	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	20 µg/L	100	61.2	117	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method Blank (MB) Report				Laboratory Control Spike (LCS) Report				
				Spike Concentration	Spike Recovery (%)	Recovery Limits (%)		
Method: Compound	CAS Number	LOR	Unit		Result	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193975) - continued								
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	20 µg/L	103	59.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3191045)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	104	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3191191)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	81.3	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	87.8	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	84.2	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192001)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	89.7	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3193974)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	81.4	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	98.7	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	82.4	62	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3191045)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	108	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3191191)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	84.9	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	86.7	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	80.4	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192001)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	87.9	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3193974)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	80.8	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	85.4	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	78.7	67	127
EP080: BTEXN (QCLot: 3191045)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	98.1	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	108	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	103	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	106	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	108	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	105	70	124
EP080: BTEXN (QCLot: 3192001)								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EP080: BTEXN (QCLot: 3192001) - continued								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	99.1	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	100	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	86.7	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	88.8	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	88.9	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	79.0	70	124

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3192361)							
ES1326077-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	126	70	130
		EG020A-T: Beryllium	7440-41-7	1 mg/L	104	70	130
		EG020A-T: Barium	7440-39-3	1 mg/L	103	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	100	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	101	70	130
		EG020A-T: Cobalt	7440-48-4	1 mg/L	99.5	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	96.8	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	98.6	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	98.2	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	94.2	70	130
		EG020A-T: Vanadium	7440-62-2	1 mg/L	104	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	92.8	70	130
		EG020T: Total Metals by ICP-MS (QCLot: 3192363)					
ES1326081-013	BW_SS53	EG020A-T: Arsenic	7440-38-2	1 mg/L	117	70	130
		EG020A-T: Beryllium	7440-41-7	1 mg/L	120	70	130
		EG020A-T: Barium	7440-39-3	1 mg/L	126	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	121	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	122	70	130
		EG020A-T: Cobalt	7440-48-4	1 mg/L	119	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	120	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	122	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	122	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	116	70	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3192363) - continued							
ES1326081-013	BW_SS53	EG020A-T: Vanadium	7440-62-2	1 mg/L	121	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	117	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3233034)							
ES1326081-002	BW_SS41	EG035T: Mercury	7439-97-6	0.010 mg/L	99.0	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3233035)							
ES1326081-022	BW_SS18	EG035T: Mercury	7439-97-6	0.010 mg/L	101	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3191192)							
ES1326081-002	BW_SS41	EP075(SIM): Phenol	108-95-2	200 µg/L	37.5	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	200 µg/L	84.6	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	200 µg/L	92.4	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	200 µg/L	97.2	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	200 µg/L	76.0	20	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3193975)							
ES1326163-002	Anonymous	EP075(SIM): Phenol	108-95-2	200 µg/L	40.2	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	200 µg/L	78.8	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	200 µg/L	101	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	200 µg/L	83.5	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	200 µg/L	108	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3191192)							
ES1326081-002	BW_SS41	EP075(SIM): Acenaphthene	83-32-9	200 µg/L	93.7	70	130
		EP075(SIM): Pyrene	129-00-0	200 µg/L	104	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193975)							
ES1326163-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	200 µg/L	81.4	70	130
		EP075(SIM): Pyrene	129-00-0	200 µg/L	82.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3191045)							
ES1326080-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	124	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3191191)							
ES1326081-002	BW_SS41	EP071: C10 - C14 Fraction	----	2000 µg/L	109	74	150
		EP071: C15 - C28 Fraction	----	3000 µg/L	119	77	153
		EP071: C29 - C36 Fraction	----	2000 µg/L	90.6	67	153
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192001)							
ES1326081-019	BW_SS15	EP080: C6 - C9 Fraction	----	325 µg/L	99.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3193974)							
ES1326163-002	Anonymous	EP071: C10 - C14 Fraction	----	2000 µg/L	108	74	150
		EP071: C15 - C28 Fraction	----	3000 µg/L	97.6	77	153
		EP071: C29 - C36 Fraction	----	2000 µg/L	80.0	67	153



Sub-Matrix: WATER

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3191045)								
ES1326080-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	120	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3191191)								
ES1326081-002	BW_SS41	EP071: >C10 - C16 Fraction	>C10_C16	2500 µg/L	105	74	150	
		EP071: >C16 - C34 Fraction	----	3500 µg/L	112	77	153	
		EP071: >C34 - C40 Fraction	----	1500 µg/L	79.4	67	153	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192001)								
ES1326081-019	BW_SS15	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	100	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3193974)								
ES1326163-002	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	2500 µg/L	100	74	150	
		EP071: >C16 - C34 Fraction	----	3500 µg/L	113	77	153	
		EP071: >C34 - C40 Fraction	----	1500 µg/L	74.4	67	153	
EP080: BTEXN (QCLot: 3191045)								
ES1326080-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	97.8	70	130	
		EP080: Toluene	108-88-3	25 µg/L	109	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	115	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	114	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	115	70	130	
	91-20-3	25 µg/L	109	70	130			
EP080: BTEXN (QCLot: 3192001)								
ES1326081-019	BW_SS15	EP080: Benzene	71-43-2	25 µg/L	92.1	70	130	
		EP080: Toluene	108-88-3	25 µg/L	86.3	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	82.9	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	80.8	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	85.3	70	130	
	91-20-3	25 µg/L	101	70	130			

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: WATER

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3191045)										
ES1326080-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	124	----	70	130	----	----



Sub-Matrix: WATER

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3191045)											
ES1326080-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	120	----	70	130	----	----	
EP080: BTEXN (QCLot: 3191045)											
ES1326080-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	97.8	----	70	130	----	----	
		EP080: Toluene	108-88-3	25 µg/L	109	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	25 µg/L	115	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	114	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	25 µg/L	115	----	70	130	----	----	
	EP080: Naphthalene	91-20-3	25 µg/L	109	----	70	130	----	----		
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3191191)											
ES1326081-002	BW_SS41	EP071: C10 - C14 Fraction	----	2000 µg/L	109	----	74	150	----	----	
		EP071: C15 - C28 Fraction	----	3000 µg/L	119	----	77	153	----	----	
		EP071: C29 - C36 Fraction	----	2000 µg/L	90.6	----	67	153	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3191191)											
ES1326081-002	BW_SS41	EP071: >C10 - C16 Fraction	>C10_C16	2500 µg/L	105	----	74	150	----	----	
		EP071: >C16 - C34 Fraction	----	3500 µg/L	112	----	77	153	----	----	
		EP071: >C34 - C40 Fraction	----	1500 µg/L	79.4	----	67	153	----	----	
EP075(SIM)A: Phenolic Compounds (QCLot: 3191192)											
ES1326081-002	BW_SS41	EP075(SIM): Phenol	108-95-2	200 µg/L	37.5	----	20	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	200 µg/L	84.6	----	60	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	200 µg/L	92.4	----	60	130	----	----	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	200 µg/L	97.2	----	70	130	----	----	
		EP075(SIM): Pentachlorophenol	87-86-5	200 µg/L	76.0	----	20	130	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3191192)											
ES1326081-002	BW_SS41	EP075(SIM): Acenaphthene	83-32-9	200 µg/L	93.7	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	200 µg/L	104	----	70	130	----	----	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192001)											
ES1326081-019	BW_SS15	EP080: C6 - C9 Fraction	----	325 µg/L	99.3	----	70	130	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192001)											
ES1326081-019	BW_SS15	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	100	----	70	130	----	----	
EP080: BTEXN (QCLot: 3192001)											
ES1326081-019	BW_SS15	EP080: Benzene	71-43-2	25 µg/L	92.1	----	70	130	----	----	
		EP080: Toluene	108-88-3	25 µg/L	86.3	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	25 µg/L	82.9	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	80.8	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	25 µg/L	85.3	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	25 µg/L	101	----	70	130	----	----	



Sub-Matrix: WATER

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG020T: Total Metals by ICP-MS (QCLot: 3192361)										
ES1326077-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	126	----	70	130	----	----
		EG020A-T: Beryllium	7440-41-7	1 mg/L	104	----	70	130	----	----
		EG020A-T: Barium	7440-39-3	1 mg/L	103	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	100	----	70	130	----	----
		EG020A-T: Chromium	7440-47-3	1 mg/L	101	----	70	130	----	----
		EG020A-T: Cobalt	7440-48-4	1 mg/L	99.5	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1 mg/L	96.8	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1 mg/L	98.6	----	70	130	----	----
		EG020A-T: Manganese	7439-96-5	1 mg/L	98.2	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1 mg/L	94.2	----	70	130	----	----
		EG020A-T: Vanadium	7440-62-2	1 mg/L	104	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1 mg/L	92.8	----	70	130	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3192363)										
ES1326081-013	BW_SS53	EG020A-T: Arsenic	7440-38-2	1 mg/L	117	----	70	130	----	----
		EG020A-T: Beryllium	7440-41-7	1 mg/L	120	----	70	130	----	----
		EG020A-T: Barium	7440-39-3	1 mg/L	126	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	121	----	70	130	----	----
		EG020A-T: Chromium	7440-47-3	1 mg/L	122	----	70	130	----	----
		EG020A-T: Cobalt	7440-48-4	1 mg/L	119	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1 mg/L	120	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1 mg/L	122	----	70	130	----	----
		EG020A-T: Manganese	7439-96-5	1 mg/L	122	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1 mg/L	116	----	70	130	----	----
		EG020A-T: Vanadium	7440-62-2	1 mg/L	121	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1 mg/L	117	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3193974)										
ES1326163-002	Anonymous	EP071: C10 - C14 Fraction	----	2000 µg/L	108	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	3000 µg/L	97.6	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	2000 µg/L	80.0	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3193974)										
ES1326163-002	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	2500 µg/L	100	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	3500 µg/L	113	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	1500 µg/L	74.4	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3193975)										
ES1326163-002	Anonymous	EP075(SIM): Phenol	108-95-2	200 µg/L	40.2	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	200 µg/L	78.8	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	200 µg/L	101	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	200 µg/L	83.5	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	200 µg/L	108	----	20	130	----	----



Sub-Matrix: WATER

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193975)										
ES1326163-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	200 µg/L	81.4	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	200 µg/L	82.3	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3233034)										
ES1326081-002	BW_SS41	EG035T: Mercury	7439-97-6	0.010 mg/L	99.0	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3233035)										
ES1326081-022	BW_SS18	EG035T: Mercury	7439-97-6	0.010 mg/L	101	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1326081	Page	: 1 of 8
Amendment	: 1		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: SYMPHONY MACGEN	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: symphony.macgen@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYWATER		
C-O-C number	: ---	Date Samples Received	: 29-NOV-2013
Sampler	: T.A	Issue Date	: 31-DEC-2013
Order number	: 0224193		
Quote number	: SY/794/13	No. of samples received	: 26
		No. of samples analysed	: 26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)								
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS17, D01_271113_TA/W,	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16, BW_SS18, R01_271113_TA	27-NOV-2013	04-DEC-2013	26-MAY-2014	✓	04-DEC-2013	26-MAY-2014	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)								
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS17,	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16, BW_SS18	27-NOV-2013	----	----	----	31-DEC-2013	25-DEC-2013	*



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15,	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16	27-NOV-2013	03-DEC-2013	04-DEC-2013	✓	05-DEC-2013	14-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP071)								
BW_SS17, D01_271113_TA/W,	BW_SS18, R01_271113_TA	27-NOV-2013	04-DEC-2013	04-DEC-2013	✓	05-DEC-2013	14-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15,	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16	27-NOV-2013	03-DEC-2013	04-DEC-2013	✓	05-DEC-2013	14-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
BW_SS17, D01_271113_TA/W,	BW_SS18, R01_271113_TA	27-NOV-2013	04-DEC-2013	04-DEC-2013	✓	05-DEC-2013	14-JAN-2014	✓



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15,	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16	27-NOV-2013	03-DEC-2013	04-DEC-2013	✓	05-DEC-2013	14-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
BW_SS17, D01_271113_TA/W,	BW_SS18, R01_271113_TA	27-NOV-2013	04-DEC-2013	04-DEC-2013	✓	05-DEC-2013	14-JAN-2014	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13,	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14	27-NOV-2013	03-DEC-2013	11-DEC-2013	✓	03-DEC-2013	11-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
BW_SS15, BW_SS17, D01_271113_TA/W, T/SPIKE,	BW_SS16, BW_SS18, T/BLANK, R01_271113_TA	27-NOV-2013	04-DEC-2013	11-DEC-2013	✓	04-DEC-2013	11-DEC-2013	✓



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP080)								
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13,	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14	27-NOV-2013	03-DEC-2013	11-DEC-2013	✓	03-DEC-2013	11-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
BW_SS15, BW_SS17, D01_271113_TAW, R01_271113_TA	BW_SS16, BW_SS18, T/BLANK,	27-NOV-2013	04-DEC-2013	11-DEC-2013	✓	04-DEC-2013	11-DEC-2013	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	4	37	10.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	22	13.6	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	4	38	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	4	37	10.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	39	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	37	5.4	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	22	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	37	5.4	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	37	5.4	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	22	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	37	5.4	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	37	5.4	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	22	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	37	5.4	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EG035T: Total Recoverable Mercury by FIMS						
Clear Plastic Bottle - Nitric Acid; Unfiltered						
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS17, BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16, BW_SS18	----	----	----	31-DEC-2013	25-DEC-2013	6

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



CHAIN OF CUSTODY

ALS Laboratory
please tick →

ALS Laboratory is an ISO 9001:2015 certified company. We are committed to providing a high quality service to our customers. Our ISO 9001:2015 certification is a testament to our commitment to excellence in all aspects of our business.

ALS Laboratory is an ISO 17025:2017 certified company. We are committed to providing a high quality service to our customers. Our ISO 17025:2017 certification is a testament to our commitment to excellence in all aspects of our business.

ALS Laboratory is an ISO 14001:2015 certified company. We are committed to providing a high quality service to our customers. Our ISO 14001:2015 certification is a testament to our commitment to excellence in all aspects of our business.

ALS Laboratory is an ISO 45001:2018 certified company. We are committed to providing a high quality service to our customers. Our ISO 45001:2018 certification is a testament to our commitment to excellence in all aspects of our business.

CLIENT: ERN	TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date): (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	FOR LABORATORY USE ONLY (Circle)	
OFFICE: SYDNEY	<input type="checkbox"/> Non Standard or urgent TAT (List due date):	Custody Seal Intact? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13	Free-ice / frozen ice bricks present upon receipt? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
ORDER NUMBER: 020493	SITE: BAYSWATER / LODDON	Random Sample Temperature on Receipt: _____ °C	
PROJECT MANAGER: J. Gering	CONTACT PH: _____	OF: 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>	Other comment: 43
SAMPLER: T. ARMANI	SAMPLER MOBILE: _____	RECEIVED BY: [Signature]	RECEIVED BY: [Signature]
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): _____	DATE/TIME: 29/11 16:00	DATE/TIME: 29/11 17:00
Email Reports to (will default to PM if no other addresses are listed): Symphony.Morgan@ecm.com	RELINQUISHED BY: T. ARMANI	DATE/TIME: 29/11/13 19:00	DATE/TIME: _____
Email Invoice to (will default to PM if no other addresses are listed):	DATE/TIME: 28-11/13/7AM		

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information		
	MATRIX: SOLID (S) WATER (W)	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS (refer)	W-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (Ag, Ba, Bi, Ca, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Ti)	Selenium (Freshwater ORC)	VOC Target Scan	PCB		PFOS/PFOA	W-24 TRIHCS-C40/BTEXN, PAH, Phenols
		1	BW-SS35	26/11/13	W		5		X					X	
		2	BW-SS36												
		3	BW-SS37												
		4	BW-SS38												
		5	BW-SS39												
		6	DOI-281113-TA/W												
		7	T/BLANK												
		8	T/SPIKE												

Subcon / Forward Lab / Split: (14 - Brisbane - TOC)
 Lab / Analysis: (9) - (13) -
 Organised By / Date: (Lx Bog - Newcastle)
 Relinquished By / Date: (PSD)
 Connote / Courier:
 WO No: (Lx Jar - Brisbane)
 Attach By PO / Internal Sheet: (TOC)

Environmental Division
 Sydney
 Work Order
ES1326082



Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Disulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plat
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Steals Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.



CHAIN OF CUSTODY

ALS Laboratory please tick ->

CLIENT: ERM	TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):	FOR LABORATORY USE ONLY (initials)
OFFICE: SYDNEY	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) <input type="checkbox"/> Non Standard or urgent TAT (List due date):	Custody Seal intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No N/A
PROJECT: Project Symphony	ALS QUOTE NO.: SY7794113	Grills (in / from) ice blocks present upon receipt? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No N/A
ORDER NUMBER: 0224193	SITE: RAYSWATER LIDDELL	Random Sample Temperature on Receipt: _____ °C
PROJECT MANAGER: J. Forcing	CONTACT PH: _____	Other comment: 4-7
SAMPLER: T. ARDANI	SAMPLER MOBILE: _____	RECEIVED BY: Southern
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): _____	RELINQUISHED BY: _____
Email Reports to (will default to PM if no other addresses are listed): Symphony.Moog@erm.com	DATE/TIME: 29/11/13 1900	RECEIVED BY: _____
Email Invoice to (will default to PM if no other addresses are listed):	DATE/TIME: _____	RECEIVED BY: _____

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).										Additional Information
					TYPE & PRESERVATIVE codes below) (refer to)	TOTAL CONTAINERS	BTEX (EP008-S0)	TPH (EP071SD)	PAH (EP132SD)	Phenols (EP075SIM)	PSD (Hydrometer)	TOC (EP003)	PCB (EP131B)		
9	BW_S535	26.11.13	B		3	X	X	X	X	X	X	X			
10	BW_S536				3										
11	BW_S537				3										
12	BW_S538				3										
13	BW_S539				3										
14	DOI 26113-TA/S				3										
15	T/BLANK				1									TRH/BTEX	
16	T/SPK				1									TRH/BTEX	
17	ROI 26113-TA		W		5	X	X	X	X			X			
18	TSC														

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cl₂ Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic
V = VOA Vial HD Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfate Preserved Plastic; F = Formaldehyde Preserved Glass
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Stop to Bottle; ASS = Plastic Bag for Acid Sulfate Solids; B = Unpreserved Bag

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : ES1326082	
Client : ENVIRO RESOURCES MANAGEMENT Contact : MR JOSEPH FERRING Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Laboratory : Environmental Division Sydney Contact : Barbara Hanna Address : 277-289 Woodpark Road Smithfield NSW Australia 2164 E-mail : joseph.ferring@erm.com Telephone : +61 02 8584 8888 Facsimile : +61 02 8584 8800 Project : PROJECT SYMPHONY Order number : 0224193 C-O-C number : ---- Site : BAYSWATER Sampler : T.ARMANI
E-mail : joseph.ferring@erm.com Telephone : +61 02 8584 8888 Facsimile : +61 02 8584 8800 Project : PROJECT SYMPHONY Order number : 0224193 C-O-C number : ---- Site : BAYSWATER Sampler : T.ARMANI	E-mail : Barbara.Hanna@alsglobal.com Telephone : +61 2 8784 8555 Facsimile : +61 2 8784 8555 Page : 1 of 4 Quote number : ES2013ENVRES0369 (SY/794/13) QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received : 28-NOV-2013 Client Requested Due Date : 10-DEC-2013	Issue Date : 03-DEC-2013 08:53 Scheduled Reporting Date : 10-DEC-2013
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Delivery Details

Mode of Delivery : Carrier No. of coolers/boxes : 1 HARD Security Seal : Intact.	Temperature : 4.7°C SYD - Ice present No. of samples received : 18 No. of samples analysed : 18
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General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Particle Sizing analysis will be conducted by ALS Newcastle.**
- **Total Organic Carbon (TOC) in soil analysis will be conducted by ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA150H Particle Size Analysis by Hydrometer. AS1289	SOIL - EG020-SD (not V) Total Metals in Sediments by ICPMS (NODG Without	SOIL - EG020-SD Total Metals in Sediments by ICPMS (NODG)	SOIL - EG020T (solids) Total Metals by ICP-MS	SOIL - EG020T Total Metals by ICPMS	SOIL - EG035T-LL Total Mercury by FIMS - Low Level	SOIL - EP003 Total Organic Carbon (TOC) in Soil
ES1326082-009	26-NOV-2013 15:00	BW_SS35	✓	✓	✓	✓	✓	✓	✓	✓
ES1326082-010	26-NOV-2013 15:00	BW_SS36	✓	✓	✓	✓	✓	✓	✓	✓
ES1326082-011	26-NOV-2013 15:00	BW_SS37	✓	✓	✓	✓	✓	✓	✓	✓
ES1326082-012	26-NOV-2013 15:00	BW_SS38	✓	✓	✓	✓	✓	✓	✓	✓
ES1326082-013	26-NOV-2013 15:00	BW_SS39	✓	✓	✓	✓	✓	✓	✓	✓
ES1326082-014	26-DEC-2013 15:00	D01_261113_TA/S								✓
	26-NOV-2013 15:00	D01_261113_TA/S	✓		✓	✓	✓	✓	✓	

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP071 - SD TRH ultra trace in sediments	SOIL - EP075 SIM Phenols only SIM - Phenols only	SOIL - EP080 BTEXN	SOIL - EP080-SD TRH(V)/BTEXN in Sediments	SOIL - EP131B PCBs (Ultratrace)	SOIL - EP132B-SD Ultra-trace PAHs in Sediments	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs
ES1326082-009	26-NOV-2013 15:00	BW_SS35	✓	✓		✓	✓	✓	
ES1326082-010	26-NOV-2013 15:00	BW_SS36	✓	✓		✓	✓	✓	
ES1326082-011	26-NOV-2013 15:00	BW_SS37	✓	✓		✓	✓	✓	
ES1326082-012	26-NOV-2013 15:00	BW_SS38	✓	✓		✓	✓	✓	
ES1326082-013	26-NOV-2013 15:00	BW_SS39	✓	✓		✓	✓	✓	
ES1326082-014	26-NOV-2013 15:00	D01_261113_TA/S	✓	✓		✓	✓	✓	
ES1326082-015	26-NOV-2013 15:00	T/BLANK							✓
ES1326082-016	26-NOV-2013 15:00	T/SPIKE			✓				
ES1326082-018	26-NOV-2013 15:00	TSC			✓				



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020T Total Recoverable Metals by ICPMS (including	WATER - EG035T Total Mercury by FIMS	WATER - EP075 SIM Phenols only SIM - Phenols only	WATER - EP080 BTEXN	WATER - EP131B Ultra Trace PCB's	WATER - EP132-LL Super Ultra Trace PAH	WATER - W-01T 7 metals (Total)	WATER - W-03T 15 Metals (Total) (NEPM)
ES1326082-001	26-NOV-2013 15:00	BW_SS35	✓	✓					✓	
ES1326082-002	26-NOV-2013 15:00	BW_SS36	✓	✓					✓	
ES1326082-003	26-NOV-2013 15:00	BW_SS37	✓	✓					✓	
ES1326082-004	26-NOV-2013 15:00	BW_SS38	✓	✓					✓	
ES1326082-005	26-NOV-2013 15:00	BW_SS39	✓	✓					✓	
ES1326082-006	26-NOV-2013 15:00	D01_261113_TAW	✓	✓					✓	
ES1326082-008	26-NOV-2013 15:00	T/SPIKE				✓				
ES1326082-017	26-NOV-2013 15:00	R01_261113_TA	✓		✓		✓	✓		✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-04 TRH/BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1326082-001	26-NOV-2013 15:00	BW_SS35			✓
ES1326082-002	26-NOV-2013 15:00	BW_SS36			✓
ES1326082-003	26-NOV-2013 15:00	BW_SS37			✓
ES1326082-004	26-NOV-2013 15:00	BW_SS38			✓
ES1326082-005	26-NOV-2013 15:00	BW_SS39			✓
ES1326082-006	26-NOV-2013 15:00	D01_261113_TAW			✓
ES1326082-007	26-NOV-2013 15:00	T/BLANK		✓	
ES1326082-017	26-NOV-2013 15:00	R01_261113_TA	✓		

Proactive Holding Time Report

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



Requested Deliverables

MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.ferring@erm.com
- Attachment - Report (SUBCO)	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) (COC)	Email	joseph.ferring@erm.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	joseph.ferring@erm.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.ferring@erm.com
- EDI Format - XTab (XTAB)	Email	joseph.ferring@erm.com

SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA (COA)	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	symphony.macgen@erm.com
- A4 - AU Tax Invoice (INV)	Email	symphony.macgen@erm.com
- Attachment - Report (SUBCO)	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) (COC)	Email	symphony.macgen@erm.com
- EDI Format - ENMRG (ENMRG)	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	symphony.macgen@erm.com
- EDI Format - ESDAT (ESDAT)	Email	symphony.macgen@erm.com

THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
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CERTIFICATE OF ANALYSIS

Work Order	: ES1326082	Page	: 1 of 19
Amendment	: 2		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224193		
C-O-C number	: ----	Date Samples Received	: 28-NOV-2013
Sampler	: T.ARMANI	Issue Date	: 30-DEC-2013
Site	: BAYSWATER		
Quote number	: SY/794/13	No. of samples received	: 18
		No. of samples analysed	: 18

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



General Comments

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

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

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

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

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

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

LOR = Limit of reporting

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

- **EA150H: Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1-2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently NATA endorsement does not apply to hydrometer results.**
- **EG020: Positive result for sample ES1326082-17 has been confirmed.**
- **EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.**
- **This report has been amended and re-released to allow the reporting of additional analytical data.(Se added)**



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
		Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics
SATISH.TRIVEDI	2 IC Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS35	BW_SS36	BW_SS37	BW_SS38	BW_SS39
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326082-009	ES1326082-010	ES1326082-011	ES1326082-012	ES1326082-013
EA150: Particle Sizing								
+75µm	----	1	%	15	8	4	22	15
+150µm	----	1	%	4	2	1	9	6
+300µm	----	1	%	2	1	<1	4	3
+425µm	----	1	%	1	<1	<1	3	2
+600µm	----	1	%	<1	<1	<1	2	2
+1180µm	----	1	%	<1	<1	<1	<1	1
+2.36mm	----	1	%	<1	<1	<1	<1	<1
+4.75mm	----	1	%	<1	<1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	46.2	45.3	51.4	50.6	47.9
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	9	10	9	10	10
Silt (2-60 µm)	----	1	%	71	72	83	64	64
Sand (0.06-2.00 mm)	----	1	%	20	18	8	26	25
Gravel (>2mm)	----	1	%	<1	<1	<1	<1	1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EG020-SD: Total Metals in Sediments by ICPMS								
Arsenic	7440-38-2	1.00	mg/kg	10.1	27.5	15.8	13.1	17.9
Cadmium	7440-43-9	0.1	mg/kg	0.3	0.2	0.4	0.4	0.1
Chromium	7440-47-3	1.0	mg/kg	9.1	23.2	18.1	15.6	22.6
Copper	7440-50-8	1.0	mg/kg	504	195	230	414	90.1
Cobalt	7440-48-4	0.5	mg/kg	5.2	4.5	4.3	6.8	4.9
Lead	7439-92-1	1.0	mg/kg	5.4	7.8	7.7	6.7	6.5
Manganese	7439-96-5	10	mg/kg	105	241	229	199	293
Nickel	7440-02-0	1.0	mg/kg	33.0	22.3	23.3	37.1	16.0
Selenium	7782-49-2	0.1	mg/kg	4.4	11.5	11.3	6.5	19.3
Vanadium	7440-62-2	2.0	mg/kg	37.7	68.6	44.6	51.2	78.2
Zinc	7440-66-6	1.0	mg/kg	114	58.2	84.2	147	37.8
EG020T: Total Metals by ICP-MS								



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS35	BW_SS36	BW_SS37	BW_SS38	BW_SS39
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326082-009	ES1326082-010	ES1326082-011	ES1326082-012	ES1326082-013
EG020T: Total Metals by ICP-MS - Continued								
Barium	7440-39-3	0.1	mg/kg	126	114	100	118	151
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	0.6	0.5	0.6	0.6	0.4
Boron	7440-42-8	5	mg/kg	8	7	10	6	9
Molybdenum	7439-98-7	0.1	mg/kg	3.0	9.5	7.4	6.2	6.1
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.09	0.12	0.24	0.13	0.05
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	4.67	1.89	3.26	2.86	1.92
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<2	<2	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg	6	4	5	8	6
C15 - C28 Fraction	----	3	mg/kg	163	93	76	107	67
C29 - C36 Fraction	----	5	mg/kg	127	89	61	103	61
C10 - C36 Fraction (sum)	----	3	mg/kg	296	186	142	218	134
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS35	BW_SS36	BW_SS37	BW_SS38	BW_SS39
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326082-009	ES1326082-010	ES1326082-011	ES1326082-012	ES1326082-013
EP080-SD: BTEXN - Continued								
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	23	12	10	44	13
2-Methylnaphthalene	91-57-6	5	µg/kg	34	16	16	54	15
Acenaphthylene	208-96-8	4	µg/kg	<4	<4	<5	13	<4
Acenaphthene	83-32-9	4	µg/kg	7	5	<5	16	<4
Fluorene	86-73-7	4	µg/kg	15	13	10	30	9
Phenanthrene	85-01-8	4	µg/kg	87	39	47	122	48
Anthracene	120-12-7	4	µg/kg	12	6	9	19	6
Fluoranthene	206-44-0	4	µg/kg	68	45	55	91	66
Pyrene	129-00-0	4	µg/kg	55	36	39	69	44
Benz(a)anthracene	56-55-3	4	µg/kg	41	26	28	64	35
Chrysene	218-01-9	4	µg/kg	39	25	28	52	34
Benzo(b)fluoranthene	205-99-2	4	µg/kg	34	29	31	52	40
Benzo(k)fluoranthene	207-08-9	4	µg/kg	7	5	7	14	12
Benzo(e)pyrene	192-97-2	4	µg/kg	25	17	21	33	27
Benzo(a)pyrene	50-32-8	4	µg/kg	18	13	13	27	18
Perylene	198-55-0	4	µg/kg	6	149	199	190	43
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	22	18	18	36	24
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	4	<4	<5	10	5
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	8	8	8	15	12



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS35	BW_SS36	BW_SS37	BW_SS38	BW_SS39
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326082-009	ES1326082-010	ES1326082-011	ES1326082-012	ES1326082-013
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Coronene	191-07-1	5	µg/kg	12	11	10	22	14
^ Sum of PAHs	----	4	µg/kg	517	473	549	973	465
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	112	101	99.4	110	111
2-Chlorophenol-D4	93951-73-6	0.1	%	96.3	94.8	90.2	97.3	107
2,4,6-Tribromophenol	118-79-6	0.1	%	100	93.0	87.1	96.5	93.1
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	93.7	92.7	69.9	97.1	96.2
Anthracene-d10	1719-06-8	0.1	%	82.9	87.3	85.9	89.8	86.5
4-Terphenyl-d14	1718-51-0	0.1	%	75.7	77.8	76.8	81.0	78.1
EP080-SD: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	103	91.7	87.8	83.4	97.9
Toluene-D8	2037-26-5	0.1	%	102	96.4	90.6	87.3	95.4
4-Bromofluorobenzene	460-00-4	0.1	%	90.5	88.7	78.8	79.7	86.0
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	58.8	45.0	43.8	57.5	57.5
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	84.7	89.5	82.8	112	107
Anthracene-d10	1719-06-8	0.1	%	94.0	94.9	87.5	98.5	119
4-Terphenyl-d14	1718-51-0	0.1	%	89.7	96.8	86.2	94.2	118



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				D01_261113_TA/S	T/BLANK	T/SPIKE	TSC	----
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	----
				ES1326082-014	ES1326082-015	ES1326082-016	ES1326082-018	----
Compound	CAS Number	LOR	Unit					
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	52.2	----	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Arsenic	7440-38-2	1.00	mg/kg	14.3	----	----	----	----
Cadmium	7440-43-9	0.1	mg/kg	0.4	----	----	----	----
Chromium	7440-47-3	1.0	mg/kg	17.3	----	----	----	----
Copper	7440-50-8	1.0	mg/kg	224	----	----	----	----
Cobalt	7440-48-4	0.5	mg/kg	4.4	----	----	----	----
Lead	7439-92-1	1.0	mg/kg	7.3	----	----	----	----
Manganese	7439-96-5	10	mg/kg	216	----	----	----	----
Nickel	7440-02-0	1.0	mg/kg	23.4	----	----	----	----
Selenium	7782-49-2	0.1	mg/kg	11.3	----	----	----	----
Vanadium	7440-62-2	2.0	mg/kg	44.6	----	----	----	----
Zinc	7440-66-6	1.0	mg/kg	82.3	----	----	----	----
EG020T: Total Metals by ICP-MS								
Barium	7440-39-3	0.1	mg/kg	97.7	----	----	----	----
Thallium	7440-28-0	0.1	mg/kg	0.1	----	----	----	----
Beryllium	7440-41-7	0.1	mg/kg	0.7	----	----	----	----
Boron	7440-42-8	5	mg/kg	9	----	----	----	----
Molybdenum	7439-98-7	0.1	mg/kg	6.3	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.25	----	----	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	3.40	----	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.8	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.8	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.8	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<2	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.8	----	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.8	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.8	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.8	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.8	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				D01_261113_TA/S	T/BLANK	T/SPIKE	TSC	----
Client sampling date / time				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1326082-014	ES1326082-015	ES1326082-016	ES1326082-018	----
EP075(SIM)A: Phenolic Compounds - Continued								
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.8	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.8	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	0.2	0.6	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	7.9	15.4	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	1.0	1.9	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	5.2	9.6	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	2.1	3.8	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	7.3	13.4	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	16.4	31.3	----
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	<1	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	----	----	----	----
C10 - C14 Fraction	----	3	mg/kg	4	----	----	----	----
C15 - C28 Fraction	----	3	mg/kg	80	----	----	----	----
C29 - C36 Fraction	----	5	mg/kg	74	----	----	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg	158	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	----	----	----	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	----	----	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	----	----	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				D01_261113_TA/S	T/BLANK	T/SPIKE	TSC	----
Client sampling date / time				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1326082-014	ES1326082-015	ES1326082-016	ES1326082-018	----

EP080-SD: BTEXN - Continued

EP131B: Polychlorinated Biphenyls (as Aroclors)

^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	----	----	----	----

EP132B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	5	µg/kg	12	----	----	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg	20	----	----	----	----
Acenaphthylene	208-96-8	4	µg/kg	<5	----	----	----	----
Acenaphthene	83-32-9	4	µg/kg	7	----	----	----	----
Fluorene	86-73-7	4	µg/kg	14	----	----	----	----
Phenanthrene	85-01-8	4	µg/kg	70	----	----	----	----
Anthracene	120-12-7	4	µg/kg	9	----	----	----	----
Fluoranthene	206-44-0	4	µg/kg	70	----	----	----	----
Pyrene	129-00-0	4	µg/kg	56	----	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg	37	----	----	----	----
Chrysene	218-01-9	4	µg/kg	36	----	----	----	----
Benzo(b)fluoranthene	205-99-2	4	µg/kg	38	----	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg	7	----	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg	26	----	----	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg	16	----	----	----	----
Perylene	198-55-0	4	µg/kg	226	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	23	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	10	----	----	----	----
Coronene	191-07-1	5	µg/kg	13	----	----	----	----
^ Sum of PAHs	----	4	µg/kg	690	----	----	----	----

EP075(SIM)S: Phenolic Compound Surrogates

Phenol-d6	13127-88-3	0.1	%	110	----	----	----	----
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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

D01_261113_TA/S	T/BLANK	T/SPIKE	TSC	----
26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	----

Client sampling date / time

Compound	CAS Number	LOR	Unit	ES1326082-014	ES1326082-015	ES1326082-016	ES1326082-018	----
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EP075(SIM)S: Phenolic Compound Surrogates - Continued

2-Chlorophenol-D4	93951-73-6	0.1	%	109	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	93.6	----	----	----	----

EP075(SIM)T: PAH Surrogates

2-Fluorobiphenyl	321-60-8	0.1	%	97.5	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	89.4	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	80.3	----	----	----	----

EP080S: TPH(V)/BTEX Surrogates

1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	94.7	101	102	----
Toluene-D8	2037-26-5	0.1	%	----	95.5	104	98.1	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	92.9	105	95.9	----

EP080-SD: TPH(V)/BTEX Surrogates

1,2-Dichloroethane-D4	17060-07-0	0.1	%	68.0	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	91.4	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	83.5	----	----	----	----

EP131T: PCB Surrogate

Decachlorobiphenyl	2051-24-3	0.1	%	41.2	----	----	----	----
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EP132T: Base/Neutral Extractable Surrogates

2-Fluorobiphenyl	321-60-8	0.1	%	100	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	109	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	108	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS35	BW_SS36	BW_SS37	BW_SS38	BW_SS39
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326082-001	ES1326082-002	ES1326082-003	ES1326082-004	ES1326082-005
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.005	0.006	0.006	0.005	0.012
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.084	0.085	0.092	0.092	0.098
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	<0.001	<0.001	0.003
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.010	0.006	0.007	0.008	0.011
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002
Manganese	7439-96-5	0.001	mg/L	0.010	0.007	0.012	0.014	0.020
Molybdenum	7439-98-7	0.001	mg/L	0.099	0.097	0.107	0.107	0.120
Nickel	7440-02-0	0.001	mg/L	0.004	0.005	0.005	0.006	0.005
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.01
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	0.01	0.01	0.02	0.02	0.04
Zinc	7440-66-6	0.005	mg/L	0.015	0.006	0.006	0.008	0.011
Boron	7440-42-8	0.05	mg/L	0.83	0.81	0.88	0.91	0.93
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS35	BW_SS36	BW_SS37	BW_SS38	BW_SS39
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326082-001	ES1326082-002	ES1326082-003	ES1326082-004	ES1326082-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS35	BW_SS36	BW_SS37	BW_SS38	BW_SS39
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326082-001	ES1326082-002	ES1326082-003	ES1326082-004	ES1326082-005
EP080: BTEXN - Continued								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	21.8	24.1	18.2	20.6	27.5
2-Chlorophenol-D4	93951-73-6	0.1	%	55.1	59.9	47.0	53.0	49.8
2,4,6-Tribromophenol	118-79-6	0.1	%	67.2	67.7	53.0	61.2	58.5
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	61.6	60.6	25.1	32.7	18.9
Anthracene-d10	1719-06-8	0.1	%	58.4	61.2	49.0	56.7	52.7
4-Terphenyl-d14	1718-51-0	0.1	%	56.8	60.7	48.8	56.5	52.2
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	106	108	102	108	108
Toluene-D8	2037-26-5	0.1	%	107	107	108	103	108
4-Bromofluorobenzene	460-00-4	0.1	%	93.5	98.1	101	86.8	94.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				D01_261113_TA/W	T/BLANK	T/SPIKE	R01_261113_TA	----
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1326082-006	ES1326082-007	ES1326082-008	ES1326082-017	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.007	----	----	<0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	<0.001	----
Barium	7440-39-3	0.001	mg/L	0.092	----	----	0.002	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	0.002	----	----	0.006	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	<0.001	----
Copper	7440-50-8	0.001	mg/L	0.006	----	----	0.003	----
Lead	7439-92-1	0.001	mg/L	0.001	----	----	<0.001	----
Manganese	7439-96-5	0.001	mg/L	0.012	----	----	0.003	----
Molybdenum	7439-98-7	0.001	mg/L	0.108	----	----	0.002	----
Nickel	7440-02-0	0.001	mg/L	0.005	----	----	0.002	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	<0.01	----
Thallium	7440-28-0	0.001	mg/L	<0.001	----	----	<0.001	----
Vanadium	7440-62-2	0.01	mg/L	0.02	----	----	<0.01	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	<0.005	----
Boron	7440-42-8	0.05	mg/L	0.90	----	----	<0.05	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	<0.0001	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	----	----	<1.0	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	----	----	<1.0	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	----	----	<1.0	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	----	----	<2.0	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	----	----	<1.0	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	----	----	<1.0	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	----	----	<1.0	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	----	----	<1.0	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	----	----	<1.0	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	----	----	<1.0	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	----	----	<1.0	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	----	----	<2.0	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.02	µg/L	----	----	----	<0.02	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

D01_261113_TA/W	T/BLANK	T/SPIKE	R01_261113_TA	----
26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	----
ES1326082-006	ES1326082-007	ES1326082-008	ES1326082-017	----

Client sampling date / time

Compound	CAS Number	LOR	Unit	ES1326082-006	ES1326082-007	ES1326082-008	ES1326082-017	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	0.02	µg/L	----	----	----	<0.02	----
Acenaphthene	83-32-9	0.02	µg/L	----	----	----	<0.02	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	0.02	µg/L	----	----	----	<0.02	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	0.02	µg/L	----	----	----	<0.02	----
Anthracene	120-12-7	0.02	µg/L	----	----	----	<0.02	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	0.02	µg/L	----	----	----	<0.02	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	0.02	µg/L	----	----	----	<0.02	----
Benz(a)anthracene	56-55-3	0.02	µg/L	----	----	----	<0.02	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	0.02	µg/L	----	----	----	<0.02	----
Benzo(b)fluoranthene	205-99-2	0.02	µg/L	----	----	----	<0.02	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.02	µg/L	----	----	----	<0.02	----
Benzo(a)pyrene	50-32-8	0.005	µg/L	----	----	----	<0.005	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.02	µg/L	----	----	----	<0.02	----
Dibenz(a,h)anthracene	53-70-3	0.02	µg/L	----	----	----	<0.02	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.02	µg/L	----	----	----	<0.02	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
^ Total PAH	----	0.005	µg/L	----	----	----	<0.005	----
^ Benzo(a)pyrene TEQ (zero)	----	0.005	µg/L	----	----	----	<0.005	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				D01_261113_TA/W	T/BLANK	T/SPIKE	R01_261113_TA	----
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1326082-006	ES1326082-007	ES1326082-008	ES1326082-017	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	<20	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	<50	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	<100	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	<20	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	----	----	<100	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	<100	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	18	<1	----
Toluene	108-88-3	2	µg/L	<2	<2	18	<2	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	16	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	16	<2	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	16	<2	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	32	<2	----
^ Sum of BTEX	----	1	µg/L	<1	<1	84	<1	----
Naphthalene	91-20-3	5	µg/L	<5	<5	19	<5	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
Total Polychlorinated biphenyls	----	0.10	µg/L	----	----	----	<0.10	----
Aroclor 1016	12674-11-2	0.10	µg/L	----	----	----	<0.10	----
Aroclor 1221	11104-28-2	0.10	µg/L	----	----	----	<0.10	----
Aroclor 1232	11141-16-5	0.10	µg/L	----	----	----	<0.10	----
Aroclor 1242	53469-21-9	0.10	µg/L	----	----	----	<0.10	----
Aroclor 1248	12672-29-6	0.10	µg/L	----	----	----	<0.10	----
Aroclor 1254	11097-69-1	0.10	µg/L	----	----	----	<0.10	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				D01_261113_TA/W	T/BLANK	T/SPIKE	R01_261113_TA	----
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1326082-006	ES1326082-007	ES1326082-008	ES1326082-017	----
EP131B: Polychlorinated Biphenyls (as Aroclors) - Continued								
Aroclor 1260	11096-82-5	0.10	µg/L	----	----	----	<0.10	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	21.8	----	----	71.5	----
2-Chlorophenol-D4	93951-73-6	0.1	%	54.9	----	----	71.4	----
2,4,6-Tribromophenol	118-79-6	0.1	%	61.3	----	----	68.4	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	43.6	----	----	65.1	----
Anthracene-d10	1719-06-8	0.1	%	56.0	----	----	64.9	----
4-Terphenyl-d14	1718-51-0	0.1	%	55.8	----	----	61.1	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	110	99.6	102	99.2	----
Toluene-D8	2037-26-5	0.1	%	110	86.5	115	98.0	----
4-Bromofluorobenzene	460-00-4	0.1	%	97.1	87.6	105	90.5	----
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	81.2	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	----	90.1	----
Anthracene-d10	1719-06-8	0.1	%	----	----	----	85.3	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	----	88.2	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0
EP080-SD: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	67	137
Toluene-D8	2037-26-5	74	134
4-Bromofluorobenzene	460-00-4	73	137
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	2.22	106
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	55	135
Anthracene-d10	1719-06-8	70	136
4-Terphenyl-d14	1718-51-0	57	127

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	7.9	144



Sub-Matrix: WATER		<i>Recovery Limits (%)</i>	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	54	136
Anthracene-d10	1719-06-8	66	134
4-Terphenyl-d14	1718-51-0	63	135

Certificate of Analysis

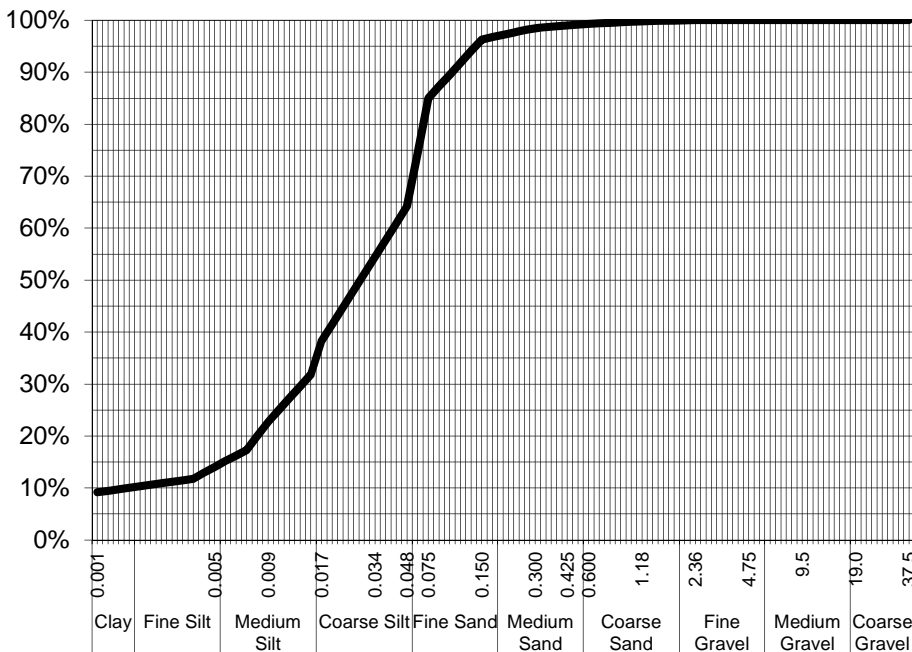
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 11-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 28-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326082-009 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS35

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	96%
0.075	85%
Particle Size (microns)	
48	64%
34	54%
17	38%
9	23%
5	14%
3	12%
1	9%

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Median Particle Size (mm)	0.029
---------------------------	-------

Analysed: 9-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

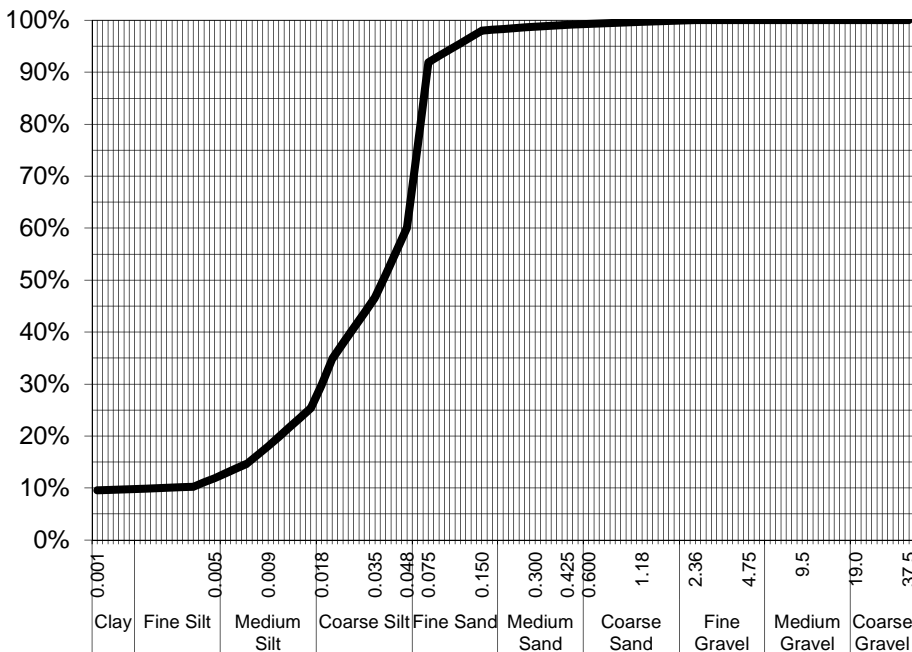
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 11-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 28-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326082-010 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS36

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	98%
0.075	92%
Particle Size (microns)	
48	60%
35	47%
18	30%
9	18%
5	12%
3	10%
1	10%

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Median Particle Size (mm)	0.038
---------------------------	-------

Analysed: 9-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

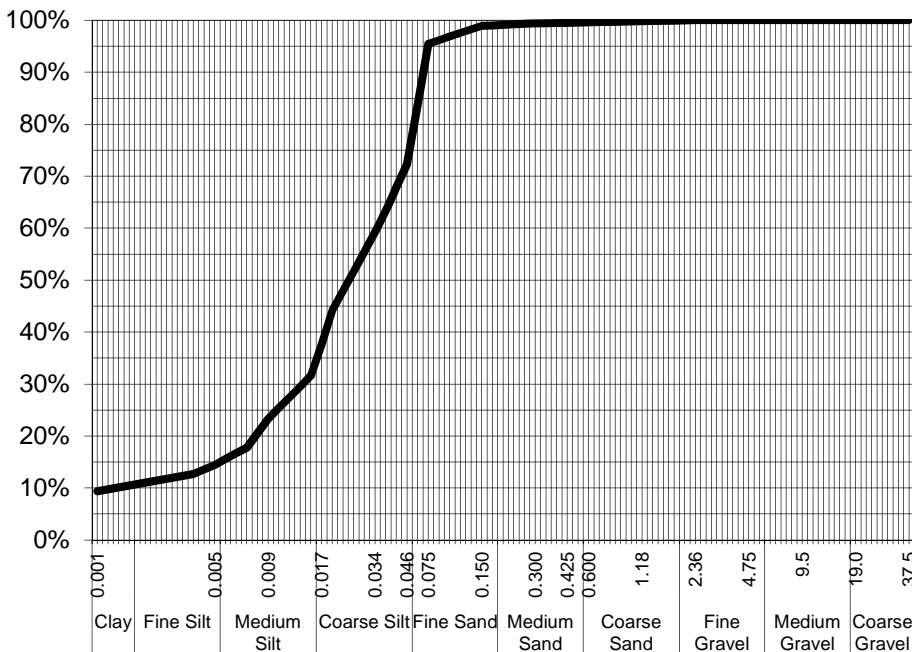
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 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 11-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 28-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326082-011 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS37

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	99%
0.150	99%
0.075	96%
Particle Size (microns)	
46	72%
34	59%
17	37%
9	23%
5	14%
3	13%
1	9%

Median Particle Size (mm)	0.026
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Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

NATA Accreditation: 825 Site: Newcastle
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Analysed: 9-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

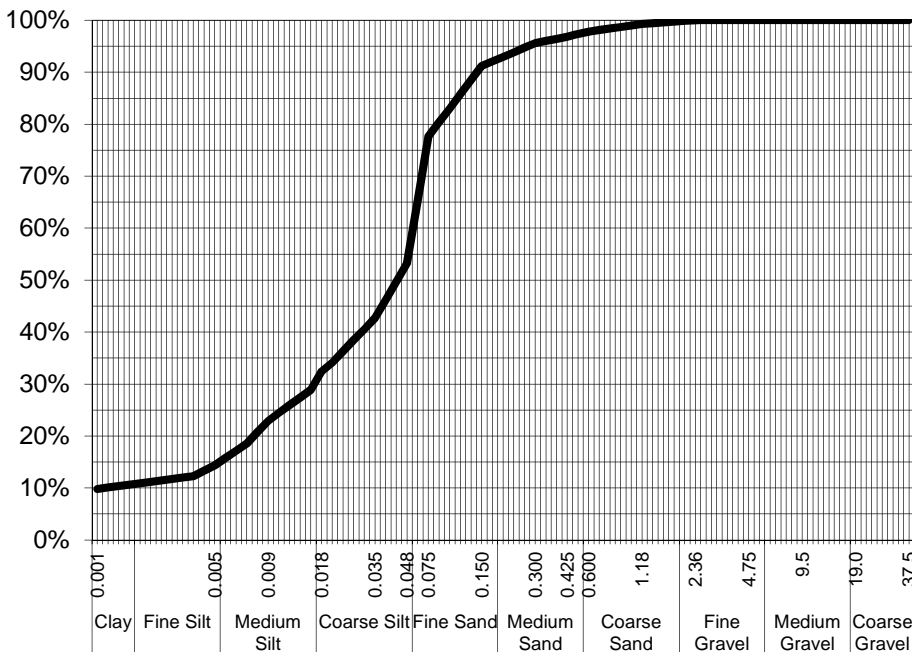
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 11-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 28-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326082-012 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS38

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	98%
0.425	97%
0.300	96%
0.150	91%
0.075	78%
Particle Size (microns)	
48	53%
35	43%
18	32%
9	23%
5	14%
3	12%
1	10%

Median Particle Size (mm)	0.046
---------------------------	-------

Samples analysed as received.
 Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA
Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

NATA Accreditation: 825 Site: Newcastle
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Analysed: 9-Dec-13
Limit of Reporting: 1%
Dispersion Method Shaker
Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

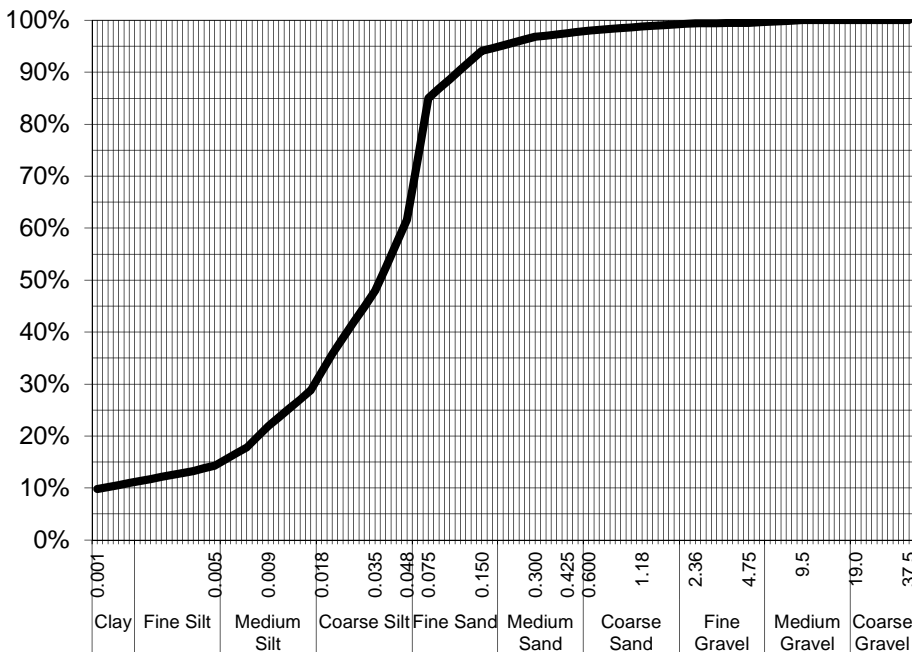
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 11-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 28-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326082-013 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS39

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	99%
0.600	98%
0.425	98%
0.300	97%
0.150	94%
0.075	85%
Particle Size (microns)	
48	62%
35	48%
18	32%
9	22%
5	14%
3	13%
1	10%

Median Particle Size (mm)	0.038
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Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

NATA Accreditation: 825 Site: Newcastle
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Analysed: 9-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

QUALITY CONTROL REPORT

Work Order	: ES1326082	Page	: 1 of 19
Amendment	: 2		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER		
C-O-C number	: ----	Date Samples Received	: 28-NOV-2013
Sampler	: T.ARMANI	Issue Date	: 30-DEC-2013
Order number	: 0224193		
Quote number	: SY/794/13	No. of samples received	: 18
		No. of samples analysed	: 18

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



General Comments

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

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

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

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

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

WORLD RECOGNISED
ACCREDITATION

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
		Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics
SATISH.TRIVEDI	2 IC Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 3195164)									
ES1326047-003	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	13.2	12.8	2.9	0% - 50%
ES1326082-011	BW_SS37	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	51.4	51.9	0.9	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 3196070)									
ES1326082-009	BW_SS35	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	0.3	0.3	0.0	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	4.4	4.4	0.0	0% - 20%
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	5.2	5.2	0.0	0% - 50%
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	9.1	8.9	2.3	No Limit
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	504	424	17.0	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	5.4	5.3	2.0	No Limit
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	33.0	31.1	5.9	0% - 20%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	114	115	1.4	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	10.1	9.23	8.9	0% - 50%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	105	108	2.0	0% - 50%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	37.7	36.1	4.3	0% - 50%
ES1326083-004	Anonymous	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	0.1	0.1	0.0	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	13.7	11.6	16.6	0% - 20%
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	3.7	3.2	15.0	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	15.9	15.2	4.1	0% - 50%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	62.8	62.1	1.1	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	6.0	5.2	14.8	No Limit
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	12.6	12.0	5.4	0% - 50%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	27.6	26.6	3.8	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	12.6	11.5	8.9	0% - 50%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	137	136	0.0	0% - 50%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	47.2	43.5	8.2	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 3196067)									
ES1326082-009	BW_SS35	EG020X-T: Barium	7440-39-3	0.1	mg/kg	126	126	0.0	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.6	0.6	0.0	No Limit
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	3.0	2.7	13.2	0% - 20%
ES1326083-004	Anonymous	EG020X-T: Barium	7440-39-3	0.1	mg/kg	93.5	88.7	5.2	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.3	0.4	30.8	No Limit
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	8.1	8.5	5.1	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 3196068)									
ES1326082-009	BW_SS35	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1326083-004	Anonymous	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3196069)									
ES1326082-009	BW_SS35	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.09	0.09	0.0	No Limit
ES1326083-004	Anonymous	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.05	0.06	0.0	No Limit
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 3195206)									
ES1326082-009	BW_SS35	EP003: Total Organic Carbon	----	0.02	%	4.67	4.65	0.4	0% - 20%
EP075(SIM)A: Phenolic Compounds (QC Lot: 3192768)									
ES1326152-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
ES1326083-023	Anonymous	EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
		EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit		
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3192969)									
ES1326190-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1326190-005	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3192969)									
ES1326190-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1326190-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 3192969)									
ES1326190-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 3192969) - continued									
ES1326190-001	Anonymous	EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1326190-005	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	1	<1	0.0	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3192516)									
ES1326082-009	BW_SS35	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.0	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3197947)									
ES1326082-009	BW_SS35	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	6	5	0.0	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	163	137	17.3	0% - 20%
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	127	108	16.3	0% - 20%
EP080-SD: BTEXN (QC Lot: 3192516)									
ES1326082-009	BW_SS35	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 3197940)									
ES1326082-009	BW_SS35	EP131B: Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3197946)									
ES1326082-009	BW_SS35	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	7	8	0.0	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	15	17	14.0	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	87	84	3.3	0% - 20%
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	12	12	0.0	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	68	65	4.1	0% - 50%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3197946) - continued									
ES1326082-009	BW_SS35	EP132B-SD: Pyrene	129-00-0	4	µg/kg	55	52	5.3	0% - 50%
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	41	47	14.5	0% - 50%
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	39	44	12.8	0% - 50%
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	34	34	3.0	No Limit
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	7	10	38.2	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	25	25	0.0	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	18	19	5.6	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	6	6	0.0	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	22	24	8.8	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	4	4	0.0	No Limit
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	8	8	0.0	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	517	536	3.6	0% - 20%
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	23	25	10.2	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	34	39	13.8	No Limit
		EP132B-SD: Coronene	191-07-1	5	µg/kg	12	13	0.0	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3197390)									
ES1326082-001	BW_SS35	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.005	0.003	42.7	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.084	0.088	3.8	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.010	0.010	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.010	0.010	0.0	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.099	0.100	0.0	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.004	0.005	0.0	No Limit
		EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.015	0.013	9.6	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	0.01	0.01	0.0	No Limit
EG020A-T: Boron	7440-42-8	0.05	mg/L	0.83	0.84	0.0	0% - 50%		
ES1326157-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.004	0.005	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.032	0.031	0.0	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.008	0.008	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	0.002	0.002	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EG020T: Total Metals by ICP-MS (QC Lot: 3197390) - continued										
ES1326157-001	Anonymous	EG020A-T: Copper	7440-50-8	0.001	mg/L	0.006	0.006	0.0	No Limit	
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.001	<0.001	0.0	No Limit	
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.242	0.236	2.6	0% - 20%	
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.011	0.009	25.6	0% - 50%	
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.019	0.020	7.0	0% - 50%	
		EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.022	0.020	10.2	No Limit	
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit	
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit	
		EG020A-T: Boron	7440-42-8	0.05	mg/L	1.10	1.05	4.8	0% - 20%	
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3193040)										
EB1328502-005	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	0.0004	0.0004	0.0	No Limit	
ES1326086-003	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3192001)										
ES1326081-019	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
ES1326082-002	BW_SS36	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3192001)										
ES1326081-019	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
ES1326082-002	BW_SS36	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
EP080: BTEXN (QC Lot: 3192001)										
ES1326081-019	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
ES1326082-002	BW_SS36	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit	
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit			
EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit			



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

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3196070)									
EG020-SD: Arsenic	7440-38-2	1.0	mg/kg	<1.00	21.7 mg/kg	107	81	139	
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	4.64 mg/kg	100	82	126	
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	43.9 mg/kg	96.6	67	129	
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	32 mg/kg	107	80	136	
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	----	16 mg/kg	120	76	132	
		10	mg/kg	<10.0	----	----	----	----	
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	40 mg/kg	105	75	131	
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	130 mg/kg	108	77	133	
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55 mg/kg	117	76	128	
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	5.37 mg/kg	106	72	134	
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	29.6 mg/kg	115	87	131	
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	60.8 mg/kg	98.6	83	137	
EG020T: Total Metals by ICP-MS (QCLot: 3196066)									
EG020T: Boron	7440-42-8	0.1	mg/kg	<0.5	----	----	----	----	
EG020T: Total Metals by ICP-MS (QCLot: 3196067)									
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	143 mg/kg	106	70	134	
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	5.63 mg/kg	116	80	136	
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	7.9 mg/kg	117	71	129	
EG020T: Total Metals by ICP-MS (QCLot: 3196068)									
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	5.96 mg/kg	113	80	138	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3196069)									
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.110 mg/kg	83.3	72	116	
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 3195206)									
EP003: Total Organic Carbon	----	0.02	%	<0.02	4.1 %	99.2	70	130	
EP075(SIM)A: Phenolic Compounds (QCLot: 3192768)									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	107	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	110	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	102	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	105	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	102	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	108	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	# 112	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	107	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	109	76.4	114	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP075(SIM)A: Phenolic Compounds (QCLot: 3192768) - continued									
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	82.6	57	111	
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	81.2	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	17.2	3.9	57	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192969)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	102	68.4	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192969)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	101	68.4	128	
EP080: BTEXN (QCLot: 3192969)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	92.5	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	91.4	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	84.0	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	90.8	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.9	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	105	62	138	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3192516)									
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	6.2 mg/kg	124	61	133	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3197947)									
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	5 mg/kg	100	78	118	
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	7.5 mg/kg	104	84	118	
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	5 mg/kg	98.0	73	119	
EP080-SD: BTEXN (QCLot: 3192516)									
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	0.2 mg/kg	113	66	122	
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	0.2 mg/kg	104	69	122	
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.2 mg/kg	105	66	126	
EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	0.4 mg/kg	108	59	129	
	106-42-3								
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.2 mg/kg	111	66	126	
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3197940)									
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	100	50	134	
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----	
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3197946)									



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3197946) - continued									
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	102	67	133	
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	25 µg/kg	111	63	135	
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	111	68	132	
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	110	67	133	
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	113	69	131	
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	112	66	138	
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	99.2	67	133	
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	107	64	130	
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	103	67	133	
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	108	65	133	
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	110	70	134	
EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	<4	25 µg/kg	81.3	63	133	
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	94.7	67	133	
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25 µg/kg	97.7	64	130	
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	95.4	72	130	
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	25 µg/kg	118	70	132	
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	109	65	127	
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	25 µg/kg	105	67	135	
EP132B-SD: Indeno(1,2,3.cd)pyrene	193-39-5	4	µg/kg	<4	25 µg/kg	108	62	126	
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	25 µg/kg	89.7	66	134	
EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	----	----	----	----	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020T: Total Metals by ICP-MS (QCLot: 3197390)									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	79	121	
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	89.5	76	120	
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	97.8	84	116	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.6	82	114	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	104	83	115	
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	103	84	116	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	107	83	117	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	92.5	85	115	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	101	83	115	
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	102	81	125	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	98.5	83	117	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	90.2	68	128	
EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	0.1 mg/L	90.2	86	116	
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	103	84	114	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EG020T: Total Metals by ICP-MS (QCLot: 3197390) - continued									
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	104	76	118	
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.1 mg/L	97.8	73	127	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3193040)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	109	77	115	
EP075(SIM)A: Phenolic Compounds (QCLot: 3196273)									
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	20 µg/L	48.0	24.5	61.9	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	20 µg/L	106	63.8	110	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	20 µg/L	94.2	55.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	40 µg/L	97.4	42.5	114	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	20 µg/L	106	62.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	20 µg/L	107	59.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	20 µg/L	87.6	59.3	122	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	20 µg/L	101	64.3	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	20 µg/L	110	63	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	20 µg/L	108	58.7	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	20 µg/L	# 113	50	108	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	40 µg/L	# 97.1	8.7	95	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3196273)									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	20 µg/L	111	58.6	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	20 µg/L	99.7	63.6	114	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	20 µg/L	109	62.2	113	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	20 µg/L	112	63.9	115	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	20 µg/L	109	62.6	116	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3196273) - continued									
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	20 µg/L	106	64.3	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	20 µg/L	111	63.6	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	20 µg/L	106	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	20 µg/L	117	64.1	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	20 µg/L	# 117	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	20 µg/L	105	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	20 µg/L	101	61.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	20 µg/L	109	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	20 µg/L	106	59.9	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	20 µg/L	106	61.2	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	20 µg/L	110	59.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192001)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	89.7	75	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3196272)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	92.2	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	95.4	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	85.0	62	120	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192001)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	87.9	75	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3196272)									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	115	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	87.8	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	83.6	67	127	
EP080: BTEXN (QCLot: 3192001)									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	99.1	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	100	65	129	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP080: BTEXN (QCLot: 3192001) - continued									
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	86.7	70	120	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	88.8	69	121	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	88.9	72	122	
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	79.0	70	124	
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3191359)									
EP131B: Total Polychlorinated biphenyls	----	0.1	µg/L	<0.10	----	----	----	----	
EP131B: Aroclor 1016	12674-11-2	0.1	µg/L	<0.10	----	----	----	----	
EP131B: Aroclor 1221	11104-28-2	0.1	µg/L	<0.10	----	----	----	----	
EP131B: Aroclor 1232	11141-16-5	0.1	µg/L	<0.10	----	----	----	----	
EP131B: Aroclor 1242	53469-21-9	0.1	µg/L	<0.10	----	----	----	----	
EP131B: Aroclor 1248	12672-29-6	0.1	µg/L	<0.10	----	----	----	----	
EP131B: Aroclor 1254	11097-69-1	0.1	µg/L	<0.10	1.00 µg/L	68.0	51	133	
EP131B: Aroclor 1260	11096-82-5	0.1	µg/L	<0.10	----	----	----	----	
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193797)									
EP132-LL: Naphthalene	91-20-3	0.02	µg/L	<0.02	0.025 µg/L	103	68	136	
EP132-LL: Acenaphthylene	208-96-8	0.02	µg/L	<0.02	0.025 µg/L	92.9	68	128	
EP132-LL: Acenaphthene	83-32-9	0.02	µg/L	<0.02	0.025 µg/L	88.0	66	128	
EP132-LL: Fluorene	86-73-7	0.02	µg/L	<0.02	0.025 µg/L	105	69	131	
EP132-LL: Phenanthrene	85-01-8	0.02	µg/L	<0.02	0.025 µg/L	88.0	74	138	
EP132-LL: Anthracene	120-12-7	0.02	µg/L	<0.02	0.025 µg/L	111	65	123	
EP132-LL: Fluoranthene	206-44-0	0.02	µg/L	<0.02	0.025 µg/L	114	63	129	
EP132-LL: Pyrene	129-00-0	0.02	µg/L	<0.02	0.025 µg/L	109	66	130	
EP132-LL: Benz(a)anthracene	56-55-3	0.02	µg/L	<0.02	0.025 µg/L	111	68	136	
EP132-LL: Chrysene	218-01-9	0.02	µg/L	<0.02	0.025 µg/L	92.7	62	128	
EP132-LL: Benzo(b)fluoranthene	205-99-2	0.02	µg/L	<0.02	0.025 µg/L	115	64	130	
EP132-LL: Benzo(k)fluoranthene	207-08-9	0.02	µg/L	<0.02	0.025 µg/L	113	62	128	
EP132-LL: Benzo(a)pyrene	50-32-8	0.005	µg/L	<0.005	0.025 µg/L	118	65	131	
EP132-LL: Indeno(1.2.3.cd)pyrene	193-39-5	0.02	µg/L	<0.02	0.025 µg/L	114	68	132	
EP132-LL: Dibenz(a,h)anthracene	53-70-3	0.02	µg/L	<0.02	0.025 µg/L	115	74	134	
EP132-LL: Benzo(g,h,i)perylene	191-24-2	0.02	µg/L	<0.02	0.025 µg/L	120	68	134	
EP132-LL: Total PAH	----	0.005	µg/L	<0.005	----	----	----	----	

Matrix Spike (MS) Report

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

Sub-Matrix: SOIL

Matrix Spike (MS) Report		
Spike	SpikeRecovery(%)	Recovery Limits (%)



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3196070)								
ES1326082-009	BW_SS35	EG020-SD: Arsenic	7440-38-2	50 mg/kg	95.0	70	130	
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	95.2	70	130	
		EG020-SD: Chromium	7440-47-3	50 mg/kg	97.5	70	130	
		EG020-SD: Copper	7440-50-8	125 mg/kg	81.6	70	130	
		EG020-SD: Lead	7439-92-1	125 mg/kg	98.7	70	130	
		EG020-SD: Nickel	7440-02-0	50 mg/kg	97.8	70	130	
		EG020-SD: Zinc	7440-66-6	125 mg/kg	86.2	70	130	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3196069)								
ES1326082-009	BW_SS35	EG035T-LL: Mercury	7439-97-6	0.050 mg/kg	81.7	70	130	
EP075(SIM)A: Phenolic Compounds (QCLot: 3192768)								
ES1326152-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	108	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	107	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	112	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	99.2	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	51.4	20	130	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192969)								
ES1326190-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	111	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192969)								
ES1326190-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	100	70	130	
EP080: BTEXN (QCLot: 3192969)								
ES1326190-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	81.7	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	85.4	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	85.0	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	87.2	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	87.8	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	83.1	70	130			
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3192516)								
ES1326082-009	BW_SS35	EP080-SD: C6 - C9 Fraction	----	6.5 mg/kg	90.1	70	130	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3197947)								
ES1326082-009	BW_SS35	EP071-SD: C10 - C14 Fraction	----	19.75 mg/kg	91.1	70	130	
		EP071-SD: C15 - C28 Fraction	----	87.25 mg/kg	86.1	70	130	
		EP071-SD: C29 - C36 Fraction	----	60 mg/kg	123	70	130	
EP080-SD: BTEXN (QCLot: 3192516)								
ES1326082-009	BW_SS35	EP080-SD: Benzene	71-43-2	0.5 mg/kg	78.6	70	130	
		EP080-SD: Toluene	108-88-3	0.5 mg/kg	78.8	70	130	
		EP080-SD: Ethylbenzene	100-41-4	0.5 mg/kg	80.2	70	130	



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080-SD: BTEXN (QCLot: 3192516) - continued							
ES1326082-009	BW_SS35	EP080-SD: meta- & para-Xylene	108-38-3	0.5 mg/kg	84.2	70	130
			106-42-3				
		EP080-SD: ortho-Xylene	95-47-6	0.5 mg/kg	83.2	70	130
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3197940)							
ES1326082-009	BW_SS35	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	92.5	44	136
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3197946)							
ES1326082-009	BW_SS35	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	72.6	70	130
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	123	70	130
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	87.1	70	130
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	75.0	70	130
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	83.6	70	130
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	90.1	70	130
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	89.1	70	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	105	70	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	83.9	70	130
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	72.2	70	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	114	70	130
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	25 µg/kg	88.8	70	130
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	83.2	70	130
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	122	70	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	93.5	70	130
		EP132B-SD: Perylene	198-55-0	25 µg/kg	80.9	70	130
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	117	70	130
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	90.6	70	130
EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	78.5	70	130		
EP132B-SD: Coronene	191-07-1	25 µg/kg	106	70	130		

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3197390)							
ES1326082-002	BW_SS36	EG020A-T: Arsenic	7440-38-2	1 mg/L	113	70	130
		EG020A-T: Beryllium	7440-41-7	1 mg/L	104	70	130
		EG020A-T: Barium	7440-39-3	1 mg/L	110	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	110	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	108	70	130
		EG020A-T: Cobalt	7440-48-4	1 mg/L	104	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	112	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	106	70	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report				
				Spike	Spike Recovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EG020T: Total Metals by ICP-MS (QCLot: 3197390) - continued								
ES1326082-002	BW_SS36	EG020A-T: Manganese	7439-96-5	1 mg/L	114	70	130	
		EG020A-T: Nickel	7440-02-0	1 mg/L	99.6	70	130	
		EG020A-T: Vanadium	7440-62-2	1 mg/L	107	70	130	
		EG020A-T: Zinc	7440-66-6	1 mg/L	112	70	130	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3193040)								
ES1326082-001	BW_SS35	EG035T: Mercury	7439-97-6	0.010 mg/L	100	70	130	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192001)								
ES1326081-019	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	99.3	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192001)								
ES1326081-019	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	100	70	130	
EP080: BTEXN (QCLot: 3192001)								
ES1326081-019	Anonymous	EP080: Benzene	71-43-2	25 µg/L	92.1	70	130	
		EP080: Toluene	108-88-3	25 µg/L	86.3	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	82.9	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	80.8	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	85.3	70	130	
EP080: Naphthalene	91-20-3	25 µg/L	101	70	130			

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3192516)											
ES1326082-009	BW_SS35	EP080-SD: C6 - C9 Fraction	----	6.5 mg/kg	90.1	----	70	130	----	----	
EP080-SD: BTEXN (QCLot: 3192516)											
ES1326082-009	BW_SS35	EP080-SD: Benzene	71-43-2	0.5 mg/kg	78.6	----	70	130	----	----	
		EP080-SD: Toluene	108-88-3	0.5 mg/kg	78.8	----	70	130	----	----	
		EP080-SD: Ethylbenzene	100-41-4	0.5 mg/kg	80.2	----	70	130	----	----	
		EP080-SD: meta- & para-Xylene	108-38-3	0.5 mg/kg	84.2	----	70	130	----	----	
			106-42-3								
EP080-SD: ortho-Xylene	95-47-6	0.5 mg/kg	83.2	----	70	130	----	----			
EP075(SIM)A: Phenolic Compounds (QCLot: 3192768)											
ES1326152-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	108	----	70	130	----	----	



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
EP075(SIM)A: Phenolic Compounds (QCLot: 3192768) - continued											
ES1326152-001	Anonymous	EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	107	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	112	----	60	130	----	----	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	99.2	----	70	130	----	----	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	51.4	----	20	130	----	----	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192969)											
ES1326190-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	111	----	70	130	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192969)											
ES1326190-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	100	----	70	130	----	----	
EP080: BTEXN (QCLot: 3192969)											
ES1326190-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	81.7	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	85.4	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	85.0	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	87.2	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	87.8	----	70	130	----	----	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	83.1	----	70	130	----	----		
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3196069)											
ES1326082-009	BW_SS35	EG035T-LL: Mercury	7439-97-6	0.050 mg/kg	81.7	----	70	130	----	----	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3196070)											
ES1326082-009	BW_SS35	EG020-SD: Arsenic	7440-38-2	50 mg/kg	95.0	----	70	130	----	----	
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	95.2	----	70	130	----	----	
		EG020-SD: Chromium	7440-47-3	50 mg/kg	97.5	----	70	130	----	----	
		EG020-SD: Copper	7440-50-8	125 mg/kg	81.6	----	70	130	----	----	
		EG020-SD: Lead	7439-92-1	125 mg/kg	98.7	----	70	130	----	----	
		EG020-SD: Nickel	7440-02-0	50 mg/kg	97.8	----	70	130	----	----	
		EG020-SD: Zinc	7440-66-6	125 mg/kg	86.2	----	70	130	----	----	
		EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3197940)									
ES1326082-009	BW_SS35	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	92.5	----	44	136	----	----	
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3197946)											
ES1326082-009	BW_SS35	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	72.6	----	70	130	----	----	
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	123	----	70	130	----	----	
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	87.1	----	70	130	----	----	
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	75.0	----	70	130	----	----	
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	83.6	----	70	130	----	----	
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	90.1	----	70	130	----	----	
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	89.1	----	70	130	----	----	
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	105	----	70	130	----	----	
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	83.9	----	70	130	----	----	



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3197946) - continued										
ES1326082-009	BW_SS35	EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	72.2	----	70	130	----	----
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	114	----	70	130	----	----
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	25 µg/kg	88.8	----	70	130	----	----
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	83.2	----	70	130	----	----
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	122	----	70	130	----	----
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	93.5	----	70	130	----	----
		EP132B-SD: Perylene	198-55-0	25 µg/kg	80.9	----	70	130	----	----
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	117	----	70	130	----	----
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	90.6	----	70	130	----	----
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	78.5	----	70	130	----	----
		EP132B-SD: Coronene	191-07-1	25 µg/kg	106	----	70	130	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3197947)										
ES1326082-009	BW_SS35	EP071-SD: C10 - C14 Fraction	----	19.75 mg/kg	91.1	----	70	130	----	----
		EP071-SD: C15 - C28 Fraction	----	87.25 mg/kg	86.1	----	70	130	----	----
		EP071-SD: C29 - C36 Fraction	----	60 mg/kg	123	----	70	130	----	----

Sub-Matrix: **WATER**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192001)										
ES1326081-019	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	99.3	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192001)										
ES1326081-019	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	100	----	70	130	----	----
EP080: BTEXN (QCLot: 3192001)										
ES1326081-019	Anonymous	EP080: Benzene	71-43-2	25 µg/L	92.1	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	86.3	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	82.9	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	80.8	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	25 µg/L	85.3	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	101	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3193040)										
ES1326082-001	BW_SS35	EG035T: Mercury	7439-97-6	0.010 mg/L	100	----	70	130	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3197390)										
ES1326082-002	BW_SS36	EG020A-T: Arsenic	7440-38-2	1 mg/L	113	----	70	130	----	----
		EG020A-T: Beryllium	7440-41-7	1 mg/L	104	----	70	130	----	----
		EG020A-T: Barium	7440-39-3	1 mg/L	110	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	110	----	70	130	----	----
		EG020A-T: Chromium	7440-47-3	1 mg/L	108	----	70	130	----	----



Sub-Matrix: **WATER**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
EG020T: Total Metals by ICP-MS (QCLot: 3197390) - continued										
ES1326082-002	BW_SS36	EG020A-T: Cobalt	7440-48-4	1 mg/L	104	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1 mg/L	112	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1 mg/L	106	----	70	130	----	----
		EG020A-T: Manganese	7439-96-5	1 mg/L	114	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1 mg/L	99.6	----	70	130	----	----
		EG020A-T: Vanadium	7440-62-2	1 mg/L	107	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1 mg/L	112	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1326082	Page	: 1 of 13
Amendment	: 2		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER		
C-O-C number	: ---	Date Samples Received	: 28-NOV-2013
Sampler	: T.ARMANI	Issue Date	: 30-DEC-2013
Order number	: 0224193		
Quote number	: SY/794/13	No. of samples received	: 18
		No. of samples analysed	: 18

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38, D01_261113_TA/S	26-NOV-2013	----	----	----	05-DEC-2013	10-DEC-2013	✓
EA150: Particle Sizing							
Snap Lock Bag (EA150H) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38,	26-NOV-2013	---	25-MAY-2014	----	10-DEC-2013	25-MAY-2014	✓
EA150: Soil Classification based on Particle Size							
Snap Lock Bag (EA150H) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38,	26-NOV-2013	---	25-MAY-2014	----	10-DEC-2013	25-MAY-2014	✓
EG020-SD: Total Metals in Sediments by ICPMS							
Soil Glass Jar - Unpreserved (EG020-SD) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38, D01_261113_TA/S	26-NOV-2013	05-DEC-2013	25-MAY-2014	✓	06-DEC-2013	25-MAY-2014	✓
EG020T: Total Metals by ICP-MS							
Soil Glass Jar - Unpreserved (EG020T) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38, D01_261113_TA/S	26-NOV-2013	05-DEC-2013	25-MAY-2014	✓	09-DEC-2013	25-MAY-2014	✓
EG020T: Total Metals by ICP-MS							
Soil Glass Jar - Unpreserved (EG020X-T) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38, D01_261113_TA/S	26-NOV-2013	05-DEC-2013	25-MAY-2014	✓	06-DEC-2013	25-MAY-2014	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Soil Glass Jar - Unpreserved (EG020Y-T) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38, D01_261113_TA/S	26-NOV-2013	05-DEC-2013	25-MAY-2014	✓	06-DEC-2013	25-MAY-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T-LL) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38, D01_261113_TA/S	26-NOV-2013	05-DEC-2013	24-DEC-2013	✓	09-DEC-2013	24-DEC-2013	✓
EP003: Total Organic Carbon (TOC) in Soil							
Pulp Bag (EP003) D01_261113_TA/S	26-DEC-2013	05-DEC-2013	23-JAN-2014	✓	09-DEC-2013	23-JAN-2014	✓
Pulp Bag (EP003) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38, D01_261113_TA/S	26-NOV-2013	05-DEC-2013	24-DEC-2013	✓	09-DEC-2013	24-DEC-2013	✓
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071-SD) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38, D01_261113_TA/S	26-NOV-2013	06-DEC-2013	10-DEC-2013	✓	09-DEC-2013	15-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075(SIM)) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38, D01_261113_TA/S	26-NOV-2013	06-DEC-2013	10-DEC-2013	✓	06-DEC-2013	15-JAN-2014	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) T/BLANK, TSC, T/SPIKE,	26-NOV-2013	05-DEC-2013	10-DEC-2013	✓	05-DEC-2013	10-DEC-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Soil Glass Jar - Unpreserved (EP080) T/BLANK	26-NOV-2013	05-DEC-2013	10-DEC-2013	✓	05-DEC-2013	10-DEC-2013	✓
EP080-SD: BTEXN							
Soil Glass Jar - Unpreserved (EP080-SD) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38, D01_261113_TA/S	26-NOV-2013	04-DEC-2013	10-DEC-2013	✓	09-DEC-2013	10-DEC-2013	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080-SD) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38, D01_261113_TA/S	26-NOV-2013	04-DEC-2013	10-DEC-2013	✓	09-DEC-2013	10-DEC-2013	✓
EP131B: Polychlorinated Biphenyls (as Aroclors)							
Soil Glass Jar - Unpreserved (EP131B) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38, D01_261113_TA/S	26-NOV-2013	06-DEC-2013	10-DEC-2013	✓	11-DEC-2013	15-JAN-2014	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP132B-SD) BW_SS35, BW_SS37, BW_SS39, BW_SS36, BW_SS38, D01_261113_TA/S	26-NOV-2013	06-DEC-2013	10-DEC-2013	✓	09-DEC-2013	15-JAN-2014	✓

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) BW_SS35, BW_SS37, BW_SS39, R01_261113_TA, BW_SS36, BW_SS38, D01_261113_TA/W,	26-NOV-2013	06-DEC-2013	25-MAY-2014	✓	06-DEC-2013	25-MAY-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) BW_SS35, BW_SS37, BW_SS39, R01_261113_TA, BW_SS36, BW_SS38, D01_261113_TA/W,	26-NOV-2013	----	----	----	04-DEC-2013	24-DEC-2013	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) BW_SS35, BW_SS37, BW_SS39, R01_261113_TA, BW_SS36, BW_SS38, D01_261113_TA/W,	26-NOV-2013	03-DEC-2013	03-DEC-2013	✓	09-DEC-2013	14-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM)) BW_SS35, BW_SS37, BW_SS39, R01_261113_TA, BW_SS36, BW_SS38, D01_261113_TA/W,	26-NOV-2013	03-DEC-2013	03-DEC-2013	✓	09-DEC-2013	14-JAN-2014	✓



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
BW_SS35, BW_SS37, BW_SS39,	BW_SS36, BW_SS38, D01_261113_TA/W	26-NOV-2013	03-DEC-2013	03-DEC-2013	✓	09-DEC-2013	14-JAN-2014	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
BW_SS35, BW_SS37, BW_SS39, T/BLANK, R01_261113_TA	BW_SS36, BW_SS38, D01_261113_TA/W, T/SPIKE,	26-NOV-2013	04-DEC-2013	10-DEC-2013	✓	04-DEC-2013	10-DEC-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Amber VOC Vial - Sulfuric Acid (EP080)								
BW_SS35, BW_SS37, BW_SS39, T/BLANK,	BW_SS36, BW_SS38, D01_261113_TA/W, R01_261113_TA	26-NOV-2013	04-DEC-2013	10-DEC-2013	✓	04-DEC-2013	10-DEC-2013	✓
EP131B: Polychlorinated Biphenyls (as Aroclors)								
Amber Glass Bottle - Unpreserved (EP131B)								
R01_261113_TA		26-NOV-2013	03-DEC-2013	03-DEC-2013	✓	06-DEC-2013	12-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP132-LL)								
R01_261113_TA		26-NOV-2013	03-DEC-2013	03-DEC-2013	✓	05-DEC-2013	14-JAN-2014	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	9	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	9	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	1	6	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	9	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	9	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Total Metals by ICP-MS	EG020T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Total Metals by ICP-MS	EG020T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Method Blanks (MB) - Continued							
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH Compounds in Water	EP132-LL	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH Compounds in Water	EP132-LL	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Page : 8 of 13
 Work Order : ES1326082 Amendment 2
 Client : ENVIRO RESOURCES MANAGEMENT
 Project : PROJECT SYMPHONY



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Matrix Spikes (MS) - Continued							
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Metals by ICP-MS	EG020T	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020) (ICPMS) Metals in solids are determined following an appropriate acid digestion. The ICPMS technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite X	EG020X-T	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite Y	EG020Y-T	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP003	SOIL	In-house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO ₂) is automatically measured by infra-red detector.
TPH - Semivolatile Fraction	EP071-SD	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
TPH Volatiles/BTEX in Sediments	EP080-SD	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PCB's (Ultra-trace)	EP131B	SOIL	USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/uECD/uECD) This technique is compliant with NEPM (2013) Schedule B(3) (Method 504)
PAHs in Sediments by GCMS(SIM)	EP132B-SD	SOIL	USEPA 8270 GCMS Capillary column, SIM mode using large volume programmed temperature vaporisation injection.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PCB's (Ultra-trace)	EP131B	WATER	USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/uECD/uECD). This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH Compounds in Water	EP132-LL	WATER	8270 GCMS, LVI, Capillary column, SIM mode. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na ₂ SO ₄ and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Tumbler Extraction of Solids for LVI (Non-concentrating)	ORG17D	SOIL	In house: 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 50mL 1:1 DCM/Acetone by end over end tumbling. An aliquot is concentrated by nitrogen blowdown to a reduced volume for analysis if required.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Sep. Funnel Extraction /Acetylation of Phenolic Compounds	ORG14-AC	WATER	USEPA 3510 (Extraction)/ In-house (Acetylation): A 1L sample is extracted into dichloromethane and concentrated to 1 mL with exchange into cyclohexane. Phenolic compounds are reacted with acetic anhydride to yield phenyl acetates suitable for ultra-trace analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Sep. Funnel Extraction of Liquids (Ultra-trace pesticides.)	ORG14-UTP	WATER	USEPA 3510 Samples are extracted into dichloromethane, concentrated and exchanged into an appropriate solvent for GPC and florisil cleanup as required. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)A: Phenolic Compounds	3811100-002	----	2,4-Dichlorophenol	120-83-2	112 %	68-112%	Recovery greater than upper control limit

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)A: Phenolic Compounds	3815243-007	----	2,4,5-Trichlorophenol	95-95-4	113 %	50-108%	Recovery greater than upper control limit
EP075(SIM)A: Phenolic Compounds	3815243-007	----	Pentachlorophenol	87-86-5	97.1 %	8.7-95%	Recovery greater than upper control limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3815243-007	----	Chrysene	218-01-9	117 %	62.5-116%	Recovery greater than upper control limit

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)T: PAH Surrogates	ES1326082-011	BW_SS37	2-Fluorobiphenyl	321-60-8	69.9 %	70-122 %	Recovery less than lower data quality objective

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	ES1326082-017	R01_261113_TA	Phenol-d6	13127-88-3	71.5 %	10.0-44 %	Recovery greater than upper data quality objective
EP075(SIM)T: PAH Surrogates	ES1326082-005	BW_SS39	2-Fluorobiphenyl	321-60-8	18.9 %	20-104 %	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.



Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

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

CHAIN OF CUSTODY
ALS Laboratory
please ink 3

CLIENT: ERM
OFFICE: Sydney
PROJECT: Project Symphony

TURNAROUND REQUIREMENTS: Standard TAT (List due date)
 Non Standard or Urgent TAT (List due date)

FOR LABORATORY USE ONLY (COC)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

RECEIVED BY: [Signature]
DATE/TIME: 24/11/13 19:00

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to code below)	CONTAINER INFORMATION TOTAL CONTAINERS	ANALYSIS REQUIRED INCLUDING SUITES (NB. Suite Codes must be typed to attend suite price) Where Matrix are required, specify Total (ultrafined bottle required) or Disposed (fold filtered bottle required).	ADDITIONAL INFORMATION
	23 DOL 21113-INS		S			BTX (EP09-SD) X TPH (EP07-SD) X PAH (EP12-SD) X Phenols (EP07-5M) X PSD (Hydromat) X TOC (EP03) X PCB (EP13B) X	Comments on likely contamination, leach, dilution, or samples requiring specific COC analysis etc.
	24 T/BLANC						
	25 T/SPIKE						TRUBIEX BIEX
	26 TSC						

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; DRG = Nitric Preserved DRG; SH = Sodium Hydroxide/Cl Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amion Glass Unpreserved; AP = Alirogth Unpreserved Plastic
V = VOA Vol HCl Preserved; VB = VOA Vol Sodium Borohydride Preserved; VS = VOA Vol Sulfide Preserved; AV = Alirogth Unpreserved Vol SO = Sulfide Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Spectralon Bottle; SP = Sulfide Preserved Plastic; F = Formaldhyde Preserved Glass
E = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ET = Sterile Bottle; ASS = Plastic Bag for Acid Substrate; SB = Unpreserved Bag

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: ES1326083		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact Address	: MR JOSEPH FERRING 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Contact Address	: Barbara Hanna 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	Page	: 1 of 4
Order number	: 0224193	Quote number	: ES2013ENVRES0369 (SY/794/13)
C-O-C number	: ----	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER		
Sampler	: TA		

Dates

Date Samples Received	: 29-NOV-2013	Issue Date	: 03-DEC-2013 09:15
Client Requested Due Date	: 10-DEC-2013	Scheduled Reporting Date	: 10-DEC-2013

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.7°C SYD - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 26
Security Seal	: Intact.	No. of samples analysed	: 26

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Total Organic Carbon (TOC) in soil analysis will be conducted by ALS Brisbane.**
- **Particle Sizing analysis will be conducted by ALS Newcastle.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP075 SIM Phenols only SIM - Phenols only	SOIL - EP080 BTEXN	SOIL - EP080-SD TRH(V)/BTEXN in Sediments	SOIL - EP131B PCBs (Ultratrace)	SOIL - EP132B-SD Ultra-trace PAHs in Sediments	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs
ES1326083-001	27-NOV-2013 15:00	BW_SS40	✓		✓	✓	✓	
ES1326083-002	27-NOV-2013 15:00	BW_SS41	✓		✓	✓	✓	
ES1326083-003	27-NOV-2013 15:00	BW_SS42	✓		✓	✓	✓	
ES1326083-004	27-NOV-2013 15:00	BW_SS43	✓		✓	✓	✓	
ES1326083-005	27-NOV-2013 15:00	BW_SS45	✓		✓	✓	✓	
ES1326083-006	27-NOV-2013 15:00	BW_SS46	✓		✓	✓	✓	
ES1326083-007	27-NOV-2013 15:00	BW_SS47	✓		✓	✓	✓	
ES1326083-008	27-NOV-2013 15:00	BW_SS48	✓		✓	✓	✓	
ES1326083-009	27-NOV-2013 15:00	BW_SS49	✓		✓	✓	✓	
ES1326083-010	27-NOV-2013 15:00	BW_SS50	✓		✓	✓	✓	
ES1326083-011	27-NOV-2013 15:00	BW_SS51	✓		✓	✓	✓	
ES1326083-012	27-NOV-2013 15:00	BW_SS52	✓		✓	✓	✓	
ES1326083-013	27-NOV-2013 15:00	BW_SS53	✓		✓	✓	✓	
ES1326083-014	27-NOV-2013 15:00	BW_SS54	✓		✓	✓	✓	
ES1326083-015	27-NOV-2013 15:00	BW_SS11	✓		✓	✓	✓	
ES1326083-016	27-NOV-2013 15:00	BW_SS12	✓		✓	✓	✓	
ES1326083-017	27-NOV-2013 15:00	BW_SS13	✓		✓	✓	✓	
ES1326083-018	27-NOV-2013 15:00	BW_SS14	✓		✓	✓	✓	
ES1326083-019	27-NOV-2013 15:00	BW_SS15	✓		✓	✓	✓	
ES1326083-020	27-NOV-2013 15:00	BW_SS16	✓		✓	✓	✓	
ES1326083-021	27-NOV-2013 15:00	BW_SS17	✓		✓	✓	✓	
ES1326083-022	27-NOV-2013 15:00	BW_SS18	✓		✓	✓	✓	
ES1326083-023	27-NOV-2013 15:00	D01_271113_TA/S	✓		✓	✓	✓	
ES1326083-024	22-NOV-2013 15:00	T/BLANK						✓
ES1326083-025	22-NOV-2013 15:00	T/SPIKE		✓				
ES1326083-026	22-NOV-2013 15:00	TSC		✓				

Proactive Holding Time Report

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



Requested Deliverables

SYMPHONY ERARING

- *AU Certificate of Analysis - NATA (COA)	Email	Symphony.Eraring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Symphony.Eraring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Symphony.Eraring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN	Email	Symphony.Eraring@erm.com
- A4 - AU Tax Invoice (INV)	Email	Symphony.Eraring@erm.com
- Attachment - Report (SUBCO)	Email	Symphony.Eraring@erm.com
- Chain of Custody (CoC) (COC)	Email	Symphony.Eraring@erm.com
- EDI Format - ENMRG (ENMRG)	Email	Symphony.Eraring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	Symphony.Eraring@erm.com
- EDI Format - ESDAT (ESDAT)	Email	Symphony.Eraring@erm.com
- EDI Format - XTab (XTAB)	Email	Symphony.Eraring@erm.com

SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA (COA)	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN	Email	symphony.macgen@erm.com
- Attachment - Report (SUBCO)	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) (COC)	Email	symphony.macgen@erm.com
- EDI Format - ENMRG (ENMRG)	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	symphony.macgen@erm.com
- EDI Format - ESDAT (ESDAT)	Email	symphony.macgen@erm.com
- EDI Format - XTab (XTAB)	Email	symphony.macgen@erm.com

THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
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CERTIFICATE OF ANALYSIS

Work Order	: ES1326083	Page	: 1 of 25
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224193	Date Samples Received	: 29-NOV-2013
C-O-C number	: ----	Issue Date	: 16-DEC-2013
Sampler	: TA	No. of samples received	: 26
Site	: BAYSWATER	No. of samples analysed	: 26
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



General Comments

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

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

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

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

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

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

LOR = Limit of reporting

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

- **EA150H: Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1-2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently NATA endorsement does not apply to hydrometer results.**
- **EG020T: Poor precision was obtained for Manganese on sample ES1326164 # 003 due to sample heterogeneity. Results have been confirmed by re-extraction and reanalysis.**
- **EP132B-SD : Particular samples required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly.**



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
		Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics
SATISH.TRIVEDI	2 IC Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	BW_SS40	BW_SS41	BW_SS42	BW_SS43	BW_SS45
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
				ES1326083-001	ES1326083-002	ES1326083-003	ES1326083-004	ES1326083-005
EA150: Particle Sizing								
+75µm	----	1	%	45	38	41	25	93
+150µm	----	1	%	23	26	28	13	91
+300µm	----	1	%	9	18	19	8	82
+425µm	----	1	%	5	14	14	5	74
+600µm	----	1	%	3	10	10	3	62
+1180µm	----	1	%	2	4	4	1	40
+2.36mm	----	1	%	1	2	1	<1	22
+4.75mm	----	1	%	<1	<1	<1	<1	11
+9.5mm	----	1	%	<1	<1	<1	<1	1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	42.1	52.5	43.0	42.6	31.4
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	9	11	10	12	5
Silt (2-60 µm)	----	1	%	38	44	36	63	2
Sand (0.06-2.00 mm)	----	1	%	52	43	53	25	71
Gravel (>2mm)	----	1	%	1	2	1	<1	22
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EG020-SD: Total Metals in Sediments by ICPMS								
Arsenic	7440-38-2	1.00	mg/kg	17.4	29.3	9.46	12.6	7.37
Cadmium	7440-43-9	0.1	mg/kg	0.1	0.2	<0.1	0.1	<0.1
Chromium	7440-47-3	1.0	mg/kg	19.6	49.5	10.9	15.9	1.1
Copper	7440-50-8	1.0	mg/kg	92.9	71.6	64.6	62.8	10.3
Cobalt	7440-48-4	0.5	mg/kg	3.9	6.6	2.9	3.7	1.1
Lead	7439-92-1	1.0	mg/kg	5.4	9.1	4.6	6.0	3.4
Manganese	7439-96-5	10	mg/kg	158	302	148	137	192
Nickel	7440-02-0	1.0	mg/kg	16.3	16.9	12.9	12.6	3.2
Selenium	7782-49-2	0.1	mg/kg	15.3	45.2	8.7	13.7	1.4
Vanadium	7440-62-2	2.0	mg/kg	47.8	126	25.5	47.2	11.2
Zinc	7440-66-6	1.0	mg/kg	35.8	40.9	24.9	27.6	21.6

EG020T: Total Metals by ICP-MS



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS40	BW_SS41	BW_SS42	BW_SS43	BW_SS45
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-001	ES1326083-002	ES1326083-003	ES1326083-004	ES1326083-005
EG020T: Total Metals by ICP-MS - Continued								
Barium	7440-39-3	0.1	mg/kg	152	268	119	93.5	26.4
Thallium	7440-28-0	0.1	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	0.4	0.6	0.3	0.3	0.3
Boron	7440-42-8	5	mg/kg	8	9	8	9	<5
Molybdenum	7439-98-7	0.1	mg/kg	6.3	19.8	3.2	8.1	2.8
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.08	0.06	0.04	0.05	0.02
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	1.18	1.34	1.29	2.29	61.9
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<2	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg	<3	<3	<3	4	88
C15 - C28 Fraction	----	3	mg/kg	26	24	68	73	874
C29 - C36 Fraction	----	5	mg/kg	26	25	54	64	359
^ C10 - C36 Fraction (sum)	----	3	mg/kg	52	49	122	141	1320
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS40	BW_SS41	BW_SS42	BW_SS43	BW_SS45
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-001	ES1326083-002	ES1326083-003	ES1326083-004	ES1326083-005
EP080-SD: BTEXN - Continued								
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	12	20	19	14	1260
2-Methylnaphthalene	91-57-6	5	µg/kg	18	32	29	27	2260
Acenaphthylene	208-96-8	4	µg/kg	<4	<5	<4	<4	86
Acenaphthene	83-32-9	4	µg/kg	<4	44	39	37	387
Fluorene	86-73-7	4	µg/kg	11	13	14	18	578
Phenanthrene	85-01-8	4	µg/kg	43	74	49	57	4990
Anthracene	120-12-7	4	µg/kg	7	7	5	9	408
Fluoranthene	206-44-0	4	µg/kg	40	56	46	65	7980
Pyrene	129-00-0	4	µg/kg	28	91	74	81	4420
Benz(a)anthracene	56-55-3	4	µg/kg	31	40	36	47	3510
Chrysene	218-01-9	4	µg/kg	23	32	28	36	3250
Benzo(b)fluoranthene	205-99-2	4	µg/kg	25	38	28	38	3470
Benzo(k)fluoranthene	207-08-9	4	µg/kg	9	9	10	16	1160
Benzo(e)pyrene	192-97-2	4	µg/kg	20	27	21	33	1920
Benzo(a)pyrene	50-32-8	4	µg/kg	16	20	18	23	1040
Perylene	198-55-0	4	µg/kg	146	111	156	242	160
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	21	26	21	36	1020
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	<5	<4	5	288
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	9	12	10	15	635



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS40	BW_SS41	BW_SS42	BW_SS43	BW_SS45
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-001	ES1326083-002	ES1326083-003	ES1326083-004	ES1326083-005
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Coronene	191-07-1	5	µg/kg	11	13	12	19	290
^ Sum of PAHs	----	4	µg/kg	470	665	615	818	39100
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	106	93.7	99.4	101	93.1
2-Chlorophenol-D4	93951-73-6	0.1	%	120	106	107	110	104
2,4,6-Tribromophenol	118-79-6	0.1	%	124	114	120	121	107
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	114	101	106	105	107
Anthracene-d10	1719-06-8	0.1	%	100	89.4	93.3	92.4	90.5
4-Terphenyl-d14	1718-51-0	0.1	%	111	97.2	101	101	100
EP080-SD: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	112	113	109	109	98.6
Toluene-D8	2037-26-5	0.1	%	104	105	102	102	89.7
4-Bromofluorobenzene	460-00-4	0.1	%	113	114	107	105	86.5
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	71.9	56.2	47.5	42.5	66.9
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	98.9	96.7	84.3	88.4	112
Anthracene-d10	1719-06-8	0.1	%	90.6	87.4	80.4	81.3	123
4-Terphenyl-d14	1718-51-0	0.1	%	93.1	98.5	80.5	85.8	94.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	BW_SS46	BW_SS47	BW_SS48	BW_SS49	BW_SS50
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
				ES1326083-006	ES1326083-007	ES1326083-008	ES1326083-009	ES1326083-010
EA150: Particle Sizing								
+75µm	----	1	%	93	90	30	29	44
+150µm	----	1	%	92	87	16	18	15
+300µm	----	1	%	87	74	11	4	2
+425µm	----	1	%	82	64	10	1	<1
+600µm	----	1	%	77	54	9	<1	<1
+1180µm	----	1	%	67	35	8	<1	<1
+2.36mm	----	1	%	57	21	5	<1	<1
+4.75mm	----	1	%	50	12	2	<1	<1
+9.5mm	----	1	%	41	4	<1	<1	<1
+19.0mm	----	1	%	25	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	29.7	40.0	39.8	58.2	48.4
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	5	7	25	19	20
Silt (2-60 µm)	----	1	%	1	2	33	52	35
Sand (0.06-2.00 mm)	----	1	%	37	70	37	29	45
Gravel (>2mm)	----	1	%	57	21	5	<1	<1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EG020-SD: Total Metals in Sediments by ICPMS								
Arsenic	7440-38-2	1.00	mg/kg	21.0	15.1	18.1	17.8	20.1
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	0.1	0.1
Chromium	7440-47-3	1.0	mg/kg	2.9	2.9	13.4	13.6	10.8
Copper	7440-50-8	1.0	mg/kg	19.4	33.7	44.3	104	110
Cobalt	7440-48-4	0.5	mg/kg	3.1	2.9	6.4	7.4	7.4
Lead	7439-92-1	1.0	mg/kg	6.5	4.5	7.9	9.9	11.2
Manganese	7439-96-5	10	mg/kg	748	257	179	417	422
Nickel	7440-02-0	1.0	mg/kg	9.6	14.2	23.2	24.7	23.2
Selenium	7782-49-2	0.1	mg/kg	3.5	3.2	4.0	6.5	7.3
Vanadium	7440-62-2	2.0	mg/kg	46.7	32.0	53.1	63.1	61.1
Zinc	7440-66-6	1.0	mg/kg	33.1	23.9	35.0	49.9	63.8

EG020T: Total Metals by ICP-MS



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS46	BW_SS47	BW_SS48	BW_SS49	BW_SS50
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-006	ES1326083-007	ES1326083-008	ES1326083-009	ES1326083-010
EG020T: Total Metals by ICP-MS - Continued								
Barium	7440-39-3	0.1	mg/kg	85.5	47.3	173	143	136
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	0.5	0.5	0.7	0.6	0.6
Boron	7440-42-8	5	mg/kg	6	8	10	12	12
Molybdenum	7439-98-7	0.1	mg/kg	18.5	6.5	2.6	5.2	4.6
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.03	0.02	0.07	0.10	0.16
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	44.8	49.8	13.5	24.6	32.2
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<2	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg	57	74	37	47	54
C15 - C28 Fraction	----	3	mg/kg	508	920	515	664	755
C29 - C36 Fraction	----	5	mg/kg	203	443	299	433	422
C10 - C36 Fraction (sum)	----	3	mg/kg	768	1440	851	1140	1230
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS46	BW_SS47	BW_SS48	BW_SS49	BW_SS50
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-006	ES1326083-007	ES1326083-008	ES1326083-009	ES1326083-010
EP080-SD: BTEXN - Continued								
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	422	705	149	279	324
2-Methylnaphthalene	91-57-6	5	µg/kg	722	1210	262	462	622
Acenaphthylene	208-96-8	4	µg/kg	42	74	<25	<50	58
Acenaphthene	83-32-9	4	µg/kg	138	343	136	218	319
Fluorene	86-73-7	4	µg/kg	277	411	140	233	324
Phenanthrene	85-01-8	4	µg/kg	2250	3790	788	1220	2120
Anthracene	120-12-7	4	µg/kg	188	400	105	168	288
Fluoranthene	206-44-0	4	µg/kg	3100	5660	1770	2760	4020
Pyrene	129-00-0	4	µg/kg	1720	3290	1130	1850	2640
Benz(a)anthracene	56-55-3	4	µg/kg	1300	2520	1050	1630	1960
Chrysene	218-01-9	4	µg/kg	1280	2380	739	1150	1850
Benzo(b)fluoranthene	205-99-2	4	µg/kg	1370	1940	618	956	1210
Benzo(k)fluoranthene	207-08-9	4	µg/kg	364	478	185	261	282
Benzo(e)pyrene	192-97-2	4	µg/kg	762	1420	389	585	713
Benzo(a)pyrene	50-32-8	4	µg/kg	483	813	320	507	561
Perylene	198-55-0	4	µg/kg	57	95	100	577	223
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	491	705	301	464	513
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	142	207	73	115	131
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	294	402	159	245	282



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS46	BW_SS47	BW_SS48	BW_SS49	BW_SS50
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-006	ES1326083-007	ES1326083-008	ES1326083-009	ES1326083-010
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Coronene	191-07-1	5	µg/kg	179	235	104	179	184
^ Sum of PAHs	----	4	µg/kg	15600	27100	8520	13800	18600
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	92.7	97.9	97.3	98.5	98.7
2-Chlorophenol-D4	93951-73-6	0.1	%	102	108	107	109	109
2,4,6-Tribromophenol	118-79-6	0.1	%	99.7	103	114	112	108
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	102	112	105	106	108
Anthracene-d10	1719-06-8	0.1	%	85.3	92.5	90.7	91.8	90.5
4-Terphenyl-d14	1718-51-0	0.1	%	94.6	102	98.8	99.2	99.5
EP080-SD: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	117	110	109	106	97.0
Toluene-D8	2037-26-5	0.1	%	105	99.8	98.6	95.0	82.7
4-Bromofluorobenzene	460-00-4	0.1	%	107	100	101	90.5	76.8
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	66.2	81.2	57.5	86.2	87.5
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	87.8	116	103	96.6	108
Anthracene-d10	1719-06-8	0.1	%	99.8	105	108	102	119
4-Terphenyl-d14	1718-51-0	0.1	%	120	99.5	99.6	108	99.6



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	BW_SS51	BW_SS52	BW_SS53	BW_SS54	BW_SS11
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
				ES1326083-011	ES1326083-012	ES1326083-013	ES1326083-014	ES1326083-015
EA150: Particle Sizing								
+75µm	----	1	%	4	12	3	29	9
+150µm	----	1	%	<1	3	<1	6	3
+300µm	----	1	%	<1	2	<1	2	2
+425µm	----	1	%	<1	2	<1	1	2
+600µm	----	1	%	<1	2	<1	<1	2
+1180µm	----	1	%	<1	1	<1	<1	1
+2.36mm	----	1	%	<1	1	<1	<1	<1
+4.75mm	----	1	%	<1	<1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	66.1	33.0	67.7	39.4	51.7
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	26	40	28	15	22
Silt (2-60 µm)	----	1	%	68	38	69	48	61
Sand (0.06-2.00 mm)	----	1	%	6	21	3	37	16
Gravel (>2mm)	----	1	%	<1	1	<1	<1	1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EG020-SD: Total Metals in Sediments by ICPMS								
Arsenic	7440-38-2	1.00	mg/kg	23.4	10.4	20.0	15.0	17.2
Cadmium	7440-43-9	0.1	mg/kg	0.1	<0.1	0.1	<0.1	0.1
Chromium	7440-47-3	1.0	mg/kg	23.7	18.6	21.1	7.0	15.2
Copper	7440-50-8	1.0	mg/kg	160	18.3	168	53.2	128
Cobalt	7440-48-4	0.5	mg/kg	11.2	5.0	9.4	4.4	7.4
Lead	7439-92-1	1.0	mg/kg	13.6	10.1	13.3	8.3	9.3
Manganese	7439-96-5	10	mg/kg	594	98	464	179	325
Nickel	7440-02-0	1.0	mg/kg	36.3	11.2	33.0	13.9	22.4
Selenium	7782-49-2	0.1	mg/kg	9.6	1.5	10.0	4.8	5.6
Vanadium	7440-62-2	2.0	mg/kg	97.8	49.2	98.1	38.5	65.7
Zinc	7440-66-6	1.0	mg/kg	66.6	20.8	62.0	39.3	56.0

EG020T: Total Metals by ICP-MS



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS51	BW_SS52	BW_SS53	BW_SS54	BW_SS11
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-011	ES1326083-012	ES1326083-013	ES1326083-014	ES1326083-015
EG020T: Total Metals by ICP-MS - Continued								
Barium	7440-39-3	0.1	mg/kg	179	80.4	170	107	133
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	0.9	0.7	0.8	0.5	0.6
Boron	7440-42-8	5	mg/kg	15	<5	14	12	10
Molybdenum	7439-98-7	0.1	mg/kg	7.4	2.8	7.2	3.7	4.7
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.12	0.02	0.12	0.08	0.32
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	9.24	2.41	8.88	29.4	11.0
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.8	<0.5	<0.8	<0.5	<0.8
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.8	<0.5	<0.8	<0.5	<0.8
2-Methylphenol	95-48-7	0.5	mg/kg	<0.8	<0.5	<0.8	<0.5	<0.8
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<2	<1	<2	<1	<2
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.8	<0.5	<0.8	<0.5	<0.8
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.8	<0.5	<0.8	<0.5	<0.8
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.8	<0.5	<0.8	<0.5	<0.8
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.8	<0.5	<0.8	<0.5	<0.8
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.8	<0.5	<0.8	<0.5	<0.8
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.8	<0.5	<0.8	<0.5	<0.8
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.8	<0.5	<0.8	<0.5	<0.8
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg	16	4	22	62	24
C15 - C28 Fraction	----	3	mg/kg	301	54	374	761	371
C29 - C36 Fraction	----	5	mg/kg	252	51	316	415	244
^ C10 - C36 Fraction (sum)	----	3	mg/kg	569	109	712	1240	639
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS51	BW_SS52	BW_SS53	BW_SS54	BW_SS11
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-011	ES1326083-012	ES1326083-013	ES1326083-014	ES1326083-015
EP080-SD: BTEXN - Continued								
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	168	31	159	349	152
2-Methylnaphthalene	91-57-6	5	µg/kg	268	53	254	806	280
Acenaphthylene	208-96-8	4	µg/kg	<50	5	<50	74	<50
Acenaphthene	83-32-9	4	µg/kg	72	52	94	373	97
Fluorene	86-73-7	4	µg/kg	160	31	156	370	137
Phenanthrene	85-01-8	4	µg/kg	577	170	580	2550	788
Anthracene	120-12-7	4	µg/kg	67	22	65	301	85
Fluoranthene	206-44-0	4	µg/kg	858	267	910	4850	1360
Pyrene	129-00-0	4	µg/kg	562	211	604	3110	830
Benz(a)anthracene	56-55-3	4	µg/kg	607	213	619	2620	973
Chrysene	218-01-9	4	µg/kg	432	156	456	2080	656
Benzo(b)fluoranthene	205-99-2	4	µg/kg	573	160	676	2330	970
Benzo(k)fluoranthene	207-08-9	4	µg/kg	245	51	278	477	237
Benzo(e)pyrene	192-97-2	4	µg/kg	312	100	356	1360	473
Benzo(a)pyrene	50-32-8	4	µg/kg	330	88	<50	1000	394
Perylene	198-55-0	4	µg/kg	821	91	1140	414	582
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	106	86	<50	861	146
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<50	19	<50	219	<50
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	52	43	<50	493	70



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS51	BW_SS52	BW_SS53	BW_SS54	BW_SS11
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-011	ES1326083-012	ES1326083-013	ES1326083-014	ES1326083-015
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Coronene	191-07-1	5	µg/kg	<50	27	<50	300	<50
^ Sum of PAHs	----	4	µg/kg	6210	1880	6350	24900	8230
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	105	102	99.0	90.4	89.3
2-Chlorophenol-D4	93951-73-6	0.1	%	114	111	109	100	101
2,4,6-Tribromophenol	118-79-6	0.1	%	125	118	114	96.7	107
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	109	107	106	100	99.9
Anthracene-d10	1719-06-8	0.1	%	96.4	94.2	93.4	85.9	86.4
4-Terphenyl-d14	1718-51-0	0.1	%	104	103	102	93.8	93.4
EP080-SD: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	106	83.6	100	96.8	110
Toluene-D8	2037-26-5	0.1	%	99.8	92.8	91.8	84.5	97.9
4-Bromofluorobenzene	460-00-4	0.1	%	95.7	98.4	93.6	88.0	99.7
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	66.9	66.2	45.0	87.5	39.1
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	108	108	95.3	122	83.9
Anthracene-d10	1719-06-8	0.1	%	109	104	106	96.9	92.9
4-Terphenyl-d14	1718-51-0	0.1	%	100	102	110	85.3	94.7



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	BW_SS12	BW_SS13	BW_SS14	BW_SS15	BW_SS16
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
				ES1326083-016	ES1326083-017	ES1326083-018	ES1326083-019	ES1326083-020
EA150: Particle Sizing								
+75µm	----	1	%	3	23	20	54	18
+150µm	----	1	%	<1	4	9	47	10
+300µm	----	1	%	<1	2	4	37	8
+425µm	----	1	%	<1	2	3	34	8
+600µm	----	1	%	<1	1	3	31	7
+1180µm	----	1	%	<1	<1	2	27	6
+2.36mm	----	1	%	<1	<1	<1	24	5
+4.75mm	----	1	%	<1	<1	<1	19	4
+9.5mm	----	1	%	<1	<1	<1	16	<1
+19.0mm	----	1	%	<1	<1	<1	7	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	49.6	32.4	61.2	33.9	51.4
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	14	12	15	14	22
Silt (2-60 µm)	----	1	%	73	53	63	32	54
Sand (0.06-2.00 mm)	----	1	%	13	35	21	30	19
Gravel (>2mm)	----	1	%	<1	<1	1	24	5
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EG020-SD: Total Metals in Sediments by ICPMS								
Arsenic	7440-38-2	1.00	mg/kg	14.4	11.8	3.89	5.36	22.2
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Chromium	7440-47-3	1.0	mg/kg	16.0	8.5	6.8	10.2	16.0
Copper	7440-50-8	1.0	mg/kg	49.7	17.1	8.7	9.1	97.2
Cobalt	7440-48-4	0.5	mg/kg	9.7	5.8	3.6	6.7	7.9
Lead	7439-92-1	1.0	mg/kg	5.9	3.9	10.3	7.4	14.8
Manganese	7439-96-5	10	mg/kg	452	189	254	580	306
Nickel	7440-02-0	1.0	mg/kg	26.2	13.8	9.2	10.6	19.6
Selenium	7782-49-2	0.1	mg/kg	3.6	2.1	0.7	0.7	6.9
Vanadium	7440-62-2	2.0	mg/kg	55.2	28.0	16.2	25.6	74.7
Zinc	7440-66-6	1.0	mg/kg	31.9	14.5	25.7	49.9	53.2

EG020T: Total Metals by ICP-MS



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS12	BW_SS13	BW_SS14	BW_SS15	BW_SS16
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-016	ES1326083-017	ES1326083-018	ES1326083-019	ES1326083-020
EG020T: Total Metals by ICP-MS - Continued								
Barium	7440-39-3	0.1	mg/kg	115	59.1	58.3	51.9	121
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	0.5	0.4	0.2	0.4	0.8
Boron	7440-42-8	5	mg/kg	8	<5	33	5	7
Molybdenum	7439-98-7	0.1	mg/kg	1.7	2.3	0.6	0.7	4.6
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.08	0.04	0.01	0.02	0.23
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	5.30	1.37	1.38	1.28	4.38
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.8
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.8
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.8
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<2	<1	<2
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.8
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.8
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.8
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.8
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.8
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.8
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.8
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg	13	5	4	4	6
C15 - C28 Fraction	----	3	mg/kg	211	44	61	76	145
C29 - C36 Fraction	----	5	mg/kg	171	40	99	71	106
^ C10 - C36 Fraction (sum)	----	3	mg/kg	395	89	164	151	257
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS12	BW_SS13	BW_SS14	BW_SS15	BW_SS16
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-016	ES1326083-017	ES1326083-018	ES1326083-019	ES1326083-020
EP080-SD: BTEXN - Continued								
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	67	22	20	27	82
2-Methylnaphthalene	91-57-6	5	µg/kg	122	38	39	67	182
Acenaphthylene	208-96-8	4	µg/kg	9	<4	<5	4	16
Acenaphthene	83-32-9	4	µg/kg	66	46	89	74	46
Fluorene	86-73-7	4	µg/kg	59	17	16	13	95
Phenanthrene	85-01-8	4	µg/kg	271	84	81	134	370
Anthracene	120-12-7	4	µg/kg	33	9	10	11	42
Fluoranthene	206-44-0	4	µg/kg	356	116	115	168	457
Pyrene	129-00-0	4	µg/kg	278	117	148	155	324
Benz(a)anthracene	56-55-3	4	µg/kg	279	93	95	133	336
Chrysene	218-01-9	4	µg/kg	184	69	72	113	253
Benzo(b)fluoranthene	205-99-2	4	µg/kg	210	69	75	118	232
Benzo(k)fluoranthene	207-08-9	4	µg/kg	61	25	36	41	50
Benzo(e)pyrene	192-97-2	4	µg/kg	161	39	45	94	182
Benzo(a)pyrene	50-32-8	4	µg/kg	125	42	51	60	111
Perylene	198-55-0	4	µg/kg	380	77	46	25	210
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	115	35	38	64	124
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	41	8	7	20	44
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	63	19	25	34	59



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS12	BW_SS13	BW_SS14	BW_SS15	BW_SS16
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-016	ES1326083-017	ES1326083-018	ES1326083-019	ES1326083-020
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Coronene	191-07-1	5	µg/kg	35	11	12	19	39
^ Sum of PAHs	----	4	µg/kg	2920	936	1020	1370	3250
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	107	99.2	98.3	98.5	98.3
2-Chlorophenol-D4	93951-73-6	0.1	%	116	108	106	107	107
2,4,6-Tribromophenol	118-79-6	0.1	%	123	119	113	116	115
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	112	102	102	104	105
Anthracene-d10	1719-06-8	0.1	%	98.5	89.4	89.9	92.3	90.0
4-Terphenyl-d14	1718-51-0	0.1	%	101	91.4	92.0	93.9	92.4
EP080-SD: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	114	123	121	125	122
Toluene-D8	2037-26-5	0.1	%	106	112	111	119	105
4-Bromofluorobenzene	460-00-4	0.1	%	112	119	121	130	115
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	57.5	65.0	48.8	65.0	46.2
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	104	109	98.5	117	92.5
Anthracene-d10	1719-06-8	0.1	%	96.3	97.0	86.7	103	83.8
4-Terphenyl-d14	1718-51-0	0.1	%	84.1	81.0	85.6	84.4	90.4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS17	BW_SS18	D01_271113_TA/S	T/BLANK	T/SPIKE
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-021	ES1326083-022	ES1326083-023	ES1326083-024	ES1326083-025
EA150: Particle Sizing								
+75µm	----	1	%	11	42	----	----	----
+150µm	----	1	%	6	22	----	----	----
+300µm	----	1	%	4	12	----	----	----
+425µm	----	1	%	4	10	----	----	----
+600µm	----	1	%	3	9	----	----	----
+1180µm	----	1	%	2	6	----	----	----
+2.36mm	----	1	%	2	4	----	----	----
+4.75mm	----	1	%	<1	2	----	----	----
+9.5mm	----	1	%	<1	<1	----	----	----
+19.0mm	----	1	%	<1	<1	----	----	----
+37.5mm	----	1	%	<1	<1	----	----	----
+75.0mm	----	1	%	<1	<1	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	39.6	31.4	45.3	----	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	25	16	----	----	----
Silt (2-60 µm)	----	1	%	56	34	----	----	----
Sand (0.06-2.00 mm)	----	1	%	17	46	----	----	----
Gravel (>2mm)	----	1	%	2	4	----	----	----
Cobbles (>6cm)	----	1	%	<1	<1	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Arsenic	7440-38-2	1.00	mg/kg	16.5	17.3	14.4	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.2	0.1	----	----
Chromium	7440-47-3	1.0	mg/kg	12.8	16.4	16.6	----	----
Copper	7440-50-8	1.0	mg/kg	48.2	34.2	62.8	----	----
Cobalt	7440-48-4	0.5	mg/kg	6.2	6.0	3.2	----	----
Lead	7439-92-1	1.0	mg/kg	11.7	13.1	5.4	----	----
Manganese	7439-96-5	10	mg/kg	178	119	123	----	----
Nickel	7440-02-0	1.0	mg/kg	17.0	17.3	12.6	----	----
Selenium	7782-49-2	0.1	mg/kg	3.7	2.2	16.2	----	----
Vanadium	7440-62-2	2.0	mg/kg	54.7	52.0	40.0	----	----
Zinc	7440-66-6	1.0	mg/kg	49.5	65.4	32.7	----	----

EG020T: Total Metals by ICP-MS



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS17	BW_SS18	D01_271113_TA/S	T/BLANK	T/SPIKE
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-021	ES1326083-022	ES1326083-023	ES1326083-024	ES1326083-025
EG020T: Total Metals by ICP-MS - Continued								
Barium	7440-39-3	0.1	mg/kg	81.2	192	113	----	----
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
Beryllium	7440-41-7	0.1	mg/kg	0.6	0.6	0.3	----	----
Boron	7440-42-8	5	mg/kg	6	10	6	----	----
Molybdenum	7439-98-7	0.1	mg/kg	3.7	4.3	6.8	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.07	0.03	0.11	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	3.08	3.45	1.18	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	6.9
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	0.9
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	5.0
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	2.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS17	BW_SS18	D01_271113_TA/S	T/BLANK	T/SPIKE
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-021	ES1326083-022	ES1326083-023	ES1326083-024	ES1326083-025
EP080: BTEXN - Continued								
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	7.1
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	14.9
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	<1
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	----	----
C10 - C14 Fraction	----	3	mg/kg	6	7	4	----	----
C15 - C28 Fraction	----	3	mg/kg	115	209	48	----	----
C29 - C36 Fraction	----	5	mg/kg	93	162	47	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg	214	378	99	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	----	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	12	12	6	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg	22	23	7	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS17	BW_SS18	D01_271113_TA/S	T/BLANK	T/SPIKE
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-021	ES1326083-022	ES1326083-023	ES1326083-024	ES1326083-025
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	4	µg/kg	<4	<4	<4	----	----
Acenaphthene	83-32-9	4	µg/kg	6	5	<4	----	----
Fluorene	86-73-7	4	µg/kg	13	11	6	----	----
Phenanthrene	85-01-8	4	µg/kg	48	48	22	----	----
Anthracene	120-12-7	4	µg/kg	8	6	<4	----	----
Fluoranthene	206-44-0	4	µg/kg	60	42	19	----	----
Pyrene	129-00-0	4	µg/kg	46	33	16	----	----
Benz(a)anthracene	56-55-3	4	µg/kg	30	26	10	----	----
Chrysene	218-01-9	4	µg/kg	30	23	10	----	----
Benzo(b)fluoranthene	205-99-2	4	µg/kg	31	24	12	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg	9	4	<4	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg	22	15	9	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg	15	12	6	----	----
Perylene	198-55-0	4	µg/kg	323	31	172	----	----
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	21	15	9	----	----
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	<4	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	10	6	<4	----	----
Coronene	191-07-1	5	µg/kg	11	8	5	----	----
^ Sum of PAHs	----	4	µg/kg	717	344	309	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	111	111	107	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	101	109	98.8	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	91.8	99.6	91.8	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	96.4	101	94.3	----	----
Anthracene-d10	1719-06-8	0.1	%	87.0	89.7	86.2	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	78.0	81.1	76.4	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	----	114	112
Toluene-D8	2037-26-5	0.1	%	----	----	----	103	113
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	----	101	112
EP080-SD: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	96.5	97.1	81.8	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS17	BW_SS18	D01_271113_TA/S	T/BLANK	T/SPIKE
				27-NOV-2013 15:00	27-NOV-2013 15:00	27-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326083-021	ES1326083-022	ES1326083-023	ES1326083-024	ES1326083-025
EP080-SD: TPH(V)/BTEX Surrogates - Continued								
Toluene-D8	2037-26-5	0.1	%	102	127	88.9	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	86.9	99.9	78.0	----	----
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	43.8	45.0	46.2	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	89.6	83.2	90.8	----	----
Anthracene-d10	1719-06-8	0.1	%	94.3	85.3	100	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	91.1	91.5	95.4	----	----



Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Client sample ID

				TSC	----	----	----	----
				22-NOV-2013 15:00	----	----	----	----
				ES1326083-026	----	----	----	----
<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>					
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	0.5	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	14.6	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	1.8	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	9.1	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	3.6	----	----	----	----
Total Xylenes	1330-20-7	0.5	mg/kg	12.7	----	----	----	----
Sum of BTEX	----	0.2	mg/kg	29.6	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	101	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	94.0	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	91.4	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0
EP080-SD: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	67	137
Toluene-D8	2037-26-5	74	134
4-Bromofluorobenzene	460-00-4	73	137
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	2.22	106
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	55	135
Anthracene-d10	1719-06-8	70	136
4-Terphenyl-d14	1718-51-0	57	127

Certificate of Analysis

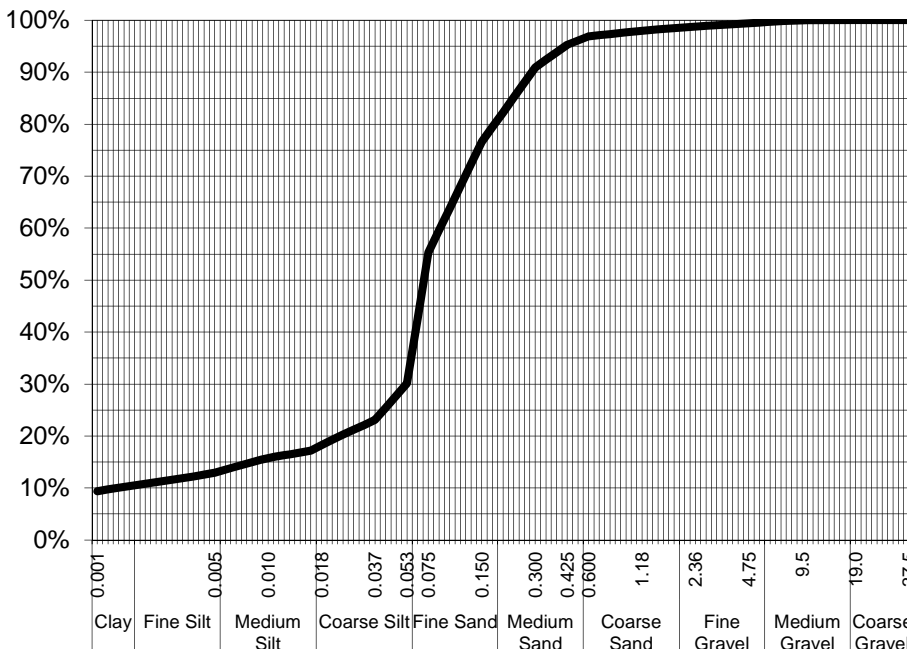
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 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 13-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-001 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS40

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	99%
1.18	98%
0.600	97%
0.425	95%
0.300	91%
0.150	77%
0.075	55%
Particle Size (microns)	
53	30%
37	23%
18	18%
10	16%
5	13%
4	12%
1	9%

Median Particle Size (mm)	0.064
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand and silty clay

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

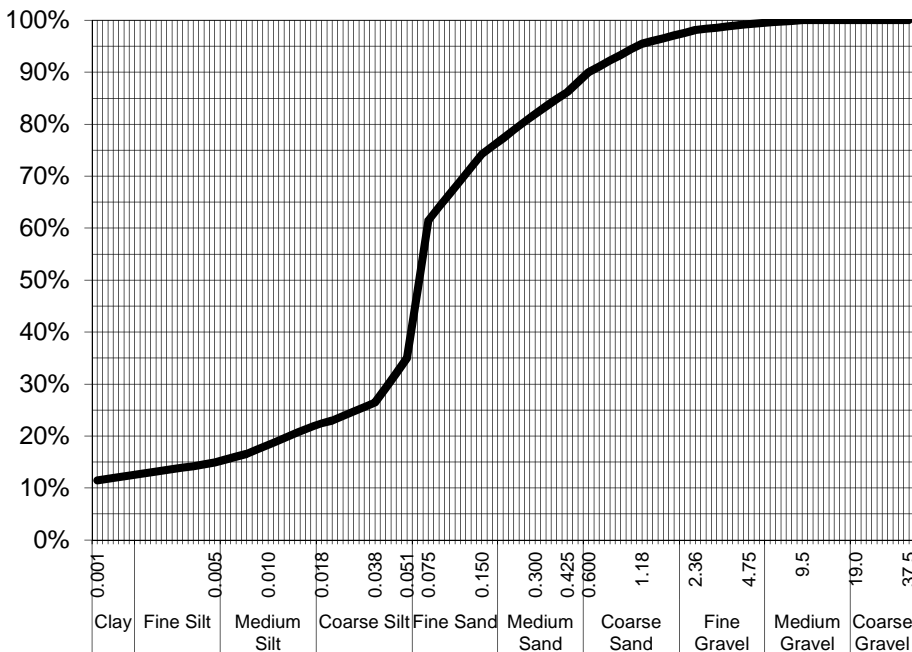
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CLIENT: Joseph Ferring **DATE REPORTED:** 13-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-002 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS41

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	98%
1.18	96%
0.600	90%
0.425	86%
0.300	82%
0.150	74%
0.075	62%
Particle Size (microns)	
51	35%
38	26%
18	22%
10	18%
5	15%
4	14%
1	11%

Median Particle Size (mm)	0.063
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

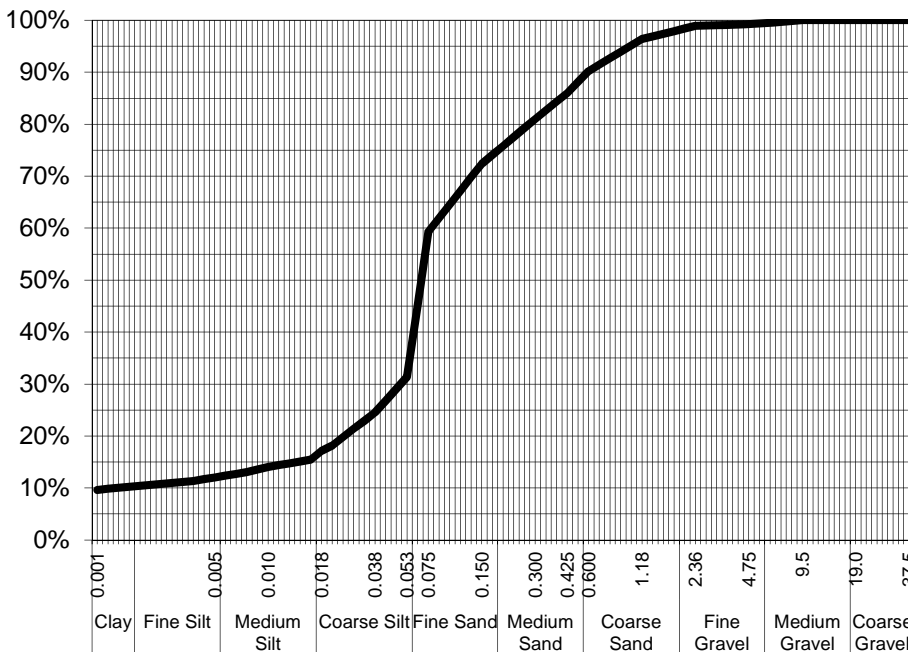
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ADDRESS: Ground Floor **REPORT NO:** ES1326083-003 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS42

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	99%
1.18	96%
0.600	90%
0.425	86%
0.300	81%
0.150	72%
0.075	59%
Particle Size (microns)	
53	31%
38	25%
18	17%
10	14%
5	12%
4	11%
1	10%

Median Particle Size (mm)	0.064
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand and silty clay

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

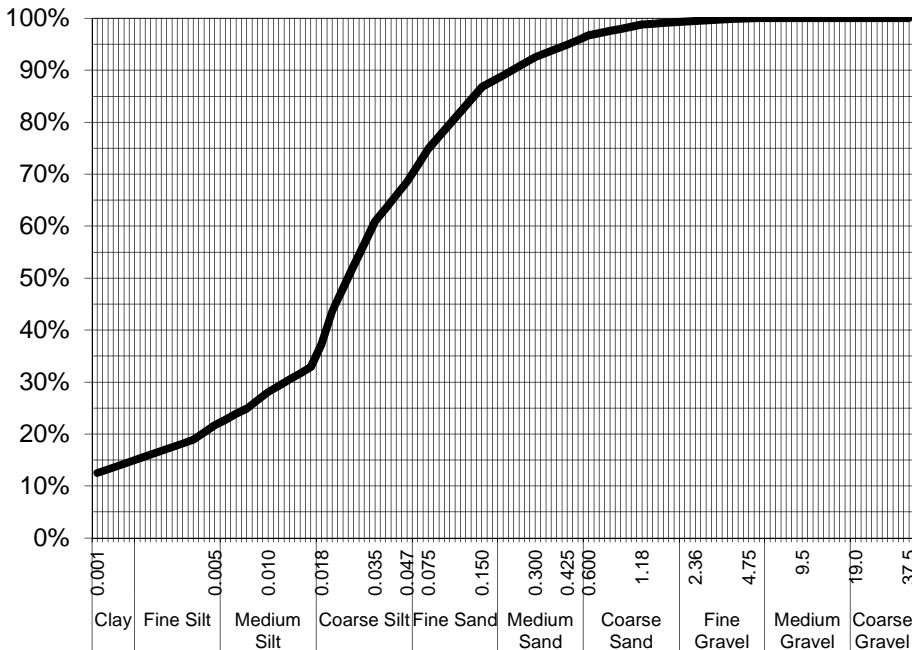
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ADDRESS: Ground Floor **REPORT NO:** ES1326083-004 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS43

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	97%
0.425	95%
0.300	93%
0.150	87%
0.075	75%
Particle Size (microns)	
47	68%
35	61%
18	37%
10	28%
5	22%
3	19%
1	12%

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Median Particle Size (mm)	0.026
---------------------------	-------

Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

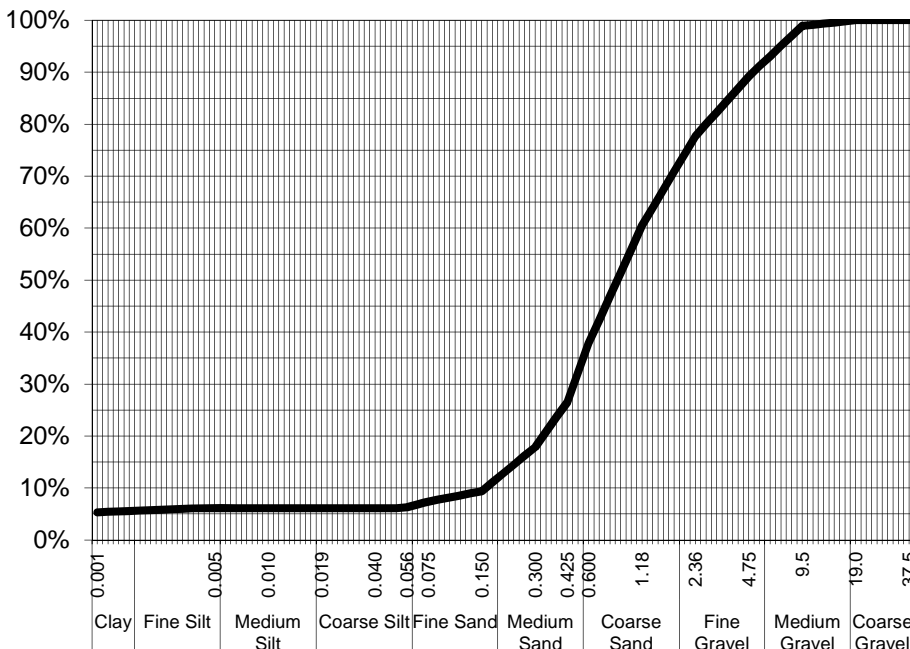
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ADDRESS: Ground Floor **REPORT NO:** ES1326083-005 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS45

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	99%
4.75	89%
2.36	78%
1.18	61%
0.600	38%
0.425	27%
0.300	18%
0.150	9%
0.075	7%
Particle Size (microns)	
56	6%
40	6%
19	6%
10	6%
5	6%
4	6%
1	5%

Median Particle Size (mm)	0.600
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand and shell

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

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 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

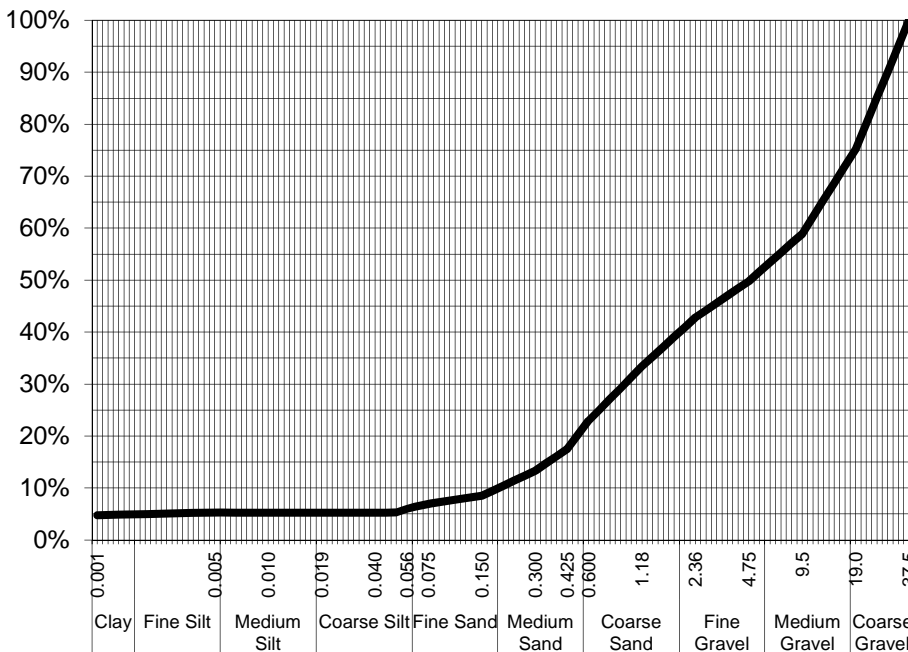
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 samples.newcastle@alsenviro.com

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COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-006 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS46

Particle Size Distribution



Particle Size (mm)	Percent Passing
37.5	100%
19.0	75%
9.5	59%
4.75	50%
2.36	43%
1.18	33%
0.600	23%
0.425	18%
0.300	13%
0.150	9%
0.075	7%
Particle Size (microns)	
56	6%
40	5%
19	5%
10	5%
5	5%
4	5%
1	5%

Median Particle Size (mm)	4.750
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Gravel and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

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 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

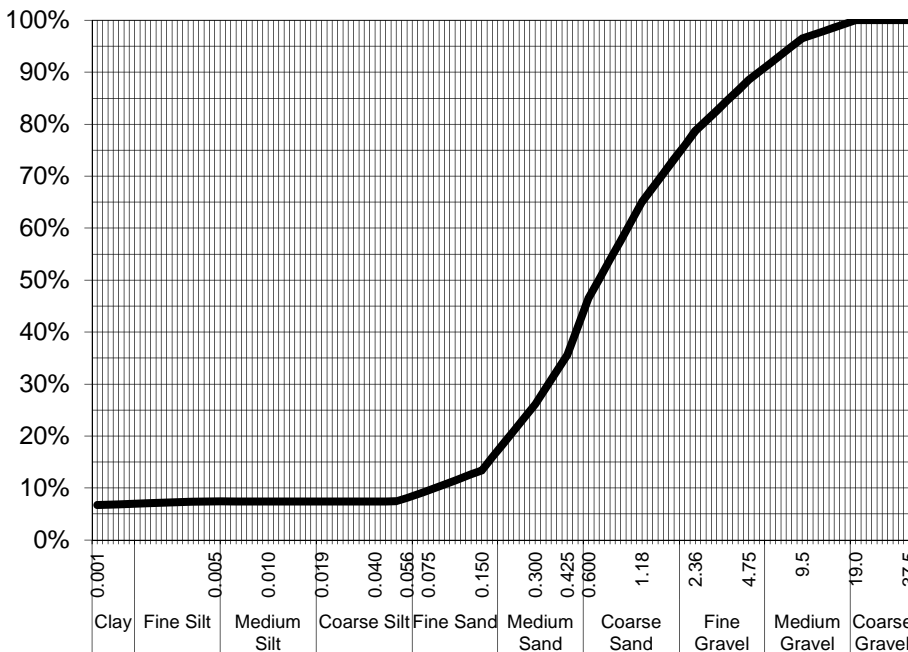
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COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-007 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS47

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	97%
4.75	89%
2.36	79%
1.18	65%
0.600	47%
0.425	36%
0.300	26%
0.150	13%
0.075	10%
Particle Size (microns)	
56	8%
40	7%
19	7%
10	7%
5	7%
4	7%
1	7%

Median Particle Size (mm)	0.600
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand and shell

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

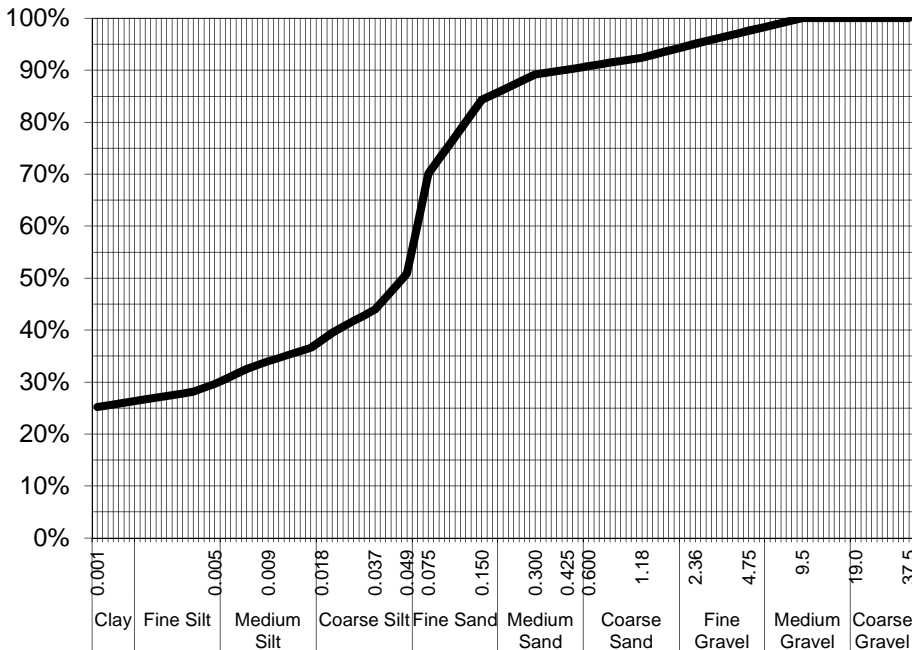
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 pH 02 4968 9433
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CLIENT: Joseph Ferring **DATE REPORTED:** 13-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-008 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS48

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	98%
2.36	95%
1.18	92%
0.600	91%
0.425	90%
0.300	89%
0.150	84%
0.075	70%
Particle Size (microns)	
49	51%
37	44%
18	38%
9	34%
5	30%
3	28%
1	25%

Median Particle Size (mm)	0.047
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment: NA
Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm): 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method: Shaker

Hydrometer Type: ASTM E100

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 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

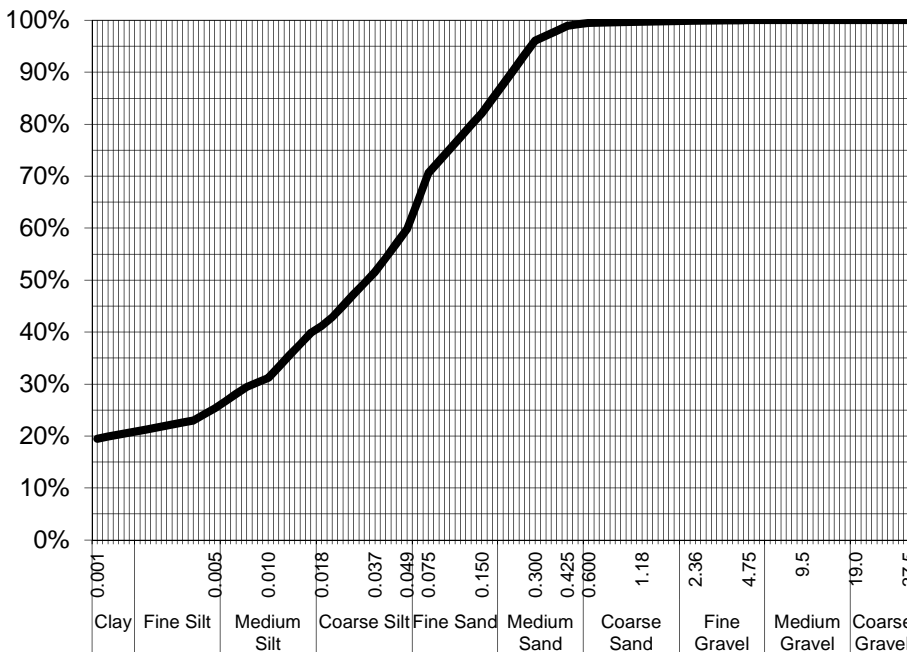
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 pH 02 4968 9433
 fax 02 4968 0349
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Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 13-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-009 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS49

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	99%
0.300	96%
0.150	82%
0.075	71%
Particle Size (microns)	Percent Passing
49	60%
37	52%
18	41%
10	31%
5	25%
3	23%
1	19%

Median Particle Size (mm)	0.035
---------------------------	-------

Samples analysed as received.
 Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment: NA
Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm): 2.65 g/cm³

NATA Accreditation: 825 Site: Newcastle
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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method: Shaker

Hydrometer Type: ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

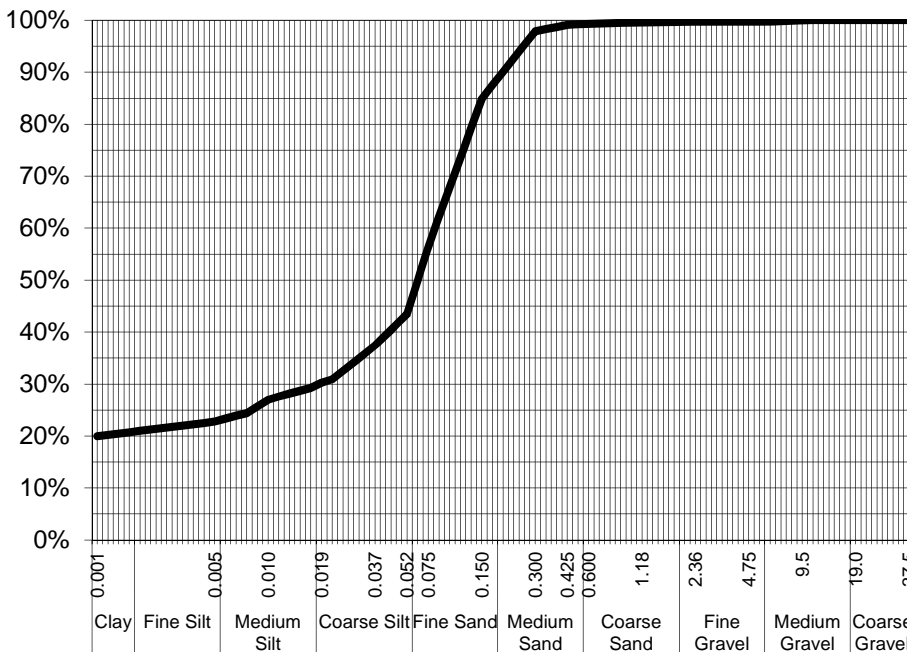
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 13-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-010 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS50

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	98%
0.150	85%
0.075	57%
Particle Size (microns)	
52	43%
37	37%
19	30%
10	27%
5	23%
3	22%
1	20%

Median Particle Size (mm)	0.063
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

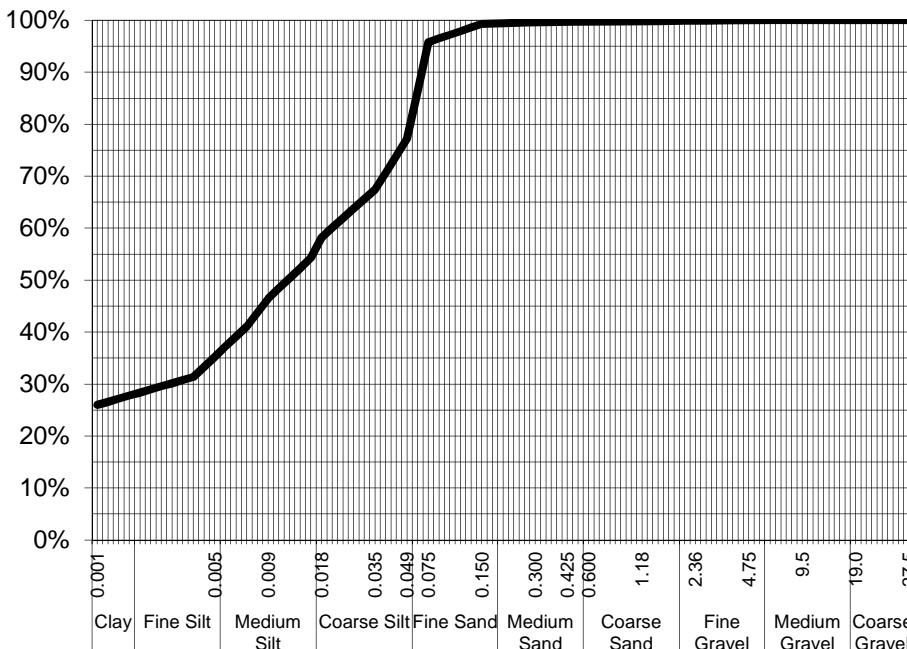
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
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CLIENT: Joseph Ferring **DATE REPORTED:** 13-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-011 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS51

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	96%
Particle Size (microns)	Percent Passing
49	77%
35	67%
18	58%
9	46%
5	35%
3	31%
1	26%

Median Particle Size (mm)	0.012
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

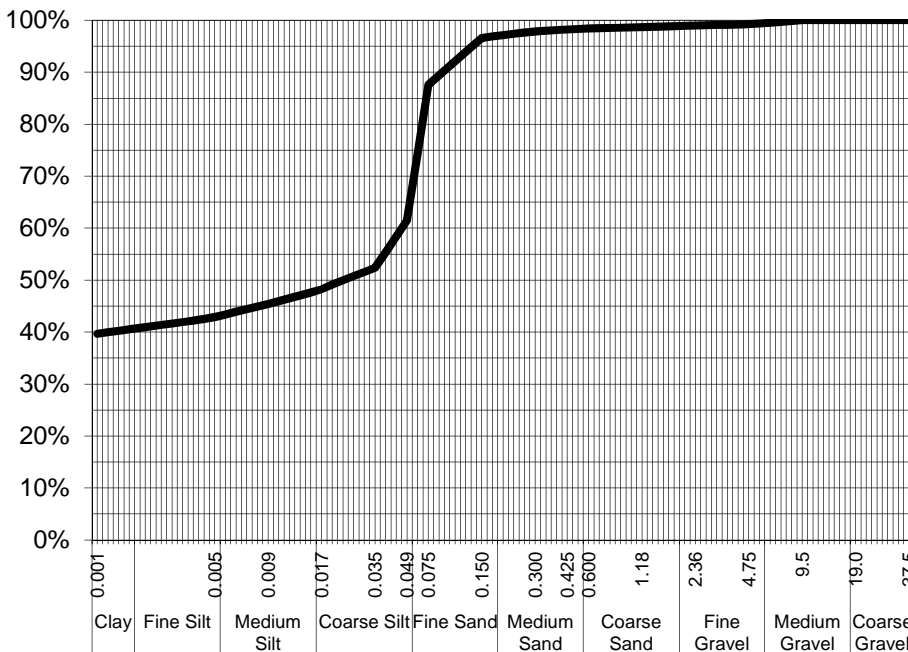
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 13-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-012 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS52

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	99%
1.18	99%
0.600	98%
0.425	98%
0.300	98%
0.150	97%
0.075	88%
Particle Size (microns)	
49	61%
35	52%
17	48%
9	45%
5	43%
3	42%
1	40%

Median Particle Size (mm)	0.026
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

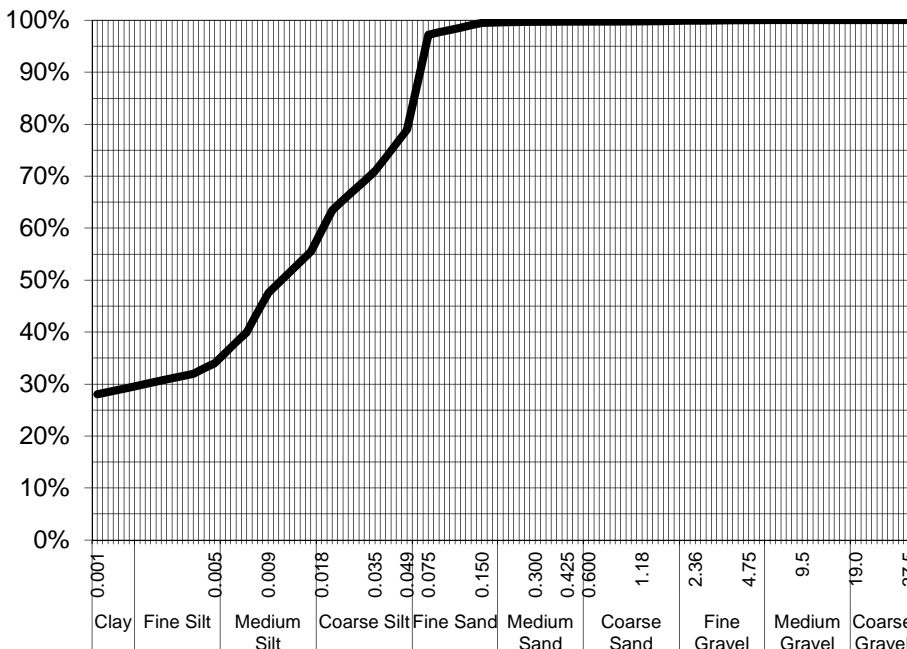
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

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Newcastle, NSW



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COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-013 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS53

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	100%
0.075	97%
Particle Size (microns)	Percent Passing
49	79%
35	71%
18	59%
9	47%
5	34%
3	32%
1	28%

Median Particle Size (mm)	0.012
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

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Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

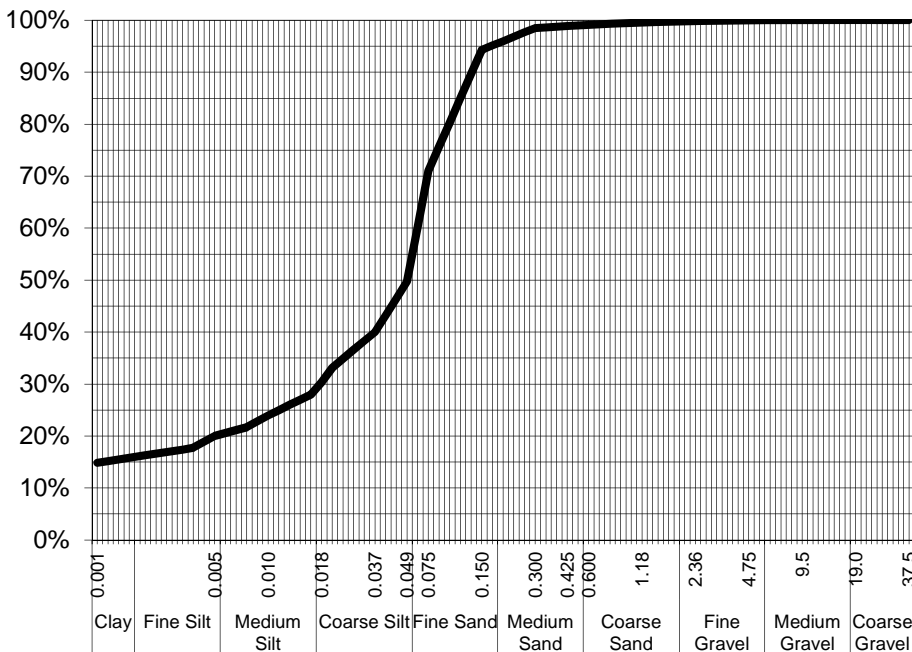
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

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CLIENT: Joseph Ferring **DATE REPORTED:** 13-Dec-2013
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ADDRESS: Ground Floor **REPORT NO:** ES1326083-014 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS54

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	94%
0.075	71%
Particle Size (microns)	
49	50%
37	40%
18	30%
10	24%
5	20%
3	18%
1	15%

Median Particle Size (mm)	0.049
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

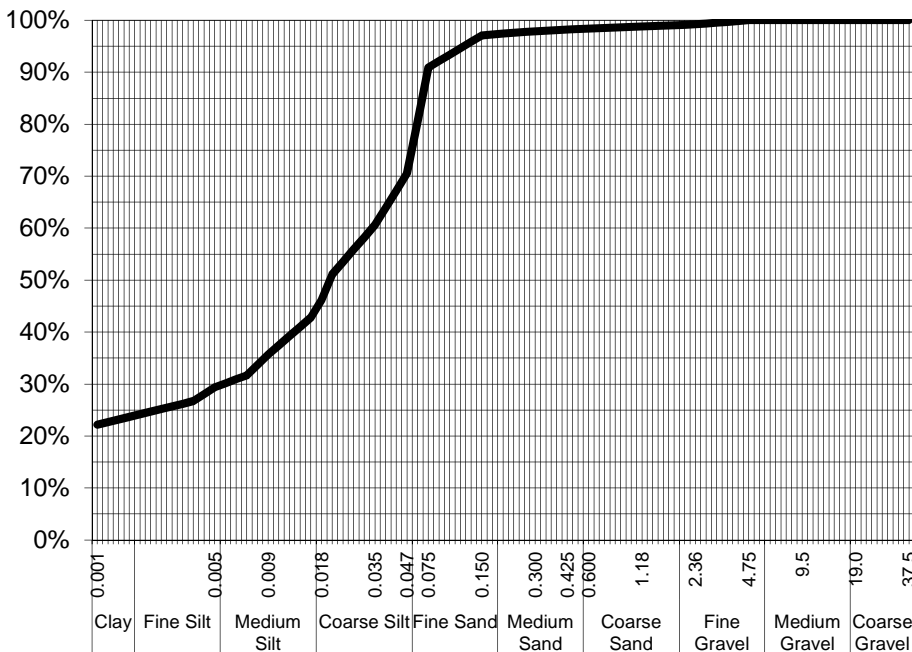
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

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Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 13-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-015 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS11

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	99%
0.600	98%
0.425	98%
0.300	98%
0.150	97%
0.075	91%
Particle Size (microns)	
47	71%
35	61%
18	46%
9	36%
5	29%
3	27%
1	22%

Median Particle Size (mm)	0.019
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

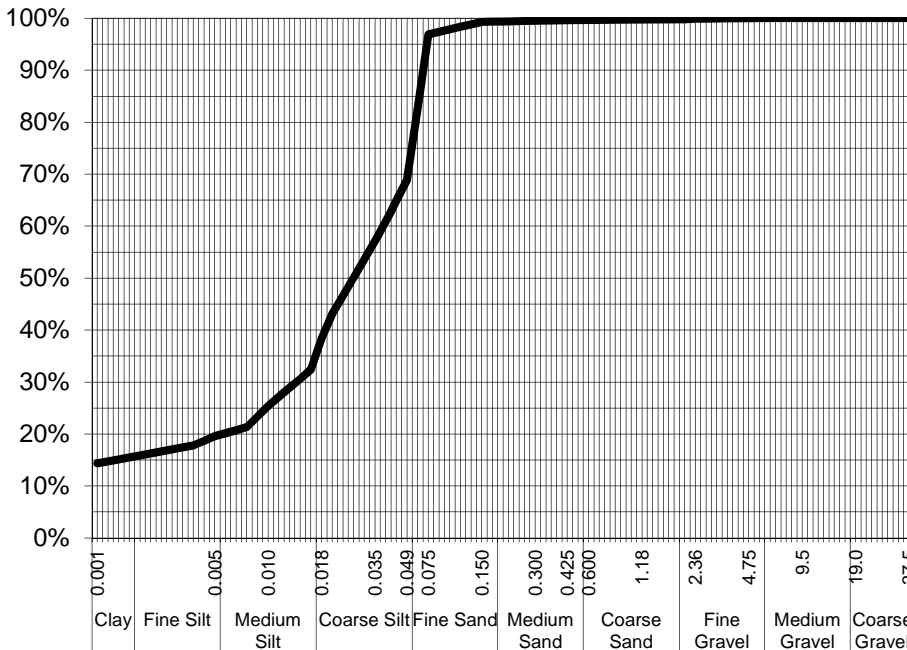
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 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
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CLIENT: Joseph Ferring **DATE REPORTED:** 13-Dec-2013
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ADDRESS: Ground Floor **REPORT NO:** ES1326083-016 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS12

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	97%
Particle Size (microns)	
49	69%
35	57%
18	38%
10	25%
5	20%
3	18%
1	14%

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Median Particle Size (mm)	0.026
---------------------------	-------

Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

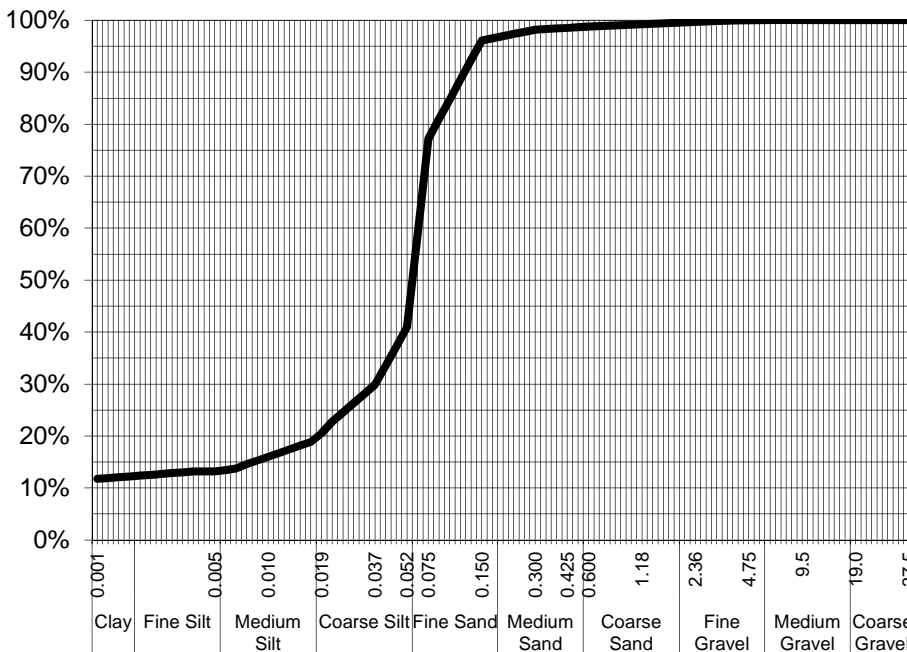
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
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COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-017 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS13

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	99%
0.425	99%
0.300	98%
0.150	96%
0.075	77%
Particle Size (microns)	
52	41%
37	30%
19	20%
10	16%
5	13%
4	13%
1	12%

Median Particle Size (mm)	0.052
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

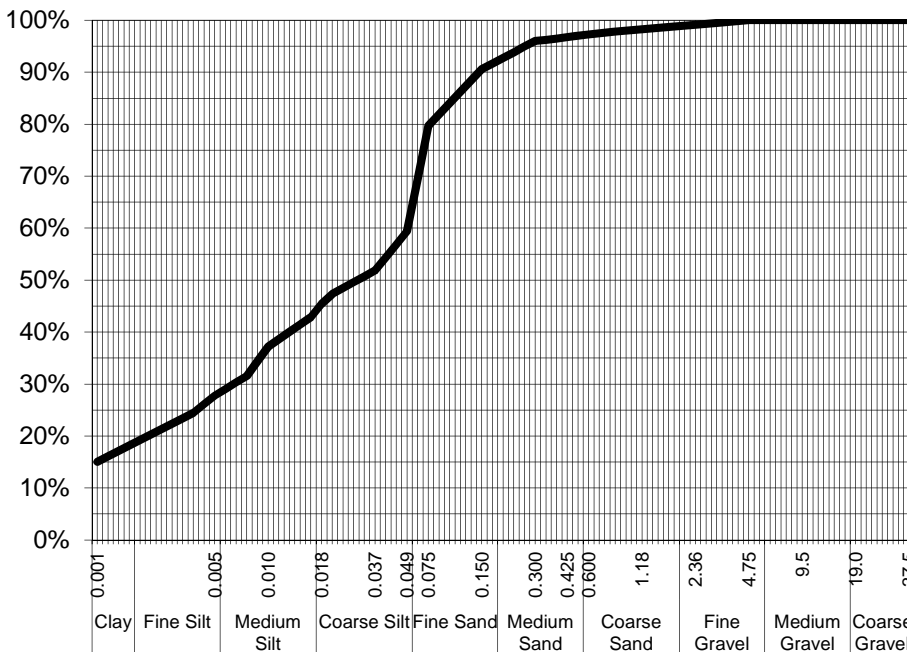
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 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
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COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-018 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS14

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	98%
0.600	97%
0.425	97%
0.300	96%
0.150	91%
0.075	80%
Particle Size (microns)	
49	59%
37	52%
18	45%
10	37%
5	28%
3	24%
1	15%

Median Particle Size (mm)	0.031
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA
Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

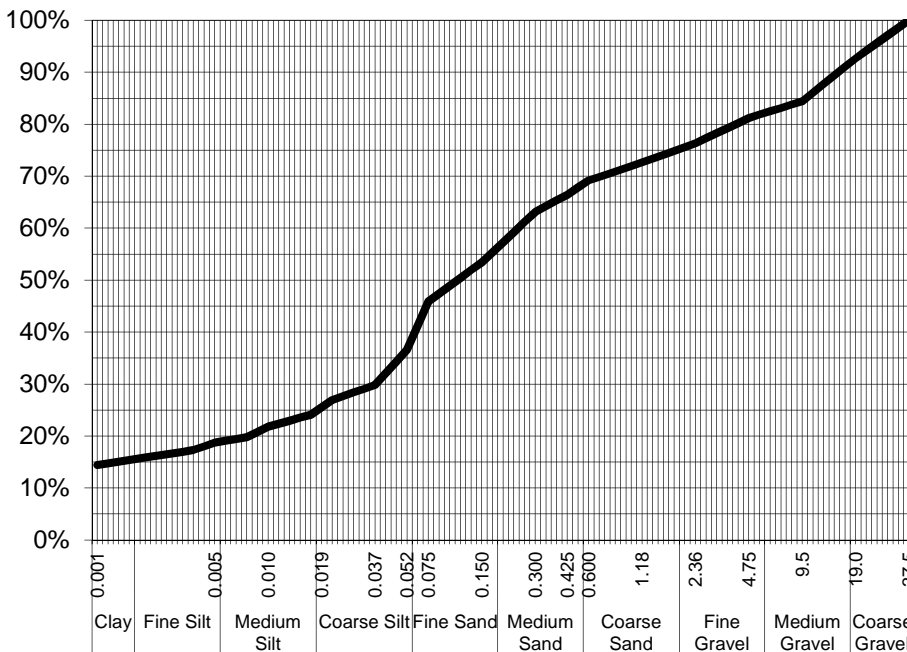
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 Warabrook, NSW 2304
 pH 02 4968 9433
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 samples.newcastle@alsenviro.com

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COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-019 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS15

Particle Size Distribution



Particle Size (mm)	Percent Passing
37.5	100%
19.0	93%
9.5	84%
4.75	81%
2.36	76%
1.18	73%
0.600	69%
0.425	66%
0.300	63%
0.150	53%
0.075	46%
Particle Size (microns)	
52	37%
37	30%
19	26%
10	22%
5	19%
3	17%
1	14%

Median Particle Size (mm)	0.075
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay, sand and gravel

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

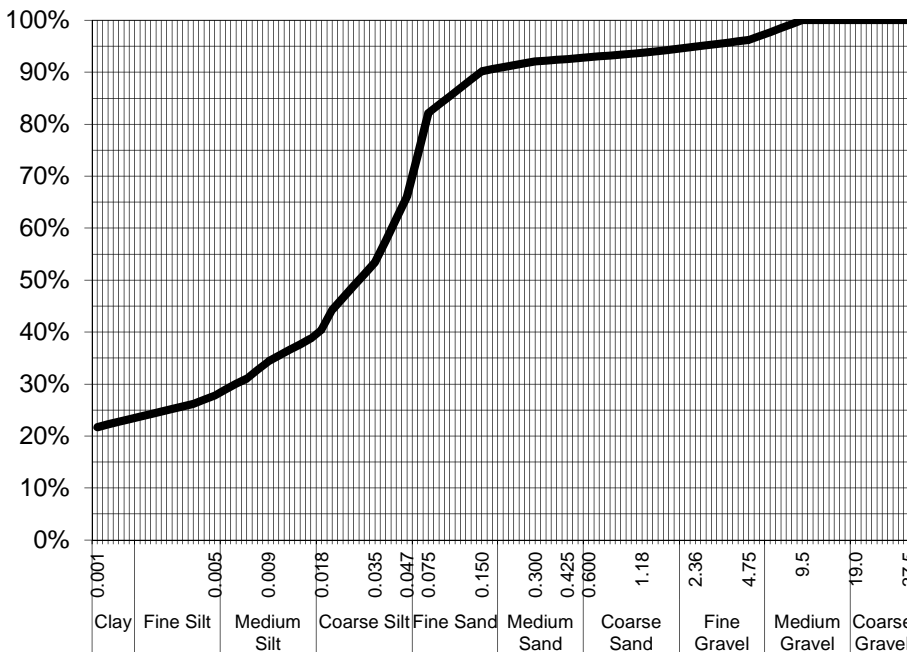
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 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

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CLIENT:	Joseph Ferring	DATE REPORTED:	13-Dec-2013
COMPANY:	Enviro Resources Management	DATE RECEIVED:	29-Nov-2013
ADDRESS:	Ground Floor 33 Saunders Street, Pyrmont NSW 2009	REPORT NO:	ES1326083-020 / PSD
PROJECT:	Project Symphony	SAMPLE ID:	BW_SS16

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	96%
2.36	95%
1.18	94%
0.600	93%
0.425	93%
0.300	92%
0.150	90%
0.075	82%
Particle Size (microns)	
47	66%
35	53%
18	40%
9	34%
5	28%
3	26%
1	22%

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Median Particle Size (mm)	0.030
---------------------------	-------

Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

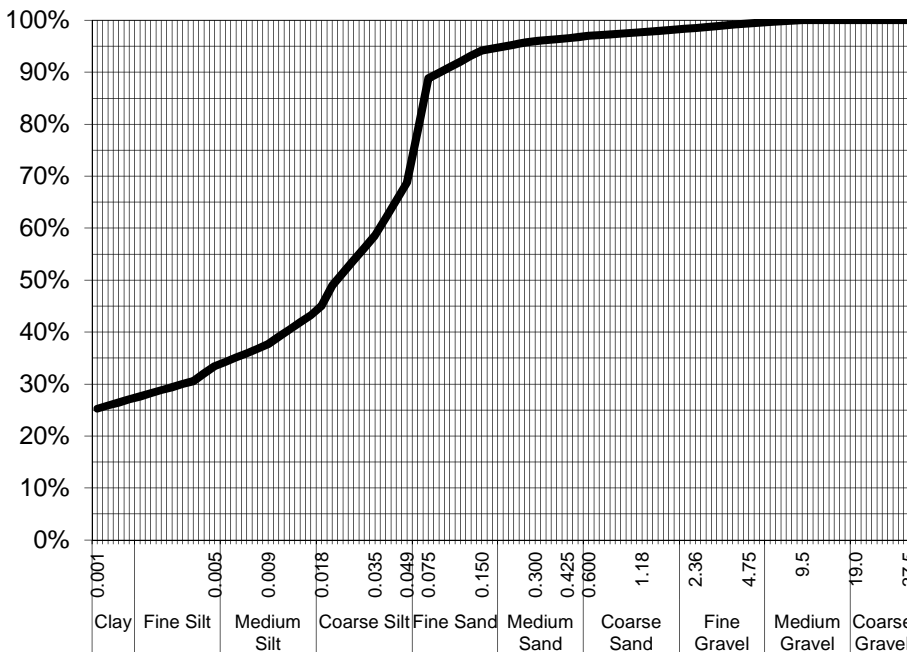
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 13-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-021 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS17

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	99%
1.18	98%
0.600	97%
0.425	97%
0.300	96%
0.150	94%
0.075	89%
Particle Size (microns)	Percent Passing
49	69%
35	59%
18	45%
9	38%
5	33%
3	31%
1	25%

Median Particle Size (mm)	0.023
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

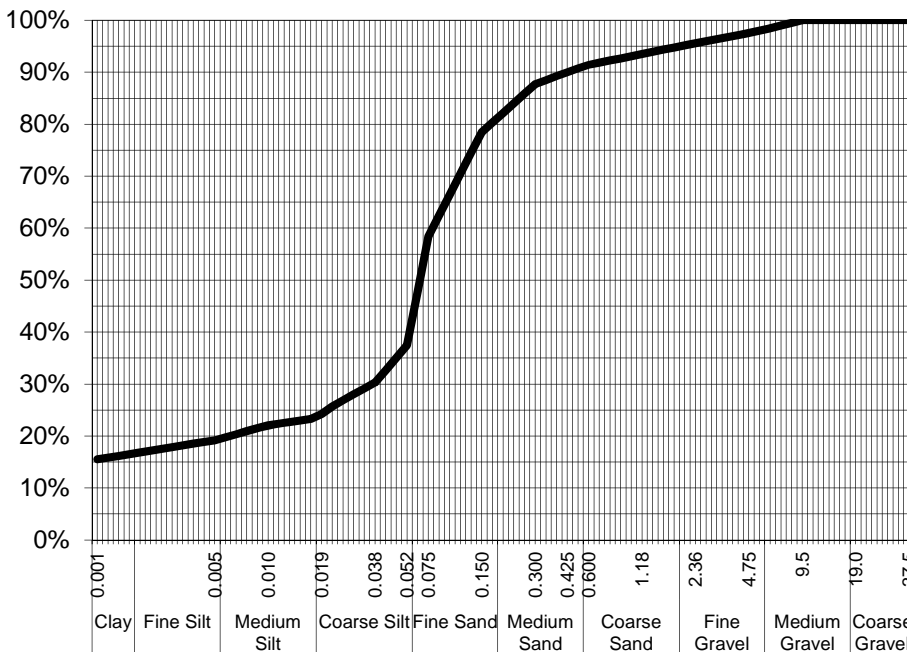
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 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
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COMPANY: Enviro Resources Management **DATE RECEIVED:** 29-Nov-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326083-022 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS18

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	98%
2.36	96%
1.18	94%
0.600	91%
0.425	90%
0.300	88%
0.150	79%
0.075	58%
Particle Size (microns)	
52	37%
38	30%
19	24%
10	22%
5	19%
3	19%
1	16%

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Median Particle Size (mm)	0.063
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Analysed: 11-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

QUALITY CONTROL REPORT

Work Order	: ES1326083	Page	: 1 of 23
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 29-NOV-2013
C-O-C number	: ----	Issue Date	: 16-DEC-2013
Sampler	: TA	No. of samples received	: 26
Order number	: 0224193	No. of samples analysed	: 26
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



General Comments

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

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

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

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

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



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Laboratory 825

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compliance with
ISO/IEC 17025.

WORLD RECOGNISED
ACCREDITATION

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
		Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics
SATISH.TRIVEDI	2 IC Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 3195165)									
ES1326083-003	BW_SS42	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	43.0	40.4	6.3	0% - 20%
ES1326083-014	BW_SS54	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	39.4	41.0	4.0	0% - 20%
EA055: Moisture Content (QC Lot: 3195166)									
ES1326083-023	D01_271113_TA/S	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	45.3	41.7	8.2	0% - 20%
ES1326152-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	14.3	14.0	2.2	0% - 50%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 3196070)									
ES1326082-009	Anonymous	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	0.3	0.3	0.0	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	4.4	4.4	0.0	0% - 20%
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	5.2	5.2	0.0	0% - 50%
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	9.1	8.9	2.3	No Limit
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	504	424	17.0	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	5.4	5.3	2.0	No Limit
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	33.0	31.1	5.9	0% - 20%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	114	115	1.4	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	10.1	9.23	8.9	0% - 50%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	105	108	2.0	0% - 50%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	37.7	36.1	4.3	0% - 50%
ES1326083-004	BW_SS43	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	0.1	0.1	0.0	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	13.7	11.6	16.6	0% - 20%
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	3.7	3.2	15.0	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	15.9	15.2	4.1	0% - 50%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	62.8	62.1	1.1	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	6.0	5.2	14.8	No Limit
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	12.6	12.0	5.4	0% - 50%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	27.6	26.6	3.8	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	12.6	11.5	8.9	0% - 50%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	137	136	0.0	0% - 50%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	47.2	43.5	8.2	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 3196076)									
ES1326083-015	BW_SS11	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	0.1	<0.1	0.0	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	5.6	6.4	12.5	0% - 20%
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	7.4	6.0	21.7	0% - 50%
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	15.2	12.6	19.0	0% - 50%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	128	105	19.6	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	9.3	8.3	10.9	No Limit
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	22.4	22.9	2.3	0% - 20%



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 3196076) - continued									
ES1326083-015	BW_SS11	EG020-SD: Zinc	7440-66-6	1.0	mg/kg	56.0	57.4	2.3	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	17.2	13.4	25.0	0% - 50%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	325	333	2.3	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	65.7	67.2	2.3	0% - 20%
ES1326164-003	Anonymous	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	5.9	5.6	5.9	0% - 20%
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	13.4	13.6	1.1	0% - 20%
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	23.4	28.2	18.7	0% - 20%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	19.7	20.4	3.7	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	15.3	17.5	13.3	0% - 50%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	18.9	17.8	5.9	0% - 50%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	58.5	64.4	9.5	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	14.4	19.4	29.3	0% - 50%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	1740	1390	# 22.2	0% - 20%
EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	63.8	52.5	19.4	0% - 20%		
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 3197555)									
ES1326083-022	BW_SS18	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	0.2	<0.1	71.8	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	2.2	2.2	0.0	0% - 20%
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	6.0	8.0	27.6	0% - 50%
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	16.4	16.2	1.3	0% - 50%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	34.2	33.8	1.3	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	13.1	14.6	10.7	0% - 50%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	17.3	18.0	4.1	0% - 50%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	65.4	64.6	1.3	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	17.3	11.0	44.7	0% - 50%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	119	90	27.8	0% - 50%
EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	52.0	51.3	1.4	0% - 20%		
EG020T: Total Metals by ICP-MS (QC Lot: 3196067)									
ES1326082-009	Anonymous	EG020X-T: Barium	7440-39-3	0.1	mg/kg	126	126	0.0	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.6	0.6	0.0	No Limit
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	3.0	2.7	13.2	0% - 20%
ES1326083-004	BW_SS43	EG020X-T: Barium	7440-39-3	0.1	mg/kg	93.5	88.7	5.2	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.3	0.4	30.8	No Limit
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	8.1	8.5	5.1	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 3196068)									
ES1326082-009	Anonymous	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1326083-004	BW_SS43	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 3196073)									
ES1326083-015	BW_SS11	EG020X-T: Barium	7440-39-3	0.1	mg/kg	133	136	2.3	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.6	0.7	21.4	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3196073) - continued									
ES1326083-015	BW_SS11	EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	4.7	4.3	8.0	0% - 20%
ES1326164-003	Anonymous	EG020X-T: Barium	7440-39-3	0.1	mg/kg	183	190	3.5	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	1.3	1.3	0.0	0% - 50%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	26.1	25.8	1.3	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 3196074)									
ES1326083-015	BW_SS11	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1326164-003	Anonymous	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	0.1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 3197552)									
ES1326083-022	BW_SS18	EG020X-T: Barium	7440-39-3	0.1	mg/kg	192	189	1.3	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.6	0.9	43.1	No Limit
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	4.3	4.2	0.0	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 3197553)									
ES1326083-022	BW_SS18	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3196069)									
ES1326082-009	Anonymous	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.09	0.09	0.0	No Limit
ES1326083-004	BW_SS43	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.05	0.06	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3196075)									
ES1326083-015	BW_SS11	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.32	0.33	0.0	0% - 20%
ES1326164-003	Anonymous	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.03	0.03	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3197554)									
ES1326083-022	BW_SS18	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.03	0.02	35.8	No Limit
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 3192668)									
ES1326083-001	BW_SS40	EP003: Total Organic Carbon	----	0.02	%	1.18	1.22	3.7	0% - 20%
ES1326083-011	BW_SS51	EP003: Total Organic Carbon	----	0.02	%	9.24	8.99	2.8	0% - 20%
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 3192669)									
ES1326083-021	BW_SS17	EP003: Total Organic Carbon	----	0.02	%	3.08	3.21	4.2	0% - 20%
EP075(SIM)A: Phenolic Compounds (QC Lot: 3191552)									
ES1326083-001	BW_SS40	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 3191552) - continued									
ES1326083-011	BW_SS51	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<2	<2	0.0	No Limit
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
EP075(SIM)A: Phenolic Compounds (QC Lot: 3192768)									
ES1326152-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
ES1326083-023	D01_271113_TA/S	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3192969)									
ES1326190-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1326190-005	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3192969)										
ES1326190-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
ES1326190-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
EP080: BTEXN (QC Lot: 3192969)										
ES1326190-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
ES1326190-005	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	1	<1	0.0	No Limit	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3190734)										
ES1326083-001	BW_SS40	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.0	No Limit	
ES1326083-011	BW_SS51	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.0	No Limit	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3191556)										
ES1326083-002	BW_SS41	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.0	No Limit	
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	24	21	13.3	No Limit	
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	25	23	6.1	No Limit	
ES1326083-011	BW_SS51	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	16	13	17.4	No Limit	
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	301	271	10.7	0% - 20%	
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	252	230	9.1	0% - 20%	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3192516)										
ES1326082-009	Anonymous	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.0	No Limit	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3197947)										
ES1326082-009	Anonymous	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	6	5	0.0	No Limit	
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	163	137	17.3	0% - 20%	
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	127	108	16.3	0% - 20%	
EP080-SD: BTEXN (QC Lot: 3190734)										
ES1326083-001	BW_SS40	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
			106-42-3							



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080-SD: BTEXN (QC Lot: 3190734) - continued									
ES1326083-001	BW_SS40	EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
ES1326083-011	BW_SS51	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
			106-42-3						
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP080-SD: BTEXN (QC Lot: 3192516)									
ES1326082-009	Anonymous	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
			106-42-3						
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 3191562)									
ES1326083-002	BW_SS41	EP131B: Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
ES1326083-012	BW_SS52	EP131B: Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 3197940)									
ES1326082-009	Anonymous	EP131B: Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3191555)									
ES1326083-002	BW_SS41	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<5	<5	0.0	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	44	61	31.1	0% - 50%
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	13	17	25.5	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	74	62	16.6	0% - 50%
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	7	7	0.0	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	56	60	5.9	0% - 50%
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	91	107	16.5	0% - 20%
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	40	45	11.8	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	32	37	13.8	No Limit
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	38	39	4.2	No Limit
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	9	12	26.5	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	27	30	8.3	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	20	25	20.3	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	111	113	2.0	0% - 20%
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	26	32	19.0	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<5	<5	0.0	No Limit
		EP132B-SD: Indeno(1,2,3.cd)pyrene	193-39-5	4	µg/kg	12	13	10.5	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	665	725	8.6	0% - 20%
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	20	18	10.2	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	32	30	4.1	No Limit
EP132B-SD: Coronene	191-07-1	5	µg/kg	13	17	23.5	No Limit		
ES1326083-011	BW_SS51	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<50	<50	0.0	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	72	85	16.4	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	160	131	20.3	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	577	465	21.5	0% - 50%
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	67	52	26.3	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	858	701	20.1	0% - 50%
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	562	500	11.6	0% - 50%
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	607	453	29.1	0% - 50%
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	432	336	24.9	No Limit
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	573	520	9.6	0% - 50%
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	245	190	25.2	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	312	286	8.4	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	330	290	13.0	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	821	764	7.2	0% - 50%
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	106	<50	71.7	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<50	<50	0.0	No Limit
		EP132B-SD: Indeno(1,2,3.cd)pyrene	193-39-5	4	µg/kg	52	<50	4.0	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	6210	5140	19.0	0% - 20%
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	168	140	18.5	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3191555) - continued									
ES1326083-011	BW_SS51	EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	268	222	18.7	No Limit
		EP132B-SD: Coronene	191-07-1	5	µg/kg	<50	<50	0.0	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3197946)									
ES1326082-009	Anonymous	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	7	8	0.0	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	15	17	14.0	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	87	84	3.3	0% - 20%
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	12	12	0.0	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	68	65	4.1	0% - 50%
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	55	52	5.3	0% - 50%
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	41	47	14.5	0% - 50%
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	39	44	12.8	0% - 50%
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	34	34	3.0	No Limit
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	7	10	38.2	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	25	25	0.0	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	18	19	5.6	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	6	6	0.0	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	22	24	8.8	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	4	4	0.0	No Limit
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	8	8	0.0	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	517	536	3.6	0% - 20%
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	23	25	10.2	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	34	39	13.8	No Limit
EP132B-SD: Coronene	191-07-1	5	µg/kg	12	13	0.0	No Limit		



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

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3196070)									
EG020-SD: Arsenic	7440-38-2	1.0	mg/kg	<1.00	21.7 mg/kg	107	81	139	
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	4.64 mg/kg	100	82	126	
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	43.9 mg/kg	96.6	67	129	
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	32 mg/kg	107	80	136	
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	----	16 mg/kg	120	76	132	
		10	mg/kg	<10.0	----	----	----	----	
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	40 mg/kg	105	75	131	
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	130 mg/kg	108	77	133	
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55 mg/kg	117	76	128	
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	5.37 mg/kg	106	72	134	
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	29.6 mg/kg	115	87	131	
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	60.8 mg/kg	98.6	83	137	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3196076)									
EG020-SD: Arsenic	7440-38-2	1.0	mg/kg	<1.00	21.7 mg/kg	103	81	139	
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	4.64 mg/kg	101	82	126	
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	43.9 mg/kg	97.4	67	129	
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	32 mg/kg	107	80	136	
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	----	16 mg/kg	113	76	132	
		10	mg/kg	<10.0	----	----	----	----	
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	40 mg/kg	100	75	131	
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	130 mg/kg	107	77	133	
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55 mg/kg	112	76	128	
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	5.37 mg/kg	105	72	134	
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	29.6 mg/kg	114	87	131	
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	60.8 mg/kg	97.3	83	137	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3197555)									
EG020-SD: Arsenic	7440-38-2	1.0	mg/kg	<1.00	21.7 mg/kg	116	81	139	
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	4.64 mg/kg	112	82	126	
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	43.9 mg/kg	112	67	129	
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	32 mg/kg	118	80	136	
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	----	16 mg/kg	128	76	132	
		10	mg/kg	<10.0	----	----	----	----	
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	40 mg/kg	105	75	131	
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	130 mg/kg	116	77	133	
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55 mg/kg	123	76	128	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3197555) - continued								
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	5.37 mg/kg	124	72	134
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	29.6 mg/kg	117	87	131
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	60.8 mg/kg	124	83	137
EG020T: Total Metals by ICP-MS (QCLot: 3196066)								
EG020T: Boron	7440-42-8	0.1	mg/kg	<0.5	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3196067)								
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	143 mg/kg	106	70	134
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	5.63 mg/kg	116	80	136
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	7.9 mg/kg	117	71	129
EG020T: Total Metals by ICP-MS (QCLot: 3196068)								
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	5.96 mg/kg	113	80	138
EG020T: Total Metals by ICP-MS (QCLot: 3196072)								
EG020T: Boron	7440-42-8	0.1	mg/kg	<0.5	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3196073)								
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	143 mg/kg	112	70	134
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	5.63 mg/kg	110	80	136
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	7.9 mg/kg	120	71	129
EG020T: Total Metals by ICP-MS (QCLot: 3196074)								
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	5.96 mg/kg	112	80	138
EG020T: Total Metals by ICP-MS (QCLot: 3197551)								
EG020T: Boron	7440-42-8	0.1	mg/kg	<0.5	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3197552)								
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	143 mg/kg	118	70	134
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	5.63 mg/kg	117	80	136
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	7.9 mg/kg	125	71	129
EG020T: Total Metals by ICP-MS (QCLot: 3197553)								
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	5.96 mg/kg	85.3	80	138
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3196069)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.110 mg/kg	83.3	72	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3196075)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.110 mg/kg	105	72	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3197554)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.110 mg/kg	95.9	72	116
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 3192668)								
EP003: Total Organic Carbon	----	0.02	%	<0.02	1.94 %	99.4	70	130
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 3192669)								
EP003: Total Organic Carbon	----	0.02	%	<0.02	29.99 %	94.4	70	130



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP075(SIM)A: Phenolic Compounds (QCLot: 3191552)									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	98.6	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	102	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	99.2	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	104	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	89.1	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	90.2	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	103	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	102	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	97.8	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	101	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	102	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	16.3	3.9	57	
EP075(SIM)A: Phenolic Compounds (QCLot: 3192768)									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	107	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	110	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	102	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	105	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	102	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	108	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	# 112	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	107	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	109	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	82.6	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	81.2	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	17.2	3.9	57	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192969)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	102	68.4	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192969)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	101	68.4	128	
EP080: BTEXN (QCLot: 3192969)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	92.5	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	91.4	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	84.0	58	118	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	90.8	60	120	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.9	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	105	62	138	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3190734)									



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3190734) - continued									
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	6.2 mg/kg	97.4	61	133	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3191556)									
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	5 mg/kg	94.0	78	118	
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	7.5 mg/kg	107	84	118	
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	5 mg/kg	92.0	73	119	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3192516)									
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	6.2 mg/kg	124	61	133	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3197947)									
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	5 mg/kg	100	78	118	
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	7.5 mg/kg	104	84	118	
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	5 mg/kg	98.0	73	119	
EP080-SD: BTEXN (QCLot: 3190734)									
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	0.2 mg/kg	106	66	122	
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	0.2 mg/kg	103	69	122	
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.2 mg/kg	101	66	126	
EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	0.4 mg/kg	104	59	129	
	106-42-3								
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.2 mg/kg	107	66	126	
EP080-SD: BTEXN (QCLot: 3192516)									
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	0.2 mg/kg	113	66	122	
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	0.2 mg/kg	104	69	122	
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.2 mg/kg	105	66	126	
EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	0.4 mg/kg	108	59	129	
	106-42-3								
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.2 mg/kg	111	66	126	
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3191562)									
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	108	50	134	
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----	
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3197940)									
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3197940) - continued									
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	100	50	134	
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----	
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3191555)									
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	118	67	133	
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	25 µg/kg	94.6	63	135	
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	93.9	68	132	
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	100	67	133	
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	99.4	69	131	
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	93.2	66	138	
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	85.6	67	133	
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	83.0	64	130	
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	96.1	67	133	
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	86.6	65	133	
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	88.2	70	134	
EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	<4	25 µg/kg	84.2	63	133	
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	89.1	67	133	
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25 µg/kg	79.3	64	130	
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	90.0	72	130	
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	25 µg/kg	95.9	70	132	
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	95.1	65	127	
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	25 µg/kg	93.5	67	135	
EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	25 µg/kg	86.3	62	126	
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	25 µg/kg	88.2	66	134	
EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	----	----	----	----	
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3197946)									
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	102	67	133	
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	25 µg/kg	111	63	135	
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	111	68	132	
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	110	67	133	
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	113	69	131	
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	112	66	138	
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	99.2	67	133	
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	107	64	130	
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	103	67	133	
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	108	65	133	
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	110	70	134	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3197946) - continued								
EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	<4	25 µg/kg	81.3	63	133
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	94.7	67	133
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25 µg/kg	97.7	64	130
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	95.4	72	130
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	25 µg/kg	118	70	132
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	109	65	127
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	25 µg/kg	105	67	135
EP132B-SD: Indeno(1,2,3,cd)pyrene	193-39-5	4	µg/kg	<4	25 µg/kg	108	62	126
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	25 µg/kg	89.7	66	134
EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low High	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3196070)							
ES1326082-009	Anonymous	EG020-SD: Arsenic	7440-38-2	50 mg/kg	95.0	70	130
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	95.2	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	97.5	70	130
		EG020-SD: Copper	7440-50-8	125 mg/kg	81.6	70	130
		EG020-SD: Lead	7439-92-1	125 mg/kg	98.7	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	97.8	70	130
		EG020-SD: Zinc	7440-66-6	125 mg/kg	86.2	70	130
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3196076)							
ES1326083-015	BW_SS11	EG020-SD: Arsenic	7440-38-2	50 mg/kg	93.8	70	130
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	99.1	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	100	70	130
		EG020-SD: Copper	7440-50-8	125 mg/kg	94.3	70	130
		EG020-SD: Lead	7439-92-1	125 mg/kg	100	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	103	70	130
		EG020-SD: Zinc	7440-66-6	125 mg/kg	87.2	70	130
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3197555)							
ES1326083-022	BW_SS18	EG020-SD: Arsenic	7440-38-2	50 mg/kg	113	70	130
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	115	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	121	70	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3197555) - continued								
ES1326083-022	BW_SS18	EG020-SD: Copper	7440-50-8	125 mg/kg	101	70	130	
		EG020-SD: Lead	7439-92-1	125 mg/kg	101	70	130	
		EG020-SD: Nickel	7440-02-0	50 mg/kg	122	70	130	
		EG020-SD: Zinc	7440-66-6	125 mg/kg	105	70	130	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3196069)								
ES1326082-009	Anonymous	EG035T-LL: Mercury	7439-97-6	0.050 mg/kg	81.7	70	130	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3196075)								
ES1326083-015	BW_SS11	EG035T-LL: Mercury	7439-97-6	0.050 mg/kg	87.0	70	130	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3197554)								
ES1326083-022	BW_SS18	EG035T-LL: Mercury	7439-97-6	0.050 mg/kg	87.3	70	130	
EP075(SIM)A: Phenolic Compounds (QCLot: 3191552)								
ES1326083-001	BW_SS40	EP075(SIM): Phenol	108-95-2	10 mg/kg	82.2	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	84.2	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	86.0	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	77.8	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	48.6	20	130	
EP075(SIM)A: Phenolic Compounds (QCLot: 3192768)								
ES1326152-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	108	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	107	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	112	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	99.2	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	51.4	20	130	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192969)								
ES1326190-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	111	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192969)								
ES1326190-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	100	70	130	
EP080: BTEXN (QCLot: 3192969)								
ES1326190-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	81.7	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	85.4	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	85.0	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	87.2	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	87.8	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	83.1	70	130			
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3190734)								
ES1326083-001	BW_SS40	EP080-SD: C6 - C9 Fraction	----	6.5 mg/kg	127	70	130	



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3191556)							
ES1326083-002	BW_SS41	EP071-SD: C10 - C14 Fraction	----	19.75 mg/kg	86.1	70	130
		EP071-SD: C15 - C28 Fraction	----	87.25 mg/kg	84.7	70	130
		EP071-SD: C29 - C36 Fraction	----	60 mg/kg	116	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3192516)							
ES1326082-009	Anonymous	EP080-SD: C6 - C9 Fraction	----	6.5 mg/kg	90.1	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3197947)							
ES1326082-009	Anonymous	EP071-SD: C10 - C14 Fraction	----	19.75 mg/kg	91.1	70	130
		EP071-SD: C15 - C28 Fraction	----	87.25 mg/kg	86.1	70	130
		EP071-SD: C29 - C36 Fraction	----	60 mg/kg	123	70	130
EP080-SD: BTEXN (QCLot: 3190734)							
ES1326083-001	BW_SS40	EP080-SD: Benzene	71-43-2	0.5 mg/kg	106	70	130
		EP080-SD: Toluene	108-88-3	0.5 mg/kg	104	70	130
		EP080-SD: Ethylbenzene	100-41-4	0.5 mg/kg	98.1	70	130
		EP080-SD: meta- & para-Xylene	108-38-3	0.5 mg/kg	102	70	130
			106-42-3				
EP080-SD: ortho-Xylene	95-47-6	0.5 mg/kg	104	70	130		
EP080-SD: BTEXN (QCLot: 3192516)							
ES1326082-009	Anonymous	EP080-SD: Benzene	71-43-2	0.5 mg/kg	78.6	70	130
		EP080-SD: Toluene	108-88-3	0.5 mg/kg	78.8	70	130
		EP080-SD: Ethylbenzene	100-41-4	0.5 mg/kg	80.2	70	130
		EP080-SD: meta- & para-Xylene	108-38-3	0.5 mg/kg	84.2	70	130
			106-42-3				
EP080-SD: ortho-Xylene	95-47-6	0.5 mg/kg	83.2	70	130		
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3191562)							
ES1326083-002	BW_SS41	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	64.1	44	136
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3197940)							
ES1326082-009	Anonymous	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	92.5	44	136
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3191555)							
ES1326083-002	BW_SS41	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	102	70	130
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	78.8	70	130
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	103	70	130
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	123	70	130
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	108	70	130
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	76.2	70	130
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	99.8	70	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	79.0	70	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	94.3	70	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3191555) - continued							
ES1326083-002	BW_SS41	EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	83.7	70	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	73.5	70	130
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	25 µg/kg	71.9	70	130
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	86.9	70	130
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	104	70	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	95.9	70	130
		EP132B-SD: Perylene	198-55-0	25 µg/kg	95.8	70	130
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	76.7	70	130
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	107	70	130
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	109	70	130
		EP132B-SD: Coronene	191-07-1	25 µg/kg	110	70	130
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3197946)							
ES1326082-009	Anonymous	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	72.6	70	130
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	123	70	130
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	87.1	70	130
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	75.0	70	130
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	83.6	70	130
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	90.1	70	130
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	89.1	70	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	105	70	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	83.9	70	130
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	72.2	70	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	114	70	130
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	25 µg/kg	88.8	70	130
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	83.2	70	130
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	122	70	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	93.5	70	130
		EP132B-SD: Perylene	198-55-0	25 µg/kg	80.9	70	130
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	117	70	130
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	90.6	70	130
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	78.5	70	130
		EP132B-SD: Coronene	191-07-1	25 µg/kg	106	70	130

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: SOIL

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report			
Spike	Spike Recovery (%)	Recovery Limits (%)	RPDs (%)



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3190734)										
ES1326083-001	BW_SS40	EP080-SD: C6 - C9 Fraction	----	6.5 mg/kg	127	----	70	130	----	----
EP080-SD: BTEXN (QCLot: 3190734)										
ES1326083-001	BW_SS40	EP080-SD: Benzene	71-43-2	0.5 mg/kg	106	----	70	130	----	----
		EP080-SD: Toluene	108-88-3	0.5 mg/kg	104	----	70	130	----	----
		EP080-SD: Ethylbenzene	100-41-4	0.5 mg/kg	98.1	----	70	130	----	----
		EP080-SD: meta- & para-Xylene	108-38-3	0.5 mg/kg	102	----	70	130	----	----
		EP080-SD: ortho-Xylene	106-42-3 95-47-6	0.5 mg/kg	104	----	70	130	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3191552)										
ES1326083-001	BW_SS40	EP075(SIM): Phenol	108-95-2	10 mg/kg	82.2	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	84.2	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	86.0	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	77.8	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	48.6	----	20	130	----	----
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3191555)										
ES1326083-002	BW_SS41	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	102	----	70	130	----	----
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	78.8	----	70	130	----	----
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	103	----	70	130	----	----
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	123	----	70	130	----	----
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	108	----	70	130	----	----
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	76.2	----	70	130	----	----
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	99.8	----	70	130	----	----
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	79.0	----	70	130	----	----
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	94.3	----	70	130	----	----
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	83.7	----	70	130	----	----
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	73.5	----	70	130	----	----
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	25 µg/kg	71.9	----	70	130	----	----
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	86.9	----	70	130	----	----
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	104	----	70	130	----	----
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	95.9	----	70	130	----	----
		EP132B-SD: Perylene	198-55-0	25 µg/kg	95.8	----	70	130	----	----
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	76.7	----	70	130	----	----
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	107	----	70	130	----	----
		EP132B-SD: Indeno(1,2,3-cd)pyrene	193-39-5	25 µg/kg	109	----	70	130	----	----
		EP132B-SD: Coronene	191-07-1	25 µg/kg	110	----	70	130	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3191556)										
ES1326083-002	BW_SS41	EP071-SD: C10 - C14 Fraction	----	19.75 mg/kg	86.1	----	70	130	----	----
		EP071-SD: C15 - C28 Fraction	----	87.25 mg/kg	84.7	----	70	130	----	----
		EP071-SD: C29 - C36 Fraction	----	60 mg/kg	116	----	70	130	----	----



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3191562)										
ES1326083-002	BW_SS41	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	64.1	----	44	136	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3192516)										
ES1326082-009	Anonymous	EP080-SD: C6 - C9 Fraction	----	6.5 mg/kg	90.1	----	70	130	----	----
EP080-SD: BTEXN (QCLot: 3192516)										
ES1326082-009	Anonymous	EP080-SD: Benzene	71-43-2	0.5 mg/kg	78.6	----	70	130	----	----
		EP080-SD: Toluene	108-88-3	0.5 mg/kg	78.8	----	70	130	----	----
		EP080-SD: Ethylbenzene	100-41-4	0.5 mg/kg	80.2	----	70	130	----	----
		EP080-SD: meta- & para-Xylene	108-38-3	0.5 mg/kg	84.2	----	70	130	----	----
		EP080-SD: ortho-Xylene	106-42-3	0.5 mg/kg	83.2	----	70	130	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3192768)										
ES1326152-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	108	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	107	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	112	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	99.2	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	51.4	----	20	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192969)										
ES1326190-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	111	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192969)										
ES1326190-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	100	----	70	130	----	----
EP080: BTEXN (QCLot: 3192969)										
ES1326190-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	81.7	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	85.4	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	85.0	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	87.2	----	70	130	----	----
		EP080: ortho-Xylene	106-42-3	2.5 mg/kg	87.8	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	83.1	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3196069)										
ES1326082-009	Anonymous	EG035T-LL: Mercury	7439-97-6	0.050 mg/kg	81.7	----	70	130	----	----
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3196070)										
ES1326082-009	Anonymous	EG020-SD: Arsenic	7440-38-2	50 mg/kg	95.0	----	70	130	----	----
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	95.2	----	70	130	----	----
		EG020-SD: Chromium	7440-47-3	50 mg/kg	97.5	----	70	130	----	----
		EG020-SD: Copper	7440-50-8	125 mg/kg	81.6	----	70	130	----	----
		EG020-SD: Lead	7439-92-1	125 mg/kg	98.7	----	70	130	----	----
		EG020-SD: Nickel	7440-02-0	50 mg/kg	97.8	----	70	130	----	----
		EG020-SD: Zinc	7440-66-6	125 mg/kg	86.2	----	70	130	----	----



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3196075)										
ES1326083-015	BW_SS11	EG035T-LL: Mercury	7439-97-6	0.050 mg/kg	87.0	----	70	130	----	----
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3196076)										
ES1326083-015	BW_SS11	EG020-SD: Arsenic	7440-38-2	50 mg/kg	93.8	----	70	130	----	----
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	99.1	----	70	130	----	----
		EG020-SD: Chromium	7440-47-3	50 mg/kg	100	----	70	130	----	----
		EG020-SD: Copper	7440-50-8	125 mg/kg	94.3	----	70	130	----	----
		EG020-SD: Lead	7439-92-1	125 mg/kg	100	----	70	130	----	----
		EG020-SD: Nickel	7440-02-0	50 mg/kg	103	----	70	130	----	----
		EG020-SD: Zinc	7440-66-6	125 mg/kg	87.2	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3197554)										
ES1326083-022	BW_SS18	EG035T-LL: Mercury	7439-97-6	0.050 mg/kg	87.3	----	70	130	----	----
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3197555)										
ES1326083-022	BW_SS18	EG020-SD: Arsenic	7440-38-2	50 mg/kg	113	----	70	130	----	----
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	115	----	70	130	----	----
		EG020-SD: Chromium	7440-47-3	50 mg/kg	121	----	70	130	----	----
		EG020-SD: Copper	7440-50-8	125 mg/kg	101	----	70	130	----	----
		EG020-SD: Lead	7439-92-1	125 mg/kg	101	----	70	130	----	----
		EG020-SD: Nickel	7440-02-0	50 mg/kg	122	----	70	130	----	----
		EG020-SD: Zinc	7440-66-6	125 mg/kg	105	----	70	130	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3197940)										
ES1326082-009	Anonymous	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	92.5	----	44	136	----	----
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3197946)										
ES1326082-009	Anonymous	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	72.6	----	70	130	----	----
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	123	----	70	130	----	----
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	87.1	----	70	130	----	----
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	75.0	----	70	130	----	----
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	83.6	----	70	130	----	----
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	90.1	----	70	130	----	----
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	89.1	----	70	130	----	----
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	105	----	70	130	----	----
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	83.9	----	70	130	----	----
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	72.2	----	70	130	----	----
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	114	----	70	130	----	----
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	25 µg/kg	88.8	----	70	130	----	----
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	83.2	----	70	130	----	----
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	122	----	70	130	----	----
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	93.5	----	70	130	----	----
		EP132B-SD: Perylene	198-55-0	25 µg/kg	80.9	----	70	130	----	----



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3197946) - continued										
ES1326082-009	Anonymous	EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	117	----	70	130	----	----
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	90.6	----	70	130	----	----
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	78.5	----	70	130	----	----
		EP132B-SD: Coronene	191-07-1	25 µg/kg	106	----	70	130	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3197947)										
ES1326082-009	Anonymous	EP071-SD: C10 - C14 Fraction	----	19.75 mg/kg	91.1	----	70	130	----	----
		EP071-SD: C15 - C28 Fraction	----	87.25 mg/kg	86.1	----	70	130	----	----
		EP071-SD: C29 - C36 Fraction	----	60 mg/kg	123	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1326083	Page	: 1 of 13
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 29-NOV-2013
C-O-C number	: ----	Issue Date	: 16-DEC-2013
Sampler	: TA	No. of samples received	: 26
Order number	: 0224193	No. of samples analysed	: 26
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS17, D01_271113_TA/S	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16, BW_SS18,	27-NOV-2013	----	----	----	05-DEC-2013	11-DEC-2013	✓
EA150: Particle Sizing								
Snap Lock Bag (EA150H)								
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS17,	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16, BW_SS18	27-NOV-2013	---	26-MAY-2014	----	12-DEC-2013	26-MAY-2014	✓



Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA150: Soil Classification based on Particle Size								
Snap Lock Bag (EA150H)								
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS17,	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16, BW_SS18	27-NOV-2013	---	26-MAY-2014	----	12-DEC-2013	26-MAY-2014	✓
EG020-SD: Total Metals in Sediments by ICPMS								
Soil Glass Jar - Unpreserved (EG020-SD)								
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS17	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16,	27-NOV-2013	05-DEC-2013	26-MAY-2014	✓	06-DEC-2013	26-MAY-2014	✓
Soil Glass Jar - Unpreserved (EG020-SD)								
BW_SS18,	D01_271113_TA/S	27-NOV-2013	06-DEC-2013	26-MAY-2014	✓	09-DEC-2013	26-MAY-2014	✓
EG020T: Total Metals by ICP-MS								
Soil Glass Jar - Unpreserved (EG020T)								
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS17	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16,	27-NOV-2013	05-DEC-2013	26-MAY-2014	✓	09-DEC-2013	26-MAY-2014	✓
Soil Glass Jar - Unpreserved (EG020T)								
BW_SS18,	D01_271113_TA/S	27-NOV-2013	06-DEC-2013	26-MAY-2014	✓	09-DEC-2013	26-MAY-2014	✓



Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Soil Glass Jar - Unpreserved (EG020X-T) BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS17 BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16,	27-NOV-2013	05-DEC-2013	26-MAY-2014	✓	06-DEC-2013	26-MAY-2014	✓
Soil Glass Jar - Unpreserved (EG020X-T) BW_SS18, D01_271113_TA/S	27-NOV-2013	06-DEC-2013	26-MAY-2014	✓	09-DEC-2013	26-MAY-2014	✓
EG020T: Total Metals by ICP-MS							
Soil Glass Jar - Unpreserved (EG020Y-T) BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS17 BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16,	27-NOV-2013	05-DEC-2013	26-MAY-2014	✓	06-DEC-2013	26-MAY-2014	✓
Soil Glass Jar - Unpreserved (EG020Y-T) BW_SS18, D01_271113_TA/S	27-NOV-2013	06-DEC-2013	26-MAY-2014	✓	09-DEC-2013	26-MAY-2014	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T-LL) BW_SS11, BW_SS13, BW_SS15, BW_SS17	BW_SS12, BW_SS14, BW_SS16, BW_SS17	27-NOV-2013	05-DEC-2013	25-DEC-2013	✓	06-DEC-2013	25-DEC-2013	✓
Soil Glass Jar - Unpreserved (EG035T-LL) BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54	27-NOV-2013	05-DEC-2013	25-DEC-2013	✓	09-DEC-2013	25-DEC-2013	✓
Soil Glass Jar - Unpreserved (EG035T-LL) BW_SS18	D01_271113_TA/S	27-NOV-2013	06-DEC-2013	25-DEC-2013	✓	09-DEC-2013	25-DEC-2013	✓
EP003: Total Organic Carbon (TOC) in Soil								
Pulp Bag (EP003) BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS17, D01_271113_TA/S	BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16, BW_SS18	27-NOV-2013	04-DEC-2013	25-DEC-2013	✓	04-DEC-2013	25-DEC-2013	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071-SD)							
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16	27-NOV-2013	05-DEC-2013	11-DEC-2013	✓	06-DEC-2013	14-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP071-SD) BW_SS17, D01_271113_TA/S	27-NOV-2013	06-DEC-2013	11-DEC-2013	✓	09-DEC-2013	15-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16	27-NOV-2013	05-DEC-2013	11-DEC-2013	✓	05-DEC-2013	14-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) BW_SS17, D01_271113_TA/S	27-NOV-2013	06-DEC-2013	11-DEC-2013	✓	06-DEC-2013	15-JAN-2014	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
T/BLANK, TSC	22-NOV-2013	05-DEC-2013	06-DEC-2013	✓	05-DEC-2013	06-DEC-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Soil Glass Jar - Unpreserved (EP080)							
T/BLANK	22-NOV-2013	05-DEC-2013	06-DEC-2013	✓	05-DEC-2013	06-DEC-2013	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080-SD: BTEXN								
Soil Glass Jar - Unpreserved (EP080-SD) BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16	27-NOV-2013	04-DEC-2013	11-DEC-2013	✓	06-DEC-2013	11-DEC-2013	✓	
Soil Glass Jar - Unpreserved (EP080-SD) BW_SS17, D01_271113_TA/S, BW_SS18	27-NOV-2013	04-DEC-2013	11-DEC-2013	✓	09-DEC-2013	11-DEC-2013	✓	
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080-SD) BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16	27-NOV-2013	04-DEC-2013	11-DEC-2013	✓	06-DEC-2013	11-DEC-2013	✓	
Soil Glass Jar - Unpreserved (EP080-SD) BW_SS17, D01_271113_TA/S, BW_SS18	27-NOV-2013	04-DEC-2013	11-DEC-2013	✓	09-DEC-2013	11-DEC-2013	✓	



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP131B: Polychlorinated Biphenyls (as Aroclors)							
Soil Glass Jar - Unpreserved (EP131B)							
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16	27-NOV-2013	05-DEC-2013	11-DEC-2013	✓	08-DEC-2013	14-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP131B)							
BW_SS17, D01_271113_TA/S, BW_SS18	27-NOV-2013	06-DEC-2013	11-DEC-2013	✓	11-DEC-2013	15-JAN-2014	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP132B-SD)							
BW_SS40, BW_SS42, BW_SS45, BW_SS47, BW_SS49, BW_SS51, BW_SS53, BW_SS11, BW_SS13, BW_SS15, BW_SS41, BW_SS43, BW_SS46, BW_SS48, BW_SS50, BW_SS52, BW_SS54, BW_SS12, BW_SS14, BW_SS16	27-NOV-2013	05-DEC-2013	11-DEC-2013	✓	07-DEC-2013	14-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP132B-SD)							
BW_SS17, D01_271113_TA/S, BW_SS18	27-NOV-2013	06-DEC-2013	11-DEC-2013	✓	09-DEC-2013	15-JAN-2014	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	4	38	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	4	39	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	3	29	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	3	29	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	5	42	11.9	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	5	41	12.2	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	5	41	12.2	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	5	41	12.2	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	3	23	13.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	3	29	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	3	29	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Total Metals by ICP-MS	EG020T	3	42	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	29	6.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	2	29	6.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	3	42	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	3	41	7.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	3	41	7.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	3	41	7.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	2	23	8.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	2	29	6.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	2	29	6.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Total Metals by ICP-MS	EG020T	3	42	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	29	6.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	2	29	6.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	3	42	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	3	41	7.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	3	41	7.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	3	41	7.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	2	23	8.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	2	29	6.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Method Blanks (MB) - Continued							
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	2	29	6.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	29	6.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	2	29	6.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	3	42	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	3	41	7.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	3	41	7.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	3	41	7.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	2	29	6.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	2	29	6.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Metals by ICP-MS	EG020T	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020) (ICPMS) Metals in solids are determined following an appropriate acid digestion. The ICPMS technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite X	EG020X-T	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite Y	EG020Y-T	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP003	SOIL	In-house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO ₂) is automatically measured by infra-red detector.
TPH - Semivolatile Fraction	EP071-SD	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
TPH Volatiles/BTEX in Sediments	EP080-SD	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PCB's (Ultra-trace)	EP131B	SOIL	USEPA Method 3640 (GPC cleanup), 3620 (Florisil), 8081/8082 (GC/uECD/uECD) This technique is compliant with NEPM (2013) Schedule B(3) (Method 504)
PAHs in Sediments by GCMS(SIM)	EP132B-SD	SOIL	USEPA 8270 GCMS Capillary column, SIM mode using large volume programmed temperature vaporisation injection.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na ₂ SO ₄ and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Tumbler Extraction of Solids for LVI (Non-concentrating)	ORG17D	SOIL	In house: 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 50mL 1:1 DCM/Acetone by end over end tumbling. An aliquot is concentrated by nitrogen blowdown to a reduced volume for analysis if required.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG020-SD: Total Metals in Sediments by ICPMS	ES1326164-003	Anonymous	Manganese	7439-96-5	22.2 %	0-20%	RPD exceeds LOR based limits
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)A: Phenolic Compounds	3811100-002	----	2,4-Dichlorophenol	120-83-2	112 %	68-112%	Recovery greater than upper control limit

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



CHAIN OF CUSTODY

ALS Laboratory
Please tick →

CLIENT: EAM
OFFICE: Sydney
PROJECT: Project Symphony
ORDER NUMBER: 0224193
PROJECT MANAGER: J. Ferris
SAMPLER: T. ARMANI
COC emailed to ALS? (YES / NO)
Email Reports to (will default to PM if no other addresses are listed): Sydney@hades-ferris.com
Email Invoice to (will default to PM if no other addresses are listed):

TURNAROUND REQUIREMENTS: Standard TAT (List due date):
 Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SY78413
SITE: BAYSWATER MODEL
CONTACT PH:
SAMPLER MOBILE:
EDD FORMAT (or default):

FOR LABORATORY USE ONLY (Circle)
 Custody Seal Intact? Yes No
 Free ice / frozen ice bricks present upon receipt? Yes No
 Random Sample Temperature on Receipt: _____ °C
 Other comment:

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (to codes below)	CONTAINER INFORMATION (refer to codes below)	ANALYSIS REQUIRED INCLUDING SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	COC SEQUENCE NUMBER (Circle)							RECEIVED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:	Additional Information	
							1	2	3	4	5	6	7						
1	BW-SS01	28/11/13	W			W-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)													
2	BW-SS07					17 Metals (As, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Ti)													
3	BW-SS08					Selenium (Freshwater ORC)													
4	BW-SS09					VOC Target Scan													
5	BW-SS19					PCB													
6	BW-SS20					W-2 TR(HC-A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z)													
7	BW-SS21					Phenols													
8	BW-SS22					PCB													
9	BW-SS23					PCB													
10	BW-SS24					PCB													
11	BW-SS26					PCB													
12	BW-SS33					PCB													


CONTAINER INFORMATION: TOTAL CONTAINERS: 5

MATRIX: W

TYPE & PRESERVATIVE: Ix-B Tex BROKEN (W TRANS)

Additional Information: Comments on likely contaminant levels, dilutions, or samples requiring specific COC analysis etc.

Environmental Division
Sydney
Work Order
ES1326163



Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfate Preserved; AV = Airtight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formic Preserved Plastic; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solids; B = Unpreserved Bag.



CHAIN OF CUSTODY
ALS Laboratory
please tick →

CLIENT: _____
OFFICE: _____
PROJECT: Project Symphony
ORDER NUMBER: _____
PROJECT MANAGER: _____

TURNAROUND REQUIREMENTS: Standard TAT (List due date): _____
 Non Standard or Urgent TAT (List due date): _____
 (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
ALS QUOTE NO.: SY79413
SITE: BAYSWATER / EDDLELL

CONTACT PH: _____
SAMPLER MOBILE: _____
EDD FORMAT (or default): _____

COC emailed to ALS? (YES / NO) _____
Email Reports to (will default to PM if no other addresses are listed): _____
Email Invoices to (will default to PM if no other addresses are listed): _____

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: _____

FOR LABORATORY USE ONLY (Circle)
 Custody Seal Intact? Yes No
 Free Ice / frozen ice blocks present upon receipt? Yes No
 Random Sample Temperature on Receipt: _____ °C
 Other comment: _____

COC SEQUENCE NUMBER (Check)
 COC: 1 2 3 4 5 6 7
 OF: 1 2 3 4 5 6 7

RECEIVED BY: _____
DATE/TIME: _____

RELINQUISHED BY: _____
DATE/TIME: _____

RECEIVED BY: *Reemesh*
DATE/TIME: *2/11/13 19:20*

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (to codes below)	TOTAL CONTAINERS (refer)	ANALYSIS REQUIRED INCLUDING SUITES (NB. Suite Codes must be listed to extract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
13	DOL 28113-TA/W	29/11/13	W		5	W-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg) W-7 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Tl) Selenium (OR) (Freshwater OR) VOC Target Scan PCB PPOS/PFOA W-24 TRHCs C40/BTEXN, PAH Phenols	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc. <i>EnviroLab</i> <i>EnviroLab</i> <i>EnviroLab</i> <i>TRN/BTEX</i> <i>TRN/BTEX</i>
14	T/BLANK						
15	T/SPIKE						

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic
 V = VOA HCl Preserved; VB = VOA Via Sodium Bisulfate Preserved; VS = VOA Via Sulfonic Preserved; AV = Airtight Unpreserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldhyde Preserved Glass;
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Salts; B = Unpreserved Bag.

Hi Loren, can you please schedule the samples below for the requested additional analyses? Will you need to re-analyse or is it possible to just pull the data from the ICP?

We will need 48-72 hour turnaround on these. Can you let me know if there are likely to be delays?

I've also attached this in Excel if you need it.

Matrix	ERM Sample ID	Sample Date	ALS Sample Code	Additional Analysis
Sediment	BW_SS06	6/12/2013	ES1327428001	Barium, Beryllium, Boron, Cobalt, Manganese, Mercury, Molybdenum, Selenium, Thallium, Vanadium
Sediment	BW_SS10	6/12/2013	ES1327428002	Barium, Beryllium, Boron, Cobalt, Manganese, Mercury, Molybdenum, Selenium, Thallium, Vanadium
Sediment	BW_SS35	26/11/2013	ES1326082009	Selenium
Sediment	BW_SS36	26/11/2013	ES1326082010	Selenium
Sediment	BW_SS37	26/11/2013	ES1326082011	Selenium
Sediment	BW_SS38	26/11/2013	ES1326082012	Selenium
Sediment	BW_SS39	26/11/2013	ES1326082013	Selenium
Water	BW_SS01	28/11/2013	ES1326163001	Mercury, Selenium
Water	BW_SS07	28/11/2013	ES1326163002	Mercury, Selenium
Water	BW_SS08	28/11/2013	ES1326163003	Mercury, Selenium
Water	BW_SS09	28/11/2013	ES1326163004	Mercury, Selenium
Water	BW_SS11	27/11/2013	ES1326081015	Mercury, Selenium
Water	BW_SS12	27/11/2013	ES1326081016	Mercury, Selenium
Water	BW_SS13	27/11/2013	ES1326081017	Mercury, Selenium
Water	BW_SS14	27/11/2013	ES1326081018	Mercury, Selenium
Water	BW_SS15	27/11/2013	ES1326081019	Mercury, Selenium
Water	BW_SS16	27/11/2013	ES1326081020	Mercury, Selenium
Water	BW_SS17	27/11/2013	ES1326081021	Mercury, Selenium
Water	BW_SS18	27/11/2013	ES1326081022	Mercury, Selenium
Water	BW_SS19	28/11/2013	ES1326163005	Mercury, Selenium
Water	BW_SS20	28/11/2013	ES1326163006	Mercury, Selenium
Water	BW_SS21	28/11/2013	ES1326163007	Mercury, Selenium
Water	BW_SS22	28/11/2013	ES1326163008	Mercury, Selenium
Water	BW_SS23	28/11/2013	ES1326163009	Mercury, Selenium
Water	BW_SS24	28/11/2013	ES1326163010	Mercury, Selenium

Water	BW_SS25	29/11/2013	ES1326639001	Selenium
Water	BW_SS26	28/11/2013	ES1326163011	Mercury, Selenium
Water	BW_SS27	29/11/2013	ES1326639002	Selenium
Water	BW_SS28	29/11/2013	ES1326639003	Selenium
Water	BW_SS29	29/11/2013	ES1326639004	Selenium
Water	BW_SS30	29/11/2013	ES1326639005	Selenium
Water	BW_SS31	29/11/2013	ES1326639006	Selenium
Water	BW_SS32	29/11/2013	ES1326639007	Selenium
Water	BW_SS33	28/11/2013	ES1326163012	Mercury, Selenium
Water	BW_SS34	29/11/2013	ES1326639008	Selenium
Water	BW_SS40	27/11/2013	ES1326081001	Mercury, Selenium
Water	BW_SS41	27/11/2013	ES1326081002	Mercury, Selenium
Water	BW_SS42	27/11/2013	ES1326081003	Mercury, Selenium
Water	BW_SS43	27/11/2013	ES1326081004	Mercury, Selenium
Water	BW_SS45	27/11/2013	ES1326081005	Mercury, Selenium
Water	BW_SS46	27/11/2013	ES1326081006	Mercury, Selenium
Water	BW_SS47	27/11/2013	ES1326081007	Mercury, Selenium
Water	BW_SS48	27/11/2013	ES1326081008	Mercury, Selenium
Water	BW_SS49	27/11/2013	ES1326081009	Mercury, Selenium
Water	BW_SS50	27/11/2013	ES1326081010	Mercury, Selenium
Water	BW_SS51	27/11/2013	ES1326081011	Mercury, Selenium
Water	BW_SS52	27/11/2013	ES1326081012	Mercury, Selenium
Water	BW_SS53	27/11/2013	ES1326081013	Mercury, Selenium
Water	BW_SS54	27/11/2013	ES1326081014	Mercury, Selenium

Cheers,

JoeJoe Ferring

Senior Environmental Scientist

ERM

Building C, 33 Saunders Street Pyrmont NSW 2009

Locked Bag 24, Broadway NSW 2007 AUSTRALIA

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: ES1326163		
Amendment	: 1		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	Page	: 1 of 3
Order number	: 0224193	Quote number	: ES2013ENVRES0369 (SY/794/13)
C-O-C number	: ----	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL		
Sampler	: TA		

Dates

Date Samples Received	: 02-DEC-2013	Issue Date	: 30-DEC-2013 16:18
Client Requested Due Date	: 03-JAN-2014	Scheduled Reporting Date	: 03-JAN-2014

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.1'C SYD - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 15
Security Seal	: Intact.	No. of samples analysed	: 15

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- Samples T01_281113_TA/W, T02_281113_TA/W and T03_281113_TA/W to be forwarded to Envirolab.
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020T Total Recoverable Metals by ICPMS (including	WATER - EG035T Total Mercury by FIMS	WATER - EP080 BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1326163-001	28-NOV-2013 15:00	BW_SS01	✓	✓			✓
ES1326163-002	28-NOV-2013 15:00	BW_SS07	✓	✓			✓
ES1326163-003	28-NOV-2013 15:00	BW_SS08	✓	✓			✓
ES1326163-004	28-NOV-2013 15:00	BW_SS09	✓	✓			✓
ES1326163-005	28-NOV-2013 15:00	BW_SS19	✓	✓			✓
ES1326163-006	28-NOV-2013 15:00	BW_SS20	✓	✓			✓
ES1326163-007	28-NOV-2013 15:00	BW_SS21	✓	✓			✓
ES1326163-008	28-NOV-2013 15:00	BW_SS22	✓	✓			✓
ES1326163-009	28-NOV-2013 15:00	BW_SS23	✓	✓			✓
ES1326163-010	28-NOV-2013 15:00	BW_SS24	✓	✓			✓
ES1326163-011	28-NOV-2013 15:00	BW_SS26	✓	✓			✓
ES1326163-012	28-NOV-2013 15:00	BW_SS33	✓	✓			✓
ES1326163-013	28-NOV-2013 15:00	D01_281113_TAW	✓				✓
ES1326163-014	22-NOV-2013 15:00	T/BLANK				✓	
ES1326163-015	22-NOV-2013 15:00	T/SPIKE			✓		

Proactive Holding Time Report

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



Requested Deliverables

MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) (COC)	Email	joseph.ferring@erm.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	joseph.ferring@erm.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.ferring@erm.com
- EDI Format - XTab (XTAB)	Email	joseph.ferring@erm.com

SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep)	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT	Email	symphony.macgen@erm.com
- Chain of Custody (CoC)	Email	symphony.macgen@erm.com
- EDI Format - ENMRG	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM	Email	symphony.macgen@erm.com
- EDI Format - ESDAT	Email	symphony.macgen@erm.com
- EDI Format - XTab	Email	symphony.macgen@erm.com

THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
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CERTIFICATE OF ANALYSIS

Work Order : ES1326163 Amendment : 1 Client : ENVIRO RESOURCES MANAGEMENT Contact : MR JOSEPH FERRING Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007 E-mail : joseph.ferring@erm.com Telephone : +61 02 8584 8888 Facsimile : +61 02 8584 8800 Project : PROJECT SYMPHONY Order number : 0224193 C-O-C number : ---- Sampler : TA Site : LIDDELL Quote number : SY/794/13	Page : 1 of 12 Laboratory : Environmental Division Sydney Contact : Barbara Hanna Address : 277-289 Woodpark Road Smithfield NSW Australia 2164 E-mail : Barbara.Hanna@alsglobal.com Telephone : +61 2 8784 8555 Facsimile : +61 2 8784 8555 QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement Date Samples Received : 02-DEC-2013 Issue Date : 31-DEC-2013 No. of samples received : 15 No. of samples analysed : 15
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics



General Comments

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

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

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

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

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

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

LOR = Limit of reporting

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

- **EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.**
- **This report has been amended and re-released to allow the reporting of additional analytical data.**



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS01	BW_SS07	BW_SS08	BW_SS09	BW_SS19
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326163-001	ES1326163-002	ES1326163-003	ES1326163-004	ES1326163-005
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.005	0.020	0.017	0.008	0.004
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.058	0.088	0.094	0.073	0.093
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0004	0.0003	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.001	0.003	0.003	0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	0.007	0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	0.008	0.006	0.005	0.006
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	1.85	0.036	0.043	0.104	0.006
Molybdenum	7439-98-7	0.001	mg/L	0.002	0.342	0.372	0.300	0.100
Nickel	7440-02-0	0.001	mg/L	0.006	0.013	0.014	0.018	0.004
Selenium	7782-49-2	0.01	mg/L	<0.01	0.03	0.03	0.01	<0.01
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	0.02	0.02	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.014	0.011	0.007	<0.005	<0.005
Boron	7440-42-8	0.05	mg/L	0.11	3.23	3.57	3.22	0.84
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				BW_SS01	BW_SS07	BW_SS08	BW_SS09	BW_SS19
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
				ES1326163-001	ES1326163-002	ES1326163-003	ES1326163-004	ES1326163-005
Compound	CAS Number	LOR	Unit					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS01	BW_SS07	BW_SS08	BW_SS09	BW_SS19
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326163-001	ES1326163-002	ES1326163-003	ES1326163-004	ES1326163-005
EP080: BTEXN - Continued								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	26.9	26.9	25.9	25.4	24.2
2-Chlorophenol-D4	93951-73-6	0.1	%	61.3	61.3	62.4	58.7	58.8
2,4,6-Tribromophenol	118-79-6	0.1	%	77.2	77.2	63.5	65.7	65.3
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	49.3	32.8	60.9	61.5	64.7
Anthracene-d10	1719-06-8	0.1	%	60.2	62.5	60.8	60.0	61.6
4-Terphenyl-d14	1718-51-0	0.1	%	54.6	55.9	55.0	54.1	55.3
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	89.2	81.7	99.2	87.8	88.4
Toluene-D8	2037-26-5	0.1	%	81.5	81.4	109	82.9	87.6
4-Bromofluorobenzene	460-00-4	0.1	%	77.6	76.6	101	81.2	81.6



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS20	BW_SS21	BW_SS22	BW_SS23	BW_SS24
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326163-006	ES1326163-007	ES1326163-008	ES1326163-009	ES1326163-010
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.003	0.004	0.006	0.004	0.004
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.088	0.088	0.091	0.090	0.092
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.004	0.003	0.004	0.004	0.003
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	0.006	0.005	0.020	0.019	0.009
Molybdenum	7439-98-7	0.001	mg/L	0.095	0.095	0.097	0.097	0.095
Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.004	0.004	0.004
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	0.01	0.01	0.01	0.01	0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	0.009	<0.005	<0.005	0.008
Boron	7440-42-8	0.05	mg/L	0.80	0.82	0.83	0.82	0.80
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS20	BW_SS21	BW_SS22	BW_SS23	BW_SS24
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326163-006	ES1326163-007	ES1326163-008	ES1326163-009	ES1326163-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				BW_SS20	BW_SS21	BW_SS22	BW_SS23	BW_SS24
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
				ES1326163-006	ES1326163-007	ES1326163-008	ES1326163-009	ES1326163-010
Compound	CAS Number	LOR	Unit					
EP080: BTEXN - Continued								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	25.3	28.4	26.6	27.4	27.2
2-Chlorophenol-D4	93951-73-6	0.1	%	60.4	67.2	63.1	72.2	63.7
2,4,6-Tribromophenol	118-79-6	0.1	%	66.6	87.2	72.8	77.1	75.8
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	64.8	69.7	52.6	21.6	22.1
Anthracene-d10	1719-06-8	0.1	%	62.0	69.0	62.8	66.8	65.6
4-Terphenyl-d14	1718-51-0	0.1	%	55.8	62.0	56.5	60.8	59.8
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	104	95.4	98.5	102	104
Toluene-D8	2037-26-5	0.1	%	95.2	81.2	79.5	80.9	91.0
4-Bromofluorobenzene	460-00-4	0.1	%	83.0	75.9	81.0	82.6	96.6



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS26	BW_SS33	D01_281113_TA/W	T/BLANK	T/SPIKE
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326163-011	ES1326163-012	ES1326163-013	ES1326163-014	ES1326163-015
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.005	0.004	0.004	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Barium	7440-39-3	0.001	mg/L	0.112	0.088	0.098	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.004	0.004	0.003	----	----
Lead	7439-92-1	0.001	mg/L	0.002	<0.001	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	0.008	0.007	0.006	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.102	0.098	0.104	----	----
Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.004	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Vanadium	7440-62-2	0.01	mg/L	0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	0.012	<0.005	0.024	----	----
Boron	7440-42-8	0.05	mg/L	0.86	0.82	0.84	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS26	BW_SS33	D01_281113_TA/W	T/BLANK	T/SPIKE
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326163-011	ES1326163-012	ES1326163-013	ES1326163-014	ES1326163-015
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----
EP080: BTEXN								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS26	BW_SS33	D01_281113_TA/W	T/BLANK	T/SPIKE
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326163-011	ES1326163-012	ES1326163-013	ES1326163-014	ES1326163-015
EP080: BTEXN - Continued								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	16
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	18
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	15
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	15
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	17
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	32
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	81
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	16
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	23.0	32.7	31.4	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	56.2	67.6	70.5	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	64.3	76.8	82.0	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	55.9	69.2	72.3	----	----
Anthracene-d10	1719-06-8	0.1	%	59.1	67.4	70.7	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	53.8	60.0	63.6	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	85.5	98.1	104	109	106
Toluene-D8	2037-26-5	0.1	%	88.6	89.5	97.0	99.5	104
4-Bromofluorobenzene	460-00-4	0.1	%	84.1	86.2	91.6	86.7	98.0



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM): Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM): PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QUALITY CONTROL REPORT

Work Order	: ES1326163	Page	: 1 of 13
Amendment	: 1		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 02-DEC-2013
Sampler	: TA	Issue Date	: 31-DEC-2013
Order number	: 0224193		
Quote number	: SY/794/13	No. of samples received	: 15
		No. of samples analysed	: 15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics



General Comments

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

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

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

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

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



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3195082)									
ES1326107-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.014	0.014	0.0	0% - 50%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.093	0.096	3.5	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.007	0.008	15.3	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit		
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.0	No Limit		
ES1326163-004	BW_SS09	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.008	0.009	12.6	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.073	0.073	0.0	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.005	0.004	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.104	0.101	2.8	0% - 20%
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.300	0.302	0.8	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.018	0.016	11.0	0% - 50%
		EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	0.01	<0.01	0.0	No Limit
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit		
EG020A-T: Boron	7440-42-8	0.05	mg/L	3.22	3.20	0.5	0% - 20%		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3233040)									
ES1326163-001	BW_SS01	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1326163-011	BW_SS26	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3193975)									



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 3193975) - continued									
ES1326163-001	BW_SS01	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
ES1326163-007	BW_SS21	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3193975)									
ES1326163-001	BW_SS01	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3193975) - continued									
ES1326163-001	BW_SS01	EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
ES1326163-007	BW_SS21	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3192001)									
ES1326081-019	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1326082-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3192008)									
ES1326099-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1326163-006	BW_SS20	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3193974)									
ES1326163-001	BW_SS01	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
ES1326163-007	BW_SS21	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3192001)									
ES1326081-019	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1326082-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3192008)									
ES1326099-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1326163-006	BW_SS20	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3193974)									
ES1326163-001	BW_SS01	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3193974) - continued									
ES1326163-001	BW_SS01	EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
ES1326163-007	BW_SS21	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080: BTEXN (QC Lot: 3192001)									
ES1326081-019	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES1326082-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP080: BTEXN (QC Lot: 3192008)									
ES1326099-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES1326163-006	BW_SS20	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



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

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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020T: Total Metals by ICP-MS (QCLot: 3195082)									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.3	79	121	
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	93.4	76	120	
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	95.8	84	116	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	93.5	82	114	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	103	83	115	
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	100	84	116	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	102	83	117	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.1	85	115	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	97.3	83	115	
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	96.3	81	125	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.7	83	117	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	87.7	68	128	
EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	0.1 mg/L	95.7	86	116	
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	101	84	114	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	92.4	76	118	
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.1 mg/L	89.2	73	127	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3233040)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	95.8	77	115	
EP075(SIM)A: Phenolic Compounds (QCLot: 3193975)									
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	20 µg/L	46.4	24.5	61.9	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	20 µg/L	98.2	63.8	110	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	20 µg/L	97.4	55.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	40 µg/L	96.6	42.5	114	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	20 µg/L	106	62.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	20 µg/L	103	59.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	20 µg/L	105	59.3	122	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	20 µg/L	105	64.3	118	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP075(SIM)A: Phenolic Compounds (QCLot: 3193975) - continued									
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	20 µg/L	98.1	63	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	20 µg/L	85.2	58.7	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	20 µg/L	84.9	50	108	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	40 µg/L	44.8	8.7	95	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193975)									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	20 µg/L	104	58.6	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	20 µg/L	92.8	63.6	114	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	20 µg/L	91.5	62.2	113	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	20 µg/L	92.9	63.9	115	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	20 µg/L	99.9	62.6	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	20 µg/L	96.9	64.3	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	20 µg/L	98.9	63.6	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	20 µg/L	102	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	20 µg/L	106	64.1	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	20 µg/L	107	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	20 µg/L	102	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	20 µg/L	97.2	61.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	20 µg/L	105	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	20 µg/L	103	59.9	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	20 µg/L	100	61.2	117	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193975) - continued									
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	20 µg/L	103	59.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192001)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	89.7	75	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192008)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	87.0	75	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3193974)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	81.4	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	98.7	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	82.4	62	120	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192001)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	87.9	75	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192008)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	89.2	75	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3193974)									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	80.8	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	85.4	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	78.7	67	127	
EP080: BTEXN (QCLot: 3192001)									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	99.1	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	100	65	129	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	86.7	70	120	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	88.8	69	121	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	88.9	72	122	
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	79.0	70	124	
EP080: BTEXN (QCLot: 3192008)									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	83.1	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	90.5	65	129	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	87.6	70	120	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	90.0	69	121	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	89.3	72	122	
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	103	70	124	



Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
				Low	High		
EG020T: Total Metals by ICP-MS (QCLot: 3195082)							
ES1326107-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	105	70	130
		EG020A-T: Beryllium	7440-41-7	1 mg/L	111	70	130
		EG020A-T: Barium	7440-39-3	1 mg/L	108	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	104	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	108	70	130
		EG020A-T: Cobalt	7440-48-4	1 mg/L	109	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	106	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	103	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	105	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	108	70	130
		EG020A-T: Vanadium	7440-62-2	1 mg/L	105	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	105	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3233040)							
ES1326163-002	BW_SS07	EG035T: Mercury	7439-97-6	0.010 mg/L	96.7	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3193975)							
ES1326163-002	BW_SS07	EP075(SIM): Phenol	108-95-2	200 µg/L	40.2	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	200 µg/L	78.8	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	200 µg/L	101	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	200 µg/L	83.5	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	200 µg/L	108	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193975)							
ES1326163-002	BW_SS07	EP075(SIM): Acenaphthene	83-32-9	200 µg/L	81.4	70	130
		EP075(SIM): Pyrene	129-00-0	200 µg/L	82.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192001)							
ES1326081-019	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	99.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192008)							
ES1326099-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	96.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3193974)							
ES1326163-002	BW_SS07	EP071: C10 - C14 Fraction	----	2000 µg/L	108	74	150
		EP071: C15 - C28 Fraction	----	3000 µg/L	97.6	77	153
		EP071: C29 - C36 Fraction	----	2000 µg/L	80.0	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192001)							
ES1326081-019	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	100	70	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192008)							
ES1326099-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	98.3	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3193974)							
ES1326163-002	BW_SS07	EP071: >C10 - C16 Fraction	>C10_C16	2500 µg/L	100	74	150
		EP071: >C16 - C34 Fraction	----	3500 µg/L	113	77	153
		EP071: >C34 - C40 Fraction	----	1500 µg/L	74.4	67	153
EP080: BTEXN (QCLot: 3192001)							
ES1326081-019	Anonymous	EP080: Benzene	71-43-2	25 µg/L	92.1	70	130
		EP080: Toluene	108-88-3	25 µg/L	86.3	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	82.9	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	80.8	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	85.3	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	101	70	130
EP080: BTEXN (QCLot: 3192008)							
ES1326099-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	74.0	70	130
		EP080: Toluene	108-88-3	25 µg/L	75.4	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	78.9	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	77.4	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	83.8	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	87.1	70	130

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192001)										
ES1326081-019	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	99.3	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192001)										
ES1326081-019	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	100	----	70	130	----	----
EP080: BTEXN (QCLot: 3192001)										
ES1326081-019	Anonymous	EP080: Benzene	71-43-2	25 µg/L	92.1	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	86.3	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	82.9	----	70	130	----	----



Sub-Matrix: WATER

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP080: BTEXN (QCLot: 3192001) - continued										
ES1326081-019	Anonymous	EP080: meta- & para-Xylene	108-38-3	25 µg/L	80.8	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	25 µg/L	85.3	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	101	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192008)										
ES1326099-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	96.9	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192008)										
ES1326099-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	98.3	----	70	130	----	----
EP080: BTEXN (QCLot: 3192008)										
ES1326099-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	74.0	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	75.4	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	78.9	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	77.4	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	25 µg/L	83.8	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	87.1	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3193974)										
ES1326163-002	BW_SS07	EP071: C10 - C14 Fraction	----	2000 µg/L	108	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	3000 µg/L	97.6	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	2000 µg/L	80.0	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3193974)										
ES1326163-002	BW_SS07	EP071: >C10 - C16 Fraction	>C10_C16	2500 µg/L	100	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	3500 µg/L	113	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	1500 µg/L	74.4	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3193975)										
ES1326163-002	BW_SS07	EP075(SIM): Phenol	108-95-2	200 µg/L	40.2	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	200 µg/L	78.8	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	200 µg/L	101	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	200 µg/L	83.5	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	200 µg/L	108	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193975)										
ES1326163-002	BW_SS07	EP075(SIM): Acenaphthene	83-32-9	200 µg/L	81.4	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	200 µg/L	82.3	----	70	130	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3195082)										
ES1326107-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	105	----	70	130	----	----
		EG020A-T: Beryllium	7440-41-7	1 mg/L	111	----	70	130	----	----
		EG020A-T: Barium	7440-39-3	1 mg/L	108	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	104	----	70	130	----	----



Sub-Matrix: WATER

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
EG020T: Total Metals by ICP-MS (QCLot: 3195082) - continued										
ES1326107-002	Anonymous	EG020A-T: Chromium	7440-47-3	1 mg/L	108	----	70	130	----	----
		EG020A-T: Cobalt	7440-48-4	1 mg/L	109	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1 mg/L	106	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1 mg/L	103	----	70	130	----	----
		EG020A-T: Manganese	7439-96-5	1 mg/L	105	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1 mg/L	108	----	70	130	----	----
		EG020A-T: Vanadium	7440-62-2	1 mg/L	105	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1 mg/L	105	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3233040)										
ES1326163-002	BW_SS07	EG035T: Mercury	7439-97-6	0.010 mg/L	96.7	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1326163	Page	: 1 of 6
Amendment	: 1		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 02-DEC-2013
Sampler	: TA	Issue Date	: 31-DEC-2013
Order number	: 0224193		
Quote number	: SY/794/13	No. of samples received	: 15
		No. of samples analysed	: 15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)								
BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/W	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	05-DEC-2013	27-MAY-2014	✓	05-DEC-2013	27-MAY-2014	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)								
BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26,	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33	28-NOV-2013	----	----	----	31-DEC-2013	26-DEC-2013	*
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/W	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	05-DEC-2013	05-DEC-2013	✓	05-DEC-2013	14-JAN-2014	✓



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/W	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	05-DEC-2013	05-DEC-2013	✓	05-DEC-2013	14-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/W	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	05-DEC-2013	05-DEC-2013	✓	05-DEC-2013	14-JAN-2014	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) T/BLANK,	T/SPIKE	22-NOV-2013	04-DEC-2013	06-DEC-2013	✓	04-DEC-2013	06-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080) BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/W	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	05-DEC-2013	12-DEC-2013	✓	05-DEC-2013	12-DEC-2013	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP080) T/BLANK		22-NOV-2013	04-DEC-2013	06-DEC-2013	✓	04-DEC-2013	06-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080) BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/W	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	05-DEC-2013	12-DEC-2013	✓	05-DEC-2013	12-DEC-2013	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	39	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33	----	----	----	31-DEC-2013	26-DEC-2013	5

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



CHAIN OF CUSTODY
ALS Laboratory
pcode: ltk-4

*PSD BAS KCH IN EN FOR 1-12
NO BAS SUPPLIED FOR B-16.*

CLIENT: **ERM**
OFFICE: **Sydney**
PROJECT: **Sydney**
ORDER NUMBER: **2824193**
PROJECT MANAGER: **T. Fazzari**
SAMPLER: **T. Atwood**
COC emailed to ALS? (YES / NO):
Email Reports to (will default to PM if no other addresses are listed):
Email Invoiced to (will default to PM if no other addresses are listed):
Comments/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS:
Standard TAT (last due date):
Non Standard or urgent TAT (last due date):
ALS QUOTE NO.: SYM013
SITE: **KAISWATER LOCAL**
CONTACT PH: **7. ADRIANA**
RELINQUISHED BY: **T. ADRIANA**
DATE/TIME: **28.11.13 / 800pm**
RECEIVED BY: **SPM**
DATE/TIME: **2/12/13 11:15**
RECEIVED BY: **RECEIVED IN RECEIVED**
DATE/TIME: **2/12/13 11:15**
RECEIVED BY: **RIN/D**
DATE/TIME: **19/12**

FOR LABORATORY USE ONLY (Circle)
Custody Good (Initials) (Yes/No) **(Yes)**
Free for re-use by this project (Yes/No) **(No)**
Purson Sample Temperature on Receipt: **41**
Other comment:

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (codes below)	TOTAL CONTAINERS	ANALYSIS REQUIRED (including SURTES (NR, SR) Codes must be back to grant table prior) Where others are required, specify total (wherever codes required) or checked (if all have been received).										Additional Information
						Trace Metals (13+) Pb, Mn, Ti, Se	Total Mercury (EG03SL)	BTEX (EP080-SD)	TPH (EP071SD)	PAH (EP132SD)	Phenols (EP075SIM)	PSD (Hydrometer)	TOC (EP003)	PCB (EP131B)	Comments on any exceptional findings, deviations or samples requiring specific analysis etc.	
1	RW-SS01	28.11.13	S		3	X	X	X	X	X	X	X	X			
2	RW-SS07															
3	RW-SS08															
4	RW-SS09															
5	RW-SS19															
6	RW-SS20															
7	RW-SS21															
8	RW-SS22															
9	RW-SS23															
10	RW-SS24															
11	RW-SS26															
12	RW-SS33															

Water Contaminants: Coder: P = Unregulated; R = High Priority; S = State Preserved; SH = Severe Hydrological; Preserved: S = Sediment Hydrate Preserved; AS = Ambient Gas; V = Volatile; U = Unregulated; V = Volatile; W = Water; X = Not Analyzed; Y = Not Analyzed; Z = Not Analyzed; AA = Not Analyzed; AB = Not Analyzed; AC = Not Analyzed; AD = Not Analyzed; AE = Not Analyzed; AF = Not Analyzed; AG = Not Analyzed; AH = Not Analyzed; AI = Not Analyzed; AJ = Not Analyzed; AK = Not Analyzed; AL = Not Analyzed; AM = Not Analyzed; AN = Not Analyzed; AO = Not Analyzed; AP = Not Analyzed; AQ = Not Analyzed; AR = Not Analyzed; AS = Not Analyzed; AT = Not Analyzed; AU = Not Analyzed; AV = Not Analyzed; AW = Not Analyzed; AX = Not Analyzed; AY = Not Analyzed; AZ = Not Analyzed; BA = Not Analyzed; BB = Not Analyzed; BC = Not Analyzed; BD = Not Analyzed; BE = Not Analyzed; BF = Not Analyzed; BG = Not Analyzed; BH = Not Analyzed; BI = Not Analyzed; BJ = Not Analyzed; BK = Not Analyzed; BL = Not Analyzed; BM = Not Analyzed; BN = Not Analyzed; BO = Not Analyzed; BP = Not Analyzed; BQ = Not Analyzed; BR = Not Analyzed; BS = Not Analyzed; BT = Not Analyzed; BU = Not Analyzed; BV = Not Analyzed; BV = Not Analyzed; BW = Not Analyzed; BX = Not Analyzed; BY = Not Analyzed; BZ = Not Analyzed; CA = Not Analyzed; CB = Not Analyzed; CC = Not Analyzed; CD = Not Analyzed; CE = Not Analyzed; CF = Not Analyzed; CG = Not Analyzed; CH = Not Analyzed; CI = Not Analyzed; CJ = Not Analyzed; CK = Not Analyzed; CL = Not Analyzed; CM = Not Analyzed; CN = Not Analyzed; CO = Not Analyzed; CP = Not Analyzed; CQ = Not Analyzed; CR = Not Analyzed; CS = Not Analyzed; CT = Not Analyzed; CU = Not Analyzed; CV = Not Analyzed; CW = Not Analyzed; CX = Not Analyzed; CY = Not Analyzed; CZ = Not Analyzed; DA = Not Analyzed; DB = Not Analyzed; DC = Not Analyzed; DD = Not Analyzed; DE = Not Analyzed; DF = Not Analyzed; DG = Not Analyzed; DH = Not Analyzed; DI = Not Analyzed; DJ = Not Analyzed; DK = Not Analyzed; DL = Not Analyzed; DM = Not Analyzed; DN = Not Analyzed; DO = Not Analyzed; DP = Not Analyzed; DQ = Not Analyzed; DR = Not Analyzed; DS = Not Analyzed; DT = Not Analyzed; DU = Not Analyzed; DV = Not Analyzed; DW = Not Analyzed; DX = Not Analyzed; DY = Not Analyzed; DZ = Not Analyzed; EA = Not Analyzed; EB = Not Analyzed; EC = Not Analyzed; ED = Not Analyzed; EE = Not Analyzed; EF = Not Analyzed; EG = Not Analyzed; EH = Not Analyzed; EI = Not Analyzed; EJ = Not Analyzed; EK = Not Analyzed; EL = Not Analyzed; EM = Not Analyzed; EN = Not Analyzed; EO = Not Analyzed; EP = Not Analyzed; EQ = Not Analyzed; ER = Not Analyzed; ES = Not Analyzed; ET = Not Analyzed; EU = Not Analyzed; EV = Not Analyzed; EW = Not Analyzed; EX = Not Analyzed; EY = Not Analyzed; EZ = Not Analyzed; FA = Not Analyzed; FB = Not Analyzed; FC = Not Analyzed; FD = Not Analyzed; FE = Not Analyzed; FF = Not Analyzed; FG = Not Analyzed; FH = Not Analyzed; FI = Not Analyzed; FJ = Not Analyzed; FK = Not Analyzed; FL = Not Analyzed; FM = Not Analyzed; FN = Not Analyzed; FO = Not Analyzed; FP = Not Analyzed; FQ = Not Analyzed; FR = Not Analyzed; FS = Not Analyzed; FT = Not Analyzed; FU = Not Analyzed; FV = Not Analyzed; FW = Not Analyzed; FX = Not Analyzed; FY = Not Analyzed; FZ = Not Analyzed; GA = Not Analyzed; GB = Not Analyzed; GC = Not Analyzed; GD = Not Analyzed; GE = Not Analyzed; GF = Not Analyzed; GG = Not Analyzed; GH = Not Analyzed; GI = Not Analyzed; GJ = Not Analyzed; GK = Not Analyzed; GL = Not Analyzed; GM = Not Analyzed; GN = Not Analyzed; GO = Not Analyzed; GP = Not Analyzed; GQ = Not Analyzed; GR = Not Analyzed; GS = Not Analyzed; GT = Not Analyzed; GU = Not Analyzed; GV = Not Analyzed; GW = Not Analyzed; GX = Not Analyzed; GY = Not Analyzed; GZ = Not Analyzed; HA = Not Analyzed; HB = Not Analyzed; HC = Not Analyzed; HD = Not Analyzed; HE = Not Analyzed; HF = Not Analyzed; HG = Not Analyzed; HH = Not Analyzed; HI = Not Analyzed; HJ = Not Analyzed; HK = Not Analyzed; HL = Not Analyzed; HM = Not Analyzed; HN = Not Analyzed; HO = Not Analyzed; HP = Not Analyzed; HQ = Not Analyzed; HR = Not Analyzed; HS = Not Analyzed; HT = Not Analyzed; HU = Not Analyzed; HV = Not Analyzed; HW = Not Analyzed; HX = Not Analyzed; HY = Not Analyzed; HZ = Not Analyzed; IA = Not Analyzed; IB = Not Analyzed; IC = Not Analyzed; ID = Not Analyzed; IE = Not Analyzed; IF = Not Analyzed; IG = Not Analyzed; IH = Not Analyzed; II = Not Analyzed; IJ = Not Analyzed; IK = Not Analyzed; IL = Not Analyzed; IM = Not Analyzed; IN = Not Analyzed; IO = Not Analyzed; IP = Not Analyzed; IQ = Not Analyzed; IR = Not Analyzed; IS = Not Analyzed; IT = Not Analyzed; IU = Not Analyzed; IV = Not Analyzed; IW = Not Analyzed; IX = Not Analyzed; IY = Not Analyzed; IZ = Not Analyzed; JA = Not Analyzed; JB = Not Analyzed; JC = Not Analyzed; JD = Not Analyzed; JE = Not Analyzed; JF = Not Analyzed; JG = Not Analyzed; JH = Not Analyzed; JI = Not Analyzed; JJ = Not Analyzed; JK = Not Analyzed; JL = Not Analyzed; JM = Not Analyzed; JN = Not Analyzed; JO = Not Analyzed; JP = Not Analyzed; JQ = Not Analyzed; JR = Not Analyzed; JS = Not Analyzed; JT = Not Analyzed; JU = Not Analyzed; JV = Not Analyzed; JW = Not Analyzed; JX = Not Analyzed; JY = Not Analyzed; JZ = Not Analyzed; KA = Not Analyzed; KB = Not Analyzed; KC = Not Analyzed; KD = Not Analyzed; KE = Not Analyzed; KF = Not Analyzed; KG = Not Analyzed; KH = Not Analyzed; KI = Not Analyzed; KJ = Not Analyzed; KK = Not Analyzed; KL = Not Analyzed; KM = Not Analyzed; KN = Not Analyzed; KO = Not Analyzed; KP = Not Analyzed; KQ = Not Analyzed; KR = Not Analyzed; KS = Not Analyzed; KT = Not Analyzed; KU = Not Analyzed; KV = Not Analyzed; KW = Not Analyzed; KX = Not Analyzed; KY = Not Analyzed; KZ = Not Analyzed; LA = Not Analyzed; LB = Not Analyzed; LC = Not Analyzed; LD = Not Analyzed; LE = Not Analyzed; LF = Not Analyzed; LG = Not Analyzed; LH = Not Analyzed; LI = Not Analyzed; LJ = Not Analyzed; LK = Not Analyzed; LL = Not Analyzed; LM = Not Analyzed; LN = Not Analyzed; LO = Not Analyzed; LP = Not Analyzed; LQ = Not Analyzed; LR = Not Analyzed; LS = Not Analyzed; LT = Not Analyzed; LU = Not Analyzed; LV = Not Analyzed; LW = Not Analyzed; LX = Not Analyzed; LY = Not Analyzed; LZ = Not Analyzed; MA = Not Analyzed; MB = Not Analyzed; MC = Not Analyzed; MD = Not Analyzed; ME = Not Analyzed; MF = Not Analyzed; MG = Not Analyzed; MH = Not Analyzed; MI = Not Analyzed; MJ = Not Analyzed; MK = Not Analyzed; ML = Not Analyzed; MM = Not Analyzed; MN = Not Analyzed; MO = Not Analyzed; MP = Not Analyzed; MQ = Not Analyzed; MR = Not Analyzed; MS = Not Analyzed; MT = Not Analyzed; MU = Not Analyzed; MV = Not Analyzed; MW = Not Analyzed; MX = Not Analyzed; MY = Not Analyzed; MZ = Not Analyzed; NA = Not Analyzed; NB = Not Analyzed; NC = Not Analyzed; ND = Not Analyzed; NE = Not Analyzed; NF = Not Analyzed; NG = Not Analyzed; NH = Not Analyzed; NI = Not Analyzed; NJ = Not Analyzed; NK = Not Analyzed; NL = Not Analyzed; NM = Not Analyzed; NN = Not Analyzed; NO = Not Analyzed; NP = Not Analyzed; NQ = Not Analyzed; NR = Not Analyzed; NS = Not Analyzed; NT = Not Analyzed; NU = Not Analyzed; NV = Not Analyzed; NW = Not Analyzed; NX = Not Analyzed; NY = Not Analyzed; NZ = Not Analyzed; OA = Not Analyzed; OB = Not Analyzed; OC = Not Analyzed; OD = Not Analyzed; OE = Not Analyzed; OF = Not Analyzed; OG = Not Analyzed; OH = Not Analyzed; OI = Not Analyzed; OJ = Not Analyzed; OK = Not Analyzed; OL = Not Analyzed; OM = Not Analyzed; ON = Not Analyzed; OO = Not Analyzed; OP = Not Analyzed; OQ = Not Analyzed; OR = Not Analyzed; OS = Not Analyzed; OT = Not Analyzed; OU = Not Analyzed; OV = Not Analyzed; OW = Not Analyzed; OX = Not Analyzed; OY = Not Analyzed; OZ = Not Analyzed; PA = Not Analyzed; PB = Not Analyzed; PC = Not Analyzed; PD = Not Analyzed; PE = Not Analyzed; PF = Not Analyzed; PG = Not Analyzed; PH = Not Analyzed; PI = Not Analyzed; PJ = Not Analyzed; PK = Not Analyzed; PL = Not Analyzed; PM = Not Analyzed; PN = Not Analyzed; PO = Not Analyzed; PP = Not Analyzed; PQ = Not Analyzed; PR = Not Analyzed; PS = Not Analyzed; PT = Not Analyzed; PU = Not Analyzed; PV = Not Analyzed; PW = Not Analyzed; PX = Not Analyzed; PY = Not Analyzed; PZ = Not Analyzed; QA = Not Analyzed; QB = Not Analyzed; QC = Not Analyzed; QD = Not Analyzed; QE = Not Analyzed; QF = Not Analyzed; QG = Not Analyzed; QH = Not Analyzed; QI = Not Analyzed; QJ = Not Analyzed; QK = Not Analyzed; QL = Not Analyzed; QM = Not Analyzed; QN = Not Analyzed; QO = Not Analyzed; QP = Not Analyzed; QQ = Not Analyzed; QR = Not Analyzed; QS = Not Analyzed; QT = Not Analyzed; QU = Not Analyzed; QV = Not Analyzed; QW = Not Analyzed; QX = Not Analyzed; QY = Not Analyzed; QZ = Not Analyzed; RA = Not Analyzed; RB = Not Analyzed; RC = Not Analyzed; RD = Not Analyzed; RE = Not Analyzed; RF = Not Analyzed; RG = Not Analyzed; RH = Not Analyzed; RI = Not Analyzed; RJ = Not Analyzed; RK = Not Analyzed; RL = Not Analyzed; RM = Not Analyzed; RN = Not Analyzed; RO = Not Analyzed; RP = Not Analyzed; RQ = Not Analyzed; RR = Not Analyzed; RS = Not Analyzed; RT = Not Analyzed; RU = Not Analyzed; RV = Not Analyzed; RW = Not Analyzed; WX = Not Analyzed; WY = Not Analyzed; WZ = Not Analyzed; XA = Not Analyzed; XB = Not Analyzed; XC = Not Analyzed; XD = Not Analyzed; XE = Not Analyzed; XF = Not Analyzed; XG = Not Analyzed; XH = Not Analyzed; XI = Not Analyzed; XJ = Not Analyzed; XK = Not Analyzed; XL = Not Analyzed; XM = Not Analyzed; XN = Not Analyzed; XO = Not Analyzed; XP = Not Analyzed; XQ = Not Analyzed; XR = Not Analyzed; XS = Not Analyzed; XT = Not Analyzed; XU = Not Analyzed; XV = Not Analyzed; XW = Not Analyzed; XX = Not Analyzed; XY = Not Analyzed; XZ = Not Analyzed; YA = Not Analyzed; YB = Not Analyzed; YC = Not Analyzed; YD = Not Analyzed; YE = Not Analyzed; YF = Not Analyzed; YG = Not Analyzed; YH = Not Analyzed; YI = Not Analyzed; YJ = Not Analyzed; YK = Not Analyzed; YL = Not Analyzed; YM = Not Analyzed; YN = Not Analyzed; YO = Not Analyzed; YP = Not Analyzed; YQ = Not Analyzed; YR = Not Analyzed; YS = Not Analyzed; YT = Not Analyzed; YU = Not Analyzed; YV = Not Analyzed; YW = Not Analyzed; YX = Not Analyzed; YZ = Not Analyzed; ZA = Not Analyzed; ZB = Not Analyzed; ZC = Not Analyzed; ZD = Not Analyzed; ZE = Not Analyzed; ZF = Not Analyzed; ZG = Not Analyzed; ZH = Not Analyzed; ZI = Not Analyzed; ZJ = Not Analyzed; ZK = Not Analyzed; ZL = Not Analyzed; ZM = Not Analyzed; ZN = Not Analyzed; ZO = Not Analyzed; ZP = Not Analyzed; ZQ = Not Analyzed; ZR = Not Analyzed; ZS = Not Analyzed; ZT = Not Analyzed; ZU = Not Analyzed; ZV = Not Analyzed; ZW = Not Analyzed; ZX = Not Analyzed; ZY = Not Analyzed; ZZ = Not Analyzed.

Telephone : + 61-2-6784 8555



Environmental Division
Sydney
Work Order
ES1326164

SAMPLE RECEIPT NOTIFICATION (SRN)**Comprehensive Report**

Work Order : **ES1326164**

Client : **ENVIRO RESOURCES MANAGEMENT** **Laboratory** : Environmental Division Sydney

Contact : MR JOSEPH FERRING **Contact** : Barbara Hanna
Address : GROUND FLOOR **Address** : 277-289 Woodpark Road Smithfield
33 SAUNDERS STREET, PYRMONT NSW Australia 2164
NSW 2009
LOCKED BAG 24
BROADWAY NSW, AUSTRALIA 2007

E-mail : joseph.ferring@erm.com **E-mail** : Barbara.Hanna@alsglobal.com
Telephone : +61 02 8584 8888 **Telephone** : +61 2 8784 8555
Facsimile : +61 02 8584 8800 **Facsimile** : +61 2 8784 8555

Project : Project Symphony **Page** : 1 of 3

Order number : 0224193

C-O-C number : ---- **Quote number** : ES2013ENVRES0369 (SY/794/13)

Site : BAYSWATER

Sampler : TA **QC Level** : NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received : 02-DEC-2013 **Issue Date** : 04-DEC-2013 14:26
Client Requested Due Date : 09-DEC-2013 **Scheduled Reporting Date** : **09-DEC-2013**

Delivery Details

Mode of Delivery : Carrier **Temperature** : 4.1°C - Ice present
No. of coolers/boxes : 1 HARD **No. of samples received** : 15
Security Seal : Intact. **No. of samples analysed** : 15

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **PSD analysis will be conducted by ALS Newcastle.**
- **TOC analysis will be conducted by ALS Brisbane**
- **All analysis will be reported on the scheduled due date 09/12/13, except for PSD and TOC analysis of the analysis will be reported on 11/12/13**
- **Sample T01, T02 and T03 send to Envirolab**
- **Sample R01_281113 and T/BLANK have not been received.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA150H Particle Size Analysis by Hydrometer.	SOIL - EG020-SD (not V) Total Metals in Sediments by ICPMS	SOIL - EG020-SD Total Metals in Sediments by ICPMS	SOIL - EG020T (solids) Total Metals by ICP-MS	SOIL - EG020T Total Metals by ICPMS	SOIL - EG035T-LL Total Mercury by FIMS - Low Level	SOIL - EP003 Total Organic Carbon (TOC) in Soil
ES1326164-001	28-NOV-2013 15:00	BW_SS01	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-002	28-NOV-2013 15:00	BW_SS07	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-003	28-NOV-2013 15:00	BW_SS08	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-004	28-NOV-2013 15:00	BW_SS09	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-005	28-NOV-2013 15:00	BW_SS19	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-006	28-NOV-2013 15:00	BW_SS20	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-007	28-NOV-2013 15:00	BW_SS21	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-008	28-NOV-2013 15:00	BW_SS22	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-009	28-NOV-2013 15:00	BW_SS23	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-010	28-NOV-2013 15:00	BW_SS24	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-011	28-NOV-2013 15:00	BW_SS26	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-012	28-NOV-2013 15:00	BW_SS33	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-013	28-NOV-2013 15:00	D01_281113_TA/S	✓	✓	✓	✓	✓	✓	✓	✓

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP071 - SD TRH ultra trace in sediments	SOIL - EP075 SIM Phenols only SIM - Phenols only	SOIL - EP080-SD TRH(V)/BTEXN in Sediments	SOIL - EP131B PCB's (Ultratrace)	SOIL - EP132B-SD Ultra-trace PAHs in Sediments	SOIL - S-18 (NO MOIST) TRH/(C6-C9)/BTEXN with No Moisture
ES1326164-001	28-NOV-2013 15:00	BW_SS01	✓	✓	✓	✓	✓	
ES1326164-002	28-NOV-2013 15:00	BW_SS07	✓	✓	✓	✓	✓	
ES1326164-003	28-NOV-2013 15:00	BW_SS08	✓	✓	✓	✓	✓	
ES1326164-004	28-NOV-2013 15:00	BW_SS09	✓	✓	✓	✓	✓	
ES1326164-005	28-NOV-2013 15:00	BW_SS19	✓	✓	✓	✓	✓	
ES1326164-006	28-NOV-2013 15:00	BW_SS20	✓	✓	✓	✓	✓	
ES1326164-007	28-NOV-2013 15:00	BW_SS21	✓	✓	✓	✓	✓	
ES1326164-008	28-NOV-2013 15:00	BW_SS22	✓	✓	✓	✓	✓	
ES1326164-009	28-NOV-2013 15:00	BW_SS23	✓	✓	✓	✓	✓	
ES1326164-010	28-NOV-2013 15:00	BW_SS24	✓	✓	✓	✓	✓	
ES1326164-011	28-NOV-2013 15:00	BW_SS26	✓	✓	✓	✓	✓	



			SOIL - EP071 - SD	TRH ultra trace in sediments	SOIL - EP075 SIM Phenols only	SIM - Phenols only	SOIL - EP080-SD	TRH(V)/BTEXN in Sediments	SOIL - EP131B	PCB's (Ultratrace)	SOIL - EP132B-SD	Ultra-trace PAHs in Sediments	SOIL - S-18 (NO MOIST)	TRH(C6-C9)/BTEXN with No Moisture
ES1326164-012	28-NOV-2013 15:00	BW_SS33	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-013	28-NOV-2013 15:00	D01_281113_TA/S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ES1326164-016	22-NOV-2013 15:00	T/SPIKE 4											✓	
ES1326164-017	22-NOV-2013 15:00	TSC 4											✓	

Proactive Holding Time Report

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

Requested Deliverables

MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA (COA) Email joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email joseph.ferring@erm.com
- Attachment - Report (SUBCO) Email joseph.ferring@erm.com
- Chain of Custody (CoC) (COC) Email joseph.ferring@erm.com
- EDI Format - ENMRG (ENMRG) Email joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM) Email joseph.ferring@erm.com
- EDI Format - ESDAT (ESDAT) Email joseph.ferring@erm.com
- EDI Format - XTab (XTAB) Email joseph.ferring@erm.com

SYMPHONY ERARING

- *AU Certificate of Analysis - NATA (COA) Email Symphony.Eraring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email Symphony.Eraring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email Symphony.Eraring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email Symphony.Eraring@erm.com
- Attachment - Report (SUBCO) Email Symphony.Eraring@erm.com
- Chain of Custody (CoC) (COC) Email Symphony.Eraring@erm.com
- EDI Format - ENMRG (ENMRG) Email Symphony.Eraring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM) Email Symphony.Eraring@erm.com
- EDI Format - ESDAT (ESDAT) Email Symphony.Eraring@erm.com
- EDI Format - XTab (XTAB) Email Symphony.Eraring@erm.com

THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email au.accounts@erm.com

CERTIFICATE OF ANALYSIS

Work Order	: ES1326164	Page	: 1 of 16
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224193		
C-O-C number	: ----	Date Samples Received	: 02-DEC-2013
Sampler	: TA	Issue Date	: 12-DEC-2013
Site	: BAYSWATER		
Quote number	: SY/794/13	No. of samples received	: 15
		No. of samples analysed	: 15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



General Comments

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

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

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

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

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

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

LOR = Limit of reporting

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

- **EA150H: Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1-2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently NATA endorsement does not apply to hydrometer results.**
- **EG020T: Poor precision was obtained for Manganese on sample ES1326164 # 003 due to sample heterogeneity. Results have been confirmed by re-extraction and reanalysis.**
- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**
- **EP132B-SD : Particular samples #ES1326164_5,#8,#9,#11 and #13 required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.**
- **EP132-SD: Poor matrix spike recovery due to sample heterogeneity. Confirmed by re-extraction and re-analysis.**



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
		Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics
SATISH.TRIVEDI	2 IC Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS01	BW_SS07	BW_SS08	BW_SS09	BW_SS19
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326164-001	ES1326164-002	ES1326164-003	ES1326164-004	ES1326164-005
EA150: Particle Sizing								
+75µm	----	1	%	38	11	15	6	41
+150µm	----	1	%	21	5	11	4	14
+300µm	----	1	%	9	4	8	4	4
+425µm	----	1	%	6	3	7	3	2
+600µm	----	1	%	3	3	5	3	1
+1180µm	----	1	%	1	2	3	2	<1
+2.36mm	----	1	%	<1	1	1	<1	<1
+4.75mm	----	1	%	<1	<1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	29.1	28.8	44.2	57.0	48.2
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	24	35	26	34	11
Silt (2-60 µm)	----	1	%	36	47	57	57	46
Sand (0.06-2.00 mm)	----	1	%	40	17	16	8	43
Gravel (>2mm)	----	1	%	<1	1	1	1	<1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EG020-SD: Total Metals in Sediments by ICPMS								
Arsenic	7440-38-2	1.00	mg/kg	6.98	10.1	14.4	14.8	14.1
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Chromium	7440-47-3	1.0	mg/kg	12.1	17.7	23.4	22.7	9.3
Copper	7440-50-8	1.0	mg/kg	8.5	14.4	19.7	21.6	94.6
Cobalt	7440-48-4	0.5	mg/kg	5.1	7.1	13.4	22.3	4.1
Lead	7439-92-1	1.0	mg/kg	10.7	11.8	15.3	17.9	20.4
Manganese	7439-96-5	10	mg/kg	54	94	1740	2030	176
Nickel	7440-02-0	1.0	mg/kg	13.3	13.7	18.9	27.6	15.3
Selenium	7782-49-2	0.1	mg/kg	1.0	1.4	5.9	1.8	4.5
Vanadium	7440-62-2	2.0	mg/kg	29.4	44.4	63.8	65.1	49.1
Zinc	7440-66-6	1.0	mg/kg	25.4	35.2	58.5	51.5	97.9
EG020T: Total Metals by ICP-MS								



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS01	BW_SS07	BW_SS08	BW_SS09	BW_SS19
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326164-001	ES1326164-002	ES1326164-003	ES1326164-004	ES1326164-005
EG020T: Total Metals by ICP-MS - Continued								
Barium	7440-39-3	0.1	mg/kg	146	163	183	193	135
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	0.7	0.9	1.3	1.2	0.5
Boron	7440-42-8	5	mg/kg	<5	9	21	17	10
Molybdenum	7439-98-7	0.1	mg/kg	0.8	2.6	26.1	16.3	4.9
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	0.05	0.03	0.04	0.14
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	2.28	1.32	2.27	3.02	12.9
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	2.6	1.1	6.4	4.9	8.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	4.1	1.0	13.2	7.3	14.2
3- & 4-Methylphenol	1319-77-3	1	mg/kg	3	<1	10	5	11
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.8	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg	3	<3	<3	3	49
C15 - C28 Fraction	----	3	mg/kg	52	12	33	51	2400
C29 - C36 Fraction	----	5	mg/kg	46	20	64	66	1340
C10 - C36 Fraction (sum)	----	3	mg/kg	101	32	97	120	3790
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS01	BW_SS07	BW_SS08	BW_SS09	BW_SS19
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326164-001	ES1326164-002	ES1326164-003	ES1326164-004	ES1326164-005
EP080-SD: BTEXN - Continued								
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	20	8	16	14	132
2-Methylnaphthalene	91-57-6	5	µg/kg	39	12	18	14	568
Acenaphthylene	208-96-8	4	µg/kg	<4	<4	<4	<5	<25
Acenaphthene	83-32-9	4	µg/kg	8	<4	<4	<5	39
Fluorene	86-73-7	4	µg/kg	29	<4	<4	5	117
Phenanthrene	85-01-8	4	µg/kg	116	26	28	27	463
Anthracene	120-12-7	4	µg/kg	17	<4	<4	<5	39
Fluoranthene	206-44-0	4	µg/kg	90	17	12	19	366
Pyrene	129-00-0	4	µg/kg	111	14	11	17	278
Benz(a)anthracene	56-55-3	4	µg/kg	62	10	9	10	186
Chrysene	218-01-9	4	µg/kg	70	12	12	14	201
Benzo(b)fluoranthene	205-99-2	4	µg/kg	69	<4	5	10	112
Benzo(k)fluoranthene	207-08-9	4	µg/kg	26	<4	<4	6	65
Benzo(e)pyrene	192-97-2	4	µg/kg	54	9	<4	9	101
Benzo(a)pyrene	50-32-8	4	µg/kg	50	5	<4	6	<25
Perylene	198-55-0	4	µg/kg	<4	<4	<4	5	26
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	49	10	<4	<5	65
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	8	<4	<4	<5	<25
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	18	4	<4	<5	33



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS01	BW_SS07	BW_SS08	BW_SS09	BW_SS19
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326164-001	ES1326164-002	ES1326164-003	ES1326164-004	ES1326164-005
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Coronene	191-07-1	5	µg/kg	25	<5	<5	<5	<25
^ Sum of PAHs	----	4	µg/kg	861	127	111	156	2790
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	93.4	97.1	97.9	91.7	98.1
2-Chlorophenol-D4	93951-73-6	0.1	%	106	103	89.5	84.3	96.0
2,4,6-Tribromophenol	118-79-6	0.1	%	59.8	73.3	60.3	57.6	70.7
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	113	103	110	109	110
Anthracene-d10	1719-06-8	0.1	%	64.1	68.3	63.5	62.4	62.2
4-Terphenyl-d14	1718-51-0	0.1	%	99.3	96.1	73.2	87.1	70.8
EP080-SD: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	113	121	93.5	114	90.8
Toluene-D8	2037-26-5	0.1	%	120	105	100	116	90.6
4-Bromofluorobenzene	460-00-4	0.1	%	108	95.5	93.3	110	72.9
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	58.8	98.8	82.5	75.0	55.0
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	99.1	69.0	85.6	83.7	72.5
Anthracene-d10	1719-06-8	0.1	%	86.7	83.0	84.3	83.3	82.3
4-Terphenyl-d14	1718-51-0	0.1	%	93.0	82.1	82.0	83.7	84.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS20	BW_SS21	BW_SS22	BW_SS23	BW_SS24
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326164-006	ES1326164-007	ES1326164-008	ES1326164-009	ES1326164-010
EA150: Particle Sizing								
+75µm	----	1	%	81	18	3	2	29
+150µm	----	1	%	75	12	1	<1	19
+300µm	----	1	%	66	9	<1	<1	13
+425µm	----	1	%	61	7	<1	<1	10
+600µm	----	1	%	54	6	<1	<1	8
+1180µm	----	1	%	45	5	<1	<1	5
+2.36mm	----	1	%	36	3	<1	<1	3
+4.75mm	----	1	%	24	2	<1	<1	1
+9.5mm	----	1	%	11	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	14.6	40.4	69.9	67.2	29.4
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	8	29	33	27	14
Silt (2-60 µm)	----	1	%	10	50	65	71	51
Sand (0.06-2.00 mm)	----	1	%	46	18	2	2	32
Gravel (>2mm)	----	1	%	36	3	<1	<1	3
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EG020-SD: Total Metals in Sediments by ICPMS								
Arsenic	7440-38-2	1.00	mg/kg	15.2	21.4	25.8	21.3	13.1
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.1	0.1	<0.1
Chromium	7440-47-3	1.0	mg/kg	8.4	14.9	17.7	17.8	24.8
Copper	7440-50-8	1.0	mg/kg	20.0	53.2	189	157	19.6
Cobalt	7440-48-4	0.5	mg/kg	6.5	7.6	8.4	8.5	5.5
Lead	7439-92-1	1.0	mg/kg	20.0	14.7	15.1	13.6	12.2
Manganese	7439-96-5	10	mg/kg	183	204	382	341	180
Nickel	7440-02-0	1.0	mg/kg	17.8	20.2	24.7	27.2	10.7
Selenium	7782-49-2	0.1	mg/kg	1.9	3.6	15.0	11.3	1.6
Vanadium	7440-62-2	2.0	mg/kg	40.3	67.9	97.4	96.8	69.0
Zinc	7440-66-6	1.0	mg/kg	68.8	56.0	73.3	63.4	13.7
EG020T: Total Metals by ICP-MS								



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS20	BW_SS21	BW_SS22	BW_SS23	BW_SS24
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326164-006	ES1326164-007	ES1326164-008	ES1326164-009	ES1326164-010
EG020T: Total Metals by ICP-MS - Continued								
Barium	7440-39-3	0.1	mg/kg	57.7	212	120	129	44.4
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	0.5	0.9	0.8	0.8	0.6
Boron	7440-42-8	5	mg/kg	<5	6	12	12	<5
Molybdenum	7439-98-7	0.1	mg/kg	4.3	3.6	9.0	7.2	3.7
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.03	0.10	0.38	0.26	0.04
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	2.34	2.34	6.14	6.10	1.49
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	3.0	2.9	10.2	9.7	4.6
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	4.4	4.2	16.8	15.4	7.7
3- & 4-Methylphenol	1319-77-3	1	mg/kg	3	3	12	12	5
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.8	<0.8	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg	8	5	19	18	<3
C15 - C28 Fraction	----	3	mg/kg	242	107	501	530	42
C29 - C36 Fraction	----	5	mg/kg	125	78	413	427	47
^ C10 - C36 Fraction (sum)	----	3	mg/kg	375	190	933	975	89
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS20	BW_SS21	BW_SS22	BW_SS23	BW_SS24
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326164-006	ES1326164-007	ES1326164-008	ES1326164-009	ES1326164-010
EP080-SD: BTEXN - Continued								
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	16	20	58	66	8
2-Methylnaphthalene	91-57-6	5	µg/kg	32	49	99	103	10
Acenaphthylene	208-96-8	4	µg/kg	<4	<4	<50	<50	<4
Acenaphthene	83-32-9	4	µg/kg	4	9	<50	<50	<4
Fluorene	86-73-7	4	µg/kg	13	22	81	67	5
Phenanthrene	85-01-8	4	µg/kg	58	80	236	202	14
Anthracene	120-12-7	4	µg/kg	9	10	<50	<50	<4
Fluoranthene	206-44-0	4	µg/kg	51	104	313	255	19
Pyrene	129-00-0	4	µg/kg	43	79	226	183	15
Benz(a)anthracene	56-55-3	4	µg/kg	30	54	169	125	8
Chrysene	218-01-9	4	µg/kg	40	66	170	155	13
Benzo(b)fluoranthene	205-99-2	4	µg/kg	27	56	188	164	13
Benzo(k)fluoranthene	207-08-9	4	µg/kg	19	21	96	66	4
Benzo(e)pyrene	192-97-2	4	µg/kg	29	40	184	116	<4
Benzo(a)pyrene	50-32-8	4	µg/kg	19	23	62	64	<4
Perylene	198-55-0	4	µg/kg	<4	94	1140	744	859
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	26	36	128	103	8
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	5	<50	<50	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	9	14	<50	<50	<4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS20	BW_SS21	BW_SS22	BW_SS23	BW_SS24
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326164-006	ES1326164-007	ES1326164-008	ES1326164-009	ES1326164-010
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Coronene	191-07-1	5	µg/kg	10	14	<50	<50	<5
^ Sum of PAHs	----	4	µg/kg	435	796	3150	2410	976
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	106	89.8	102	92.9	104
2-Chlorophenol-D4	93951-73-6	0.1	%	96.5	99.8	87.0	102	104
2,4,6-Tribromophenol	118-79-6	0.1	%	61.4	78.3	69.0	66.6	70.7
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	114	112	110	106	114
Anthracene-d10	1719-06-8	0.1	%	64.3	61.5	65.2	60.6	67.1
4-Terphenyl-d14	1718-51-0	0.1	%	81.3	79.5	75.8	70.6	88.2
EP080-SD: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	98.8	122	122	114	88.7
Toluene-D8	2037-26-5	0.1	%	109	116	109	104	107
4-Bromofluorobenzene	460-00-4	0.1	%	107	100	94.2	84.6	98.5
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	95.0	98.0	90.0	96.2	67.5
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	86.3	86.6	82.7	91.1	82.6
Anthracene-d10	1719-06-8	0.1	%	92.6	101	85.1	89.9	88.0
4-Terphenyl-d14	1718-51-0	0.1	%	101	101	82.4	81.3	88.7



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	BW_SS26	BW_SS33	D01_281113_TA/S	T/SPIKE 4	TSC 4
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
				ES1326164-011	ES1326164-012	ES1326164-013	ES1326164-016	ES1326164-017
EA150: Particle Sizing								
+75µm	----	1	%	12	18	49	----	----
+150µm	----	1	%	1	13	16	----	----
+300µm	----	1	%	<1	11	4	----	----
+425µm	----	1	%	<1	11	2	----	----
+600µm	----	1	%	<1	10	2	----	----
+1180µm	----	1	%	<1	9	<1	----	----
+2.36mm	----	1	%	<1	6	<1	----	----
+4.75mm	----	1	%	<1	3	<1	----	----
+9.5mm	----	1	%	<1	<1	<1	----	----
+19.0mm	----	1	%	<1	<1	<1	----	----
+37.5mm	----	1	%	<1	<1	<1	----	----
+75.0mm	----	1	%	<1	<1	<1	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	52.8	48.7	44.7	----	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	19	21	10	----	----
Silt (2-60 µm)	----	1	%	69	58	41	----	----
Sand (0.06-2.00 mm)	----	1	%	12	14	49	----	----
Gravel (>2mm)	----	1	%	<1	7	<1	----	----
Cobbles (>6cm)	----	1	%	<1	<1	<1	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Arsenic	7440-38-2	1.00	mg/kg	15.1	20.4	13.1	----	----
Cadmium	7440-43-9	0.1	mg/kg	0.2	<0.1	0.1	----	----
Chromium	7440-47-3	1.0	mg/kg	8.8	18.9	8.2	----	----
Copper	7440-50-8	1.0	mg/kg	128	81.4	84.0	----	----
Cobalt	7440-48-4	0.5	mg/kg	4.6	6.5	4.0	----	----
Lead	7439-92-1	1.0	mg/kg	16.6	14.0	17.2	----	----
Manganese	7439-96-5	10	mg/kg	327	219	146	----	----
Nickel	7440-02-0	1.0	mg/kg	12.6	18.0	14.2	----	----
Selenium	7782-49-2	0.1	mg/kg	9.8	5.7	4.1	----	----
Vanadium	7440-62-2	2.0	mg/kg	60.4	87.3	44.8	----	----
Zinc	7440-66-6	1.0	mg/kg	71.8	41.9	90.9	----	----

EG020T: Total Metals by ICP-MS



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS26	BW_SS33	D01_281113_TA/S	T/SPIKE 4	TSC 4
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326164-011	ES1326164-012	ES1326164-013	ES1326164-016	ES1326164-017
EG020T: Total Metals by ICP-MS - Continued								
Barium	7440-39-3	0.1	mg/kg	125	118	117	----	----
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
Beryllium	7440-41-7	0.1	mg/kg	0.8	0.8	0.4	----	----
Boron	7440-42-8	5	mg/kg	11	8	8	----	----
Molybdenum	7439-98-7	0.1	mg/kg	5.6	4.5	4.6	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.46	0.15	0.12	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	30.0	4.59	16.4	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	8.2	7.0	8.7	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.8	<0.5	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	11.9	11.6	14.0	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	9	9	11	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.8	<0.5	<0.5	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.8	<0.5	<0.5	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.8	<0.5	<0.5	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.8	<0.5	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.8	<0.5	<0.5	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.8	<0.5	<0.5	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.8	<0.5	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	52	72
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	62	83
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	34	47
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	0.5	0.7
Toluene	108-88-3	0.5	mg/kg	----	----	----	14.0	18.4
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	1.7	2.2
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	8.2	10.3
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	3.5	4.4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS26	BW_SS33	D01_281113_TA/S	T/SPIKE 4	TSC 4
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326164-011	ES1326164-012	ES1326164-013	ES1326164-016	ES1326164-017
EP080: BTEXN - Continued								
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	27.9	36.0
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	11.7	14.7
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	<1
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	----	----
C10 - C14 Fraction	----	3	mg/kg	136	<3	52	----	----
C15 - C28 Fraction	----	3	mg/kg	1390	68	2470	----	----
C29 - C36 Fraction	----	5	mg/kg	602	55	1380	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg	2130	123	3900	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	----	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	336	22	142	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg	1000	42	332	----	----
Acenaphthylene	208-96-8	4	µg/kg	73	6	<25	----	----
Acenaphthene	83-32-9	4	µg/kg	336	9	45	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS26	BW_SS33	D01_281113_TA/S	T/SPIKE 4	TSC 4
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326164-011	ES1326164-012	ES1326164-013	ES1326164-016	ES1326164-017
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Fluorene	86-73-7	4	µg/kg	513	22	121	----	----
Phenanthrene	85-01-8	4	µg/kg	1460	79	466	----	----
Anthracene	120-12-7	4	µg/kg	345	13	42	----	----
Fluoranthene	206-44-0	4	µg/kg	1960	101	361	----	----
Pyrene	129-00-0	4	µg/kg	1330	83	276	----	----
Benz(a)anthracene	56-55-3	4	µg/kg	1150	<4	186	----	----
Chrysene	218-01-9	4	µg/kg	1280	<4	210	----	----
Benzo(b)fluoranthene	205-99-2	4	µg/kg	1200	<4	<25	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg	408	<4	<25	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg	762	<4	104	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg	481	<4	43	----	----
Perylene	198-55-0	4	µg/kg	211	143	29	----	----
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	630	37	71	----	----
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	117	<4	<25	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	261	<4	34	----	----
Coronene	191-07-1	5	µg/kg	203	<5	<25	----	----
^ Sum of PAHs	----	4	µg/kg	14000	557	2460	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	108	107	102	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	104	106	99.8	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	55.2	64.7	70.1	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	99.7	105	101	----	----
Anthracene-d10	1719-06-8	0.1	%	66.3	63.6	65.6	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	70.9	71.1	68.2	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	----	110	107
Toluene-D8	2037-26-5	0.1	%	----	----	----	104	101
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	----	109	109
EP080-SD: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	96.3	122	116	----	----
Toluene-D8	2037-26-5	0.1	%	94.6	106	109	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	82.1	89.1	94.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS26	BW_SS33	D01_281113_TA/S	T/SPIKE 4	TSC 4
				28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326164-011	ES1326164-012	ES1326164-013	ES1326164-016	ES1326164-017
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	50.0	51.2	61.2	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	87.1	86.6	63.0	----	----
Anthracene-d10	1719-06-8	0.1	%	89.8	76.4	74.9	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	79.6	77.5	85.9	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0
EP080-SD: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	67	137
Toluene-D8	2037-26-5	74	134
4-Bromofluorobenzene	460-00-4	73	137
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	2.22	106
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	55	135
Anthracene-d10	1719-06-8	70	136
4-Terphenyl-d14	1718-51-0	57	127

Certificate of Analysis

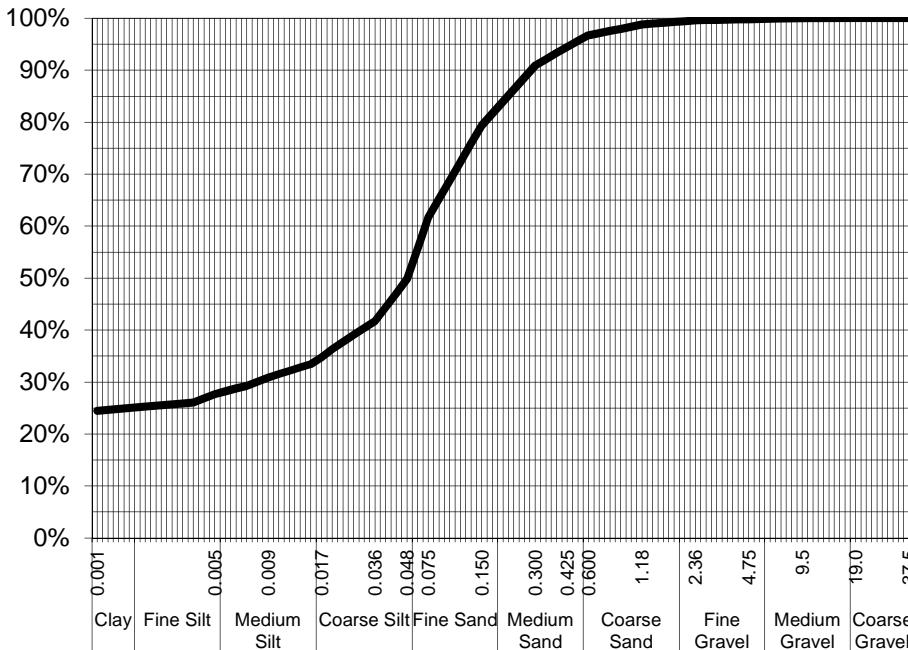
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 12-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 2-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326164-001 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS01

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	97%
0.425	95%
0.300	91%
0.150	79%
0.075	62%
Particle Size (microns)	
48	50%
36	42%
17	35%
9	31%
5	28%
3	26%
1	24%

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Median Particle Size (mm)	0.048
---------------------------	-------

Analysed: 10-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

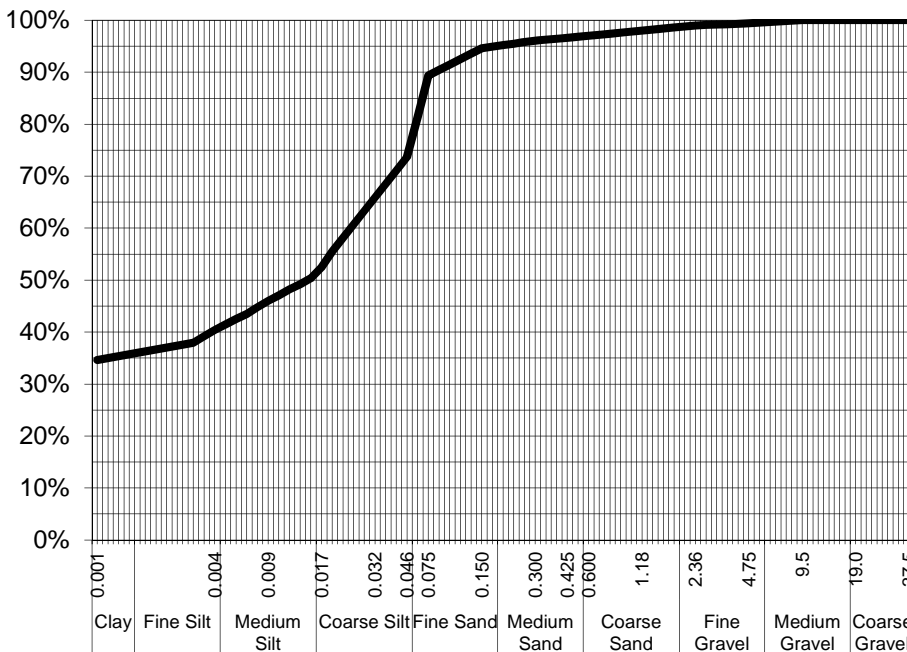
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 12-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 2-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326164-002 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS07

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	99%
1.18	98%
0.600	97%
0.425	97%
0.300	96%
0.150	95%
0.075	89%
Particle Size (microns)	
46	74%
32	66%
17	52%
9	46%
4	40%
3	38%
1	35%

Median Particle Size (mm)	0.014
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 10-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

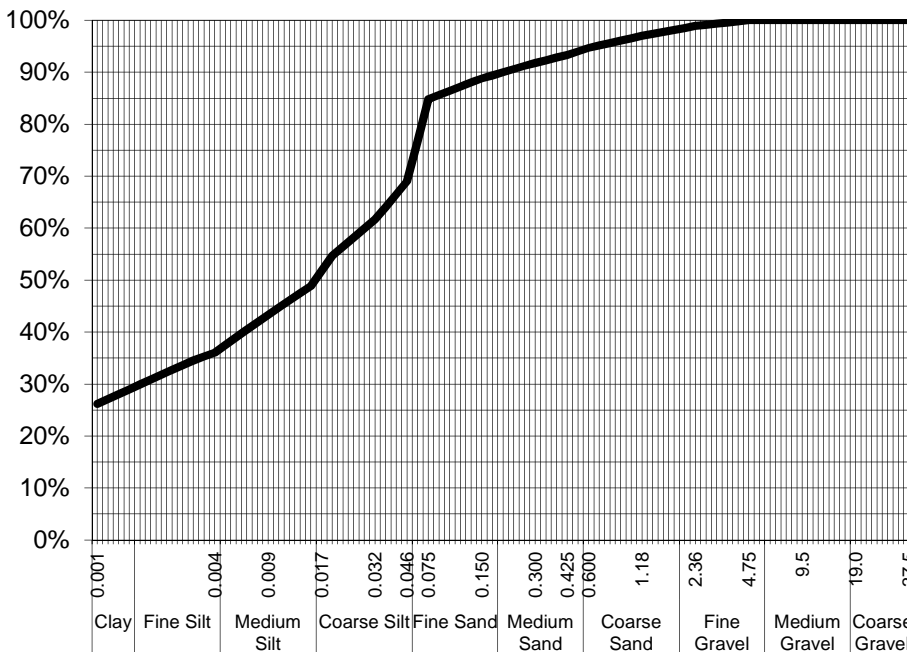
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 12-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 2-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326164-003 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS08

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	97%
0.600	95%
0.425	93%
0.300	92%
0.150	89%
0.075	85%
Particle Size (microns)	
46	69%
32	62%
17	52%
9	43%
4	36%
3	35%
1	26%

Median Particle Size (mm)	0.016
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 10-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

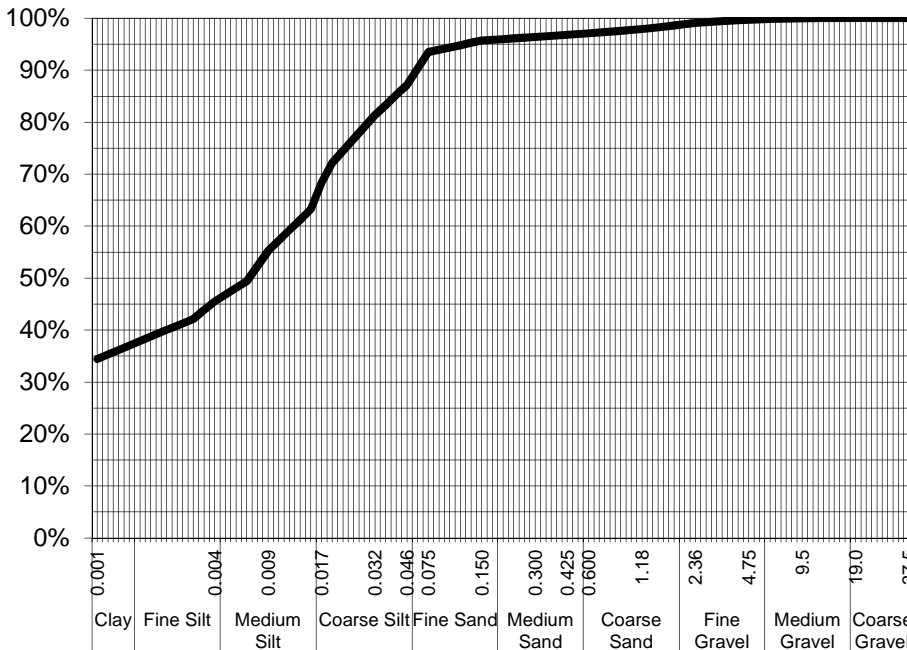
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 12-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 2-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326164-004 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS09

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	98%
0.600	97%
0.425	97%
0.300	96%
0.150	96%
0.075	94%
Particle Size (microns)	Percent Passing
46	87%
32	81%
17	68%
9	55%
4	46%
3	42%
1	34%

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Median Particle Size (mm)	0.008
---------------------------	-------

Analysed: 10-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

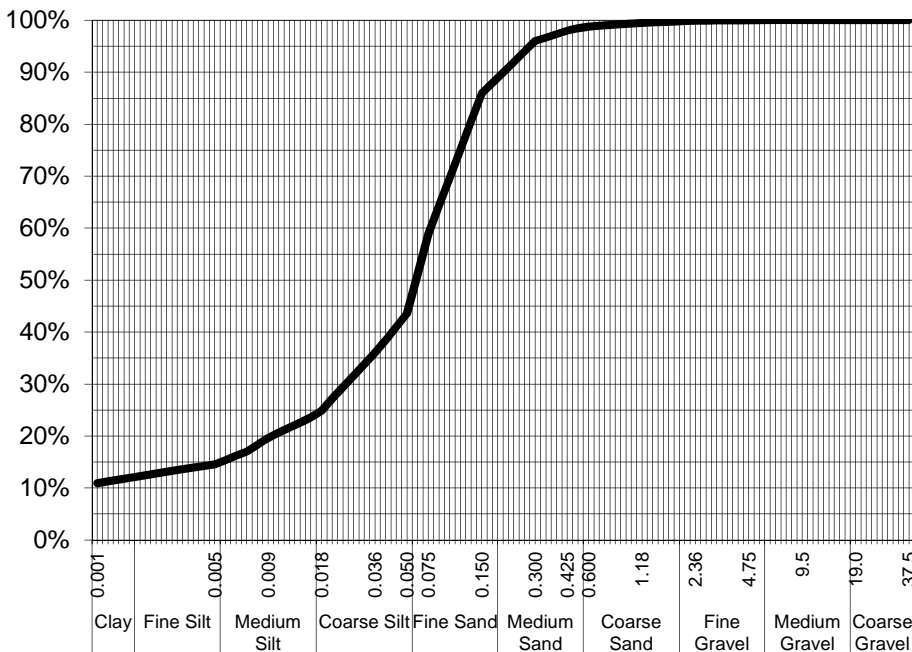
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 12-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 2-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326164-005 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS19

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	98%
0.300	96%
0.150	86%
0.075	59%
Particle Size (microns)	
50	44%
36	36%
18	25%
9	20%
5	15%
3	14%
1	11%

Median Particle Size (mm)	0.050
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 10-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

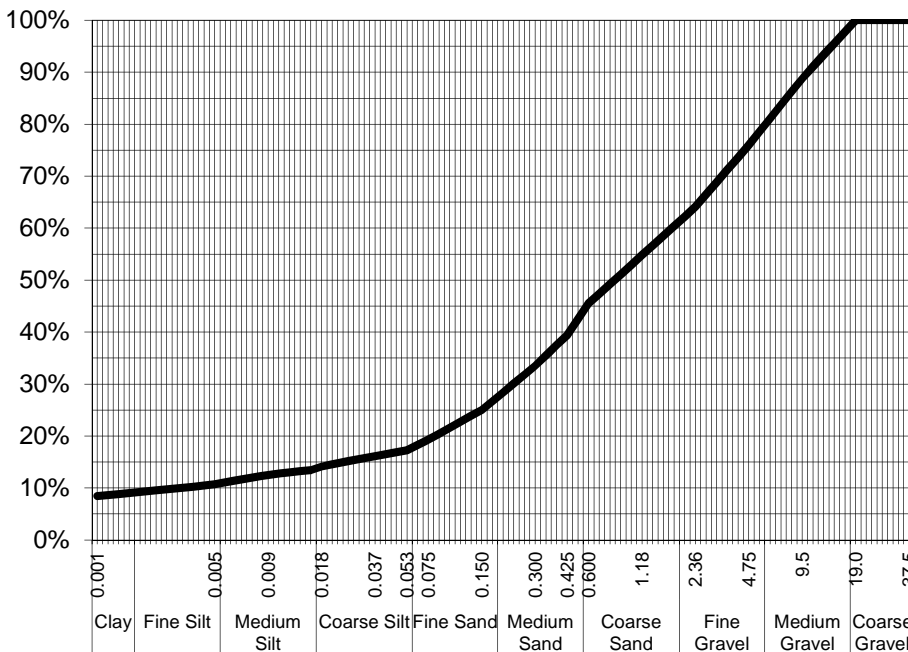
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 12-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 2-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326164-006 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS20

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	89%
4.75	76%
2.36	64%
1.18	55%
0.600	46%
0.425	39%
0.300	34%
0.150	25%
0.075	19%
Particle Size (microns)	
53	17%
37	16%
18	14%
9	13%
5	11%
3	10%
1	8%

Median Particle Size (mm)	0.600
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand, gravel and silty clay

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 10-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

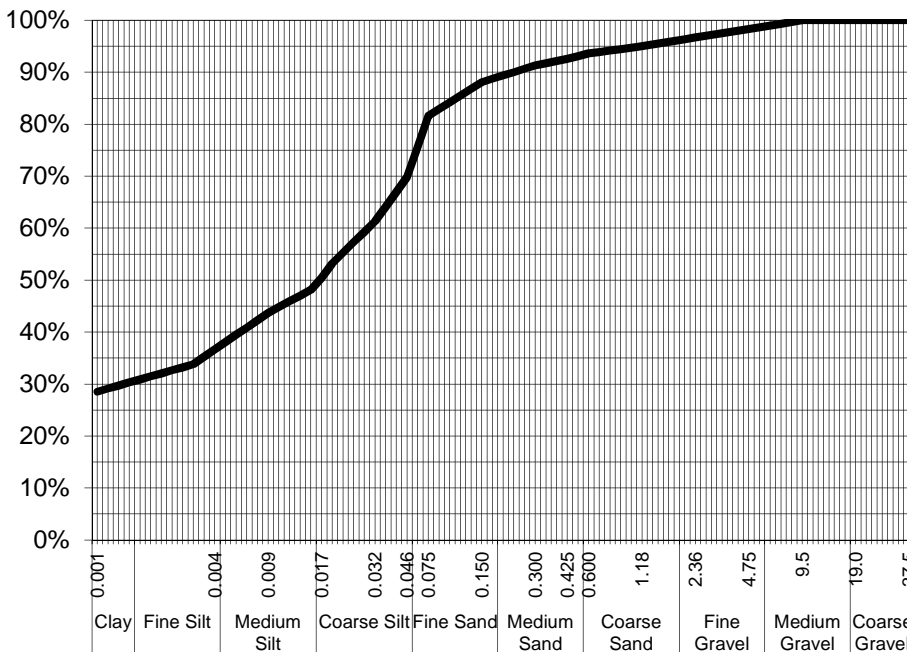
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 12-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 2-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326164-007 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS21

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	98%
2.36	97%
1.18	95%
0.600	94%
0.425	93%
0.300	91%
0.150	88%
0.075	82%
Particle Size (microns)	
46	70%
32	61%
17	50%
9	44%
4	37%
3	34%
1	29%

Median Particle Size (mm)	0.016
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 10-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

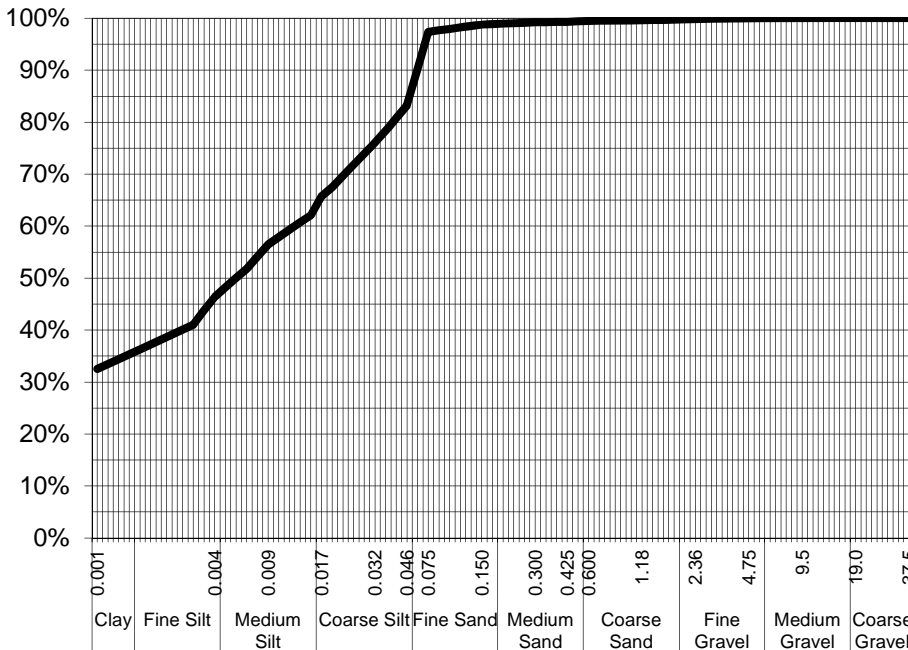
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 12-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 2-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326164-008 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS22

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	99%
0.300	99%
0.150	99%
0.075	97%
Particle Size (microns)	Percent Passing
46	83%
32	76%
17	66%
9	56%
4	46%
3	41%
1	33%

Median Particle Size (mm)	0.006
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 10-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

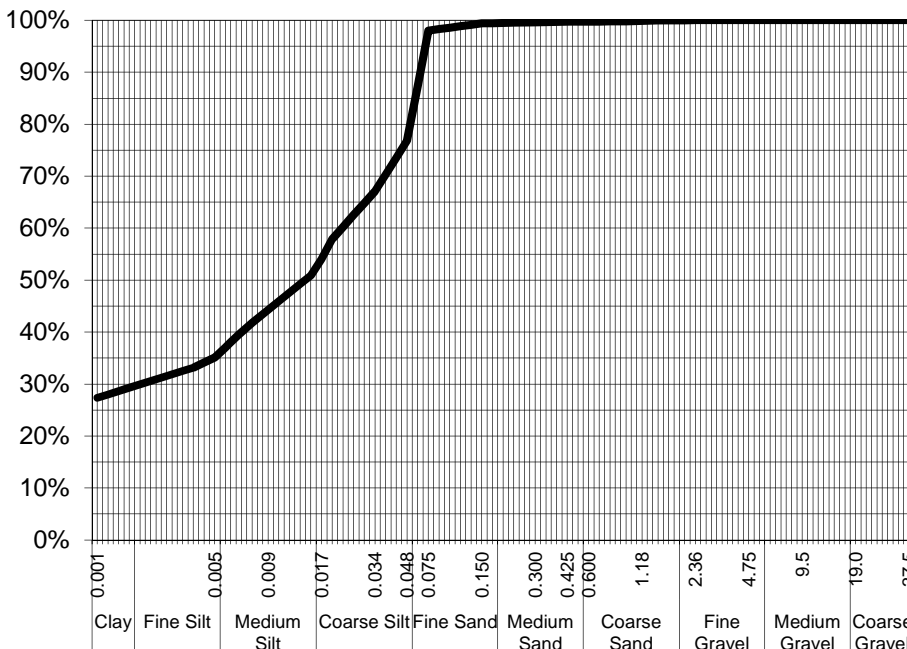
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 12-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 2-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326164-009 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS23

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	98%
Particle Size (microns)	
48	77%
34	67%
17	54%
9	44%
5	35%
3	33%
1	27%

Median Particle Size (mm)	0.015
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 10-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

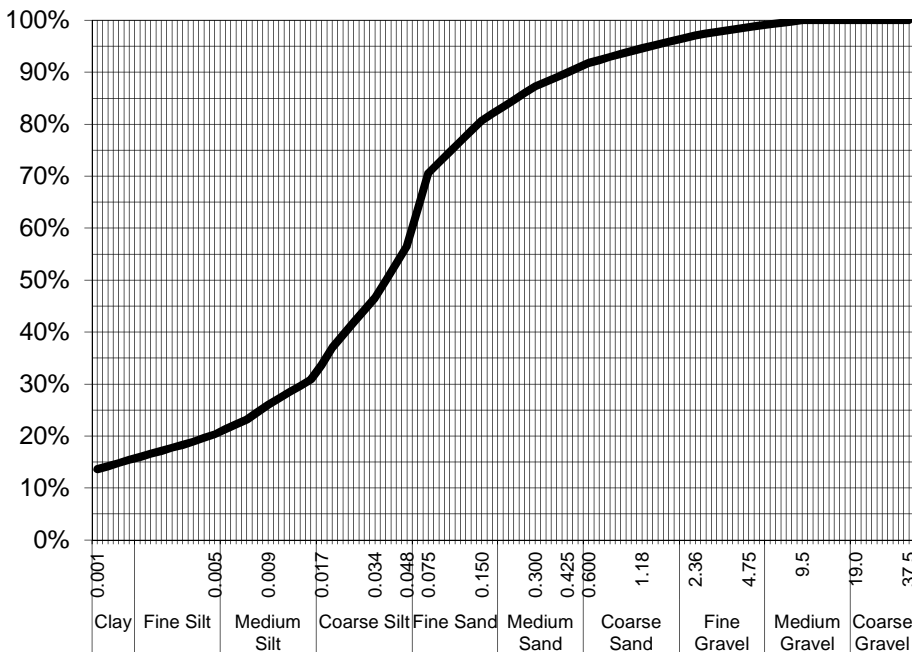
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 12-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 2-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326164-010 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS24

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	97%
1.18	95%
0.600	92%
0.425	90%
0.300	87%
0.150	81%
0.075	71%
Particle Size (microns)	
48	57%
34	47%
17	34%
9	26%
5	20%
3	19%
1	14%

Median Particle Size (mm)	0.041
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment: NA
Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm): 2.65 g/cm³

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Analysed: 10-Dec-13

Limit of Reporting: 1%

Dispersion Method: Shaker

Hydrometer Type: ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

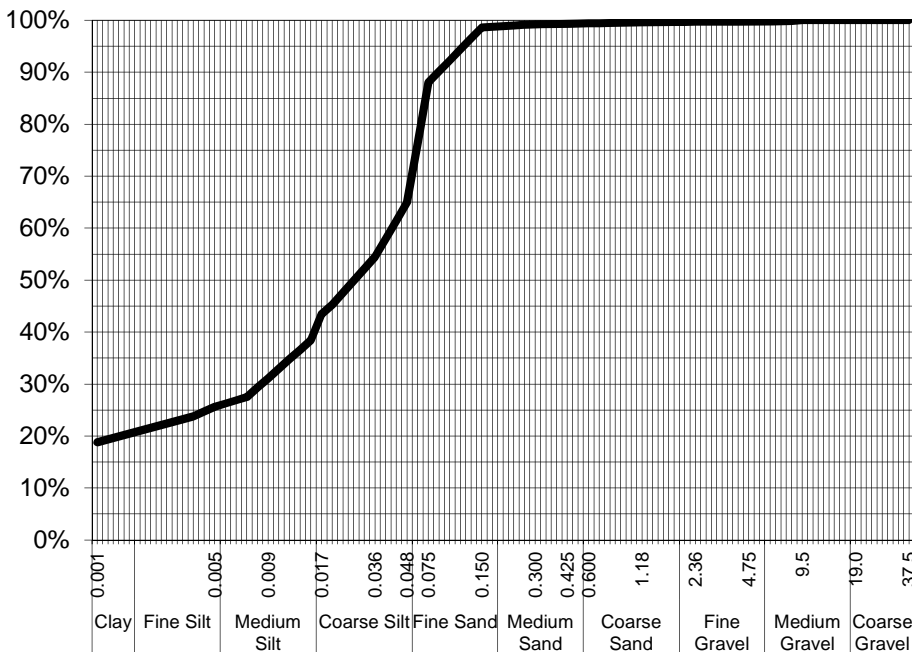
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 12-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 2-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326164-011 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS26

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	99%
0.075	88%
Particle Size (microns)	
48	65%
36	54%
17	43%
9	31%
5	26%
3	24%
1	19%

Median Particle Size (mm)	0.030
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 10-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

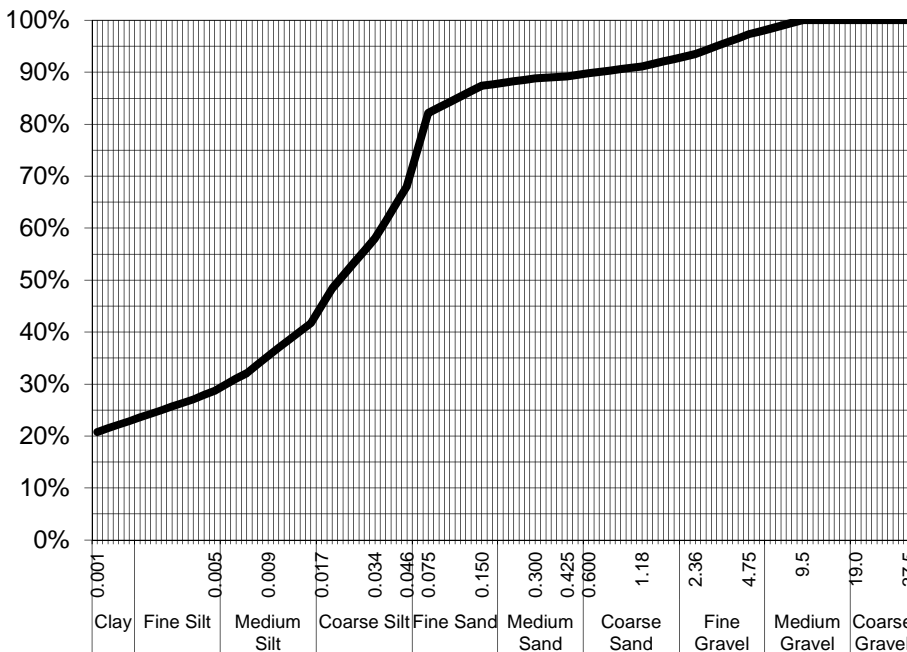
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 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 12-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 2-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326164-012 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS33

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	97%
2.36	94%
1.18	91%
0.600	90%
0.425	89%
0.300	89%
0.150	87%
0.075	82%
Particle Size (microns)	Percent Passing
46	68%
34	58%
17	45%
9	35%
5	29%
3	27%
1	21%

Median Particle Size (mm)	0.022
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 10-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

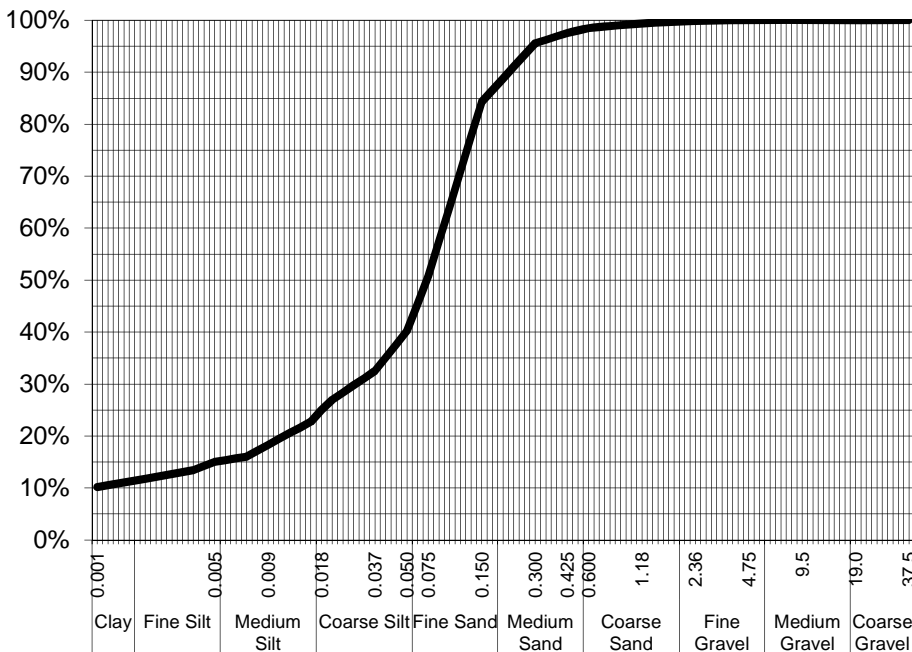
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 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

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Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 12-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 2-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326164-013 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** D01_281113_TA/S

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	99%
0.425	98%
0.300	96%
0.150	84%
0.075	51%
Particle Size (microns)	
50	40%
37	33%
18	25%
9	18%
5	15%
3	13%
1	10%

Median Particle Size (mm)	0.063
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

NATA Accreditation: 825 Site: Newcastle
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Analysed: 10-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

QUALITY CONTROL REPORT

Work Order	: ES1326164	Page	: 1 of 14
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 02-DEC-2013
C-O-C number	: ----	Issue Date	: 12-DEC-2013
Sampler	: TA	No. of samples received	: 15
Order number	: 0224193	No. of samples analysed	: 15
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



General Comments

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

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

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

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

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics
SATISH.TRIVEDI	2 IC Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EA055: Moisture Content (QC Lot: 3196028)											
ES1326153-003	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	25.2	24.5	2.7	0% - 20%		
ES1326162-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.3	16.3	0.0	0% - 50%		
EA055: Moisture Content (QC Lot: 3196029)											
ES1326164-009	BW_SS23	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	67.2	66.9	0.4	0% - 20%		
ES1326190-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	19.2	21.6	12.1	0% - 20%		
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 3196076)											
ES1326083-015	Anonymous	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	0.1	<0.1	0.0	No Limit		
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	5.6	6.4	12.5	0% - 20%		
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	7.4	6.0	21.7	0% - 50%		
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	15.2	12.6	19.0	0% - 50%		
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	128	105	19.6	0% - 20%		
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	9.3	8.3	10.9	No Limit		
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	22.4	22.9	2.3	0% - 20%		
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	56.0	57.4	2.3	0% - 20%		
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	17.2	13.4	25.0	0% - 50%		
		EG020-SD: Manganese	7439-96-5	10	mg/kg	325	333	2.3	0% - 20%		
ES1326164-003	BW_SS08	EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	65.7	67.2	2.3	0% - 20%		
		EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit		
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	5.9	5.6	5.9	0% - 20%		
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	13.4	13.6	1.1	0% - 20%		
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	23.4	28.2	18.7	0% - 20%		
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	19.7	20.4	3.7	0% - 20%		
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	15.3	17.5	13.3	0% - 50%		
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	18.9	17.8	5.9	0% - 50%		
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	58.5	64.4	9.5	0% - 20%		
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	14.4	19.4	29.3	0% - 50%		
ES1326164-003	BW_SS08	EG020-SD: Manganese	7439-96-5	10	mg/kg	1740	1390	# 22.2	0% - 20%		
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	63.8	52.5	19.4	0% - 20%		
		EG020T: Total Metals by ICP-MS (QC Lot: 3196073)									
		ES1326083-015	Anonymous	EG020X-T: Barium	7440-39-3	0.1	mg/kg	133	136	2.3	0% - 20%
				EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.6	0.7	21.4	No Limit
				EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	4.7	4.3	8.0	0% - 20%
		ES1326164-003	BW_SS08	EG020X-T: Barium	7440-39-3	0.1	mg/kg	183	190	3.5	0% - 20%
				EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	1.3	1.3	0.0	0% - 50%
				EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	26.1	25.8	1.3	0% - 20%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3196074)									
ES1326083-015	Anonymous	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1326164-003	BW_SS08	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3196075)									
ES1326083-015	Anonymous	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.32	0.33	0.0	0% - 20%
ES1326164-003	BW_SS08	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.03	0.03	0.0	No Limit
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 3197810)									
ES1326164-001	BW_SS01	EP003: Total Organic Carbon	----	0.02	%	2.28	2.28	0.0	0% - 20%
ES1326164-011	BW_SS26	EP003: Total Organic Carbon	----	0.02	%	30.0	29.7	0.8	0% - 20%
EP075(SIM)A: Phenolic Compounds (QC Lot: 3193920)									
ES1326164-001	BW_SS01	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	2.6	2.5	4.9	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	4.1	4.0	3.4	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	3	3	0.0	No Limit
ES1326164-011	BW_SS26	EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
		EP075(SIM): Phenol	108-95-2	0.5	mg/kg	8.2	7.5	8.2	0% - 50%
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	11.9	11.1	7.0	0% - 50%
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	9	9	0.0	No Limit		
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3195444)									
ES1326489-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1326489-004	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	29	28	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3195444)									
ES1326489-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1326489-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	49	48	3.1	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 3195444)									
ES1326489-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1326489-004	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3193929)									
ES1326164-001	BW_SS01	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.0	No Limit
ES1326164-011	BW_SS26	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.0	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3193932)									
ES1326164-001	BW_SS01	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	3	3	0.0	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	52	49	5.5	0% - 50%
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	46	46	0.0	No Limit
ES1326164-011	BW_SS26	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	136	154	12.1	0% - 20%
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	1390	1450	4.2	0% - 20%
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	602	650	7.7	0% - 20%
EP080-SD: BTEXN (QC Lot: 3193929)									
ES1326164-001	BW_SS01	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
ES1326164-011	BW_SS26	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 3193926)									
ES1326164-001	BW_SS01	EP131B: Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 3193926) - continued									
ES1326164-001	BW_SS01	EP131B: Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
ES1326164-011	BW_SS26	EP131B: Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3193931)									
ES1326164-001	BW_SS01	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	8	7	14.4	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	29	20	33.4	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	116	121	4.5	0% - 20%
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	17	14	15.7	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	90	94	3.6	0% - 20%
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	111	100	10.2	0% - 20%
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	62	64	2.9	0% - 50%
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	70	76	7.4	0% - 50%
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	69	63	8.4	0% - 50%
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	26	26	0.0	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	54	46	16.8	0% - 50%
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	50	46	9.0	0% - 50%
		EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	49	54	11.0	0% - 50%
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	8	6	20.3	No Limit
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	18	18	0.0	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	861	826	4.1	0% - 20%
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	20	16	20.0	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	39	30	24.3	No Limit
EP132B-SD: Coronene	191-07-1	5	µg/kg	25	25	0.0	No Limit		
ES1326164-011	BW_SS26	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	73	90	20.3	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	336	320	4.9	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	513	503	2.0	0% - 50%
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	1460	1260	14.4	0% - 20%

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 Work Order : ES1326164
 Client : ENVIRO RESOURCES MANAGEMENT
 Project : Project Symphony



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3193931) - continued									
ES1326164-011	BW_SS26	EP132B-SD: Anthracene	120-12-7	4	µg/kg	345	328	5.1	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	1960	1650	17.2	0% - 20%
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	1330	1100	18.6	0% - 20%
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	1150	1020	12.2	0% - 20%
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	1280	1060	18.7	0% - 20%
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	1200	1110	8.0	0% - 20%
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	408	478	15.9	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	762	651	15.7	0% - 50%
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	481	385	22.1	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	211	194	8.8	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	630	546	14.3	0% - 50%
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	117	98	17.6	No Limit
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	261	228	13.2	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	14000	12600	11.1	0% - 20%
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	336	342	1.7	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	1000	1030	2.6	0% - 20%
		EP132B-SD: Coronene	191-07-1	5	µg/kg	203	183	10.2	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3196076)									
EG020-SD: Arsenic	7440-38-2	1.0	mg/kg	<1.00	21.7 mg/kg	103	81	139	
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	4.64 mg/kg	101	82	126	
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	43.9 mg/kg	97.4	67	129	
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	32 mg/kg	107	80	136	
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	----	16 mg/kg	113	76	132	
		10	mg/kg	<10.0	----	----	----	----	
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	40 mg/kg	100	75	131	
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	130 mg/kg	107	77	133	
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55 mg/kg	112	76	128	
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	5.37 mg/kg	105	72	134	
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	29.6 mg/kg	114	87	131	
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	60.8 mg/kg	97.3	83	137	
EG020T: Total Metals by ICP-MS (QCLot: 3196072)									
EG020T: Boron	7440-42-8	0.1	mg/kg	<0.5	----	----	----	----	
EG020T: Total Metals by ICP-MS (QCLot: 3196073)									
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	143 mg/kg	112	70	134	
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	5.63 mg/kg	110	80	136	
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	7.9 mg/kg	120	71	129	
EG020T: Total Metals by ICP-MS (QCLot: 3196074)									
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	5.96 mg/kg	112	80	138	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3196075)									
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.110 mg/kg	105	72	116	
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 3197810)									
EP003: Total Organic Carbon	----	0.02	%	<0.02	12.3 %	97.1	70	130	
EP075(SIM)A: Phenolic Compounds (QCLot: 3193920)									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	112	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	106	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	107	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	102	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	98.1	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	84.1	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	93.3	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	90.3	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	88.1	76.4	114	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP075(SIM)A: Phenolic Compounds (QCLot: 3193920) - continued									
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	89.7	57	111	
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	93.6	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	41.0	3.9	57	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3195444)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	96.4	68.4	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3195444)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	99.4	68.4	128	
EP080: BTEXN (QCLot: 3195444)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	105	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	109	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	106	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	105	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	113	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	113	62	138	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3193929)									
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	6.2 mg/kg	105	61	133	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3193932)									
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	5 mg/kg	81.0	78	118	
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	7.5 mg/kg	115	84	118	
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	5 mg/kg	101	73	119	
EP080-SD: BTEXN (QCLot: 3193929)									
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	0.2 mg/kg	99.8	66	122	
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	0.2 mg/kg	88.4	69	122	
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.2 mg/kg	79.2	66	126	
EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	0.4 mg/kg	68.6	59	129	
	106-42-3								
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.2 mg/kg	70.8	66	126	
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3193926)									
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	105	50	134	
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----	
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193931)									



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193931) - continued								
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	100	67	133
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	25 µg/kg	115	63	135
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	106	68	132
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	108	67	133
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	110	69	131
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	105	66	138
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	101	67	133
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	95.5	64	130
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	101	67	133
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	100	65	133
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	107	70	134
EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	<4	25 µg/kg	91.9	63	133
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	108	67	133
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25 µg/kg	91.5	64	130
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	103	72	130
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	25 µg/kg	111	70	132
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	107	65	127
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	25 µg/kg	106	67	135
EP132B-SD: Indeno(1,2,3.cd)pyrene	193-39-5	4	µg/kg	<4	25 µg/kg	98.2	62	126
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	25 µg/kg	88.7	66	134
EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Recovery Limits (%)	
					MS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3196076)							
ES1326083-015	Anonymous	EG020-SD: Arsenic	7440-38-2	50 mg/kg	93.8	70	130
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	99.1	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	100	70	130
		EG020-SD: Copper	7440-50-8	125 mg/kg	94.3	70	130
		EG020-SD: Lead	7439-92-1	125 mg/kg	100	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	103	70	130
		EG020-SD: Zinc	7440-66-6	125 mg/kg	87.2	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3196075)							
ES1326083-015	Anonymous	EG035T-LL: Mercury	7439-97-6	0.050 mg/kg	87.0	70	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EP075(SIM)A: Phenolic Compounds (QCLot: 3193920)								
ES1326164-001	BW_SS01	EP075(SIM): Phenol	108-95-2	10 mg/kg	113	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	112	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	119	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	78.4	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	66.9	20	130	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3195444)								
ES1326489-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	90.9	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3195444)								
ES1326489-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	91.4	70	130	
EP080: BTEXN (QCLot: 3195444)								
ES1326489-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	84.7	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	93.0	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	91.0	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	90.0	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	94.4	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	98.9	70	130			
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3193929)								
ES1326164-001	BW_SS01	EP080-SD: C6 - C9 Fraction	----	6.5 mg/kg	98.5	70	130	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3193932)								
ES1326164-001	BW_SS01	EP071-SD: C10 - C14 Fraction	----	19.75 mg/kg	91.1	70	130	
		EP071-SD: C15 - C28 Fraction	----	87.25 mg/kg	75.6	70	130	
		EP071-SD: C29 - C36 Fraction	----	60 mg/kg	101	70	130	
EP080-SD: BTEXN (QCLot: 3193929)								
ES1326164-001	BW_SS01	EP080-SD: Benzene	71-43-2	0.5 mg/kg	77.6	70	130	
		EP080-SD: Toluene	108-88-3	0.5 mg/kg	80.5	70	130	
		EP080-SD: Ethylbenzene	100-41-4	0.5 mg/kg	78.0	70	130	
		EP080-SD: meta- & para-Xylene	108-38-3	0.5 mg/kg	82.7	70	130	
			106-42-3					
EP080-SD: ortho-Xylene	95-47-6	0.5 mg/kg	83.4	70	130			
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3193926)								
ES1326164-001	BW_SS01	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	59.1	44	136	
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193931)								
ES1326164-001	BW_SS01	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	91.6	70	130	
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	77.2	70	130	
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	83.1	70	130	
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	75.1	70	130	



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193931) - continued							
ES1326164-001	BW_SS01	EP132B-SD: Fluorene	86-73-7	25 µg/kg	80.3	70	130
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	# 53.1	70	130
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	94.3	70	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	105	70	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	125	70	130
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	104	70	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	116	70	130
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	25 µg/kg	120	70	130
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	97.3	70	130
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	86.4	70	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	# 65.9	70	130
		EP132B-SD: Perylene	198-55-0	25 µg/kg	91.2	70	130
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	124	70	130
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	73.0	70	130
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	78.7	70	130
EP132B-SD: Coronene	191-07-1	25 µg/kg	113	70	130		

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP075(SIM)A: Phenolic Compounds (QCLot: 3193920)										
ES1326164-001	BW_SS01	EP075(SIM): Phenol	108-95-2	10 mg/kg	113	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	112	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	119	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	78.4	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	66.9	----	20	130	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3193926)										
ES1326164-001	BW_SS01	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	59.1	----	44	136	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3193929)										
ES1326164-001	BW_SS01	EP080-SD: C6 - C9 Fraction	----	6.5 mg/kg	98.5	----	70	130	----	----
EP080-SD: BTEXN (QCLot: 3193929)										
ES1326164-001	BW_SS01	EP080-SD: Benzene	71-43-2	0.5 mg/kg	77.6	----	70	130	----	----
		EP080-SD: Toluene	108-88-3	0.5 mg/kg	80.5	----	70	130	----	----
		EP080-SD: Ethylbenzene	100-41-4	0.5 mg/kg	78.0	----	70	130	----	----



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP080-SD: BTEXN (QCLot: 3193929) - continued										
ES1326164-001	BW_SS01	EP080-SD: meta- & para-Xylene	108-38-3	0.5 mg/kg	82.7	----	70	130	----	----
			106-42-3							
		EP080-SD: ortho-Xylene	95-47-6	0.5 mg/kg	83.4	----	70	130	----	----
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193931)										
ES1326164-001	BW_SS01	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	91.6	----	70	130	----	----
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	77.2	----	70	130	----	----
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	83.1	----	70	130	----	----
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	75.1	----	70	130	----	----
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	80.3	----	70	130	----	----
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	# 53.1	----	70	130	----	----
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	94.3	----	70	130	----	----
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	105	----	70	130	----	----
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	125	----	70	130	----	----
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	104	----	70	130	----	----
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	116	----	70	130	----	----
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	25 µg/kg	120	----	70	130	----	----
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	97.3	----	70	130	----	----
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	86.4	----	70	130	----	----
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	# 65.9	----	70	130	----	----
		EP132B-SD: Perylene	198-55-0	25 µg/kg	91.2	----	70	130	----	----
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	124	----	70	130	----	----
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	73.0	----	70	130	----	----		
EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	78.7	----	70	130	----	----		
EP132B-SD: Coronene	191-07-1	25 µg/kg	113	----	70	130	----	----		
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3193932)										
ES1326164-001	BW_SS01	EP071-SD: C10 - C14 Fraction	----	19.75 mg/kg	91.1	----	70	130	----	----
		EP071-SD: C15 - C28 Fraction	----	87.25 mg/kg	75.6	----	70	130	----	----
		EP071-SD: C29 - C36 Fraction	----	60 mg/kg	101	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3195444)										
ES1326489-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	90.9	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3195444)										
ES1326489-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	91.4	----	70	130	----	----
EP080: BTEXN (QCLot: 3195444)										
ES1326489-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	84.7	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	93.0	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	91.0	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	90.0	----	70	130	----	----
			106-42-3							
	EP080: ortho-Xylene	95-47-6	2.5 mg/kg	94.4	----	70	130	----	----	



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP080: BTEXN (QCLot: 3195444) - continued										
ES1326489-001	Anonymous	EP080: Naphthalene	91-20-3	2.5 mg/kg	98.9	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3196075)										
ES1326083-015	Anonymous	EG035T-LL: Mercury	7439-97-6	0.050 mg/kg	87.0	----	70	130	----	----
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3196076)										
ES1326083-015	Anonymous	EG020-SD: Arsenic	7440-38-2	50 mg/kg	93.8	----	70	130	----	----
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	99.1	----	70	130	----	----
		EG020-SD: Chromium	7440-47-3	50 mg/kg	100	----	70	130	----	----
		EG020-SD: Copper	7440-50-8	125 mg/kg	94.3	----	70	130	----	----
		EG020-SD: Lead	7439-92-1	125 mg/kg	100	----	70	130	----	----
		EG020-SD: Nickel	7440-02-0	50 mg/kg	103	----	70	130	----	----
		EG020-SD: Zinc	7440-66-6	125 mg/kg	87.2	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1326164	Page	: 1 of 11
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 02-DEC-2013
C-O-C number	: ----	Issue Date	: 12-DEC-2013
Sampler	: TA	No. of samples received	: 15
Order number	: 0224193	No. of samples analysed	: 15
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/S	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	----	----	----	05-DEC-2013	12-DEC-2013	✓
EA150: Particle Sizing								
Pulp Bag (EA150H)								
BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26,	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33	28-NOV-2013	---	27-MAY-2014	----	11-DEC-2013	27-MAY-2014	✓
Soil Glass Jar - Unpreserved (EA150H)								
D01_281113_TA/S		28-NOV-2013	---	27-MAY-2014	----	11-DEC-2013	27-MAY-2014	✓
EA150: Soil Classification based on Particle Size								
Pulp Bag (EA150H)								
BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26,	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33	28-NOV-2013	---	27-MAY-2014	----	11-DEC-2013	27-MAY-2014	✓
Soil Glass Jar - Unpreserved (EA150H)								
D01_281113_TA/S		28-NOV-2013	---	27-MAY-2014	----	11-DEC-2013	27-MAY-2014	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG020-SD: Total Metals in Sediments by ICPMS								
Soil Glass Jar - Unpreserved (EG020-SD) BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/S	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	05-DEC-2013	27-MAY-2014	✓	06-DEC-2013	27-MAY-2014	✓
EG020T: Total Metals by ICP-MS								
Soil Glass Jar - Unpreserved (EG020T) BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/S	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	05-DEC-2013	27-MAY-2014	✓	09-DEC-2013	27-MAY-2014	✓
EG020T: Total Metals by ICP-MS								
Soil Glass Jar - Unpreserved (EG020X-T) BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/S	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	05-DEC-2013	27-MAY-2014	✓	06-DEC-2013	27-MAY-2014	✓
EG020T: Total Metals by ICP-MS								
Soil Glass Jar - Unpreserved (EG020Y-T) BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/S	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	05-DEC-2013	27-MAY-2014	✓	06-DEC-2013	27-MAY-2014	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T-LL)								
BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/S	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	05-DEC-2013	26-DEC-2013	✓	06-DEC-2013	26-DEC-2013	✓
EP003: Total Organic Carbon (TOC) in Soil								
Pulp Bag (EP003)								
BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/S	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	06-DEC-2013	26-DEC-2013	✓	06-DEC-2013	26-DEC-2013	✓
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071-SD)								
BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/S	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	06-DEC-2013	12-DEC-2013	✓	08-DEC-2013	15-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075(SIM))								
BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/S	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	06-DEC-2013	12-DEC-2013	✓	07-DEC-2013	15-JAN-2014	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
T/SPIKE 4,	TSC 4	22-NOV-2013	05-DEC-2013	06-DEC-2013	✓	05-DEC-2013	06-DEC-2013	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
T/SPIKE 4,	TSC 4	22-NOV-2013	05-DEC-2013	06-DEC-2013	✓	05-DEC-2013	06-DEC-2013	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080-SD: BTEXN								
Soil Glass Jar - Unpreserved (EP080-SD) BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/S	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	05-DEC-2013	12-DEC-2013	✓	06-DEC-2013	12-DEC-2013	✓
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080-SD) BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/S	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	05-DEC-2013	12-DEC-2013	✓	06-DEC-2013	12-DEC-2013	✓
EP131B: Polychlorinated Biphenyls (as Aroclors)								
Soil Glass Jar - Unpreserved (EP131B) BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/S	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	06-DEC-2013	12-DEC-2013	✓	08-DEC-2013	15-JAN-2014	✓
EP132B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP132B-SD) BW_SS01, BW_SS08, BW_SS19, BW_SS21, BW_SS23, BW_SS26, D01_281113_TA/S	BW_SS07, BW_SS09, BW_SS20, BW_SS22, BW_SS24, BW_SS33,	28-NOV-2013	06-DEC-2013	12-DEC-2013	✓	08-DEC-2013	15-JAN-2014	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Total Metals by ICP-MS	EG020T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Total Metals by ICP-MS	EG020T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Method Blanks (MB) - Continued							
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Metals by ICP-MS	EG020T	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020) (ICPMS) Metals in solids are determined following an appropriate acid digestion. The ICPMS technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite X	EG020X-T	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite Y	EG020Y-T	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP003	SOIL	In-house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO ₂) is automatically measured by infra-red detector.
TPH - Semivolatile Fraction	EP071-SD	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
TPH Volatiles/BTEX in Sediments	EP080-SD	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PCB's (Ultra-trace)	EP131B	SOIL	USEPA Method 3640 (GPC cleanup), 3620 (Florisil), 8081/8082 (GC/uECD/uECD) This technique is compliant with NEPM (2013) Schedule B(3) (Method 504)
PAHs in Sediments by GCMS(SIM)	EP132B-SD	SOIL	USEPA 8270 GCMS Capillary column, SIM mode using large volume programmed temperature vaporisation injection.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na ₂ SO ₄ and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Tumbler Extraction of Solids for LVI (Non-concentrating)	ORG17D	SOIL	In house: 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 50mL 1:1 DCM/Acetone by end over end tumbling. An aliquot is concentrated by nitrogen blowdown to a reduced volume for analysis if required.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG020-SD: Total Metals in Sediments by ICPMS	ES1326164-003	BW_SS08	Manganese	7439-96-5	22.2 %	0-20%	RPD exceeds LOR based limits
Matrix Spike (MS) Recoveries							
EP132B: Polynuclear Aromatic Hydrocarbons	ES1326164-001	BW_SS01	Phenanthrene	85-01-8	53.1 %	70-130%	Recovery less than lower control limit
EP132B: Polynuclear Aromatic Hydrocarbons	ES1326164-001	BW_SS01	Benzo(a)pyrene	50-32-8	65.9 %	70-130%	Recovery less than lower data quality objective

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Laboratory Control outliers occur.

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)T: PAH Surrogates	ES1326164-001	BW_SS01	Anthracene-d10	1719-06-8	64.1 %	66-128 %	Recovery less than lower data quality objective
EP075(SIM)T: PAH Surrogates	ES1326164-003	BW_SS08	Anthracene-d10	1719-06-8	63.5 %	66-128 %	Recovery less than lower data quality objective
EP075(SIM)T: PAH Surrogates	ES1326164-005	BW_SS19	Anthracene-d10	1719-06-8	62.2 %	66-128 %	Recovery less than lower data quality objective
EP075(SIM)T: PAH Surrogates	ES1326164-007	BW_SS21	Anthracene-d10	1719-06-8	61.5 %	66-128 %	Recovery less than lower data quality objective
EP075(SIM)T: PAH Surrogates	ES1326164-009	BW_SS23	Anthracene-d10	1719-06-8	60.6 %	66-128 %	Recovery less than lower data quality objective
EP075(SIM)T: PAH Surrogates	ES1326164-013	D01_281113_TA/S	Anthracene-d10	1719-06-8	65.6 %	66-128 %	Recovery less than lower data quality objective
EP075(SIM)T: PAH Surrogates	ES1326164-004	BW_SS09	Anthracene-d10	1719-06-8	62.4 %	66-128 %	Recovery less than lower data quality objective
EP075(SIM)T: PAH Surrogates	ES1326164-006	BW_SS20	Anthracene-d10	1719-06-8	64.3 %	66-128 %	Recovery less than lower data quality objective
EP075(SIM)T: PAH Surrogates	ES1326164-008	BW_SS22	Anthracene-d10	1719-06-8	65.2 %	66-128 %	Recovery less than lower data quality objective
EP075(SIM)T: PAH Surrogates	ES1326164-012	BW_SS33	Anthracene-d10	1719-06-8	63.6 %	66-128 %	Recovery less than lower data quality objective



Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted - Continued							
EP080-SD: TPH(V)/BTEX Surrogates	ES1326164-005	BW_SS19	4-Bromofluorobenzene	460-00-4	72.9 %	73-137 %	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

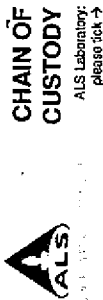
- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

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

12013



CHAIN OF CUSTODY
ALS Laboratory
please tick →

CLIENT: ERM
OFFICE: Sydney
PROJECT: Project Symphony
ORDER NUMBER: 0224193
PROJECT MANAGER: J. Fanning
SAMPLER: T. AGANI
COC emailed to ALS? (YES / NO)
 Email Reports to (will default to PM if no other addresses are listed): Symphony@MaxbeeElect.com
 Email Invoice to (will default to PM if no other addresses are listed):

TURNAROUND REQUIREMENTS:
 Standard TAT (List due date):
 Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SY794113
SITE: BAYSWATER LIDDELL
CONTACT PH:
SAMPLER MOBILE:
EDD FORMAT (or default): T. AGANI
DATE/TIME: 29.11.13 / 1700

FOR LABORATORY USE ONLY (Circle)
 Cautely Seal Intact? Yes No N/A
 Free ice / frozen ice bricks present upon receipt? Yes No N/A
 Random Sample Temperature on Receipt: °C
 Other comment:

RECEIVED BY: T. AGANI
DATE/TIME: 29.11.13 / 1700
RELINQUISHED BY:
DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE ID	DATE / TIME	MATRIX	CONTAINER INFORMATION		ANALYSIS REQUIRED INCLUDING SUITES (NB. Suite Codes must be listed to attract suite price) Where metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
				TYPE & PRESERVATIVE (to codes below)	TOTAL CONTAINERS (refer to codes below)		
1	BW-SS25	29-11-13	W		S	17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	Comments on likely contaminant levels, solutions, or samples requiring specific OC analysis etc. Environmental Division Sydney Work Order ES1326639 Telephone : +61-2-8784 8555 TRM / BTEX TRM / BTEX
2	BW-SS27					17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	
3	BW-SS28					17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	
4	BW-SS29					17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	
5	BW-SS30					17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	
6	BW-SS31					17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	
7	BW-SS32					17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	
8	BW-SS34					17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	
9	ROL-261113-TA					17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	
10	T/BLANK					17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	
11	T/SPIKE					17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	
						17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	
						17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	
						17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic; V = VOA Vial HCl Preserved; V8 = VOA Vial Sodium Bisphosphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formic Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Stable Bottle; ASS = Plastic Bag for Acid Sulphate Salts; B = Unpreserved Bag.

Hi Loren, can you please schedule the samples below for the requested additional analyses? Will you need to re-analyse or is it possible to just pull the data from the ICP?

We will need 48-72 hour turnaround on these. Can you let me know if there are likely to be delays?

I've also attached this in Excel if you need it.

Matrix	ERM Sample ID	Sample Date	ALS Sample Code	Additional Analysis
Sediment	BW_SS06	6/12/2013	ES1327428001	Barium, Beryllium, Boron, Cobalt, Manganese, Mercury, Molybdenum, Selenium, Thallium, Vanadium
Sediment	BW_SS10	6/12/2013	ES1327428002	Barium, Beryllium, Boron, Cobalt, Manganese, Mercury, Molybdenum, Selenium, Thallium, Vanadium
Sediment	BW_SS35	26/11/2013	ES1326082009	Selenium
Sediment	BW_SS36	26/11/2013	ES1326082010	Selenium
Sediment	BW_SS37	26/11/2013	ES1326082011	Selenium
Sediment	BW_SS38	26/11/2013	ES1326082012	Selenium
Sediment	BW_SS39	26/11/2013	ES1326082013	Selenium
Water	BW_SS01	28/11/2013	ES1326163001	Mercury, Selenium
Water	BW_SS07	28/11/2013	ES1326163002	Mercury, Selenium
Water	BW_SS08	28/11/2013	ES1326163003	Mercury, Selenium
Water	BW_SS09	28/11/2013	ES1326163004	Mercury, Selenium
Water	BW_SS11	27/11/2013	ES1326081015	Mercury, Selenium
Water	BW_SS12	27/11/2013	ES1326081016	Mercury, Selenium
Water	BW_SS13	27/11/2013	ES1326081017	Mercury, Selenium
Water	BW_SS14	27/11/2013	ES1326081018	Mercury, Selenium
Water	BW_SS15	27/11/2013	ES1326081019	Mercury, Selenium
Water	BW_SS16	27/11/2013	ES1326081020	Mercury, Selenium
Water	BW_SS17	27/11/2013	ES1326081021	Mercury, Selenium
Water	BW_SS18	27/11/2013	ES1326081022	Mercury, Selenium
Water	BW_SS19	28/11/2013	ES1326163005	Mercury, Selenium
Water	BW_SS20	28/11/2013	ES1326163006	Mercury, Selenium
Water	BW_SS21	28/11/2013	ES1326163007	Mercury, Selenium
Water	BW_SS22	28/11/2013	ES1326163008	Mercury, Selenium
Water	BW_SS23	28/11/2013	ES1326163009	Mercury, Selenium
Water	BW_SS24	28/11/2013	ES1326163010	Mercury, Selenium

Water	BW_SS25	29/11/2013	ES1326639001	Selenium
Water	BW_SS26	28/11/2013	ES1326163011	Mercury, Selenium
Water	BW_SS27	29/11/2013	ES1326639002	Selenium
Water	BW_SS28	29/11/2013	ES1326639003	Selenium
Water	BW_SS29	29/11/2013	ES1326639004	Selenium
Water	BW_SS30	29/11/2013	ES1326639005	Selenium
Water	BW_SS31	29/11/2013	ES1326639006	Selenium
Water	BW_SS32	29/11/2013	ES1326639007	Selenium
Water	BW_SS33	28/11/2013	ES1326163012	Mercury, Selenium
Water	BW_SS34	29/11/2013	ES1326639008	Selenium
Water	BW_SS40	27/11/2013	ES1326081001	Mercury, Selenium
Water	BW_SS41	27/11/2013	ES1326081002	Mercury, Selenium
Water	BW_SS42	27/11/2013	ES1326081003	Mercury, Selenium
Water	BW_SS43	27/11/2013	ES1326081004	Mercury, Selenium
Water	BW_SS45	27/11/2013	ES1326081005	Mercury, Selenium
Water	BW_SS46	27/11/2013	ES1326081006	Mercury, Selenium
Water	BW_SS47	27/11/2013	ES1326081007	Mercury, Selenium
Water	BW_SS48	27/11/2013	ES1326081008	Mercury, Selenium
Water	BW_SS49	27/11/2013	ES1326081009	Mercury, Selenium
Water	BW_SS50	27/11/2013	ES1326081010	Mercury, Selenium
Water	BW_SS51	27/11/2013	ES1326081011	Mercury, Selenium
Water	BW_SS52	27/11/2013	ES1326081012	Mercury, Selenium
Water	BW_SS53	27/11/2013	ES1326081013	Mercury, Selenium
Water	BW_SS54	27/11/2013	ES1326081014	Mercury, Selenium

Cheers,

JoeJoe Ferring

Senior Environmental Scientist

ERM

Building C, 33 Saunders Street Pyrmont NSW 2009

Locked Bag 24, Broadway NSW 2007 AUSTRALIA

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: ES1326639		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact Address	: MR JOSEPH FERRING GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Contact Address	: Barbara Hanna 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	Page	: 1 of 2
Order number	: 0224193	Quote number	: ES2013ENVRES0369 (SY/794/13)
C-O-C number	: ----	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER		
Sampler	: NH		

Dates

Date Samples Received	: 04-DEC-2013	Issue Date	: 06-DEC-2013 16:31
Client Requested Due Date	: 10-DEC-2013	Scheduled Reporting Date	: 10-DEC-2013

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 2.4°C - Ice present
No. of coolers/boxes	: 2 HARD	No. of samples received	: 11
Security Seal	: Intact.	No. of samples analysed	: 11

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020T Total Recoverable Metals by ICPMS	WATER - EG035T Total Mercury by FIMS	WATER - EP080 BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH(BTEXN)/PAH/Phenols
ES1326639-001	29-NOV-2013 15:00	BW_SS25	✓	✓			✓
ES1326639-002	29-NOV-2013 15:00	BW_SS27	✓	✓			✓
ES1326639-003	29-NOV-2013 15:00	BW_SS28	✓	✓			✓
ES1326639-004	29-NOV-2013 15:00	BW_SS29	✓	✓			✓
ES1326639-005	29-NOV-2013 15:00	BW_SS30	✓	✓			✓
ES1326639-006	29-NOV-2013 15:00	BW_SS31	✓	✓			✓
ES1326639-007	29-NOV-2013 15:00	BW_SS32	✓	✓			✓
ES1326639-008	29-NOV-2013 15:00	BW_SS34	✓	✓			✓
ES1326639-009	29-NOV-2013 15:00	R01_291113_TA	✓	✓			✓
ES1326639-010	29-NOV-2013 15:00	T/BLANK				✓	
ES1326639-011	29-NOV-2013 15:00	T/SPIKE			✓		

Proactive Holding Time Report

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

Requested Deliverables

MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) (COC)	Email	joseph.ferring@erm.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	joseph.ferring@erm.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.ferring@erm.com
- EDI Format - XTab (XTAB)	Email	joseph.ferring@erm.com

SYMPHONY ERARING

- *AU Certificate of Analysis - NATA (COA)	Email	Symphony.Eraring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Symphony.Eraring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Symphony.Eraring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Symphony.Eraring@erm.com
- Chain of Custody (CoC) (COC)	Email	Symphony.Eraring@erm.com
- EDI Format - ENMRG (ENMRG)	Email	Symphony.Eraring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	Symphony.Eraring@erm.com
- EDI Format - ESDAT (ESDAT)	Email	Symphony.Eraring@erm.com
- EDI Format - XTab (XTAB)	Email	Symphony.Eraring@erm.com

THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
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CERTIFICATE OF ANALYSIS

Work Order : ES1326639 Amendment : 1 Client : ENVIRO RESOURCES MANAGEMENT Contact : MR JOSEPH FERRING Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007 E-mail : joseph.ferring@erm.com Telephone : +61 02 8584 8888 Facsimile : +61 02 8584 8800 Project : Project Symphony Order number : 0224193 C-O-C number : ---- Sampler : NH Site : BAYSWATER Quote number : SY/794/13	Page : 1 of 10 Laboratory : Environmental Division Sydney Contact : Barbara Hanna Address : 277-289 Woodpark Road Smithfield NSW Australia 2164 E-mail : Barbara.Hanna@alsglobal.com Telephone : +61 2 8784 8555 Facsimile : +61 2 8784 8555 QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement Date Samples Received : 04-DEC-2013 Issue Date : 31-DEC-2013 No. of samples received : 11 No. of samples analysed : 11
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



General Comments

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

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

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

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

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

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

LOR = Limit of reporting

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

- **This report has been amended and re-released to allow the reporting of additional analytical data.**
-



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS25	BW_SS27	BW_SS28	BW_SS29	BW_SS30
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326639-001	ES1326639-002	ES1326639-003	ES1326639-004	ES1326639-005
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.005	0.002	0.003	0.003	0.004
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.116	0.086	0.089	0.092	0.091
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.005	0.004	0.004	0.004	0.004
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	0.006	0.006	0.007	0.004	0.005
Molybdenum	7439-98-7	0.001	mg/L	0.126	0.092	0.095	0.102	0.100
Nickel	7440-02-0	0.001	mg/L	0.006	0.005	0.004	0.005	0.004
Selenium	7782-49-2	0.01	mg/L	0.01	<0.01	<0.01	<0.01	<0.01
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	0.01	<0.01	0.01	0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.008	0.010	<0.005	<0.005	<0.005
Boron	7440-42-8	0.05	mg/L	1.14	0.87	0.94	0.92	0.90
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				BW_SS25	BW_SS27	BW_SS28	BW_SS29	BW_SS30
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
				ES1326639-001	ES1326639-002	ES1326639-003	ES1326639-004	ES1326639-005
Compound	CAS Number	LOR	Unit					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS25	BW_SS27	BW_SS28	BW_SS29	BW_SS30
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326639-001	ES1326639-002	ES1326639-003	ES1326639-004	ES1326639-005
EP080: BTEXN - Continued								
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	28.0	30.4	27.4	27.2	30.6
2-Chlorophenol-D4	93951-73-6	0.1	%	70.6	69.2	68.2	67.6	75.6
2.4.6-Tribromophenol	118-79-6	0.1	%	98.4	94.9	95.9	95.5	109
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	83.9	81.2	75.4	71.2	87.9
Anthracene-d10	1719-06-8	0.1	%	77.8	74.8	74.2	73.8	83.9
4-Terphenyl-d14	1718-51-0	0.1	%	79.2	76.5	75.9	75.8	86.2
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	106	122	116	123	123
Toluene-D8	2037-26-5	0.1	%	101	91.8	96.7	96.4	111
4-Bromofluorobenzene	460-00-4	0.1	%	108	90.5	97.8	103	98.1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS31	BW_SS32	BW_SS34	R01_291113_TA	T/BLANK
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326639-006	ES1326639-007	ES1326639-008	ES1326639-009	ES1326639-010
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.003	0.004	0.004	<0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	0.090	0.094	0.084	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	0.004	0.004	0.005	<0.001	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Manganese	7439-96-5	0.001	mg/L	0.006	0.005	0.005	<0.001	----
Molybdenum	7439-98-7	0.001	mg/L	0.105	0.105	0.093	<0.001	----
Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.005	<0.001	----
Selenium	7782-49-2	0.01	mg/L	0.01	<0.01	<0.01	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	0.006	0.007	0.017	<0.005	----
Boron	7440-42-8	0.05	mg/L	0.93	0.94	0.85	<0.05	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS31	BW_SS32	BW_SS34	R01_291113_TA	T/BLANK
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326639-006	ES1326639-007	ES1326639-008	ES1326639-009	ES1326639-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS31	BW_SS32	BW_SS34	R01_291113_TA	T/BLANK
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326639-006	ES1326639-007	ES1326639-008	ES1326639-009	ES1326639-010
EP080: BTEXN - Continued								
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	31.0	32.0	30.7	31.6	----
2-Chlorophenol-D4	93951-73-6	0.1	%	82.3	76.1	76.6	83.0	----
2.4.6-Tribromophenol	118-79-6	0.1	%	120	110	110	115	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	95.8	92.7	93.1	100	----
Anthracene-d10	1719-06-8	0.1	%	91.7	85.0	85.0	93.8	----
4-Terphenyl-d14	1718-51-0	0.1	%	94.2	87.4	87.0	95.8	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	127	115	108	103	102
Toluene-D8	2037-26-5	0.1	%	130	102	109	96.7	108
4-Bromofluorobenzene	460-00-4	0.1	%	120	98.4	99.7	90.5	98.9



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				T/SPIKE	----	----	----	----
				29-NOV-2013 15:00	----	----	----	----
				ES1326639-011	----	----	----	----
Compound	CAS Number	LOR	Unit					
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	14	----	----	----	----
Toluene	108-88-3	2	µg/L	14	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	13	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	15	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	15	----	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L	30	----	----	----	----
^ Sum of BTEX	----	1	µg/L	71	----	----	----	----
Naphthalene	91-20-3	5	µg/L	19	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	104	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	104	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	85.3	----	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM): Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM): PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QUALITY CONTROL REPORT

Work Order	: ES1326639	Page	: 1 of 12
Amendment	: 1		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER		
C-O-C number	: ----	Date Samples Received	: 04-DEC-2013
Sampler	: NH	Issue Date	: 31-DEC-2013
Order number	: 0224193		
Quote number	: SY/794/13	No. of samples received	: 11
		No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



General Comments

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

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

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

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

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



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3200310)									
ES1326447-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.008	0.006	32.5	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.058	0.058	0.0	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	0.002	0.003	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.010	0.010	0.0	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.017	0.017	0.0	0% - 50%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.028	0.028	0.0	0% - 20%
		EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.009	0.010	0.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EG020A-T: Boron	7440-42-8	0.05	mg/L	0.13	0.14	0.0	No Limit		
ES1326639-007	BW_SS32	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.004	0.003	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.094	0.093	1.7	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.004	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.005	0.006	0.0	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.105	0.104	0.0	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.004	0.006	21.0	No Limit
		EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.007	0.008	16.9	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EG020A-T: Boron	7440-42-8	0.05	mg/L	0.94	0.96	1.7	0% - 50%		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3200838)									
ES1326639-001	BW_SS25	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1326680-011	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3198859)									



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 3198859) - continued									
ES1326639-001	BW_SS25	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
ES1326639-005	BW_SS30	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3198859)									
ES1326639-001	BW_SS25	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3198859) - continued									
ES1326639-001	BW_SS25	EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
ES1326639-005	BW_SS30	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3198858)									
ES1326639-001	BW_SS25	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
ES1326639-005	BW_SS30	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3200528)									
ES1326639-001	BW_SS25	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1326680-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3198858)									
ES1326639-001	BW_SS25	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
ES1326639-005	BW_SS30	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3200528)									
ES1326639-001	BW_SS25	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1326680-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 3200528)									
ES1326639-001	BW_SS25	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 3200528) - continued									
ES1326639-001	BW_SS25	EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
		ES1326680-003	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1
EP080: Toluene	108-88-3	2		µg/L	<2	<2	0.0	No Limit	
EP080: Ethylbenzene	100-41-4	2		µg/L	<2	<2	0.0	No Limit	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2		µg/L	<2	<2	0.0	No Limit	
EP080: ortho-Xylene	95-47-6	2		µg/L	<2	<2	0.0	No Limit	
EP080: Naphthalene	91-20-3	5		µg/L	<5	<5	0.0	No Limit	



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

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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020T: Total Metals by ICP-MS (QCLot: 3200310)									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	79	121	
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	100	76	120	
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	103	84	116	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	105	82	114	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	105	83	115	
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	106	84	116	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	101	83	117	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.7	85	115	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	104	83	115	
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	105	81	125	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	105	83	117	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	96.9	68	128	
EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	0.1 mg/L	99.2	86	116	
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	105	84	114	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	93.2	76	118	
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.1 mg/L	100	73	127	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3200838)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	88.1	77	115	
EP075(SIM)A: Phenolic Compounds (QCLot: 3198859)									
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	20 µg/L	35.4	24.5	61.9	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	20 µg/L	75.0	63.8	110	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	20 µg/L	70.9	55.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	40 µg/L	65.2	42.5	114	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	20 µg/L	72.8	62.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	20 µg/L	71.1	59.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	20 µg/L	76.9	59.3	122	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	20 µg/L	79.4	64.3	118	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
				Result		LCS	Low	High	
EP075(SIM)A: Phenolic Compounds (QCLot: 3198859) - continued									
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	20 µg/L	71.9	63	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	20 µg/L	82.1	58.7	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	20 µg/L	82.1	50	108	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	40 µg/L	61.6	8.7	95	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3198859)									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	20 µg/L	77.8	58.6	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	20 µg/L	84.3	63.6	114	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	20 µg/L	83.4	62.2	113	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	20 µg/L	86.1	63.9	115	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	20 µg/L	83.8	62.6	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	20 µg/L	80.6	64.3	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	20 µg/L	85.8	63.6	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	20 µg/L	85.6	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	20 µg/L	82.7	64.1	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	20 µg/L	80.9	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	20 µg/L	82.1	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	20 µg/L	87.8	61.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	20 µg/L	84.1	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.2	µg/L	----	20 µg/L	84.0	59.9	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	20 µg/L	83.3	61.2	117	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3198859) - continued									
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	20 µg/L	83.5	59.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3198858)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	70.5	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	91.8	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	79.9	62	120	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3200528)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	99.1	75	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3198858)									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	92.1	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	85.9	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	74.6	67	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3200528)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	102	75	127	
EP080: BTEXN (QCLot: 3200528)									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	102	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	106	65	129	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	118	70	120	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	118	69	121	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	120	72	122	
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	119	70	124	

Matrix Spike (MS) Report

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

Sub-Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
EG020T: Total Metals by ICP-MS (QCLot: 3200310)								
ES1326447-004	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	120	70	130	
		EG020A-T: Beryllium	7440-41-7	1 mg/L	116	70	130	
		EG020A-T: Barium	7440-39-3	1 mg/L	120	70	130	
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	115	70	130	
		EG020A-T: Chromium	7440-47-3	1 mg/L	109	70	130	



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3200310) - continued							
ES1326447-004	Anonymous	EG020A-T: Cobalt	7440-48-4	1 mg/L	109	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	114	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	108	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	120	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	103	70	130
		EG020A-T: Vanadium	7440-62-2	1 mg/L	112	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	113	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3200838)							
ES1326639-002	BW_SS27	EG035T: Mercury	7439-97-6	0.010 mg/L	82.0	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3198859)							
ES1326639-002	BW_SS27	EP075(SIM): Phenol	108-95-2	200 µg/L	32.6	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	200 µg/L	80.6	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	200 µg/L	93.2	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	200 µg/L	85.8	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	200 µg/L	95.4	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3198859)							
ES1326639-002	BW_SS27	EP075(SIM): Acenaphthene	83-32-9	200 µg/L	93.0	70	130
		EP075(SIM): Pyrene	129-00-0	200 µg/L	93.1	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3198858)							
ES1326639-002	BW_SS27	EP071: C10 - C14 Fraction	----	2000 µg/L	109	74	150
		EP071: C15 - C28 Fraction	----	3000 µg/L	119	77	153
		EP071: C29 - C36 Fraction	----	2000 µg/L	106	67	153
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3200528)							
ES1326639-001	BW_SS25	EP080: C6 - C9 Fraction	----	325 µg/L	120	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3198858)							
ES1326639-002	BW_SS27	EP071: >C10 - C16 Fraction	>C10_C16	2500 µg/L	108	74	150
		EP071: >C16 - C34 Fraction	----	3500 µg/L	107	77	153
		EP071: >C34 - C40 Fraction	----	1500 µg/L	87.9	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3200528)							
ES1326639-001	BW_SS25	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	70	130
EP080: BTEXN (QCLot: 3200528)							
ES1326639-001	BW_SS25	EP080: Benzene	71-43-2	25 µg/L	79.3	70	130
		EP080: Toluene	108-88-3	25 µg/L	98.5	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	110	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	109	70	130
		EP080: ortho-Xylene	106-42-3	25 µg/L	111	70	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%) Low High
EP080: BTEXN (QCLot: 3200528) - continued							
ES1326639-001		BW_SS25	EP080: Naphthalene	91-20-3	25 µg/L	124	70 130

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: WATER

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%) MS MSD		Recovery Limits (%) Low High		RPDs (%) Value Control Limit	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3198858)											
ES1326639-002		BW_SS27	EP071: C10 - C14 Fraction	----	2000 µg/L	109	----	74	150	----	----
			EP071: C15 - C28 Fraction	----	3000 µg/L	119	----	77	153	----	----
			EP071: C29 - C36 Fraction	----	2000 µg/L	106	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3198858)											
ES1326639-002		BW_SS27	EP071: >C10 - C16 Fraction	>C10_C16	2500 µg/L	108	----	74	150	----	----
			EP071: >C16 - C34 Fraction	----	3500 µg/L	107	----	77	153	----	----
			EP071: >C34 - C40 Fraction	----	1500 µg/L	87.9	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3198859)											
ES1326639-002		BW_SS27	EP075(SIM): Phenol	108-95-2	200 µg/L	32.6	----	20	130	----	----
			EP075(SIM): 2-Chlorophenol	95-57-8	200 µg/L	80.6	----	60	130	----	----
			EP075(SIM): 2-Nitrophenol	88-75-5	200 µg/L	93.2	----	60	130	----	----
			EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	200 µg/L	85.8	----	70	130	----	----
			EP075(SIM): Pentachlorophenol	87-86-5	200 µg/L	95.4	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3198859)											
ES1326639-002		BW_SS27	EP075(SIM): Acenaphthene	83-32-9	200 µg/L	93.0	----	70	130	----	----
			EP075(SIM): Pyrene	129-00-0	200 µg/L	93.1	----	70	130	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3200310)											
ES1326447-004		Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	120	----	70	130	----	----
			EG020A-T: Beryllium	7440-41-7	1 mg/L	116	----	70	130	----	----
			EG020A-T: Barium	7440-39-3	1 mg/L	120	----	70	130	----	----
			EG020A-T: Cadmium	7440-43-9	0.25 mg/L	115	----	70	130	----	----
			EG020A-T: Chromium	7440-47-3	1 mg/L	109	----	70	130	----	----
			EG020A-T: Cobalt	7440-48-4	1 mg/L	109	----	70	130	----	----
			EG020A-T: Copper	7440-50-8	1 mg/L	114	----	70	130	----	----
			EG020A-T: Lead	7439-92-1	1 mg/L	108	----	70	130	----	----
			EG020A-T: Manganese	7439-96-5	1 mg/L	120	----	70	130	----	----
			EG020A-T: Nickel	7440-02-0	1 mg/L	103	----	70	130	----	----
			EG020A-T: Vanadium	7440-62-2	1 mg/L	112	----	70	130	----	----



Sub-Matrix: **WATER**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
EG020T: Total Metals by ICP-MS (QCLot: 3200310) - continued											
ES1326447-004	Anonymous	EG020A-T: Zinc	7440-66-6	1 mg/L	113	----	70	130	----	----	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3200528)											
ES1326639-001	BW_SS25	EP080: C6 - C9 Fraction	----	325 µg/L	120	----	70	130	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3200528)											
ES1326639-001	BW_SS25	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	----	70	130	----	----	
EP080: BTEXN (QCLot: 3200528)											
ES1326639-001	BW_SS25	EP080: Benzene	71-43-2	25 µg/L	79.3	----	70	130	----	----	
		EP080: Toluene	108-88-3	25 µg/L	98.5	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	25 µg/L	110	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	109	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	25 µg/L	111	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	25 µg/L	124	----	70	130	----	----	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3200838)											
ES1326639-002	BW_SS27	EG035T: Mercury	7439-97-6	0.010 mg/L	82.0	----	70	130	----	----	

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1326639	Page	: 1 of 6
Amendment	: 1		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
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Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER		
C-O-C number	: ---	Date Samples Received	: 04-DEC-2013
Sampler	: NH	Issue Date	: 31-DEC-2013
Order number	: 0224193		
Quote number	: SY/794/13	No. of samples received	: 11
		No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)								
BW_SS25, BW_SS28, BW_SS30, BW_SS32, R01_291113_TA	BW_SS27, BW_SS29, BW_SS31, BW_SS34,	29-NOV-2013	09-DEC-2013	28-MAY-2014	✓	09-DEC-2013	28-MAY-2014	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)								
BW_SS25, BW_SS28, BW_SS30, BW_SS32, R01_291113_TA	BW_SS27, BW_SS29, BW_SS31, BW_SS34,	29-NOV-2013	----	----	----	09-DEC-2013	27-DEC-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Amber Glass Bottle - Unpreserved (EP071)								
BW_SS25, BW_SS28, BW_SS30, BW_SS32, R01_291113_TA	BW_SS27, BW_SS29, BW_SS31, BW_SS34,	29-NOV-2013	06-DEC-2013	06-DEC-2013	✓	11-DEC-2013	20-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
BW_SS25, BW_SS28, BW_SS30, BW_SS32, R01_291113_TA	BW_SS27, BW_SS29, BW_SS31, BW_SS34,	29-NOV-2013	06-DEC-2013	06-DEC-2013	✓	11-DEC-2013	20-JAN-2014	✓



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
BW_SS25, BW_SS28, BW_SS30, BW_SS32, R01_291113_TA	BW_SS27, BW_SS29, BW_SS31, BW_SS34,	29-NOV-2013	06-DEC-2013	06-DEC-2013	✓	11-DEC-2013	20-JAN-2014	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
BW_SS25, BW_SS28, BW_SS30, BW_SS32, R01_291113_TA, T/SPIKE	BW_SS27, BW_SS29, BW_SS31, BW_SS34, T/BLANK,	29-NOV-2013	09-DEC-2013	13-DEC-2013	✓	09-DEC-2013	13-DEC-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Amber VOC Vial - Sulfuric Acid (EP080)								
BW_SS25, BW_SS28, BW_SS30, BW_SS32, R01_291113_TA,	BW_SS27, BW_SS29, BW_SS31, BW_SS34, T/BLANK	29-NOV-2013	09-DEC-2013	13-DEC-2013	✓	09-DEC-2013	13-DEC-2013	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	15	13.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.


- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.
-

6671
16/12

 CHAIN OF CUSTODY ALS Laboratory please tick →		TURNAROUND REQUIREMENTS: <input checked="" type="checkbox"/> Standard TAT (List due date): <small>(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)</small>										FOR LABORATORY USE ONLY (Circle) Custody Seal Intact? Yes No N/A Free Ice / frozen Ice Swicks present upon receipt? Yes No N/A Random Sample Temperature on Receipt: °C Other comment:																																																																																																																																																																																																																														
CLIENT: EAM OFFICE: Sydney		PROJECT: Project Symphony ALS QUOTE NO.: SY794113 SITE: BAYSWATER / LIDDELL										COC SEQUENCE NUMBER (Circle) COC: 0 1 2 3 4 5 6 7 OF: 0 2 3 4 5 6 7																																																																																																																																																																																																																														
ORDER NUMBER: 0224193 PROJECT MANAGER: J. Ferris		CONTACT PH:		RELINQUISHED BY: T. ARMANI DATE/TIME: 29.11.13 / 1300				RECEIVED BY: Frank ALS DATE/TIME: 4.12.13 1900				RELINQUISHED BY:		RECEIVED BY:																																																																																																																																																																																																																												
SAMPLER: T. ARMANI COC emailed to ALS? (YES / NO)		SAMPLER MOBILE:		EDD FORMAT (or default):				Email Reports to (will default to PM if no other addresses are listed): Symphony.Machen@eam.com				Email Invoice to (will default to PM if no other addresses are listed):																																																																																																																																																																																																																														
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Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; DRC = Nitric Preserved OR Silica Preserved Plastic; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Amber Glass Preserved; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Disulfate Preserved; VS = VOA Vial Sulfate Preserved; B = BOD Bottle Preserved; BUB = BOD Bottle Preserved; BUBP = BOD Bottle Preserved; BUBS = BOD Bottle Preserved; BUBC = BOD Bottle Preserved; BUBD = BOD Bottle Preserved; BUBF = BOD Bottle Preserved; BUBG = BOD Bottle Preserved; BUBH = BOD Bottle Preserved; BUBI = BOD Bottle Preserved; BUBJ = BOD Bottle Preserved; BUBK = BOD Bottle Preserved; BUBL = BOD Bottle Preserved; BUBM = BOD Bottle Preserved; BUBN = BOD Bottle Preserved; BUBO = BOD Bottle Preserved; BUBP = BOD Bottle Preserved; BUBQ = BOD Bottle Preserved; BUBR = BOD Bottle Preserved; BUBS = BOD Bottle Preserved; BUBT = BOD Bottle Preserved; BUBU = BOD Bottle Preserved; BUBV = BOD Bottle Preserved; BUBW = BOD Bottle Preserved; BUBX = BOD Bottle Preserved; BUBY = BOD Bottle Preserved; BUBZ = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Stuffle Bottle; ASS = Plastic Bag for Acid Sulfate Soils; B = Unpreserved Bag																																																																																																																																																																																																																																										

Environmental Division
 Sydney
 Work Order
ES1326691



Telephone : +61-2-8784 8555

Subcon / Forward Lab / Split WO

Organised By / Date: _____
 Relinquished By / Date: **Newcastle / PSD ①-⑧**
 Connote / Courier: _____
 WO No: _____
 Attach By PO / Internal Sheet: _____

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: ES1326691		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact Address	: MR JOSEPH FERRING GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Contact Address	: Barbara Hanna 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	Page	: 1 of 3
Order number	: 0224193	Quote number	: ES2013ENVRES0369 (SY/794/13)
C-O-C number	: ----	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER		
Sampler	: WG		

Dates

Date Samples Received	: 04-DEC-2013	Issue Date	: 09-DEC-2013 15:22
Client Requested Due Date	: 12-DEC-2013	Scheduled Reporting Date	: 12-DEC-2013

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.2°C SYD - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 11
Security Seal	: Intact.	No. of samples analysed	: 11

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- This is an updated SRA which indicates the new scheduled release date for this work order.
- All analysis will be reported on the scheduled due date of 12/12/2013, except for Particle Sizing analysis which will be reported on 16/12/2013.
- **Samples received in appropriately pretreated and preserved containers.**
- **Total Organic Carbon (TOC) analysis will be conducted by ALS Brisbane.**
- **Particle Sizing analysis will be conducted by ALS Newcastle.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA150H Particle Size Analysis by Hydrometer. AS1289	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP003 Total Organic Carbon (TOC) in Soil	SOIL - EP071 - SD	TRH ultra trace in sediments	SOIL - EP075 SIM Phenols only	SIM - Phenols only	SOIL - EP080-SD	TRH(V)/BTEXN in Sediments	SOIL - EP131B	PCB's (Ultratrace)	SOIL - EP132B-SD	Ultra-trace PAHs in Sediments
ES1326691-001	29-NOV-2013 15:00	BW_SS25	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ES1326691-002	29-NOV-2013 15:00	BW_SS27	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ES1326691-003	29-NOV-2013 15:00	BW_SS28	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ES1326691-004	29-NOV-2013 15:00	BW_SS29	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ES1326691-005	29-NOV-2013 15:00	BW_SS30	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ES1326691-006	29-NOV-2013 15:00	BW_SS31	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ES1326691-007	29-NOV-2013 15:00	BW_SS32	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ES1326691-008	29-NOV-2013 15:00	BW_SS34	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBS	SOIL - SD-03 Metals by ICPMS (15 metals + low level Hg)
ES1326691-001	29-NOV-2013 15:00	BW_SS25		✓
ES1326691-002	29-NOV-2013 15:00	BW_SS27		✓
ES1326691-003	29-NOV-2013 15:00	BW_SS28		✓
ES1326691-004	29-NOV-2013 15:00	BW_SS29		✓
ES1326691-005	29-NOV-2013 15:00	BW_SS30		✓
ES1326691-006	29-NOV-2013 15:00	BW_SS31		✓
ES1326691-007	29-NOV-2013 15:00	BW_SS32		✓
ES1326691-008	29-NOV-2013 15:00	BW_SS34		✓
ES1326691-009	29-NOV-2013 15:00	T/BLANK	✓	
ES1326691-010	29-NOV-2013 15:00	T/SPIKE	✓	
ES1326691-011	29-NOV-2013 15:00	TSC	✓	

Proactive Holding Time Report

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



Requested Deliverables

MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.ferring@erm.com
- Attachment - Report (SUBCO)	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) (COC)	Email	joseph.ferring@erm.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	joseph.ferring@erm.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.ferring@erm.com
- EDI Format - XTab (XTAB)	Email	joseph.ferring@erm.com

SYMPHONY ERARING

- *AU Certificate of Analysis - NATA (COA)	Email	Symphony.Eraring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Symphony.Eraring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Symphony.Eraring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Symphony.Eraring@erm.com
- Attachment - Report (SUBCO)	Email	Symphony.Eraring@erm.com
- Chain of Custody (CoC) (COC)	Email	Symphony.Eraring@erm.com
- EDI Format - ENMRG (ENMRG)	Email	Symphony.Eraring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	Symphony.Eraring@erm.com
- EDI Format - ESDAT (ESDAT)	Email	Symphony.Eraring@erm.com
- EDI Format - XTab (XTAB)	Email	Symphony.Eraring@erm.com

SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA (COA)	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	symphony.macgen@erm.com
- Attachment - Report (SUBCO)	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) (COC)	Email	symphony.macgen@erm.com
- EDI Format - ENMRG (ENMRG)	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	symphony.macgen@erm.com
- EDI Format - ESDAT (ESDAT)	Email	symphony.macgen@erm.com
- EDI Format - XTab (XTAB)	Email	symphony.macgen@erm.com

THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
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CERTIFICATE OF ANALYSIS

Work Order	: ES1326691	Page	: 1 of 13
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224193		
C-O-C number	: ----	Date Samples Received	: 04-DEC-2013
Sampler	: WG	Issue Date	: 17-DEC-2013
Site	: BAYSWATER		
Quote number	: SY/794/13	No. of samples received	: 11
		No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



General Comments

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

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

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

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

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

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

LOR = Limit of reporting

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

- **EA150H: Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1-2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently NATA endorsement does not apply to hydrometer results.**
- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**
- **EP132B-SD : Particular samples # BW-SS27 and #BW-Ss28 required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly.**



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
SATISH.TRIVEDI	2 IC Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS25	BW_SS27	BW_SS28	BW_SS29	BW_SS30
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326691-001	ES1326691-002	ES1326691-003	ES1326691-004	ES1326691-005
EA150: Particle Sizing								
+75µm	----	1	%	36	16	86	68	45
+150µm	----	1	%	30	8	77	59	37
+300µm	----	1	%	23	6	54	47	27
+425µm	----	1	%	20	5	38	39	22
+600µm	----	1	%	17	4	23	33	19
+1180µm	----	1	%	14	2	7	27	15
+2.36mm	----	1	%	12	<1	1	23	12
+4.75mm	----	1	%	5	<1	<1	19	8
+9.5mm	----	1	%	<1	<1	<1	16	6
+19.0mm	----	1	%	<1	<1	<1	<1	6
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	32.4	59.9	40.7	27.6	33.4
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	19	14	5	10	14
Silt (2-60 µm)	----	1	%	45	70	9	21	39
Sand (0.06-2.00 mm)	----	1	%	24	15	85	46	35
Gravel (>2mm)	----	1	%	12	1	1	23	12
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EG005-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	9350	6250	1020	3160	4420
Iron	7439-89-6	50	mg/kg	23800	21000	2580	10400	14200
EG005T: Total Metals by ICP-AES								
Barium	7440-39-3	10	mg/kg	80	190	50	80	90
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Molybdenum	7439-98-7	2	mg/kg	6	16	4	3	3
Thallium	7440-28-0	5	mg/kg	<5	<5	<5	<5	<5
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	2.12	2.06	0.68	2.17	1.80
Arsenic	7440-38-2	1.00	mg/kg	41.2	24.0	4.13	33.5	29.2
Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.3	<0.1	<0.1	0.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS25	BW_SS27	BW_SS28	BW_SS29	BW_SS30
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326691-001	ES1326691-002	ES1326691-003	ES1326691-004	ES1326691-005
EG020-SD: Total Metals in Sediments by ICPMS - Continued								
Chromium	7440-47-3	1.0	mg/kg	12.7	18.9	2.2	13.5	15.4
Copper	7440-50-8	1.0	mg/kg	35.7	82.5	19.8	58.5	84.2
Cobalt	7440-48-4	0.5	mg/kg	5.3	7.6	1.5	5.5	6.3
Lead	7439-92-1	1.0	mg/kg	9.5	18.2	4.7	8.2	9.7
Manganese	7439-96-5	10	mg/kg	245	221	28	235	292
Nickel	7440-02-0	1.0	mg/kg	14.9	20.9	3.0	16.4	19.0
Selenium	7782-49-2	0.1	mg/kg	3.5	10.4	2.9	3.7	5.6
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	2.0	mg/kg	80.2	92.5	15.8	76.5	74.5
Zinc	7440-66-6	1.0	mg/kg	31.8	84.4	22.5	41.9	48.4
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.03	2.95	0.15	0.08	0.10
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	1.16	18.0	64.2	1.64	9.16
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<2	1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.8	0.9	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg	<3	6	53	<3	<3
C15 - C28 Fraction	----	3	mg/kg	18	100	507	13	12
C29 - C36 Fraction	----	5	mg/kg	23	53	198	9	10
^ C10 - C36 Fraction (sum)	----	3	mg/kg	41	159	758	22	22



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS25	BW_SS27	BW_SS28	BW_SS29	BW_SS30
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326691-001	ES1326691-002	ES1326691-003	ES1326691-004	ES1326691-005
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	<50	631	26	36
2-Methylnaphthalene	91-57-6	5	µg/kg	9	1120	1100	65	97
Acenaphthylene	208-96-8	4	µg/kg	<4	65	64	<4	7
Acenaphthene	83-32-9	4	µg/kg	<4	179	235	13	24
Fluorene	86-73-7	4	µg/kg	<4	468	568	23	35
Phenanthrene	85-01-8	4	µg/kg	16	2100	2320	103	165
Anthracene	120-12-7	4	µg/kg	<4	213	423	14	23
Fluoranthene	206-44-0	4	µg/kg	16	2010	3240	149	240
Pyrene	129-00-0	4	µg/kg	16	3300	2340	113	197
Benz(a)anthracene	56-55-3	4	µg/kg	10	1160	1520	68	143
Chrysene	218-01-9	4	µg/kg	9	906	1400	78	128
Benzo(b)fluoranthene	205-99-2	4	µg/kg	10	919	1050	76	84
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	327	363	33	52
Benzo(e)pyrene	192-97-2	4	µg/kg	7	556	728	54	77



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS25	BW_SS27	BW_SS28	BW_SS29	BW_SS30
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326691-001	ES1326691-002	ES1326691-003	ES1326691-004	ES1326691-005
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(a)pyrene	50-32-8	4	µg/kg	10	421	660	49	76
Perylene	198-55-0	4	µg/kg	214	102	<25	56	75
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	9	1180	1310	40	61
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	306	434	8	11
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	5	558	697	18	27
Coronene	191-07-1	5	µg/kg	<5	765	706	13	24
^ Sum of PAHs	----	4	µg/kg	331	16600	19800	999	1580
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	80.2	76.7	76.1	74.2	74.2
2-Chlorophenol-D4	93951-73-6	0.1	%	86.7	82.2	82.5	80.0	81.6
2,4,6-Tribromophenol	118-79-6	0.1	%	122	106	102	113	110
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	103	98.7	102	99.7	100
Anthracene-d10	1719-06-8	0.1	%	100	92.8	90.6	92.7	92.5
4-Terphenyl-d14	1718-51-0	0.1	%	97.0	60.2	88.6	89.5	88.8
EP080-SD: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	86.2	87.6	93.7	91.4	111
Toluene-D8	2037-26-5	0.1	%	80.2	87.1	89.1	89.2	106
4-Bromofluorobenzene	460-00-4	0.1	%	76.5	85.6	81.0	81.3	98.0
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	82.0	89.0	100	98.0	96.0
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	119	124	109	98.5	119
Anthracene-d10	1719-06-8	0.1	%	101	107	122	90.2	105
4-Terphenyl-d14	1718-51-0	0.1	%	92.2	108	117	88.7	97.6



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS31	BW_SS32	BW_SS34	T/BLANK	T/SPIKE
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326691-006	ES1326691-007	ES1326691-008	ES1326691-009	ES1326691-010
EA150: Particle Sizing								
+75µm	----	1	%	20	25	12	----	----
+150µm	----	1	%	12	14	5	----	----
+300µm	----	1	%	7	8	3	----	----
+425µm	----	1	%	4	7	3	----	----
+600µm	----	1	%	3	6	2	----	----
+1180µm	----	1	%	1	3	2	----	----
+2.36mm	----	1	%	<1	2	1	----	----
+4.75mm	----	1	%	<1	<1	<1	----	----
+9.5mm	----	1	%	<1	<1	<1	----	----
+19.0mm	----	1	%	<1	<1	<1	----	----
+37.5mm	----	1	%	<1	<1	<1	----	----
+75.0mm	----	1	%	<1	<1	<1	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	46.3	32.0	29.6	----	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	12	16	33	----	----
Silt (2-60 µm)	----	1	%	63	56	50	----	----
Sand (0.06-2.00 mm)	----	1	%	25	26	16	----	----
Gravel (>2mm)	----	1	%	<1	2	1	----	----
Cobbles (>6cm)	----	1	%	<1	<1	<1	----	----
EG005-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	5340	7100	7210	----	----
Iron	7439-89-6	50	mg/kg	12000	24500	11600	----	----
EG005T: Total Metals by ICP-AES								
Barium	7440-39-3	10	mg/kg	90	70	110	----	----
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	----	----
Boron	7440-42-8	50	mg/kg	<50	<50	<50	----	----
Molybdenum	7439-98-7	2	mg/kg	4	3	3	----	----
Thallium	7440-28-0	5	mg/kg	<5	<5	<5	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	1.29	0.79	0.86	----	----
Arsenic	7440-38-2	1.00	mg/kg	10.8	22.4	13.0	----	----
Cadmium	7440-43-9	0.1	mg/kg	0.1	<0.1	<0.1	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS31	BW_SS32	BW_SS34	T/BLANK	T/SPIKE
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326691-006	ES1326691-007	ES1326691-008	ES1326691-009	ES1326691-010
EG020-SD: Total Metals in Sediments by ICPMS - Continued								
Chromium	7440-47-3	1.0	mg/kg	11.2	28.9	15.1	----	----
Copper	7440-50-8	1.0	mg/kg	78.3	21.8	27.3	----	----
Cobalt	7440-48-4	0.5	mg/kg	3.8	6.0	5.1	----	----
Lead	7439-92-1	1.0	mg/kg	9.2	16.5	6.2	----	----
Manganese	7439-96-5	10	mg/kg	213	605	138	----	----
Nickel	7440-02-0	1.0	mg/kg	12.7	19.3	18.0	----	----
Selenium	7782-49-2	0.1	mg/kg	4.8	2.6	3.6	----	----
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
Vanadium	7440-62-2	2.0	mg/kg	49.4	69.7	36.7	----	----
Zinc	7440-66-6	1.0	mg/kg	44.6	41.8	31.5	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.20	0.04	0.02	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	9.09	1.82	1.21	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	36
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	42
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	28



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS31	BW_SS32	BW_SS34	T/BLANK	T/SPIKE
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326691-006	ES1326691-007	ES1326691-008	ES1326691-009	ES1326691-010
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	6.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	0.9
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	4.6
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	2.0
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	14.0
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	6.6
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	<1
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	----	----
C10 - C14 Fraction	----	3	mg/kg	<3	<3	<3	----	----
C15 - C28 Fraction	----	3	mg/kg	41	33	12	----	----
C29 - C36 Fraction	----	5	mg/kg	29	25	13	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg	70	58	25	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	----	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS31	BW_SS32	BW_SS34	T/BLANK	T/SPIKE
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326691-006	ES1326691-007	ES1326691-008	ES1326691-009	ES1326691-010
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	15	8	<5	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg	52	25	9	----	----
Acenaphthylene	208-96-8	4	µg/kg	5	<4	<4	----	----
Acenaphthene	83-32-9	4	µg/kg	14	6	<4	----	----
Fluorene	86-73-7	4	µg/kg	26	13	6	----	----
Phenanthrene	85-01-8	4	µg/kg	101	46	18	----	----
Anthracene	120-12-7	4	µg/kg	16	6	<4	----	----
Fluoranthene	206-44-0	4	µg/kg	159	55	16	----	----
Pyrene	129-00-0	4	µg/kg	124	42	15	----	----
Benz(a)anthracene	56-55-3	4	µg/kg	95	37	13	----	----
Chrysene	218-01-9	4	µg/kg	90	34	14	----	----
Benzo(b)fluoranthene	205-99-2	4	µg/kg	69	28	12	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg	24	13	4	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg	50	19	8	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg	41	15	6	----	----
Perylene	198-55-0	4	µg/kg	675	292	98	----	----
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	44	13	8	----	----
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	7	<4	<4	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	18	5	<4	----	----
Coronene	191-07-1	5	µg/kg	19	<5	<5	----	----
^ Sum of PAHs	----	4	µg/kg	1640	657	227	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	74.0	72.7	87.4	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	67.7	80.9	102	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	106	107	119	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	87.1	93.2	106	----	----
Anthracene-d10	1719-06-8	0.1	%	87.8	93.5	97.1	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	84.5	89.8	92.7	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	----	84.8	93.3
Toluene-D8	2037-26-5	0.1	%	----	----	----	87.8	91.7
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	----	91.3	91.0



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS31	BW_SS32	BW_SS34	T/BLANK	T/SPIKE
				29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00	29-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1326691-006	ES1326691-007	ES1326691-008	ES1326691-009	ES1326691-010
EP080-SD: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	96.9	101	111	----	----
Toluene-D8	2037-26-5	0.1	%	90.4	89.9	100	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	85.0	82.4	95.0	----	----
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	108	82.0	85.0	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	102	112	108	----	----
Anthracene-d10	1719-06-8	0.1	%	93.8	87.4	102	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	86.6	83.7	91.3	----	----



Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Client sample ID

TSC	----	----	----	----
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Client sampling date / time

29-NOV-2013 15:00	----	----	----	----
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Compound	CAS Number	LOR	Unit	ES1326691-011	----	----	----	----
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EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	10	mg/kg	66	----	----	----	----
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EP080/071: Total Recoverable Hydrocarbons - NEPM 2013

C6 - C10 Fraction	C6_C10	10	mg/kg	75	----	----	----	----
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C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	49	----	----	----	----
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EP080: BTEXN

Benzene	71-43-2	0.2	mg/kg	0.4	----	----	----	----
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Toluene	108-88-3	0.5	mg/kg	12.4	----	----	----	----
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Ethylbenzene	100-41-4	0.5	mg/kg	1.6	----	----	----	----
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meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	8.0	----	----	----	----
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ortho-Xylene	95-47-6	0.5	mg/kg	3.3	----	----	----	----
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Sum of BTEX	----	0.2	mg/kg	25.7	----	----	----	----
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Total Xylenes	1330-20-7	0.5	mg/kg	11.3	----	----	----	----
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Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
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EP080S: TPH(V)/BTEX Surrogates

1,2-Dichloroethane-D4	17060-07-0	0.1	%	98.8	----	----	----	----
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Toluene-D8	2037-26-5	0.1	%	93.8	----	----	----	----
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4-Bromofluorobenzene	460-00-4	0.1	%	90.9	----	----	----	----
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Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0
EP080-SD: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	67	137
Toluene-D8	2037-26-5	74	134
4-Bromofluorobenzene	460-00-4	73	137
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	2.22	106
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	55	135
Anthracene-d10	1719-06-8	70	136
4-Terphenyl-d14	1718-51-0	57	127

Certificate of Analysis

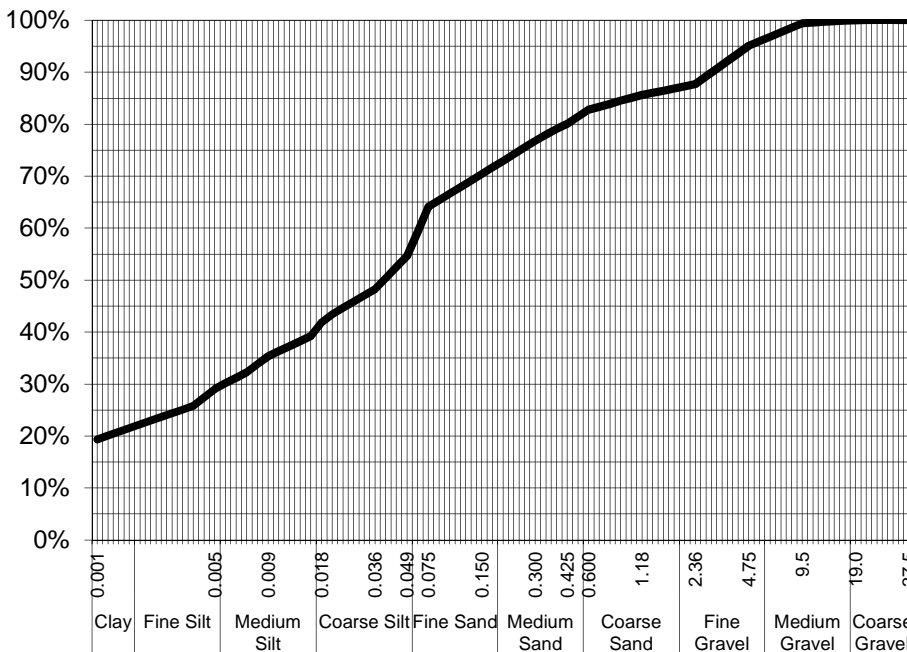
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 17-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 4-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326691-001 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS25

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	99%
4.75	95%
2.36	88%
1.18	86%
0.600	83%
0.425	80%
0.300	77%
0.150	70%
0.075	64%
Particle Size (microns)	Percent Passing
49	55%
36	48%
18	42%
9	35%
5	29%
3	26%
1	19%

Median Particle Size (mm)	0.038
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay, sand and shell

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

NATA Accreditation: 825 Site: Newcastle
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Analysed: 12-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

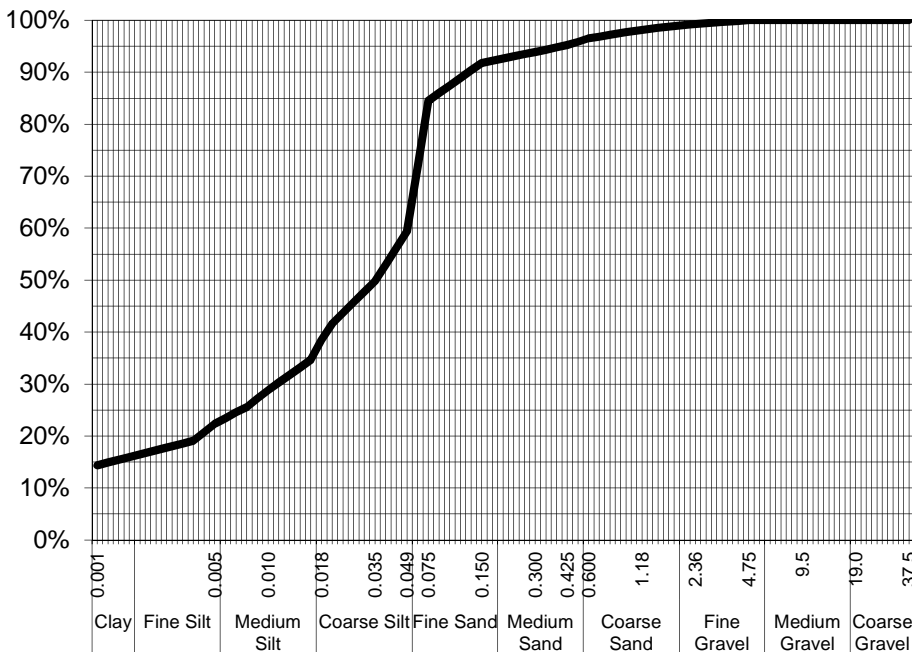
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COMPANY: Enviro Resources Management **DATE RECEIVED:** 4-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326691-002 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS27

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	98%
0.600	97%
0.425	95%
0.300	94%
0.150	92%
0.075	85%
Particle Size (microns)	Percent Passing
49	59%
35	50%
18	38%
10	29%
5	22%
3	19%
1	14%

Median Particle Size (mm)	0.037
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Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 12-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

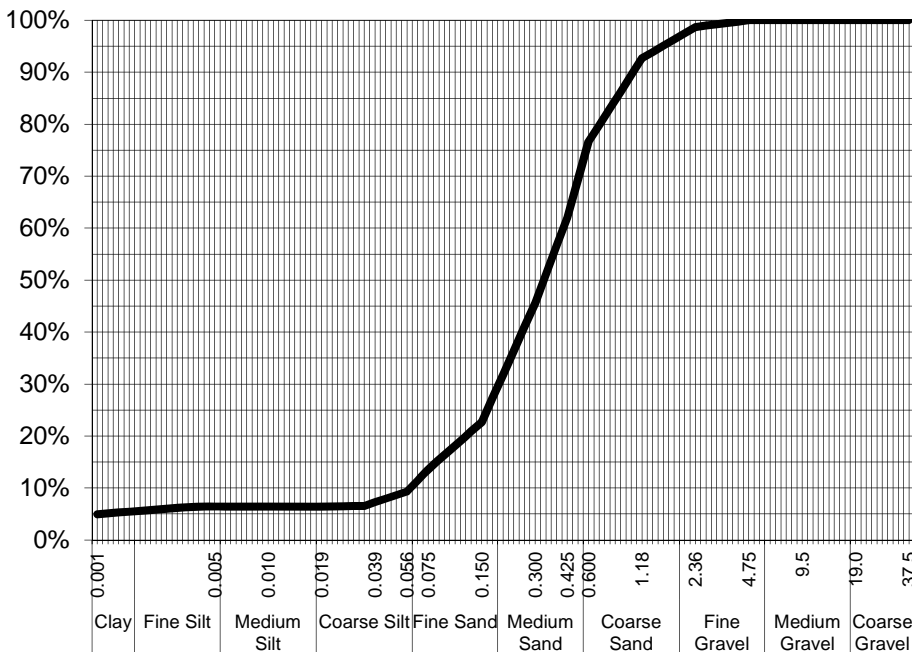
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 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



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ADDRESS: Ground Floor **REPORT NO:** ES1326691-003 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS28

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	93%
0.600	77%
0.425	62%
0.300	46%
0.150	23%
0.075	14%
Particle Size (microns)	
56	9%
39	7%
19	6%
10	6%
5	6%
4	6%
1	5%

Median Particle Size (mm)	0.300
---------------------------	-------

Samples analysed as received.
 Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand and silt

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 12-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

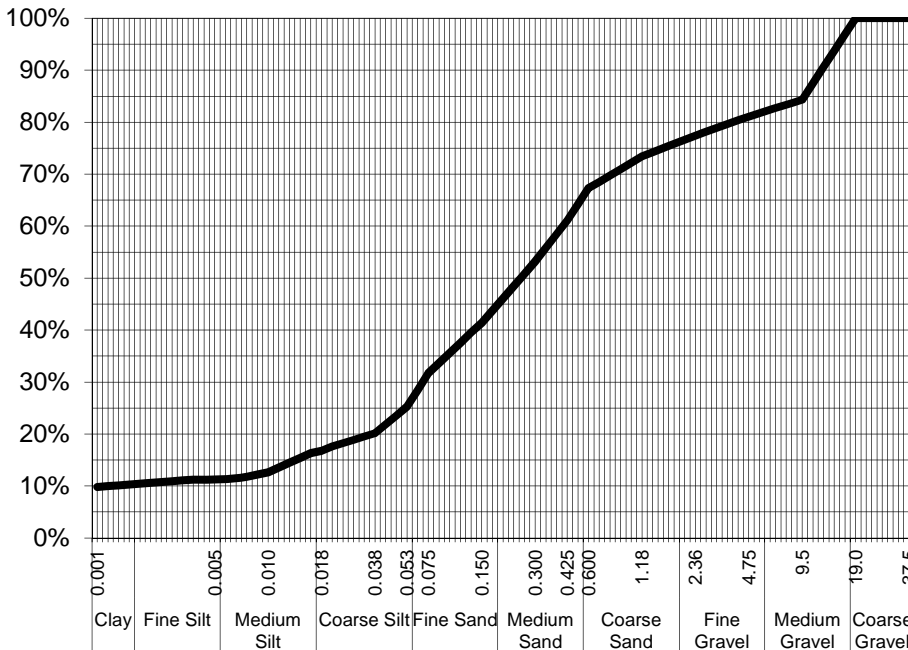
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ADDRESS: Ground Floor **REPORT NO:** ES1326691-004 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS29

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	84%
4.75	81%
2.36	77%
1.18	73%
0.600	67%
0.425	61%
0.300	53%
0.150	41%
0.075	32%
Particle Size (microns)	
53	25%
38	20%
18	17%
10	13%
5	11%
4	11%
1	10%

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand, silty clay and shell

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Median Particle Size (mm)	0.150
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Analysed: 12-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

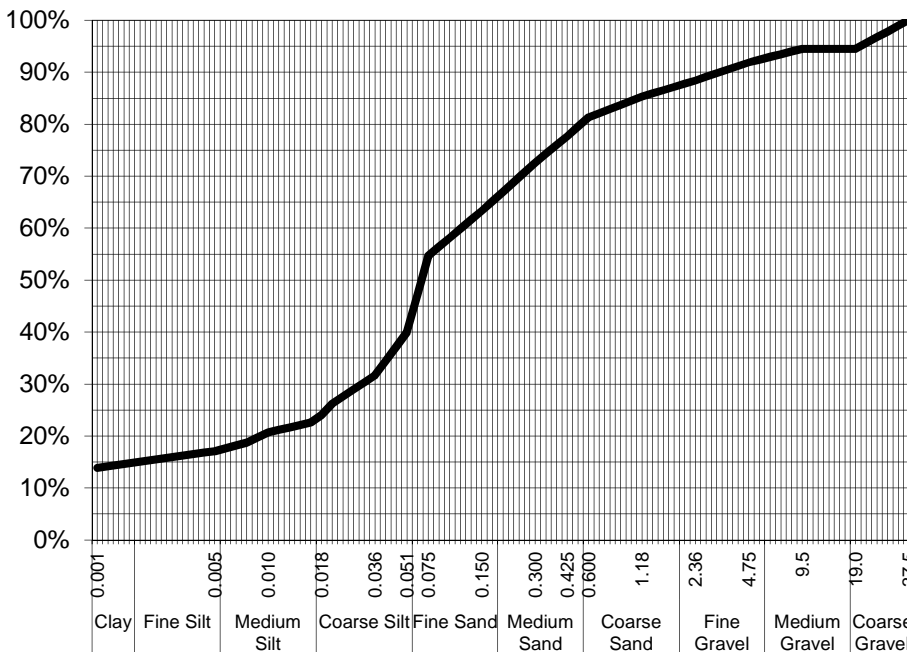
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 pH 02 4968 9433
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COMPANY: Enviro Resources Management **DATE RECEIVED:** 4-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326691-005 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS30

Particle Size Distribution



Particle Size (mm)	Percent Passing
37.5	100%
19.0	95%
9.5	95%
4.75	92%
2.36	88%
1.18	85%
0.600	81%
0.425	78%
0.300	73%
0.150	63%
0.075	55%
Particle Size (microns)	
51	40%
36	32%
18	24%
10	21%
5	17%
3	17%
1	14%

Median Particle Size (mm)	0.063
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay, sand and shell

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

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Analysed: 12-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

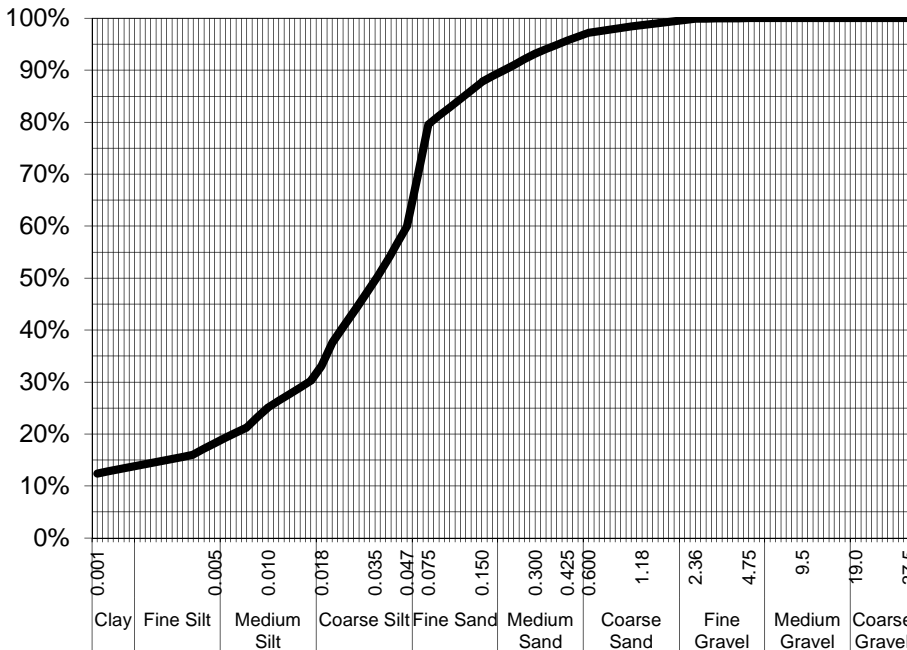
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ADDRESS: Ground Floor **REPORT NO:** ES1326691-006 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS31

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	97%
0.425	96%
0.300	93%
0.150	88%
0.075	80%
Particle Size (microns)	
47	60%
35	49%
18	33%
10	25%
5	18%
3	16%
1	12%

Median Particle Size (mm)	0.037
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment: NA
Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm): 2.65 g/cm³

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Analysed: 12-Dec-13

Limit of Reporting: 1%

Dispersion Method: Shaker

Hydrometer Type: ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

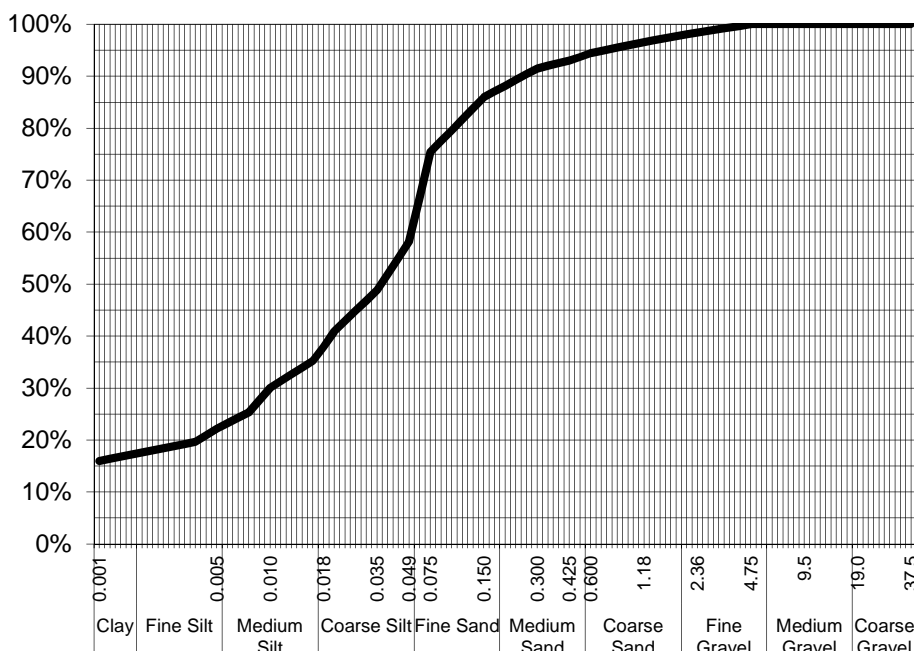
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Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 17-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 4-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326691-007 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS32

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	98%
1.18	97%
0.600	94%
0.425	93%
0.300	92%
0.150	86%
0.075	75%
Particle Size (microns)	Percent Passing
49	58%
35	49%
18	38%
10	30%
5	22%
3	20%
1	16%

Median Particle Size (mm)	0.037
---------------------------	-------

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

NATA Accreditation: 825 Site: Newcastle
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Analysed: 12-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

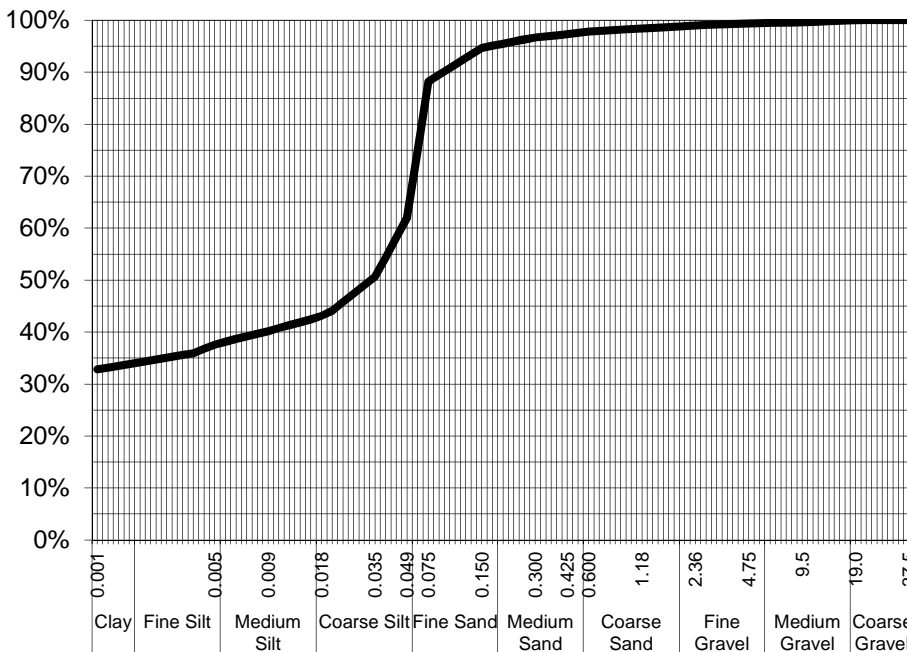
ALS Laboratory Group Pty Ltd
 5 Rosegum Road
 Warabrook, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 17-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 4-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1326691-008 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS34

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	99%
1.18	98%
0.600	98%
0.425	97%
0.300	97%
0.150	95%
0.075	88%
Particle Size (microns)	Percent Passing
49	62%
35	51%
18	43%
9	40%
5	38%
3	36%
1	33%

Median Particle Size (mm)	0.033
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Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay and sand

Test Method: AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

NATA Accreditation: 825 Site: Newcastle
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Analysed: 12-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

QUALITY CONTROL REPORT

Work Order	: ES1326691	Page	: 1 of 12
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 04-DEC-2013
C-O-C number	: ----	Issue Date	: 17-DEC-2013
Sampler	: WG	No. of samples received	: 11
Order number	: 0224193	No. of samples analysed	: 11
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



General Comments

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

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

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

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

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
SATISH.TRIVEDI	2 IC Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 3203893)									
ES1326691-001	BW_SS25	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	32.4	33.7	4.0	0% - 20%
ES1326715-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	32.5	33.5	3.0	0% - 20%
EG005-SD: Total Metals in Sediments by ICP-AES (QC Lot: 3206765)									
ES1326691-001	BW_SS25	EG005-SD: Aluminium	7429-90-5	50	mg/kg	9350	9660	3.3	0% - 20%
		EG005-SD: Iron	7439-89-6	50	mg/kg	23800	23300	2.0	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 3206761)									
ES1326691-001	BW_SS25	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	80	80	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	6	6	0.0	No Limit
		EG005T: Thallium	7440-28-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 3206763)									
ES1326691-001	BW_SS25	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	3.5	3.9	9.0	0% - 20%
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	5.3	5.0	5.6	0% - 50%
		EG020-SD: Antimony	7440-36-0	0.50	mg/kg	2.12	1.20	55.0	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	12.7	14.7	15.1	0% - 50%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	35.7	30.0	17.2	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	9.5	12.7	29.1	0% - 50%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	14.9	12.6	16.8	0% - 50%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	31.8	31.5	0.9	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	41.2	33.8	19.7	0% - 20%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	245	269	9.1	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	80.2	84.8	5.7	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3206762)									
ES1326691-001	BW_SS25	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.03	0.02	0.0	No Limit
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 3206168)									
ES1326691-001	BW_SS25	EP003: Total Organic Carbon	----	0.02	%	1.16	1.16	0.0	0% - 20%
EP075(SIM)A: Phenolic Compounds (QC Lot: 3201674)									
ES1326691-001	BW_SS25	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP075(SIM)A: Phenolic Compounds (QC Lot: 3201674) - continued										
ES1326691-001	BW_SS25	EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3203506)										
ES1326801-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
ES1326801-007	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3203506)										
ES1326801-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
ES1326801-007	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
EP080: BTEXN (QC Lot: 3203506)										
ES1326801-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
ES1326801-007	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit			
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3201665)										
ES1326691-001	BW_SS25	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.0	No Limit	
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	18	18	0.0	No Limit	
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	23	22	0.0	No Limit	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3203503)										
ES1326691-001	BW_SS25	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.0	No Limit	
EP080-SD: BTEXN (QC Lot: 3203503)										
ES1326691-001	BW_SS25	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080-SD: BTEXN (QC Lot: 3203503) - continued									
ES1326691-001	BW_SS25	EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
			106-42-3						
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 3201667)									
ES1326691-001	BW_SS25	EP131B: Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3201664)									
ES1326691-001	BW_SS25	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	16	10	46.8	No Limit
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	16	12	27.6	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	16	13	19.5	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	10	7	40.7	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	9	6	33.3	No Limit
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	10	8	23.9	No Limit
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	7	5	42.8	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	10	7	39.3	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	214	231	7.3	0% - 20%
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	9	7	28.8	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	5	5	0.0	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	331	316	4.6	0% - 20%
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.0	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	9	5	59.5	No Limit
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.0	No Limit		



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

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG005-SD: Total Metals in Sediments by ICP-AES (QCLot: 3206765)									
EG005-SD: Aluminium	7429-90-5	50	mg/kg	<50	6134 mg/kg	117	70	130	
EG005-SD: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	92.0	70	130	
EG005T: Total Metals by ICP-AES (QCLot: 3206761)									
EG005T: Barium	7440-39-3	10	mg/kg	<10	143 mg/kg	104	83	129	
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	5.63 mg/kg	109	88	130	
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----	
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	116	70	130	
EG005T: Thallium	7440-28-0	5	mg/kg	<5	5.96 mg/kg	106	70	130	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3206763)									
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----	
EG020-SD: Arsenic	7440-38-2	1.0	mg/kg	<1.00	21.7 mg/kg	121	81	139	
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	4.64 mg/kg	111	82	126	
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	43.9 mg/kg	116	67	129	
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	32 mg/kg	124	80	136	
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	----	16 mg/kg	119	76	132	
		10	mg/kg	<10.0	----	----	----	----	
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	40 mg/kg	102	75	131	
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	130 mg/kg	120	77	133	
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55 mg/kg	121	76	128	
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	5.37 mg/kg	125	72	134	
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	2.10 mg/kg	76.4	64	148	
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	29.6 mg/kg	125	87	131	
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	60.8 mg/kg	132	83	137	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3206762)									
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.110 mg/kg	110	72	116	
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 3206168)									
EP003: Total Organic Carbon	----	0.02	%	<0.02	1.94 %	98.8	70	130	
EP075(SIM)A: Phenolic Compounds (QCLot: 3201674)									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	87.3	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	95.1	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	98.0	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	98.5	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	80.1	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	81.7	69	117	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP075(SIM)A: Phenolic Compounds (QCLot: 3201674) - continued									
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	93.2	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	96.8	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	88.6	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	95.4	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	95.8	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	44.0	3.9	57	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3203506)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	102	68.4	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3203506)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	98.4	68.4	128	
EP080: BTEXN (QCLot: 3203506)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	69.6	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	79.0	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	80.2	58	118	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	85.4	60	120	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	87.7	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	105	62	138	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3201665)									
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	5 mg/kg	83.0	78	118	
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	7.5 mg/kg	105	84	118	
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	5 mg/kg	100	73	119	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3203503)									
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	6.2 mg/kg	84.5	61	133	
EP080-SD: BTEXN (QCLot: 3203503)									
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	0.2 mg/kg	89.3	66	122	
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	0.2 mg/kg	99.1	69	122	
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.2 mg/kg	102	66	126	
EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	0.4 mg/kg	103	59	129	
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.2 mg/kg	104	66	126	
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3201667)									
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	High
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3201667) - continued									
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	84.0	50	134	
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----	
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3201664)									
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	101	67	133	
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	25 µg/kg	110	63	135	
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	112	68	132	
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	115	67	133	
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	114	69	131	
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	119	66	138	
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	116	67	133	
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	112	64	130	
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	119	67	133	
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	110	65	133	
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	117	70	134	
EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	<4	25 µg/kg	107	63	133	
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	116	67	133	
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25 µg/kg	109	64	130	
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	118	72	130	
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	25 µg/kg	101	70	132	
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	112	65	127	
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	25 µg/kg	109	67	135	
EP132B-SD: Indeno(1,2,3-cd)pyrene	193-39-5	4	µg/kg	<4	25 µg/kg	112	62	126	
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	25 µg/kg	102	66	134	
EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	----	----	----	----	

Matrix Spike (MS) Report

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

Sub-Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3206763)								
ES1326691-001	BW_SS25	EG020-SD: Arsenic	7440-38-2	50 mg/kg	89.0	70	130	
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	111	70	130	
		EG020-SD: Chromium	7440-47-3	50 mg/kg	118	70	130	
		EG020-SD: Copper	7440-50-8	125 mg/kg	111	70	130	
		EG020-SD: Lead	7439-92-1	125 mg/kg	104	70	130	
		EG020-SD: Nickel	7440-02-0	50 mg/kg	115	70	130	



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3206763) - continued								
ES1326691-001	BW_SS25	EG020-SD: Zinc	7440-66-6	125 mg/kg	114	70	130	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3206762)								
ES1326691-001	BW_SS25	EG035T-LL: Mercury	7439-97-6	0.050 mg/kg	118	70	130	
EP075(SIM)A: Phenolic Compounds (QCLot: 3201674)								
ES1326691-001	BW_SS25	EP075(SIM): Phenol	108-95-2	10 mg/kg	77.9	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	86.0	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	83.2	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	86.6	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	85.8	20	130	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3203506)								
ES1326801-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	115	70	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3203506)								
ES1326801-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	86.7	70	130	
EP080: BTEXN (QCLot: 3203506)								
ES1326801-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	72.4	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	76.3	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	77.4	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	80.0	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	82.5	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	82.2	70	130			
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3201665)								
ES1326691-001	BW_SS25	EP071-SD: C10 - C14 Fraction	----	19.75 mg/kg	75.9	70	130	
		EP071-SD: C15 - C28 Fraction	----	87.25 mg/kg	93.6	70	130	
		EP071-SD: C29 - C36 Fraction	----	60 mg/kg	112	70	130	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3203503)								
ES1326691-001	BW_SS25	EP080-SD: C6 - C9 Fraction	----	6.5 mg/kg	130	70	130	
EP080-SD: BTEXN (QCLot: 3203503)								
ES1326691-001	BW_SS25	EP080-SD: Benzene	71-43-2	0.5 mg/kg	102	70	130	
		EP080-SD: Toluene	108-88-3	0.5 mg/kg	110	70	130	
		EP080-SD: Ethylbenzene	100-41-4	0.5 mg/kg	121	70	130	
		EP080-SD: meta- & para-Xylene	108-38-3	0.5 mg/kg	124	70	130	
			106-42-3					
EP080-SD: ortho-Xylene	95-47-6	0.5 mg/kg	125	70	130			
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3201667)								
ES1326691-001	BW_SS25	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	73.0	44	136	



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3201664)							
ES1326691-001	BW_SS25	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	76.1	70	130
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	88.6	70	130
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	94.0	70	130
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	91.0	70	130
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	92.0	70	130
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	72.0	70	130
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	95.8	70	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	81.3	70	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	97.4	70	130
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	92.4	70	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	101	70	130
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	25 µg/kg	90.2	70	130
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	78.8	70	130
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	100	70	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	92.4	70	130
		EP132B-SD: Perylene	198-55-0	25 µg/kg	# Not Determined	70	130
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	70.0	70	130		
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	90.4	70	130		
EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	74.0	70	130		
EP132B-SD: Coronene	191-07-1	25 µg/kg	93.7	70	130		

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: SOIL

						Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
						Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit		
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3201664)												
ES1326691-001	BW_SS25	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	76.1	----	70	130	----	----		
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	88.6	----	70	130	----	----		
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	94.0	----	70	130	----	----		
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	91.0	----	70	130	----	----		
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	92.0	----	70	130	----	----		
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	72.0	----	70	130	----	----		
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	95.8	----	70	130	----	----		
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	81.3	----	70	130	----	----		
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	97.4	----	70	130	----	----		



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3201664) - continued										
ES1326691-001	BW_SS25	EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	92.4	----	70	130	----	----
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	101	----	70	130	----	----
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	25 µg/kg	90.2	----	70	130	----	----
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	78.8	----	70	130	----	----
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	100	----	70	130	----	----
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	92.4	----	70	130	----	----
		EP132B-SD: Perylene	198-55-0	25 µg/kg	# Not Determined	----	70	130	----	----
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	70.0	----	70	130	----	----
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	90.4	----	70	130	----	----
		EP132B-SD: Indeno(1,2,3-cd)pyrene	193-39-5	25 µg/kg	74.0	----	70	130	----	----
EP132B-SD: Coronene	191-07-1	25 µg/kg	93.7	----	70	130	----	----		
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3201665)										
ES1326691-001	BW_SS25	EP071-SD: C10 - C14 Fraction	----	19.75 mg/kg	75.9	----	70	130	----	----
		EP071-SD: C15 - C28 Fraction	----	87.25 mg/kg	93.6	----	70	130	----	----
		EP071-SD: C29 - C36 Fraction	----	60 mg/kg	112	----	70	130	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3201667)										
ES1326691-001	BW_SS25	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	73.0	----	44	136	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3201674)										
ES1326691-001	BW_SS25	EP075(SIM): Phenol	108-95-2	10 mg/kg	77.9	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	86.0	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	83.2	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	86.6	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	85.8	----	20	130	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3203503)										
ES1326691-001	BW_SS25	EP080-SD: C6 - C9 Fraction	----	6.5 mg/kg	130	----	70	130	----	----
EP080-SD: BTEXN (QCLot: 3203503)										
ES1326691-001	BW_SS25	EP080-SD: Benzene	71-43-2	0.5 mg/kg	102	----	70	130	----	----
		EP080-SD: Toluene	108-88-3	0.5 mg/kg	110	----	70	130	----	----
		EP080-SD: Ethylbenzene	100-41-4	0.5 mg/kg	121	----	70	130	----	----
		EP080-SD: meta- & para-Xylene	108-38-3	0.5 mg/kg	124	----	70	130	----	----
		EP080-SD: ortho-Xylene	106-42-3	0.5 mg/kg	125	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3203506)										
ES1326801-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	115	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3203506)										
ES1326801-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	86.7	----	70	130	----	----
EP080: BTEXN (QCLot: 3203506)										



Sub-Matrix: SOIL

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
EP080: BTEXN (QCLot: 3203506) - continued											
ES1326801-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	72.4	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	76.3	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	77.4	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	80.0	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	82.5	----	70	130	----	----	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	82.2	----	70	130	----	----		
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3206762)											
ES1326691-001	BW_SS25	EG035T-LL: Mercury	7439-97-6	0.050 mg/kg	118	----	70	130	----	----	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3206763)											
ES1326691-001	BW_SS25	EG020-SD: Arsenic	7440-38-2	50 mg/kg	89.0	----	70	130	----	----	
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	111	----	70	130	----	----	
		EG020-SD: Chromium	7440-47-3	50 mg/kg	118	----	70	130	----	----	
		EG020-SD: Copper	7440-50-8	125 mg/kg	111	----	70	130	----	----	
		EG020-SD: Lead	7439-92-1	125 mg/kg	104	----	70	130	----	----	
		EG020-SD: Nickel	7440-02-0	50 mg/kg	115	----	70	130	----	----	
		EG020-SD: Zinc	7440-66-6	125 mg/kg	114	----	70	130	----	----	

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1326691	Page	: 1 of 9
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 04-DEC-2013
C-O-C number	: ----	Issue Date	: 17-DEC-2013
Sampler	: WG	No. of samples received	: 11
Order number	: 0224193	No. of samples analysed	: 11
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103) BW_SS25, BW_SS28, BW_SS30, BW_SS32, BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	----	----	----	10-DEC-2013	13-DEC-2013	✓
EA150: Particle Sizing							
Snap Lock Bag (EA150H) BW_SS25, BW_SS28, BW_SS30, BW_SS32, BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	---	28-MAY-2014	----	16-DEC-2013	28-MAY-2014	✓
EA150: Soil Classification based on Particle Size							
Snap Lock Bag (EA150H) BW_SS25, BW_SS28, BW_SS30, BW_SS32, BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	---	28-MAY-2014	----	16-DEC-2013	28-MAY-2014	✓
EG005-SD: Total Metals in Sediments by ICP-AES							
Soil Glass Jar - Unpreserved (EG005-SD) BW_SS25, BW_SS28, BW_SS30, BW_SS32, BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	11-DEC-2013	28-MAY-2014	✓	12-DEC-2013	28-MAY-2014	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) BW_SS25, BW_SS28, BW_SS30, BW_SS32, BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	11-DEC-2013	28-MAY-2014	✓	12-DEC-2013	28-MAY-2014	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG020-SD: Total Metals in Sediments by ICPMS								
Soil Glass Jar - Unpreserved (EG020-SD) BW_SS25, BW_SS28, BW_SS30, BW_SS32	BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	11-DEC-2013	28-MAY-2014	✓	12-DEC-2013	28-MAY-2014	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T-LL) BW_SS25, BW_SS28, BW_SS30, BW_SS32	BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	11-DEC-2013	27-DEC-2013	✓	12-DEC-2013	27-DEC-2013	✓
EP003: Total Organic Carbon (TOC) in Soil								
Pulp Bag (EP003) BW_SS25, BW_SS28, BW_SS30, BW_SS32	BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	11-DEC-2013	27-DEC-2013	✓	11-DEC-2013	27-DEC-2013	✓
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071-SD) BW_SS25, BW_SS28, BW_SS30, BW_SS32	BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	11-DEC-2013	13-DEC-2013	✓	12-DEC-2013	20-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075(SIM)) BW_SS25, BW_SS28, BW_SS30, BW_SS32	BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	11-DEC-2013	13-DEC-2013	✓	11-DEC-2013	20-JAN-2014	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) T/BLANK, TSC	T/SPIKE,	29-NOV-2013	11-DEC-2013	13-DEC-2013	✓	11-DEC-2013	13-DEC-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Soil Glass Jar - Unpreserved (EP080) T/BLANK, TSC	T/SPIKE,	29-NOV-2013	11-DEC-2013	13-DEC-2013	✓	11-DEC-2013	13-DEC-2013	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080-SD: BTEXN							
Soil Glass Jar - Unpreserved (EP080-SD) BW_SS25, BW_SS28, BW_SS30, BW_SS32, BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	10-DEC-2013	13-DEC-2013	✓	11-DEC-2013	13-DEC-2013	✓
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080-SD) BW_SS25, BW_SS28, BW_SS30, BW_SS32, BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	10-DEC-2013	13-DEC-2013	✓	11-DEC-2013	13-DEC-2013	✓
EP131B: Polychlorinated Biphenyls (as Aroclors)							
Soil Glass Jar - Unpreserved (EP131B) BW_SS25, BW_SS28, BW_SS30, BW_SS32, BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	11-DEC-2013	13-DEC-2013	✓	13-DEC-2013	20-JAN-2014	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP132B-SD) BW_SS25, BW_SS28, BW_SS30, BW_SS32, BW_SS27, BW_SS29, BW_SS31, BW_SS34	29-NOV-2013	11-DEC-2013	13-DEC-2013	✓	12-DEC-2013	20-JAN-2014	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Fe and Al in Sediments by ICPAES	EG005-SD	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	14	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Fe and Al in Sediments by ICPAES	EG005-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Fe and Al in Sediments by ICPAES	EG005-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Fe and Al in Sediments by ICPAES	EG005-SD	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3). LORs per NODG
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP003	SOIL	In-house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO ₂) is automatically measured by infra-red detector.
TPH - Semivolatile Fraction	EP071-SD	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
TPH Volatiles/BTEX in Sediments	EP080-SD	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PCB's (Ultra-trace)	EP131B	SOIL	USEPA Method 3640 (GPC cleanup), 3620 (Florisil), 8081/8082 (GC/uECD/uECD) This technique is compliant with NEPM (2013) Schedule B(3) (Method 504)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
PAHs in Sediments by GCMS(SIM)	EP132B-SD	SOIL	USEPA 8270 GCMS Capillary column, SIM mode using large volume programmed temperature vaporisation injection.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na ₂ SO ₄ and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Tumbler Extraction of Solids for LVI (Non-concentrating)	ORG17D	SOIL	In house: 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 50mL 1:1 DCM/Acetone by end over end tumbling. An aliquot is concentrated by nitrogen blowdown to a reduced volume for analysis if required.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP132B: Polynuclear Aromatic Hydrocarbons	ES1326691-001	BW_SS25	Perylene	198-55-0	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)T: PAH Surrogates	ES1326691-002	BW_SS27	4-Terphenyl-d14	1718-51-0	60.2 %	65-129 %	Recovery less than lower data quality objective
EP131T: PCB Surrogate	ES1326691-006	BW_SS31	Decachlorobiphenyl	2051-24-3	108 %	2.22-106 %	Recovery greater than upper data quality objective

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : ES1327427	
Client : ENVIRO RESOURCES MANAGEMENT Contact : MR JOSEPH FERRING Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Laboratory : Environmental Division Sydney Contact : Barbara Hanna Address : 277-289 Woodpark Road Smithfield NSW Australia 2164 E-mail : Barbara.Hanna@alsglobal.com Telephone : +61 2 8784 8555 Facsimile : +61 2 8784 8555 Project : Project Symphony Order number : 0224193 C-O-C number : ---- Site : BAYSWATER Sampler : TA
E-mail : joseph.ferring@erm.com Telephone : +61 02 8584 8888 Facsimile : +61 02 8584 8800	E-mail : Barbara.Hanna@alsglobal.com Telephone : +61 2 8784 8555 Facsimile : +61 2 8784 8555
Project : Project Symphony Order number : 0224193 C-O-C number : ---- Site : BAYSWATER Sampler : TA	Page : 1 of 2 Quote number : ES2013ENVRES0369 (SY/794/13) QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received : 13-DEC-2013 Client Requested Due Date : 19-DEC-2013	Issue Date : 14-DEC-2013 11:31 Scheduled Reporting Date : 19-DEC-2013
--	---

Delivery Details

Mode of Delivery : Carrier No. of coolers/boxes : 1 HARD Security Seal : Intact.	Temperature : 6.8°C SYD - Ice present No. of samples received : 2 No. of samples analysed : 2
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General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020T Total Recoverable Metals by ICPMS (including)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - W-03T 15 Metals (Total) (NEPM)	WATER - W-24 TRH/TEXNIPAH/Phenols
ES1327427-001	06-DEC-2013 15:00	BW_SS06	✓	✓	✓	✓
ES1327427-002	06-DEC-2013 15:00	BW_SS10	✓	✓	✓	✓

Proactive Holding Time Report

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

Requested Deliverables

MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) (COC)	Email	joseph.ferring@erm.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	joseph.ferring@erm.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.ferring@erm.com
- EDI Format - XTab (XTAB)	Email	joseph.ferring@erm.com

SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA (COA)	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) (COC)	Email	symphony.macgen@erm.com
- EDI Format - ENMRG (ENMRG)	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	symphony.macgen@erm.com
- EDI Format - ESDAT (ESDAT)	Email	symphony.macgen@erm.com
- EDI Format - XTab (XTAB)	Email	symphony.macgen@erm.com

THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
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CERTIFICATE OF ANALYSIS

Work Order : ES1327427 Client : ENVIRO RESOURCES MANAGEMENT Contact : MR JOSEPH FERRING Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007 E-mail : joseph.ferring@erm.com Telephone : +61 02 8584 8888 Facsimile : +61 02 8584 8800 Project : Project Symphony Order number : 0224193 C-O-C number : ---- Sampler : TA Site : BAYSWATER Quote number : SY/794/13	Page : 1 of 6 Laboratory : Environmental Division Sydney Contact : Barbara Hanna Address : 277-289 Woodpark Road Smithfield NSW Australia 2164 E-mail : Barbara.Hanna@alsglobal.com Telephone : +61 2 8784 8555 Facsimile : +61 2 8784 8555 QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement Date Samples Received : 13-DEC-2013 Issue Date : 19-DEC-2013 No. of samples received : 2 No. of samples analysed : 2
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics



General Comments

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

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

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

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

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

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

LOR = Limit of reporting

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



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS06	BW_SS10	---	---	---
				06-DEC-2013 15:00	06-DEC-2013 15:00	---	---	---
Compound	CAS Number	LOR	Unit	ES1327427-001	ES1327427-002	---	---	---
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.009	---	---	---
Boron	7440-42-8	0.05	mg/L	0.17	3.53	---	---	---
Barium	7440-39-3	0.001	mg/L	0.061	0.056	---	---	---
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	---	---	---
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0004	---	---	---
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	---	---	---
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	---	---	---
Copper	7440-50-8	0.001	mg/L	0.008	0.002	---	---	---
Manganese	7439-96-5	0.001	mg/L	0.048	0.034	---	---	---
Nickel	7440-02-0	0.001	mg/L	0.004	0.017	---	---	---
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	---	---	---
Selenium	7782-49-2	0.01	mg/L	<0.01	0.01	---	---	---
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	---	---	---
Zinc	7440-66-6	0.005	mg/L	0.038	<0.005	---	---	---
Molybdenum	7439-98-7	0.001	mg/L	0.011	0.275	---	---	---
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	---	---	---
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	---	---	---
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	---	---	---
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	---	---	---
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	---	---	---
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	---	---	---
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	---	---	---
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	---	---	---
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	---	---	---
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	---	---	---
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	---	---	---
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	---	---	---
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	---	---	---
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	---	---	---
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	---	---	---



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS06	BW_SS10	---	---	---
				06-DEC-2013 15:00	06-DEC-2013 15:00	---	---	---
Compound	CAS Number	LOR	Unit	ES1327427-001	ES1327427-002	---	---	---
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	---	---	---
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	---	---	---
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	---	---	---
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	---	---	---
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	---	---	---
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	---	---	---
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	---	---	---
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	---	---	---
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	---	---	---
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	---	---	---
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	---	---	---
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	---	---	---
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	---	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	---	---	---
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	---	---	---
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	---	---	---
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	---	---	---
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	---	---	---
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	---	---	---
C10 - C14 Fraction	----	50	µg/L	<50	<50	---	---	---
C15 - C28 Fraction	----	100	µg/L	<100	<100	---	---	---
C29 - C36 Fraction	----	50	µg/L	<50	<50	---	---	---
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	---	---	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	---	---	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	---	---	---
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	---	---	---
>C16 - C34 Fraction	----	100	µg/L	<100	<100	---	---	---
>C34 - C40 Fraction	----	100	µg/L	<100	<100	---	---	---
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	---	---	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	---	---	---



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BW_SS06	BW_SS10	---	---	---
				06-DEC-2013 15:00	06-DEC-2013 15:00	---	---	---
Compound	CAS Number	LOR	Unit	ES1327427-001	ES1327427-002	---	---	---
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	---	---	---
Toluene	108-88-3	2	µg/L	<2	<2	---	---	---
Ethylbenzene	100-41-4	2	µg/L	<2	<2	---	---	---
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	---	---	---
ortho-Xylene	95-47-6	2	µg/L	<2	<2	---	---	---
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	---	---	---
^ Sum of BTEX	----	1	µg/L	<1	<1	---	---	---
Naphthalene	91-20-3	5	µg/L	<5	<5	---	---	---
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	59.0	79.0	---	---	---
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	33.5	35.1	---	---	---
2-Chlorophenol-D4	93951-73-6	0.1	%	73.5	82.7	---	---	---
2,4,6-Tribromophenol	118-79-6	0.1	%	77.2	87.0	---	---	---
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	82.5	92.1	---	---	---
Anthracene-d10	1719-06-8	0.1	%	68.4	77.9	---	---	---
4-Terphenyl-d14	1718-51-0	0.1	%	62.4	69.8	---	---	---
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	107	112	---	---	---
Toluene-D8	2037-26-5	0.1	%	105	122	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	91.9	97.3	---	---	---



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	28.5	129
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QUALITY CONTROL REPORT

Work Order	: ES1327427	Page	: 1 of 12
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 13-DEC-2013
C-O-C number	: ----	Issue Date	: 19-DEC-2013
Sampler	: TA	No. of samples received	: 2
Order number	: 0224193	No. of samples analysed	: 2
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

Signatories

Celine Conceicao
Pabi Subba
Phalak Inthaksone

Position

Senior Spectroscopist
Senior Organic Chemist
Laboratory Manager - Organics

Accreditation Category

Sydney Inorganics
Sydney Organics
Sydney Organics



General Comments

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

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

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

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

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



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3215728)									
ES1327127-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.010	0.010	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.002	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.040	0.041	0.0	0% - 20%
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.001	0.0	No Limit
		EG020A-T: Thallium	7440-28-0	0.001	mg/L	0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.007	23.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit		
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.0	No Limit		
ES1327142-011	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit		
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.0	No Limit		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3213228)									
ES1327088-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	0.0013	0.0014	9.1	0% - 50%
ES1327164-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3213983)									



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3213983) - continued									
ES1327427-001	BW_SS06	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3213981)									
ES1327427-001	BW_SS06	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		ES1327284-001	Anonymous	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0
EP075(SIM): 2-Chlorophenol	95-57-8			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2-Nitrophenol	88-75-5			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2.4-Dimethylphenol	105-67-9			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2.4-Dichlorophenol	120-83-2			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2.6-Dichlorophenol	87-65-0			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 3- & 4-Methylphenol	1319-77-3			2.0	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM): Pentachlorophenol	87-86-5			2.0	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3213981)									
ES1327427-001	BW_SS06	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3213981) - continued									
ES1327427-001	BW_SS06	EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
ES1327284-001	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3213980)									
ES1327427-001	BW_SS06	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
ES1327284-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3216150)									
ES1327289-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1327438-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3213980)									
ES1327427-001	BW_SS06	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
ES1327284-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3216150)									
ES1327289-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1327438-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 3216150)									
ES1327289-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES1327438-003	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



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

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

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020T: Total Metals by ICP-MS (QCLot: 3215728)									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	90.1	79	121	
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	91.5	76	120	
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	92.2	84	116	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.1	82	114	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	89.5	83	115	
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	87.6	84	116	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	90.7	83	117	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.8	85	115	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	95.4	83	115	
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	94.5	81	125	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	91.0	83	117	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	76.5	68	128	
EG020A-T: Thallium	7440-28-0	0.001	mg/L	<0.001	0.1 mg/L	87.7	86	116	
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	88.0	84	114	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	87.3	76	118	
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.1 mg/L	102	73	127	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3213228)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	98.8	77	115	
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3213983)									
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	100 µg/L	90.0	61.6	107	
EP075(SIM)A: Phenolic Compounds (QCLot: 3213981)									
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	20 µg/L	37.4	24.5	61.9	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	20 µg/L	83.7	63.8	110	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	20 µg/L	82.5	55.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	40 µg/L	73.0	42.5	114	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	20 µg/L	98.4	62.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	20 µg/L	90.4	59.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	20 µg/L	96.4	59.3	122	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP075(SIM)A: Phenolic Compounds (QCLot: 3213981) - continued									
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	20 µg/L	99.4	64.3	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	20 µg/L	90.8	63	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	20 µg/L	96.3	58.7	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	20 µg/L	87.4	50	108	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	40 µg/L	40.3	8.7	95	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213981)									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	20 µg/L	92.9	58.6	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	20 µg/L	102	63.6	114	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	20 µg/L	100	62.2	113	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	20 µg/L	98.0	63.9	115	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	20 µg/L	94.1	62.6	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	20 µg/L	90.6	64.3	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	20 µg/L	95.9	63.6	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	20 µg/L	97.6	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	20 µg/L	89.8	64.1	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	20 µg/L	95.5	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	20 µg/L	90.8	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	20 µg/L	100	61.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	20 µg/L	91.0	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.2	µg/L	----	20 µg/L	96.4	59.9	118	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EP075(SIM): Polynuclear Aromatic Hydrocarbons (QCLot: 3213981) - continued								
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	20 µg/L	103	61.2	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	20 µg/L	82.8	59.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213980)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	107	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	117	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	85.8	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216150)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	98.5	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213980)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	115	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	109	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	79.2	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216150)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	99.9	75	127
EP080: BTEXN (QCLot: 3216150)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	96.6	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	99.3	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	97.2	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	96.0	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	96.1	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	88.0	70	124

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Recovery Limits (%)	
					MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3215728)							
ES1327127-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	117	70	130
		EG020A-T: Beryllium	7440-41-7	1 mg/L	105	70	130
		EG020A-T: Barium	7440-39-3	1 mg/L	106	70	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3215728) - continued							
ES1327127-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.25 mg/L	108	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	112	70	130
		EG020A-T: Cobalt	7440-48-4	1 mg/L	109	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	114	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	113	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	116	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	109	70	130
		EG020A-T: Vanadium	7440-62-2	1 mg/L	110	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	112	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3213228)							
ES1327118-001	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	73.1	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3213983)							
ES1327427-002	BW_SS10	EP066: Total Polychlorinated biphenyls	----	100 µg/L	78.0	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3213981)							
ES1327427-002	BW_SS10	EP075(SIM): Phenol	108-95-2	200 µg/L	31.8	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	200 µg/L	79.1	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	200 µg/L	106	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	200 µg/L	95.5	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	200 µg/L	83.4	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213981)							
ES1327427-002	BW_SS10	EP075(SIM): Acenaphthene	83-32-9	200 µg/L	87.6	70	130
		EP075(SIM): Pyrene	129-00-0	200 µg/L	79.7	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213980)							
ES1327427-002	BW_SS10	EP071: C10 - C14 Fraction	----	2000 µg/L	109	74	150
		EP071: C15 - C28 Fraction	----	3000 µg/L	125	77	153
		EP071: C29 - C36 Fraction	----	2000 µg/L	96.0	67	153
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216150)							
ES1327289-002	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	126	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213980)							
ES1327427-002	BW_SS10	EP071: >C10 - C16 Fraction	>C10_C16	2500 µg/L	109	74	150
		EP071: >C16 - C34 Fraction	----	3500 µg/L	113	77	153
		EP071: >C34 - C40 Fraction	----	1500 µg/L	69.9	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216150)							
ES1327289-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	125	70	130
EP080: BTEXN (QCLot: 3216150)							
ES1327289-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	105	70	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 3216150) - continued							
ES1327289-002	Anonymous	EP080: Toluene	108-88-3	25 µg/L	108	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	109	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	109	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	111	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	104	70	130

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3213228)										
ES1327118-001	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	73.1	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213980)										
ES1327427-002	BW_SS10	EP071: C10 - C14 Fraction	----	2000 µg/L	109	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	3000 µg/L	125	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	2000 µg/L	96.0	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213980)										
ES1327427-002	BW_SS10	EP071: >C10 - C16 Fraction	>C10_C16	2500 µg/L	109	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	3500 µg/L	113	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	1500 µg/L	69.9	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3213981)										
ES1327427-002	BW_SS10	EP075(SIM): Phenol	108-95-2	200 µg/L	31.8	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	200 µg/L	79.1	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	200 µg/L	106	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	200 µg/L	95.5	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	200 µg/L	83.4	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213981)										
ES1327427-002	BW_SS10	EP075(SIM): Acenaphthene	83-32-9	200 µg/L	87.6	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	200 µg/L	79.7	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3213983)										
ES1327427-002	BW_SS10	EP066: Total Polychlorinated biphenyls	----	100 µg/L	78.0	----	70	130	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3215728)										
ES1327127-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	117	----	70	130	----	----
		EG020A-T: Beryllium	7440-41-7	1 mg/L	105	----	70	130	----	----



Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EG020T: Total Metals by ICP-MS (QCLot: 3215728) - continued										
ES1327127-002	Anonymous	EG020A-T: Barium	7440-39-3	1 mg/L	106	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	108	----	70	130	----	----
		EG020A-T: Chromium	7440-47-3	1 mg/L	112	----	70	130	----	----
		EG020A-T: Cobalt	7440-48-4	1 mg/L	109	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1 mg/L	114	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1 mg/L	113	----	70	130	----	----
		EG020A-T: Manganese	7439-96-5	1 mg/L	116	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1 mg/L	109	----	70	130	----	----
		EG020A-T: Vanadium	7440-62-2	1 mg/L	110	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1 mg/L	112	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216150)										
ES1327289-002	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	126	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216150)										
ES1327289-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	125	----	70	130	----	----
EP080: BTEXN (QCLot: 3216150)										
ES1327289-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	105	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	108	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	109	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	109	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	25 µg/L	111	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	104	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1327427	Page	: 1 of 5
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER	Date Samples Received	: 13-DEC-2013
C-O-C number	: ----	Issue Date	: 19-DEC-2013
Sampler	: TA	No. of samples received	: 2
Order number	: 0224193	No. of samples analysed	: 2
Quote number	: SY/794/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) BW_SS06, BW_SS10	06-DEC-2013	17-DEC-2013	04-JUN-2014	✓	17-DEC-2013	04-JUN-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) BW_SS06, BW_SS10	06-DEC-2013	----	----	----	16-DEC-2013	03-JAN-2014	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066) BW_SS06, BW_SS10	06-DEC-2013	17-DEC-2013	13-DEC-2013	*	17-DEC-2013	26-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber Glass Bottle - Unpreserved (EP071) BW_SS06, BW_SS10	06-DEC-2013	17-DEC-2013	13-DEC-2013	*	17-DEC-2013	26-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM)) BW_SS06, BW_SS10	06-DEC-2013	17-DEC-2013	13-DEC-2013	*	17-DEC-2013	26-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) BW_SS06, BW_SS10	06-DEC-2013	17-DEC-2013	13-DEC-2013	*	17-DEC-2013	26-JAN-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) BW_SS06, BW_SS10	06-DEC-2013	18-DEC-2013	20-DEC-2013	✓	18-DEC-2013	20-DEC-2013	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) BW_SS06, BW_SS10	06-DEC-2013	18-DEC-2013	20-DEC-2013	✓	18-DEC-2013	20-DEC-2013	✓



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	14	14.3	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.3	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	17	11.8	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	16	12.5	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	14	14.3	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.1	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	5.9	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	14	7.1	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.1	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	5.9	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	14	7.1	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.1	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	5.9	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	14	7.1	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP066: Polychlorinated Biphenyls (PCB)						
Amber Glass Bottle - Unpreserved BW_SS06, BW_SS10	17-DEC-2013	13-DEC-2013	4	----	----	----
EP075(SIM)A: Phenolic Compounds						
Amber Glass Bottle - Unpreserved BW_SS06, BW_SS10	17-DEC-2013	13-DEC-2013	4	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
Amber Glass Bottle - Unpreserved BW_SS06, BW_SS10	17-DEC-2013	13-DEC-2013	4	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
Amber Glass Bottle - Unpreserved BW_SS06, BW_SS10	17-DEC-2013	13-DEC-2013	4	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013						
Amber Glass Bottle - Unpreserved BW_SS06, BW_SS10	17-DEC-2013	13-DEC-2013	4	----	----	----

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

191213

ALS CHAIN OF CUSTODY
ALS Laboratory please tick →

CLIENT: ERM TURNAROUND REQUIREMENTS: Standard TAT (List due date): FOR LABORATORY USE ONLY (Circle)

OFFICE: Sydney (Standard TAT may be longer for some tests e.g. Ultra Trace Organics) Non Standard or urgent TAT (List due date): 3 day TAT Custody Seal Intact? YES No NA

PROJECT: Project Symphony ALS QUOTE NO.: SY724/13 COC SEQUENCE NUMBER (Circle) Pinned / frozen ba bricks present upon receipt? Yes No NA

ORDER NUMBER: 0224193 SITE: BAYSWATER / LIODELL COC: 0 2 3 4 5 6 7 Random Sample Temperature on Receipt: 8.5 °C

PROJECT MANAGER: J. Ferring CONTACT PH: OF: 0 2 3 4 5 6 7 Other comment: 8.5

SAMPLER: T. Armani SAMPLER MOBILE: RELINQUISHED BY: T. Armani RECEIVED BY: PC RECEIVED BY: 2008/12/13

COC emailed to ALS? (YES / NO) EDD FORMAT (or default): DATE/TIME: 13/12/10 1645 DATE/TIME: 13/12/13 1700 DATE/TIME: 13/12/13 1900

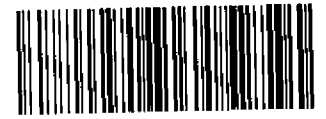
Email Reports to (will default to PM if no other addresses are listed): Symphony.Naigen@erm.com.au

Email Invoice to (will default to PM if no other addresses are listed):

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Split Codes must be listed to attract split prices) Where Metals is not required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).										Additional Information		
	LAB ID	SAMPLE ID	DATE / TIME		MATRIX	TYPE & PRESERVATIVE codes below	(refer to)	TOTAL CONTAINERS	Trace Metals (EG020SU) (As, Cd, Cr, Cu, Ni, Pb, Zn)	Total Mercury (EG035SL)	BTEX (EP060-SQ)	TPH (EP071SD)	PAH (EP122SD)	Phenols (EP075SUH)		PCD (Hydrometer)	TOC (EP000)
		BW-SS06	6.12.13	S			3	X		X	X	X	X	X	X	X	
		BW-SS10	6.12.13	S			3	X		X	X	X	X	X	X	X	

Environmental Division
Sydney
Work Order
ES1327428



Telephone : +61-2-8784 8555

TAT

Subcon / Forward Lab / Split WO
Lab / Analysis: TOC / base
Organised By / Date: PSB / NIC
Relinquished By / Date:
Complete / Carrier:
WO NO:
Attach By PO / Internal Sheet:

V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airflight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
E = EDTA Preserved Bottle; SZ = Sterile Zwitterionic Bag for Acid Sulfate Sol; B = Unpreserved Bag

Hi Loren, can you please schedule the samples below for the requested additional analyses? Will you need to re-analyse or is it possible to just pull the data from the ICP?

We will need 48-72 hour turnaround on these. Can you let me know if there are likely to be delays?

I've also attached this in Excel if you need it.

Matrix	ERM Sample ID	Sample Date	ALS Sample Code	Additional Analysis
Sediment	BW_SS06	6/12/2013	ES1327428001	Barium, Beryllium, Boron, Cobalt, Manganese, Me Molybdenum, Selenium, Thallium, Vanadium
Sediment	BW_SS10	6/12/2013	ES1327428002	Barium, Beryllium, Boron, Cobalt, Manganese, Me Molybdenum, Selenium, Thallium, Vanadium
Sediment	BW_SS35	26/11/2013	ES1326082009	Selenium
Sediment	BW_SS36	26/11/2013	ES1326082010	Selenium
Sediment	BW_SS37	26/11/2013	ES1326082011	Selenium
Sediment	BW_SS38	26/11/2013	ES1326082012	Selenium
Sediment	BW_SS39	26/11/2013	ES1326082013	Selenium
Water	BW_SS01	28/11/2013	ES1326163001	Mercury, Selenium
Water	BW_SS07	28/11/2013	ES1326163002	Mercury, Selenium
Water	BW_SS08	28/11/2013	ES1326163003	Mercury, Selenium
Water	BW_SS09	28/11/2013	ES1326163004	Mercury, Selenium
Water	BW_SS11	27/11/2013	ES1326081015	Mercury, Selenium
Water	BW_SS12	27/11/2013	ES1326081016	Mercury, Selenium
Water	BW_SS13	27/11/2013	ES1326081017	Mercury, Selenium
Water	BW_SS14	27/11/2013	ES1326081018	Mercury, Selenium
Water	BW_SS15	27/11/2013	ES1326081019	Mercury, Selenium
Water	BW_SS16	27/11/2013	ES1326081020	Mercury, Selenium
Water	BW_SS17	27/11/2013	ES1326081021	Mercury, Selenium
Water	BW_SS18	27/11/2013	ES1326081022	Mercury, Selenium
Water	BW_SS19	28/11/2013	ES1326163005	Mercury, Selenium
Water	BW_SS20	28/11/2013	ES1326163006	Mercury, Selenium
Water	BW_SS21	28/11/2013	ES1326163007	Mercury, Selenium
Water	BW_SS22	28/11/2013	ES1326163008	Mercury, Selenium
Water	BW_SS23	28/11/2013	ES1326163009	Mercury, Selenium
Water	BW_SS24	28/11/2013	ES1326163010	Mercury, Selenium

Water	BW_SS25	29/11/2013	ES1326639001	Selenium
Water	BW_SS26	28/11/2013	ES1326163011	Mercury, Selenium
Water	BW_SS27	29/11/2013	ES1326639002	Selenium
Water	BW_SS28	29/11/2013	ES1326639003	Selenium
Water	BW_SS29	29/11/2013	ES1326639004	Selenium
Water	BW_SS30	29/11/2013	ES1326639005	Selenium
Water	BW_SS31	29/11/2013	ES1326639006	Selenium
Water	BW_SS32	29/11/2013	ES1326639007	Selenium
Water	BW_SS33	28/11/2013	ES1326163012	Mercury, Selenium
Water	BW_SS34	29/11/2013	ES1326639008	Selenium
Water	BW_SS40	27/11/2013	ES1326081001	Mercury, Selenium
Water	BW_SS41	27/11/2013	ES1326081002	Mercury, Selenium
Water	BW_SS42	27/11/2013	ES1326081003	Mercury, Selenium
Water	BW_SS43	27/11/2013	ES1326081004	Mercury, Selenium
Water	BW_SS45	27/11/2013	ES1326081005	Mercury, Selenium
Water	BW_SS46	27/11/2013	ES1326081006	Mercury, Selenium
Water	BW_SS47	27/11/2013	ES1326081007	Mercury, Selenium
Water	BW_SS48	27/11/2013	ES1326081008	Mercury, Selenium
Water	BW_SS49	27/11/2013	ES1326081009	Mercury, Selenium
Water	BW_SS50	27/11/2013	ES1326081010	Mercury, Selenium
Water	BW_SS51	27/11/2013	ES1326081011	Mercury, Selenium
Water	BW_SS52	27/11/2013	ES1326081012	Mercury, Selenium
Water	BW_SS53	27/11/2013	ES1326081013	Mercury, Selenium
Water	BW_SS54	27/11/2013	ES1326081014	Mercury, Selenium

Cheers,

JoeJoe Ferring

Senior Environmental Scientist

ERM

Building C, 33 Saunders Street Pyrmont NSW 2009

Locked Bag 24, Broadway NSW 2007 AUSTRALIA

SAMPLE RECEIPT NOTIFICATION (SRN)**Comprehensive Report**

Work Order : **ES1327428**
Amendment : **1**

Client : **ENVIRO RESOURCES MANAGEMENT** **Laboratory** : Environmental Division Sydney

Contact : MR JOSEPH FERRING **Contact** : Barbara Hanna
Address : GROUND FLOOR **Address** : 277-289 Woodpark Road Smithfield
33 SAUNDERS STREET, PYRMONT NSW Australia 2164
NSW 2009
LOCKED BAG 24
BROADWAY NSW, AUSTRALIA 2007

E-mail : joseph.ferring@erm.com **E-mail** : Barbara.Hanna@alsglobal.com
Telephone : +61 02 8584 8888 **Telephone** : +61 2 8784 8555
Facsimile : +61 02 8584 8800 **Facsimile** : +61 2 8784 8555

Project : Project Symphony **Page** : 1 of 3
Order number : 0224193
C-O-C number : ---- **Quote number** : ES2013ENVRES0369 (SY/794/13)
Site : BAYSWATER
Sampler : TA **QC Level** : NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received : 13-DEC-2013 **Issue Date** : 30-DEC-2013 16:22
Client Requested Due Date : 03-JAN-2014 **Scheduled Reporting Date** : **03-JAN-2014**

Delivery Details

Mode of Delivery : Carrier **Temperature** : 6.8°C SYD - Ice present
No. of coolers/boxes : 1 HARD **No. of samples received** : 2
Security Seal : Intact. **No. of samples analysed** : 2

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **PSD analysis will be conducted by ALS Newcastle.**
- **TOC analysis will be conducted by ALS Brisbane**
- **ALL analysis will be reported on the scheduled due date 19/12/13, except for PSD AND TOC analysis will be reported on 24/12/13**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA150H Particle Size Analysis by Hydrometer. AS1289	SOIL - EG020-SD (not V) Total Metals in Sediments by ICPMS (NODG Without	SOIL - EG020T (solids) Total Metals by ICP-MS	SOIL - EG020T Total Metals by ICPMS	SOIL - EG035T (solids) Total Mercury by FIMS	SOIL - EP003 Total Organic Carbon (TOC) in Soil	SOIL - EP071 - SD TRH ultra trace in sediments
ES1327428-001	06-DEC-2013 15:00	BW_SS06	✓	✓	✓	✓	✓	✓	✓	✓
ES1327428-002	06-DEC-2013 15:00	BW_SS10	✓	✓	✓	✓	✓	✓	✓	✓

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP075 SIM Phenols only SIM - Phenols only	SOIL - EP080-SD TRH(V)/BTEXN in Sediments	SOIL - EP131B PCBs (Ultra-trace)	SOIL - EP132B-SD Ultra-trace PAHs in Sediments
ES1327428-001	06-DEC-2013 15:00	BW_SS06	✓	✓	✓	✓
ES1327428-002	06-DEC-2013 15:00	BW_SS10	✓	✓	✓	✓

Proactive Holding Time Report

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



Requested Deliverables

MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.ferring@erm.com
- Attachment - Report (SUBCO)	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) (COC)	Email	joseph.ferring@erm.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	joseph.ferring@erm.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.ferring@erm.com
- EDI Format - XTab (XTAB)	Email	joseph.ferring@erm.com

SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA (COA)	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	symphony.macgen@erm.com
- Attachment - Report (SUBCO)	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) (COC)	Email	symphony.macgen@erm.com
- EDI Format - ENMRG (ENMRG)	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	symphony.macgen@erm.com
- EDI Format - ESDAT (ESDAT)	Email	symphony.macgen@erm.com
- EDI Format - XTab (XTAB)	Email	symphony.macgen@erm.com

THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
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CERTIFICATE OF ANALYSIS

Work Order	: ES1327428	Page	: 1 of 7
Amendment	: 1		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224193		
C-O-C number	: ----	Date Samples Received	: 13-DEC-2013
Sampler	: TA	Issue Date	: 02-JAN-2014
Site	: BAYSWATER		
Quote number	: SY/794/13	No. of samples received	: 2
		No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



General Comments

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

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

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

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

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

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

LOR = Limit of reporting

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

- **EA150H: Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1-2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently NATA endorsement does not apply to hydrometer results.**
- **This report has been amended and re-released to allow the reporting of additional analytical data.**



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
SATISH.TRIVEDI	2 IC Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS06	BW_SS10	---	---	---
				06-DEC-2013 15:00	06-DEC-2013 15:00	---	---	---
Compound	CAS Number	LOR	Unit	ES1327428-001	ES1327428-002	---	---	---
EA150: Particle Sizing								
+75µm	---	1	%	18	46	---	---	---
+150µm	---	1	%	14	40	---	---	---
+300µm	---	1	%	12	34	---	---	---
+425µm	---	1	%	11	32	---	---	---
+600µm	---	1	%	10	29	---	---	---
+1180µm	---	1	%	8	23	---	---	---
+2.36mm	---	1	%	5	17	---	---	---
+4.75mm	---	1	%	3	10	---	---	---
+9.5mm	---	1	%	<1	3	---	---	---
+19.0mm	---	1	%	<1	<1	---	---	---
+37.5mm	---	1	%	<1	<1	---	---	---
+75.0mm	---	1	%	<1	<1	---	---	---
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	---	1.0	%	18.6	27.6	---	---	---
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	---	1	%	25	15	---	---	---
Silt (2-60 µm)	---	1	%	57	35	---	---	---
Sand (0.06-2.00 mm)	---	1	%	13	33	---	---	---
Gravel (>2mm)	---	1	%	5	17	---	---	---
Cobbles (>6cm)	---	1	%	<1	<1	---	---	---
EG020-SD: Total Metals in Sediments by ICPMS								
Arsenic	7440-38-2	1.00	mg/kg	10.8	11.1	---	---	---
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	---	---	---
Chromium	7440-47-3	1.0	mg/kg	14.6	16.1	---	---	---
Copper	7440-50-8	1.0	mg/kg	23.2	13.5	---	---	---
Cobalt	7440-48-4	0.5	mg/kg	11.9	10.9	---	---	---
Lead	7439-92-1	1.0	mg/kg	16.9	11.1	---	---	---
Manganese	7439-96-5	10	mg/kg	253	204	---	---	---
Nickel	7440-02-0	1.0	mg/kg	16.8	12.6	---	---	---
Selenium	7782-49-2	0.1	mg/kg	1.4	1.2	---	---	---
Vanadium	7440-62-2	2.0	mg/kg	38.7	42.5	---	---	---
Zinc	7440-66-6	1.0	mg/kg	78.1	41.8	---	---	---

EG020T: Total Metals by ICP-MS



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS06	BW_SS10	---	---	---
				06-DEC-2013 15:00	06-DEC-2013 15:00	---	---	---
				ES1327428-001	ES1327428-002	---	---	---
Compound	CAS Number	LOR	Unit					
EG020T: Total Metals by ICP-MS - Continued								
Barium	7440-39-3	0.1	mg/kg	91.5	146	---	---	---
Thallium	7440-28-0	0.1	mg/kg	0.1	<0.1	---	---	---
Beryllium	7440-41-7	0.1	mg/kg	1.0	1.0	---	---	---
Boron	7440-42-8	5	mg/kg	23	16	---	---	---
Molybdenum	7439-98-7	0.1	mg/kg	1.3	2.9	---	---	---
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	---	---	---
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	---	0.02	%	6.79	1.22	---	---	---
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	---	---	---
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	---	---	---
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	---	---	---
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	---	---	---
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	---	---	---
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	---	---	---
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	---	---	---
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	---	---	---
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	---	---	---
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	---	---	---
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	---	---	---
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	---	---	---
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	---	3	mg/kg	<3	<3	---	---	---
C10 - C14 Fraction	---	3	mg/kg	28	5	---	---	---
C15 - C28 Fraction	---	3	mg/kg	276	58	---	---	---
C29 - C36 Fraction	---	5	mg/kg	143	43	---	---	---
C10 - C36 Fraction (sum)	---	3	mg/kg	447	106	---	---	---
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	---	---	---
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	---	---	---
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	---	---	---



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BW_SS06	BW_SS10	---	---	---
				06-DEC-2013 15:00	06-DEC-2013 15:00	---	---	---
Compound	CAS Number	LOR	Unit	ES1327428-001	ES1327428-002	---	---	---
EP080-SD: BTEXN - Continued								
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	---	---	---
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	---	---	---
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	---	---	---
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	---	---	---
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	---	---	---
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	---	---	---
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	---	---	---
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	---	---	---
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	---	---	---
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	---	---	---
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	---	---	---
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	---	---	---
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	---	---	---
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	14	12	---	---	---
2-Methylnaphthalene	91-57-6	5	µg/kg	22	13	---	---	---
Acenaphthylene	208-96-8	4	µg/kg	<4	<4	---	---	---
Acenaphthene	83-32-9	4	µg/kg	<4	<4	---	---	---
Fluorene	86-73-7	4	µg/kg	6	<4	---	---	---
Phenanthrene	85-01-8	4	µg/kg	84	46	---	---	---
Anthracene	120-12-7	4	µg/kg	14	5	---	---	---
Fluoranthene	206-44-0	4	µg/kg	57	26	---	---	---
Pyrene	129-00-0	4	µg/kg	40	21	---	---	---
Benz(a)anthracene	56-55-3	4	µg/kg	27	15	---	---	---
Chrysene	218-01-9	4	µg/kg	31	18	---	---	---
Benzo(b)fluoranthene	205-99-2	4	µg/kg	22	14	---	---	---
Benzo(k)fluoranthene	207-08-9	4	µg/kg	8	5	---	---	---
Benzo(e)pyrene	192-97-2	4	µg/kg	13	9	---	---	---
Benzo(a)pyrene	50-32-8	4	µg/kg	12	7	---	---	---
Perylene	198-55-0	4	µg/kg	<4	<4	---	---	---
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	14	9	---	---	---
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	---	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	6	<4	---	---	---



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BW_SS06	BW_SS10	----	----	----
				06-DEC-2013 15:00	06-DEC-2013 15:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1327428-001	ES1327428-002	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Coronene	191-07-1	5	µg/kg	<5	<5	----	----	----
^ Sum of PAHs	----	4	µg/kg	370	200	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	102	104	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	100	104	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	74.3	70.0	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	100	105	----	----	----
Anthracene-d10	1719-06-8	0.1	%	86.4	87.8	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	66.8	79.3	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	77.0	124	----	----	----
Toluene-D8	2037-26-5	0.1	%	91.5	111	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	90.3	106	----	----	----
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	73.8	56.2	----	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	104	120	----	----	----
Anthracene-d10	1719-06-8	0.1	%	85.8	121	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	73.2	120	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080-SD: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	67	137
Toluene-D8	2037-26-5	74	134
4-Bromofluorobenzene	460-00-4	73	137
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	2.22	106
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	55	135
Anthracene-d10	1719-06-8	70	136
4-Terphenyl-d14	1718-51-0	57	127

Certificate of Analysis

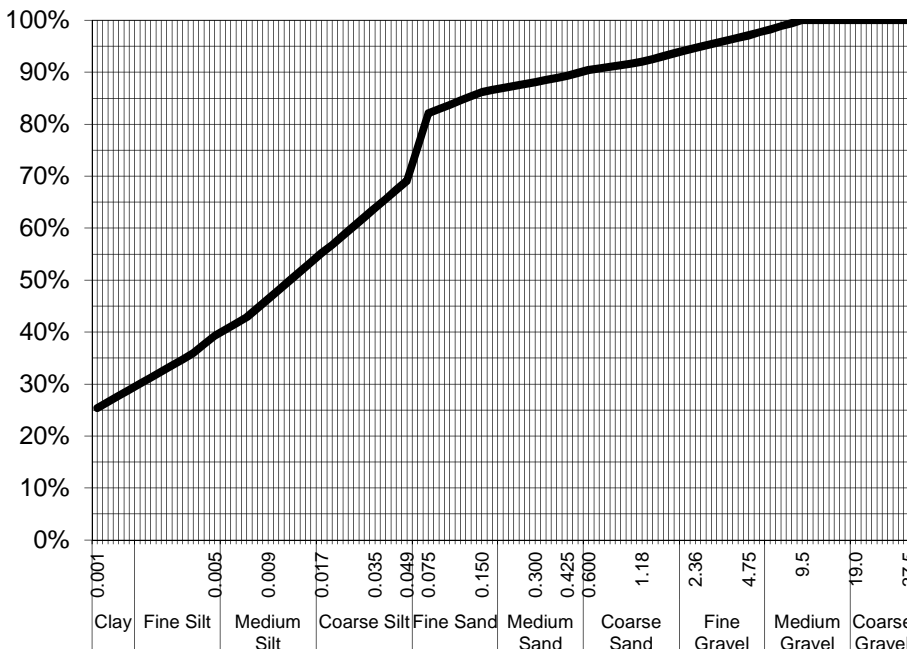
ALS Laboratory Group Pty Ltd
 5/585 Maitland Road
 Mayfield West, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 24-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 13-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1327428-001 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS06

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	97%
2.36	95%
1.18	92%
0.600	90%
0.425	89%
0.300	88%
0.150	86%
0.075	82%
Particle Size (microns)	
49	69%
35	64%
17	55%
9	46%
5	39%
3	36%
1	25%

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment: NA
Sample Description: Silty clay and sand

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm): 2.65 g/cm³

NATA Accreditation: 825 Site: Newcastle
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Analysed: 19-Dec-13

Limit of Reporting: 1%

Dispersion Method: Shaker

Hydrometer Type: ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

Certificate of Analysis

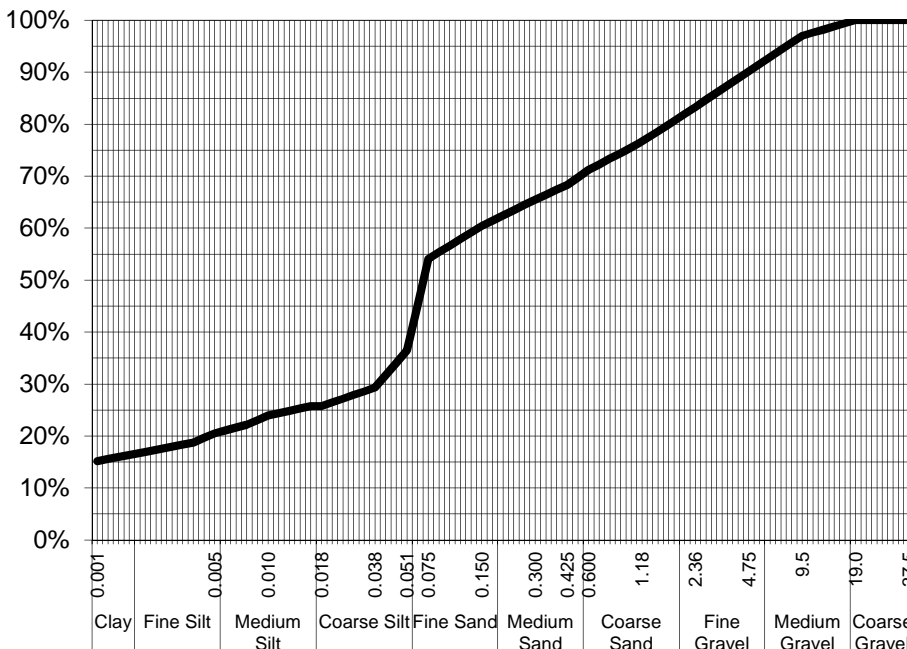
ALS Laboratory Group Pty Ltd
 5/585 Maitland Road
 Mayfield West, NSW 2304
 pH 02 4968 9433
 fax 02 4968 0349
 samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Joseph Ferring **DATE REPORTED:** 24-Dec-2013
COMPANY: Enviro Resources Management **DATE RECEIVED:** 13-Dec-2013
ADDRESS: Ground Floor **REPORT NO:** ES1327428-002 / PSD
 33 Saunders Street, Pyrmont
 NSW 2009
PROJECT: Project Symphony **SAMPLE ID:** BW_SS10

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	97%
4.75	90%
2.36	83%
1.18	77%
0.600	71%
0.425	68%
0.300	66%
0.150	60%
0.075	54%
Particle Size (microns)	Percent Passing
51	36%
38	29%
18	26%
10	24%
5	21%
3	19%
1	15%

Samples analysed as received.

Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silty clay, sand and gravel

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.65 g/cm³

NATA Accreditation: 825 Site: Newcastle
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Analysed: 19-Dec-13

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Hamish Murray
 Laboratory Supervisor, Newcastle
Authorised Signatory

QUALITY CONTROL REPORT

Work Order	: ES1327428	Page	: 1 of 11
Amendment	: 1		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER		
C-O-C number	: ----	Date Samples Received	: 13-DEC-2013
Sampler	: TA	Issue Date	: 02-JAN-2014
Order number	: 0224193		
Quote number	: SY/794/13	No. of samples received	: 2
		No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



General Comments

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

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

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

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

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
SATISH.TRIVEDI	2 IC Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 3218281)									
ES1327373-015	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	23.7	23.2	1.8	0% - 20%
ES1327428-002	BW_SS10	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	27.6	23.4	16.7	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 3219383)									
ES1327428-001	BW_SS06	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	1.4	1.0	25.5	0% - 50%
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	14.6	16.0	9.3	0% - 50%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	23.2	23.6	1.8	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	16.9	15.7	6.9	0% - 50%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	16.8	16.9	0.8	0% - 50%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	78.1	77.7	0.6	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	10.8	11.4	4.9	0% - 50%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	253	216	15.5	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	38.7	41.4	6.9	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 3233118)									
ES1327428-002	BW_SS10	EG020X-T: Barium	7440-39-3	0.1	mg/kg	146	139	5.1	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	1.0	1.1	0.0	0% - 50%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	2.9	2.9	0.0	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 3233119)									
ES1327428-002	BW_SS10	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3233117)									
ES1327812-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1327939-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 3218205)									
EM1313161-002	Anonymous	EP003: Total Organic Carbon	----	0.02	%	0.09	0.09	0.0	No Limit
ES1327287-009	Anonymous	EP003: Total Organic Carbon	----	0.02	%	0.20	0.23	13.8	0% - 50%
EP075(SIM)A: Phenolic Compounds (QC Lot: 3213843)									
ES1327368-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 3213843) - continued									
ES1327368-001	Anonymous	EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1327368-004	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3213803)									
ES1327428-001	BW_SS06	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	28	26	6.0	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	276	281	1.7	0% - 20%
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	143	150	4.7	0% - 20%
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3216265)									
ES1327428-001	BW_SS06	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.0	No Limit
EP080-SD: BTEXN (QC Lot: 3216265)									
ES1327428-001	BW_SS06	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080-SD: ortho-Xylene	106-42-3 95-47-6	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 3213821)									
ES1327428-001	BW_SS06	EP131B: Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3213802)									
ES1327428-002	BW_SS10	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.0	No Limit

Page : 5 of 11
 Work Order : ES1327428 Amendment 1
 Client : ENVIRO RESOURCES MANAGEMENT
 Project : Project Symphony



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3213802) - continued									
ES1327428-002	BW_SS10	EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	46	40	14.9	0% - 50%
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	5	5	0.0	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	26	30	14.0	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	21	23	12.2	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	15	16	0.0	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	18	18	0.0	No Limit
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	14	15	0.0	No Limit
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	5	5	0.0	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	9	8	0.0	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	7	7	0.0	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	9	11	15.0	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Indeno(1,2,3-cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.0	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	200	204	2.0	0% - 20%
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	12	13	8.2	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	13	13	0.0	No Limit
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.0	No Limit		



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

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3219383)									
EG020-SD: Arsenic	7440-38-2	1.0	mg/kg	<1.00	21.7 mg/kg	104	81	139	
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	4.64 mg/kg	108	82	126	
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	43.9 mg/kg	90.4	67	129	
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	32 mg/kg	107	80	136	
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	----	16 mg/kg	99.4	76	132	
		10	mg/kg	<10.0	----	----	----	----	
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	40 mg/kg	98.1	75	131	
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	130 mg/kg	91.6	77	133	
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55 mg/kg	92.0	76	128	
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	5.37 mg/kg	114	72	134	
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	29.6 mg/kg	114	87	131	
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	60.8 mg/kg	114	83	137	
EG020T: Total Metals by ICP-MS (QCLot: 3233116)									
EG020T: Boron	7440-42-8	0.1	mg/kg	<0.1	----	----	----	----	
EG020T: Total Metals by ICP-MS (QCLot: 3233118)									
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	143 mg/kg	103	70	134	
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	5.63 mg/kg	98.8	80	136	
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	7.9 mg/kg	115	71	129	
EG020T: Total Metals by ICP-MS (QCLot: 3233119)									
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	5.96 mg/kg	87.2	80	138	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3233117)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	91.2	66	112	
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 3218205)									
EP003: Total Organic Carbon	----	0.02	%	<0.02	0.11 %	112	70	130	
EP075(SIM)A: Phenolic Compounds (QCLot: 3213843)									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	107	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	106	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	97.9	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	105	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	81.4	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	96.2	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	86.1	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	92.5	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	82.7	76.4	114	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP075(SIM)A: Phenolic Compounds (QCLot: 3213843) - continued									
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	81.9	57	111	
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	81.9	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	23.9	3.9	57	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3213803)									
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	5 mg/kg	104	78	118	
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	7.5 mg/kg	109	84	118	
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	5 mg/kg	106	73	119	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3216265)									
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	6.2 mg/kg	104	61	133	
EP080-SD: BTEXN (QCLot: 3216265)									
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	0.2 mg/kg	110	66	122	
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	0.2 mg/kg	99.5	69	122	
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.2 mg/kg	108	66	126	
EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	0.4 mg/kg	108	59	129	
	106-42-3								
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.2 mg/kg	110	66	126	
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3213821)									
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----	
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	73.0	50	134	
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----	
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213802)									
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	99.0	67	133	
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	25 µg/kg	109	63	135	
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	110	68	132	
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	106	67	133	
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	113	69	131	
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	114	66	138	
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	94.5	67	133	
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	104	64	130	
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	100	67	133	
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	93.0	65	133	
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	90.0	70	134	
EP132B-SD: Benzo(b)fluoranthene	205-99-2	4	µg/kg	<4	25 µg/kg	119	63	133	



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)		Recovery Limits (%)
				Concentration		LCS	Low	High	
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213802) - continued									
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	97.0	67	133	
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25 µg/kg	97.2	64	130	
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	90.5	72	130	
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	25 µg/kg	103	70	132	
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	103	65	127	
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	25 µg/kg	109	67	135	
EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	25 µg/kg	100	62	126	
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	25 µg/kg	106	66	134	
EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	----	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: SOIL				Matrix Spike (MS) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery(%)		Recovery Limits (%)	
				Concentration	MS	Low	High	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3219383)								
ES1327428-002	BW_SS10	EG020-SD: Arsenic	7440-38-2	50 mg/kg	107	70	130	
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	101	70	130	
		EG020-SD: Chromium	7440-47-3	50 mg/kg	106	70	130	
		EG020-SD: Copper	7440-50-8	125 mg/kg	116	70	130	
		EG020-SD: Lead	7439-92-1	125 mg/kg	99.4	70	130	
		EG020-SD: Nickel	7440-02-0	50 mg/kg	91.7	70	130	
		EG020-SD: Zinc	7440-66-6	125 mg/kg	118	70	130	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3233117)								
ES1327812-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	102	70	130	
EP075(SIM)A: Phenolic Compounds (QCLot: 3213843)								
ES1327368-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	111	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	110	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	67.6	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	90.8	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	40.0	20	130	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3213803)								
ES1327428-001	BW_SS06	EP071-SD: C10 - C14 Fraction	----	19.75 mg/kg	93.9	70	130	
		EP071-SD: C15 - C28 Fraction	----	87.25 mg/kg	93.2	70	130	
		EP071-SD: C29 - C36 Fraction	----	60 mg/kg	103	70	130	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3216265)								



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3216265) - continued							
ES1327428-001	BW_SS06	EP080-SD: C6 - C9 Fraction	----	6.5 mg/kg	110	70	130
EP080-SD: BTEXN (QCLot: 3216265)							
ES1327428-001	BW_SS06	EP080-SD: Benzene	71-43-2	0.5 mg/kg	116	70	130
		EP080-SD: Toluene	108-88-3	0.5 mg/kg	103	70	130
		EP080-SD: Ethylbenzene	100-41-4	0.5 mg/kg	109	70	130
		EP080-SD: meta- & para-Xylene	108-38-3	0.5 mg/kg	112	70	130
		EP080-SD: ortho-Xylene	106-42-3	0.5 mg/kg	110	70	130
			95-47-6	0.5 mg/kg	110	70	130
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3213821)							
ES1327428-001	BW_SS06	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	71.2	44	136
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213802)							
ES1327428-002	BW_SS10	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	118	70	130
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	110	70	130
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	102	70	130
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	118	70	130
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	121	70	130
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	91.3	70	130
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	103	70	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	99.2	70	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	99.2	70	130
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	97.7	70	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	71.5	70	130
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	25 µg/kg	111	70	130
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	105	70	130
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	94.2	70	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	103	70	130
		EP132B-SD: Perylene	198-55-0	25 µg/kg	96.3	70	130
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	88.4	70	130
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	106	70	130
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	121	70	130
		EP132B-SD: Coronene	191-07-1	25 µg/kg	116	70	130

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: **SOIL**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report			
Spike	Spike Recovery (%)	Recovery Limits (%)	RPDs (%)



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213802)										
ES1327428-002	BW_SS10	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	118	----	70	130	----	----
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	110	----	70	130	----	----
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	102	----	70	130	----	----
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	118	----	70	130	----	----
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	121	----	70	130	----	----
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	91.3	----	70	130	----	----
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	103	----	70	130	----	----
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	99.2	----	70	130	----	----
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	99.2	----	70	130	----	----
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	97.7	----	70	130	----	----
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	71.5	----	70	130	----	----
		EP132B-SD: Benzo(b)fluoranthene	205-99-2	25 µg/kg	111	----	70	130	----	----
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	105	----	70	130	----	----
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	94.2	----	70	130	----	----
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	103	----	70	130	----	----
		EP132B-SD: Perylene	198-55-0	25 µg/kg	96.3	----	70	130	----	----
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	88.4	----	70	130	----	----
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	106	----	70	130	----	----
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	121	----	70	130	----	----
		EP132B-SD: Coronene	191-07-1	25 µg/kg	116	----	70	130	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3213803)										
ES1327428-001	BW_SS06	EP071-SD: C10 - C14 Fraction	----	19.75 mg/kg	93.9	----	70	130	----	----
		EP071-SD: C15 - C28 Fraction	----	87.25 mg/kg	93.2	----	70	130	----	----
		EP071-SD: C29 - C36 Fraction	----	60 mg/kg	103	----	70	130	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3213821)										
ES1327428-001	BW_SS06	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	71.2	----	44	136	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3213843)										
ES1327368-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	111	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	110	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	67.6	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	90.8	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	40.0	----	20	130	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3216265)										
ES1327428-001	BW_SS06	EP080-SD: C6 - C9 Fraction	----	6.5 mg/kg	110	----	70	130	----	----
EP080-SD: BTEXN (QCLot: 3216265)										
ES1327428-001	BW_SS06	EP080-SD: Benzene	71-43-2	0.5 mg/kg	116	----	70	130	----	----
		EP080-SD: Toluene	108-88-3	0.5 mg/kg	103	----	70	130	----	----
		EP080-SD: Ethylbenzene	100-41-4	0.5 mg/kg	109	----	70	130	----	----



Sub-Matrix: SOIL

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP080-SD: BTEXN (QCLot: 3216265) - continued										
ES1327428-001	BW_SS06	EP080-SD: meta- & para-Xylene	108-38-3	0.5 mg/kg	112	----	70	130	----	----
			106-42-3							
		EP080-SD: ortho-Xylene	95-47-6	0.5 mg/kg	110	----	70	130	----	----
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3219383)										
ES1327428-002	BW_SS10	EG020-SD: Arsenic	7440-38-2	50 mg/kg	107	----	70	130	----	----
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	101	----	70	130	----	----
		EG020-SD: Chromium	7440-47-3	50 mg/kg	106	----	70	130	----	----
		EG020-SD: Copper	7440-50-8	125 mg/kg	116	----	70	130	----	----
		EG020-SD: Lead	7439-92-1	125 mg/kg	99.4	----	70	130	----	----
		EG020-SD: Nickel	7440-02-0	50 mg/kg	91.7	----	70	130	----	----
		EG020-SD: Zinc	7440-66-6	125 mg/kg	118	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3233117)										
ES1327812-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	102	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1327428	Page	: 1 of 8
Amendment	: 1		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
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Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER		
C-O-C number	: ---	Date Samples Received	: 13-DEC-2013
Sampler	: TA	Issue Date	: 02-JAN-2014
Order number	: 0224193		
Quote number	: SY/794/13	No. of samples received	: 2
		No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103) BW_SS06, BW_SS10	06-DEC-2013	----	----	----	18-DEC-2013	20-DEC-2013	✓
EA150: Particle Sizing							
Snap Lock Bag (EA150H) BW_SS06, BW_SS10	06-DEC-2013	---	04-JUN-2014	----	23-DEC-2013	04-JUN-2014	✓
EA150: Soil Classification based on Particle Size							
Snap Lock Bag (EA150H) BW_SS06, BW_SS10	06-DEC-2013	---	04-JUN-2014	----	23-DEC-2013	04-JUN-2014	✓
EG020-SD: Total Metals in Sediments by ICPMS							
Soil Glass Jar - Unpreserved (EG020-SD) BW_SS06, BW_SS10	06-DEC-2013	18-DEC-2013	04-JUN-2014	✓	19-DEC-2013	04-JUN-2014	✓
EG020T: Total Metals by ICP-MS							
Soil Glass Jar - Unpreserved (EG020T) BW_SS06, BW_SS10	06-DEC-2013	31-DEC-2013	04-JUN-2014	✓	31-DEC-2013	04-JUN-2014	✓
EG020T: Total Metals by ICP-MS							
Soil Glass Jar - Unpreserved (EG020X-T) BW_SS06, BW_SS10	06-DEC-2013	31-DEC-2013	04-JUN-2014	✓	31-DEC-2013	04-JUN-2014	✓
EG020T: Total Metals by ICP-MS							
Soil Glass Jar - Unpreserved (EG020Y-T) BW_SS06, BW_SS10	06-DEC-2013	31-DEC-2013	04-JUN-2014	✓	31-DEC-2013	04-JUN-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) BW_SS06, BW_SS10	06-DEC-2013	31-DEC-2013	03-JAN-2014	✓	31-DEC-2013	03-JAN-2014	✓
EP003: Total Organic Carbon (TOC) in Soil							
Pulp Bag (EP003) BW_SS06, BW_SS10	06-DEC-2013	17-DEC-2013	03-JAN-2014	✓	18-DEC-2013	03-JAN-2014	✓
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071-SD) BW_SS06, BW_SS10	06-DEC-2013	17-DEC-2013	20-DEC-2013	✓	18-DEC-2013	26-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075(SIM)) BW_SS06, BW_SS10	06-DEC-2013	16-DEC-2013	20-DEC-2013	✓	17-DEC-2013	25-JAN-2014	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080-SD: BTEXN							
Soil Glass Jar - Unpreserved (EP080-SD) BW_SS06, BW_SS10	06-DEC-2013	18-DEC-2013	20-DEC-2013	✓	18-DEC-2013	20-DEC-2013	✓
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080-SD) BW_SS06, BW_SS10	06-DEC-2013	18-DEC-2013	20-DEC-2013	✓	18-DEC-2013	20-DEC-2013	✓
EP131B: Polychlorinated Biphenyls (as Aroclors)							
Soil Glass Jar - Unpreserved (EP131B) BW_SS06, BW_SS10	06-DEC-2013	17-DEC-2013	20-DEC-2013	✓	19-DEC-2013	26-JAN-2014	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP132B-SD) BW_SS06, BW_SS10	06-DEC-2013	17-DEC-2013	20-DEC-2013	✓	18-DEC-2013	26-JAN-2014	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	2	50.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	50.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	11	18.2	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	1	2	50.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	1	2	50.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	2	50.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	2	50.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	2	50.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Total Metals by ICP-MS	EG020T	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP003	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite X	EG020X-T	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite Y	EG020Y-T	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071-SD	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX in Sediments	EP080-SD	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Metals by ICP-MS	EG020T	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020) (ICPMS) Metals in solids are determined following an appropriate acid digestion. The ICPMS technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite X	EG020X-T	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite Y	EG020Y-T	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP003	SOIL	In-house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO ₂) is automatically measured by infra-red detector.
TPH - Semivolatile Fraction	EP071-SD	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX in Sediments	EP080-SD	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
PCB's (Ultra-trace)	EP131B	SOIL	USEPA Method 3640 (GPC cleanup), 3620 (Florisil), 8081/8082 (GC/uECD/uECD) This technique is compliant with NEPM (2013) Schedule B(3) (Method 504)
PAHs in Sediments by GCMS(SIM)	EP132B-SD	SOIL	USEPA 8270 GCMS Capillary column, SIM mode using large volume programmed temperature vaporisation injection.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na ₂ SO ₄ and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Tumbler Extraction of Solids for LVI (Non-concentrating)	ORG17D	SOIL	In house: 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 50mL 1:1 DCM/Acetone by end over end tumbling. An aliquot is concentrated by nitrogen blowdown to a reduced volume for analysis if required.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.
-



CHAIN OF CUSTODY

ALS Laboratory
please tick →

CLIENT:		TURNAROUND REQUIREMENTS: <input checked="" type="checkbox"/> Standard TAT (List due date):				FOR LABORATORY USE ONLY (Circle)		
OFFICE:		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) <input type="checkbox"/> Non Standard or urgent TAT (List due date):				Custody Seal Intact? Yes No N/A		
PROJECT: Project Symphony		ALS QUOTE NO.: SY/794/13		COC SEQUENCE NUMBER (Circle)		Free Ice / frozen ice bricks present upon receipt? Yes No N/A		
ORDER NUMBER:		SITE: BAYSWATER / LIDDELL		COC: 1 (2) 3 4 5 6 7		Random Sample Temperature on Receipt: °C		
PROJECT MANAGER:		CONTACT PH:		OR: 1 (5) 3 4 5 6 7		Other comment:		
SAMPLER:		SAMPLER MOBILE:		RELIQUISHED BY:		RECEIVED BY: <i>SMC</i>		RECEIVED BY: <i>Hoho</i>
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME:		DATE/TIME:		DATE/TIME: <i>3 Dec 13 / 13:45pm</i>
Email Reports to (will default to PM if no other addresses are listed):		Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME:		DATE/TIME:		DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <i>(refer to codes below)</i>	TOTAL CONTAINERS	W-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (As, Ba, Be, Bi, Cd, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Tl)	Selenium (Freshwater ORC)	VOC Target Scan	PCB	PFOS/PFOA	W-24 TRACE CAO/STEAR, PAH, Prenols	
	12	D01 281113 TA/W	29/11/13	W		5		X					X	
1	13	T01 281113 TA/W				1								EnviroLab
2	14	T02 281113 TA/W				1								EnviroLab
3	15	T03 281113 TA/W				1								EnviroLab
15	16	T/BLANK												TAN/BTEX
16	17	T/SPIKE												TAN/BTEX
		T/SL												

ENVIROLAB
 EnviroLab Services
 12 Ashley St
 Chatswood NSW 2067
 Ph: (02) 9910 6200
 Job No: 101727
 Date Received: 3 Dec 2013
 Time Received: 13:45 pm
 Received by: Hoho
 Temp: Cool/Ambient
 Cooling: Ice/ice pack
 Security: Intact/Broken/None

Water Container Codes: P - Unpreserved Plastic; N - Nitric Preserved Plastic; ORC - Nitric Preserved ORC; SH - Sodium Hydroxide/Cd Preserved; S - Sodium Hydroxide Preserved Plastic; AG - Airfree Glass Unpreserved; AP - Airright Unpreserved Plastic
 V - VOA Vial HCl Preserved; VIL - VOA Vial Sodium Bisulfate Preserved; VS - VOA Vial Sulfuric Preserved; AV - Airright Unpreserved Vial SG - Sulfuric Preserved Amber Glass; H - HCl preserved Plastic; HS - HCl preserved Specimen bottle; SP - Sulfuric Preserved Plastic; F - Formaldehyde Preserved Glass;
 Z - Zinc Acetate Preserved Bottle; E - EDTA Preserved Bottle; ST - Sterile Bottle; ASS - Plastic Bin for Acid Sulphate Cells; B - Unpreserved Bag

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Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway NSW 2007

ph: 02 8584 8888
Fax: 02 8584 8800

Attention: Joe Ferring

Sample log in details:

Your reference:	0224193, Project Symphony
Envirolab Reference:	101727
Date received:	03/12/13
Date results expected to be reported:	10/12/13

Samples received in appropriate condition for analysis:	YES
No. of samples provided	3 waters
Turnaround time requested:	Standard
Temperature on receipt (°C)	9.7
Cooling Method:	Ice
Sampling Date Provided:	YES

Comments:

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

CERTIFICATE OF ANALYSIS

101727

Client:

Environmental Resources Management Australia

Locked Bag 24

Broadway

NSW 2007

Attention: Joe Ferring

Sample log in details:

Your Reference:	0224193, Project Symphony
No. of samples:	3 waters
Date samples received / completed instructions received	03/12/13 / 03/12/13

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date: 10/12/13 / 10/12/13

Date of Preliminary Report: Not issued

NATA accreditation number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:



Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Water				
Our Reference:	UNITS	101727-1	101727-2	101727-3
Your Reference	-----	T01-281113- TAW	T02-281113- TAW	T03-281113- TAW
Date Sampled	-----	28/11/2013	28/11/2013	28/11/2013
Type of sample		Water	Water	Water
Date extracted	-	06/12/2013	06/12/2013	06/12/2013
Date analysed	-	06/12/2013	06/12/2013	06/12/2013
TRHC ₆ - C ₉	µg/L	<10	<10	<10
TRHC ₆ - C ₁₀	µg/L	<10	<10	<10
TRHC ₆ - C ₁₀ less BTEX (F1)	µg/L	<10	<10	<10
Benzene	µg/L	<1	<1	<1
Toluene	µg/L	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2
o-xylene	µg/L	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1
Surrogate Dibromofluoromethane	%	103	104	102
Surrogate toluene-d8	%	100	99	98
Surrogate 4-BFB	%	91	91	91

svTRH (C10-C40) in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	101727-1 T01-281113- TAW 28/11/2013 Water	101727-2 T02-281113- TAW 28/11/2013 Water	101727-3 T03-281113- TAW 28/11/2013 Water
Date extracted	-	05/12/2013	05/12/2013	05/12/2013
Date analysed	-	06/12/2013	06/12/2013	06/12/2013
TRHC ₁₀ - C ₁₄	µg/L	<50	<50	<50
TRHC ₁₅ - C ₂₈	µg/L	<100	<100	<100
TRHC ₂₉ - C ₃₆	µg/L	<100	<100	<100
TRH>C ₁₀ - C ₁₆	µg/L	<50	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50	<50	<50
TRH>C ₁₆ - C ₃₄	µg/L	<100	<100	<100
TRH>C ₃₄ - C ₄₀	µg/L	<100	<100	<100
Surrogate o-Terphenyl	%	101	104	121

PAHs in Water Our Reference: Your Reference	UNITS -----	101727-1 T01-281113- TAW	101727-2 T02-281113- TAW	101727-3 T03-281113- TAW
Date Sampled	-----	28/11/2013	28/11/2013	28/11/2013
Type of sample		Water	Water	Water
Date extracted	-	05/12/2013	05/12/2013	05/12/2013
Date analysed	-	05/12/2013	05/12/2013	05/12/2013
Naphthalene	µg/L	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1
Fluorene	µg/L	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1
Anthracene	µg/L	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1
Pyrene	µg/L	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1
Chrysene	µg/L	<1	<1	<1
Benzo(b+k)fluoranthene	µg/L	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	98	99	112

Client Reference: 0224193, Project Symphony

Total Phenolics in Water				
Our Reference:	UNITS	101727-1	101727-2	101727-3
Your Reference	-----	T01-281113- TAW	T02-281113- TAW	T03-281113- TAW
Date Sampled	-----	28/11/2013	28/11/2013	28/11/2013
Type of sample		Water	Water	Water
Date extracted	-	05/12/2013	05/12/2013	05/12/2013
Date analysed	-	05/12/2013	05/12/2013	05/12/2013
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05	<0.05

HM in water - dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	101727-1 T01-281113- TAW 28/11/2013 Water	101727-2 T02-281113- TAW 28/11/2013 Water	101727-3 T03-281113- TAW 28/11/2013 Water
Date prepared	-	05/12/2013	05/12/2013	05/12/2013
Date analysed	-	05/12/2013	05/12/2013	05/12/2013
Arsenic-Dissolved	µg/L	3	3	3
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1
Copper-Dissolved	µg/L	3	3	2
Lead-Dissolved	µg/L	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	4	4	4
Zinc-Dissolved	µg/L	1	<1	<1
Boron-Dissolved	µg/L	860	870	850
Barium-Dissolved	µg/L	95	100	97
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5
Cobalt-Dissolved	µg/L	<1	<1	<1
Manganese-Dissolved	µg/L	<5	<5	<5
Molybdenum-Dissolved	µg/L	83	84	83
Thallium-Dissolved	µg/L	<1	<1	<1
Selenium-Dissolved	µg/L	4	4	4
Vanadium-Dissolved	µg/L	9	9	9

MethodID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 22nd ED 5530 D.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

Client Reference: 0224193, Project Symphony

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Water						Base II Duplicate II %RPD		
Date extracted	-			06/12/2013	101727-1	06/12/2013 06/12/2013	LCS-W1	06/12/2013
Date analysed	-			06/12/2013	101727-1	06/12/2013 06/12/2013	LCS-W1	06/12/2013
TRHC ₆ - C ₉	µg/L	10	Org-016	<10	101727-1	<10 <10	LCS-W1	87%
TRHC ₆ - C ₁₀	µg/L	10	Org-016	<10	101727-1	<10 <10	LCS-W1	87%
Benzene	µg/L	1	Org-016	<1	101727-1	<1 <1	LCS-W1	83%
Toluene	µg/L	1	Org-016	<1	101727-1	<1 <1	LCS-W1	83%
Ethylbenzene	µg/L	1	Org-016	<1	101727-1	<1 <1	LCS-W1	87%
m+p-xylene	µg/L	2	Org-016	<2	101727-1	<2 <2	LCS-W1	90%
o-xylene	µg/L	1	Org-016	<1	101727-1	<1 <1	LCS-W1	89%
Naphthalene	µg/L	1	Org-013	<1	101727-1	<1 <1	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	99	101727-1	103 108 RPD: 5	LCS-W1	100%
Surrogate toluene-d8	%		Org-016	101	101727-1	100 107 RPD: 7	LCS-W1	97%
Surrogate 4-BFB	%		Org-016	92	101727-1	91 105 RPD: 14	LCS-W1	99%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH(C10-C40) in Water						Base II Duplicate II %RPD		
Date extracted	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Date analysed	-			06/12/2013	[NT]	[NT]	LCS-W1	06/12/2013
TRHC ₁₀ - C ₁₄	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	109%
TRHC ₁₅ - C ₂₈	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	127%
TRHC ₂₉ - C ₃₆	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	108%
TRH>C ₁₀ - C ₁₆	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	109%
TRH>C ₁₆ - C ₃₄	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	127%
TRH>C ₃₄ - C ₄₀	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	108%
Surrogate o-Terphenyl	%		Org-003	104	[NT]	[NT]	LCS-W1	75%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Water						Base II Duplicate II %RPD		
Date extracted	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Date analysed	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Naphthalene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	92%
Acenaphthylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	91%
Phenanthrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	86%

Client Reference: 0224193, Project Symphony

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Water						Base II Duplicate II %RPD		
Anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	85%
Pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	90%
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	80%
Benzo(b+k)fluoranthene	µg/L	2	Org-012 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	86%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	106	[NT]	[NT]	LCS-W1	99%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Total Phenolics in Water						Base II Duplicate II %RPD		
Date extracted	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Date analysed	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-030	<0.05	[NT]	[NT]	LCS-W1	78%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
HM in water - dissolved						Base II Duplicate II %RPD		
Date prepared	-			05/12/2013	101727-3	05/12/2013 05/12/2013	LCS-W1	05/12/2013
Date analysed	-			05/12/2013	101727-3	05/12/2013 05/12/2013	LCS-W1	05/12/2013
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	101727-3	3 [N/T]	LCS-W1	97%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	101727-3	<0.1 [N/T]	LCS-W1	105%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	101727-3	<1 [N/T]	LCS-W1	96%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	101727-3	2 [N/T]	LCS-W1	100%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	101727-3	<1 [N/T]	LCS-W1	113%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	101727-3	<0.05 <0.05	LCS-W1	100%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	101727-3	4 [N/T]	LCS-W1	97%

Client Reference: 0224193, Project Symphony

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
HM in water - dissolved						Base II Duplicate II %RPD		
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	101727-3	<1 [N/T]	LCS-W1	95%
Boron-Dissolved	µg/L	5	Metals-022 ICP-MS	<5	101727-3	850 [N/T]	LCS-W1	106%
Barium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	101727-3	97 [N/T]	LCS-W1	106%
Beryllium-Dissolved	µg/L	0.5	Metals-022 ICP-MS	<0.5	101727-3	<0.5 [N/T]	LCS-W1	116%
Cobalt-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	101727-3	<1 [N/T]	LCS-W1	107%
Manganese-Dissolved	µg/L	5	Metals-022 ICP-MS	<5	101727-3	<5 [N/T]	LCS-W1	94%
Molybdenum-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	101727-3	83 [N/T]	LCS-W1	92%
Thallium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	101727-3	<1 [N/T]	LCS-W1	107%
Selenium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	101727-3	4 [N/T]	LCS-W1	99%
Vanadium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	101727-3	9 [N/T]	LCS-W1	97%

Report Comments:

Asbestos ID was analysed by Approved Identifier: Not applicable for this job
 Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.



CHAIN OF CUSTODY

ALS Laboratory
please tick →

LIMELIGHT Chemicals Products Australia Pty Ltd
100-120 Formosa Street, Kingsford NSW 1505
Tel: (02) 9439 1000 Fax: (02) 9439 1001
www.limelightchemicals.com.au

Environmental Laboratory Services Pty Ltd
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Tel: (02) 9439 1000 Fax: (02) 9439 1001
www.environmentallab.com.au

CLIENT: NSW Treasury / ERM	TURNAROUND REQUIREMENTS: <input checked="" type="checkbox"/> Standard TAT (List due date): 3 day TAT <input type="checkbox"/> Non Standard or urgent TAT (List due date):	FOR LABORATORY USE ONLY (Circle) Custody Seal intact? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>
OFFICE:	ALTS QUOTE NO.: SY7794113	Free Ice / frozen ice bricks present upon receipt? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>
PROJECT: Project Symphony	SITE: BAYSWATER / LIDDELL	Random Sample Temperature on Receipt: 24 °C
ORDER NUMBER:	CONTACT PH: (02) 4964 2150	Other comment:
PROJECT MANAGER: Joseph Ferring	SAMPLER MOBILE: 0410367411	RECEIVED BY: en
SAMPLER: C. Henry + K. Fosc	EDD FORMAT (or default):	DATE/TIME: 10/12/13 1430
COC emailed to ALS? (YES / NO)	RELINQUISHED BY: en	RELINQUISHED BY: a
Email Reports to (will default to PM if no other addresses are listed): Joseph Ferring	DATE/TIME:	DATE/TIME: 10/12/13 1700
Email Invoice to (will default to PM if no other addresses are listed):		RECEIVED BY: Frank ALS
		DATE/TIME: 10.12.13 1900

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)	CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information										
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below (refer to)	TOTAL CONTAINERS	W-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (As, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Ti)	Selenium (Freshwater ORC)	VOC Target Scan	PCB	PFOA/PFOA	W-24 TRH/C6-C40/BTEXN, PAH, Phenols	ORC W-7 metals*	Comments on likely contaminants (in etc, dilutions, or samples requiring specific analysis etc)
1	BE-MW04	4/12/13	W	Subcom / Forward Lab / Split WO Lab / Analysis: Envirolab	7	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	*Please lab filter and analyse for 'dissolved', not total & CATIONS & ANIONS ↓ Environmental Division Sydney Work Order ES1326993
2	BE-MW05			Relinquished By / Date: Front	7				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
3	BE-MW06			Organised By / Date: Front	7				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
4	BE-MW07			Relinquished By / Date: Front	7				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
5	BH-MW05			Relinquished By / Date: Front	8				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
6	BH-MW06			Relinquished By / Date: Front	8				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
7	BH-MW07			Relinquished By / Date: Front	8				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
8	BH-MW08			Relinquished By / Date: Front	8				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
9	BV-MW01			Relinquished By / Date: Front	8				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
10	BV-MW07			Relinquished By / Date: Front	8				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
11	ROI-04 ROI-041213-CH	4/12		Relinquished By / Date: Front	7				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
12	ROI-041213-KF	4/12		Relinquished By / Date: Front	7				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	


Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfree Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specimen bottle; SP = Sulfuric Preserved Plastic
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

TAT



Telephone : +61-2-8784 8555

"ROI-041213-CH"

 CHAIN OF CUSTODY ALS Laboratory please tick →		<small> CHAIN OF CUSTODY - Details of the Requirements for the Receipt, Storage and Handling of Samples for Analysis CHAIN OF CUSTODY - Details of the Requirements for the Receipt, Storage and Handling of Samples for Analysis CHAIN OF CUSTODY - Details of the Requirements for the Receipt, Storage and Handling of Samples for Analysis CHAIN OF CUSTODY - Details of the Requirements for the Receipt, Storage and Handling of Samples for Analysis </small>		<small> CHAIN OF CUSTODY - Details of the Requirements for the Receipt, Storage and Handling of Samples for Analysis CHAIN OF CUSTODY - Details of the Requirements for the Receipt, Storage and Handling of Samples for Analysis CHAIN OF CUSTODY - Details of the Requirements for the Receipt, Storage and Handling of Samples for Analysis CHAIN OF CUSTODY - Details of the Requirements for the Receipt, Storage and Handling of Samples for Analysis </small>		<small> CHAIN OF CUSTODY - Details of the Requirements for the Receipt, Storage and Handling of Samples for Analysis CHAIN OF CUSTODY - Details of the Requirements for the Receipt, Storage and Handling of Samples for Analysis CHAIN OF CUSTODY - Details of the Requirements for the Receipt, Storage and Handling of Samples for Analysis CHAIN OF CUSTODY - Details of the Requirements for the Receipt, Storage and Handling of Samples for Analysis </small>	
CLIENT: <u>NSW Treasury / ERM</u>		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date): (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		FOR LABORATORY USE ONLY (Circle) Custody Seal intact? Yes No <u>NA</u> Free Ice / frozen ice bricks present upon receipt? Yes No <u>NA</u> Random Sample Temperature on Receipt: <u>24</u> °C Other comment:		COC SEQUENCE NUMBER (Circle) COC: + 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7	
OFFICE:		ALQ QUOTE NO.: <u>SY794/13</u>		ORDER NUMBER:		SITE: <u>BAYSWATER / LIDDELL</u>	
PROJECT: <u>Project Symphony</u>		PROJECT MANAGER: <u>Joseph Fanning</u>		CONTACT PH: <u>(02) 40642150</u>		RELINQUISHED BY: <u>[Signature]</u>	
ORDER NUMBER:		SAMPLER: <u>C. Henry + K. Fox</u>		SAMPLER MOBILE: <u>0410367411</u>		RECEIVED BY: <u>[Signature]</u>	
PROJECT MANAGER:		COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RELINQUISHED BY: <u>[Signature]</u>	
ORDER NUMBER:		Email Reports to (will default to PM if no other addresses are listed):		DATE/TIME: <u>10/12/13 1420</u>		RECEIVED BY: <u>[Signature]</u>	
PROJECT MANAGER:		Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME: <u>10/12/13 1700</u>		RECEIVED BY: <u>Frank ALS</u>	
PROJECT MANAGER:		COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:		DATE/TIME:		RECEIVED BY:	

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information	
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below)	(refer to TOTAL CONTAINERS)	W-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (As, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Ti)	Selenium (Freshwater ORC)	VOC Target Scan	PCB	PFOS/PFOA	W-24 TRHCs, C40/BTEXN, PAH, Phenols		ORC metals
	12	TO1-041213	4/12/13	(W)		F				X			X	X	Trip to Envirolabs
	13	Trip blank		W											Analyse
	14	Trip spike		W											Trip blanks + spike for TRH & BTEX

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialist bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.



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12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway NSW 2007

ph: 02 8584 8888

Fax: 02 8584 8800

Attention: Joe Ferring

Sample log in details:

Your reference:

Envirolab Reference:

Date received:

Date results expected to be reported:

Project Symphony

102224

11/12/13

14/12/13

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 Water
Turnaround time requested:	72hr
Temperature on receipt (°C)	8.4
Cooling Method:	Ice Pack
Sampling Date Provided:	YES

Comments:

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst

ph: 02 9910 6200 fax: 02 9910 6201

email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

CERTIFICATE OF ANALYSIS

102224

Client:

Environmental Resources Management Australia

Locked Bag 24

Broadway

NSW 2007

Attention: Joe Ferring

Sample log in details:

Your Reference:

Project Symphony

No. of samples:

1 Water

Date samples received / completed instructions received

11/12/13

/ 11/12/13

This report replaces the previous one due to changes in sample's ID.

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:

14/12/13

/ 6/01/14

Date of Preliminary Report:

Not issued

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Accredited for compliance with ISO/IEC 17025.

Tests not covered by NATA are denoted with *.

Results Approved By:



Jacinta Hurst
Laboratory Manager

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	102224-1 T01-041213 4/12/2013 Water
Date extracted	-	12/12/2013
Date analysed	-	16/12/2013
Dichlorodifluoromethane	µg/L	<10
Chloromethane	µg/L	<10
Vinyl Chloride	µg/L	<10
Bromomethane	µg/L	<10
Chloroethane	µg/L	<10
Trichlorofluoromethane	µg/L	<10
1,1-Dichloroethene	µg/L	<1
Trans-1,2-dichloroethene	µg/L	<1
1,1-dichloroethane	µg/L	<1
Cis-1,2-dichloroethene	µg/L	<1
Bromochloromethane	µg/L	<1
Chloroform	µg/L	<1
2,2-dichloropropane	µg/L	<1
1,2-dichloroethane	µg/L	<1
1,1,1-trichloroethane	µg/L	<1
1,1-dichloropropene	µg/L	<1
Cyclohexane	µg/L	<1
Carbon tetrachloride	µg/L	<1
Benzene	µg/L	<1
Dibromomethane	µg/L	<1
1,2-dichloropropane	µg/L	<1
Trichloroethene	µg/L	<1
Bromodichloromethane	µg/L	<1
trans-1,3-dichloropropene	µg/L	<1
cis-1,3-dichloropropene	µg/L	<1
1,1,2-trichloroethane	µg/L	<1
Toluene	µg/L	<1
1,3-dichloropropane	µg/L	<1
Dibromochloromethane	µg/L	<1
1,2-dibromoethane	µg/L	<1
Tetrachloroethene	µg/L	<1
1,1,1,2-tetrachloroethane	µg/L	<1
Chlorobenzene	µg/L	<1
Ethylbenzene	µg/L	<1
Bromoform	µg/L	<1
m+p-xylene	µg/L	<2
Styrene	µg/L	<1
1,1,2,2-tetrachloroethane	µg/L	<1
o-xylene	µg/L	<1
1,2,3-trichloropropane	µg/L	<1

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	102224-1 T01-041213 4/12/2013 Water
Isopropylbenzene	µg/L	<1
Bromobenzene	µg/L	<1
n-propyl benzene	µg/L	<1
2-chlorotoluene	µg/L	<1
4-chlorotoluene	µg/L	<1
1,3,5-trimethyl benzene	µg/L	<1
Tert-butyl benzene	µg/L	<1
1,2,4-trimethyl benzene	µg/L	<1
1,3-dichlorobenzene	µg/L	<1
Sec-butyl benzene	µg/L	<1
1,4-dichlorobenzene	µg/L	<1
4-isopropyl toluene	µg/L	<1
1,2-dichlorobenzene	µg/L	<1
n-butyl benzene	µg/L	<1
1,2-dibromo-3-chloropropane	µg/L	<1
1,2,4-trichlorobenzene	µg/L	<1
Hexachlorobutadiene	µg/L	<1
1,2,3-trichlorobenzene	µg/L	<1
Surrogate Dibromofluoromethane	%	74
Surrogate toluene-d8	%	95
Surrogate 4-BFB	%	126

vTRH(C6-C10)/BTEXN in Water		
Our Reference:	UNITS	102224-1
Your Reference	-----	T01-041213
Date Sampled	-----	4/12/2013
Type of sample		Water
Date extracted	-	13/12/2013
Date analysed	-	13/12/2013
TRHC ₆ - C ₉	µg/L	<10
TRHC ₆ - C ₁₀	µg/L	<10
TRHC ₆ - C ₁₀ less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	106
Surrogate toluene-d8	%	97
Surrogate 4-BFB	%	89

svTRH (C10-C40) in Water		
Our Reference:	UNITS	102224-1
Your Reference	-----	T01-041213
Date Sampled	-----	4/12/2013
Type of sample		Water
Date extracted	-	12/12/2013
Date analysed	-	13/12/2013
TRHC ₁₀ - C ₁₄	µg/L	<50
TRHC ₁₅ - C ₂₈	µg/L	<100
TRHC ₂₉ - C ₃₆	µg/L	<100
TRH>C ₁₀ - C ₁₆	µg/L	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50
TRH>C ₁₆ - C ₃₄	µg/L	<100
TRH>C ₃₄ - C ₄₀	µg/L	<100
Surrogate o-Terphenyl	%	107

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	102224-1 T01-041213 4/12/2013 Water
Date extracted	-	12/12/2013
Date analysed	-	12/12/2013
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	98

Total Phenolics in Water		
Our Reference:	UNITS	102224-1
Your Reference	-----	T01-041213
Date Sampled	-----	4/12/2013
Type of sample		Water
Date extracted	-	12/12/2013
Date analysed	-	12/12/2013
Total Phenolics (as Phenol)	mg/L	<0.05

HM in water - dissolved		
Our Reference:	UNITS	102224-1
Your Reference	-----	T01-041213
Date Sampled	-----	4/12/2013
Type of sample		Water
Date prepared	-	12/12/2013
Date analysed	-	12/12/2013
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	17
Zinc-Dissolved	µg/L	11

MethodID	Methodology Summary
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 22nd ED 5530 D.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

Client Reference: Project Symphony

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
VOCs in water						Base II Duplicate II %RPD		
Date extracted	-			12/12/2013	[NT]	[NT]	LCS-W1	12/12/2013
Date analysed	-			16/12/2013	[NT]	[NT]	LCS-W1	16/12/2013
Dichlorodifluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Bromomethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloroethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trans-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	95%
Cis-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Chloroform	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	95%
2,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	103%
1,1,1-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	94%
1,1-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Cyclohexane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Carbon tetrachloride	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromomethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	126%
Bromodichloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	95%
trans-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	90%
1,2-dibromoethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tetrachloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	110%
1,1,1,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Chlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Ethylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromoform	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
m+p-xylene	µg/L	2	Org-013	<2	[NT]	[NT]	[NR]	[NR]
Styrene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
o-xylene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]

Client Reference: Project Symphony

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
VOCs in water						Base II Duplicate II %RPD		
1,2,3-trichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Isopropylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-propyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3,5-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tert-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Sec-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,4-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-isopropyl toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
<i>Surrogate</i>	%		Org-013	62	[NT]	[NT]	LCS-W1	97%
Dibromofluoromethane								
<i>Surrogate toluene-d8</i>	%		Org-013	92	[NT]	[NT]	LCS-W1	101%
<i>Surrogate 4-BFB</i>	%		Org-013	83	[NT]	[NT]	LCS-W1	97%

Client Reference: Project Symphony

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Water						Base II Duplicate II %RPD		
Date extracted	-			13/12/2013	[NT]	[NT]	LCS-W1	13/12/2013
Date analysed	-			13/12/2013	[NT]	[NT]	LCS-W1	13/12/2013
TRHC ₆ - C ₉	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	95%
TRHC ₆ - C ₁₀	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	95%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	95%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	91%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	93%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	97%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	97%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	102	[NT]	[NT]	LCS-W1	107%
Surrogate toluene-d8	%		Org-016	99	[NT]	[NT]	LCS-W1	102%
Surrogate 4-BFB	%		Org-016	89	[NT]	[NT]	LCS-W1	102%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH(C10-C40) in Water						Base II Duplicate II %RPD		
Date extracted	-			12/12/2013	[NT]	[NT]	LCS-W1	12/12/2013
Date analysed	-			13/12/2013	[NT]	[NT]	LCS-W1	13/12/2013
TRHC ₁₀ - C ₁₄	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	131%
TRHC ₁₅ - C ₂₈	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	94%
TRHC ₂₉ - C ₃₆	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	99%
TRH>C ₁₀ - C ₁₆	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	131%
TRH>C ₁₆ - C ₃₄	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	94%
TRH>C ₃₄ - C ₄₀	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	99%
Surrogate o-Terphenyl	%		Org-003	100	[NT]	[NT]	LCS-W1	106%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Water						Base II Duplicate II %RPD		
Date extracted	-			12/12/2013	[NT]	[NT]	LCS-W2	12/12/2013
Date analysed	-			12/12/2013	[NT]	[NT]	LCS-W2	12/12/2013
Naphthalene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	79%
Acenaphthylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	88%
Phenanthrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	85%

Client Reference: Project Symphony

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Water						Base II Duplicate II %RPD		
Anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	84%
Pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	88%
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	82%
Benzo(b+k)fluoranthene	µg/L	2	Org-012 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	96%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	101	[NT]	[NT]	LCS-W2	82%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Total Phenolics in Water						Base II Duplicate II %RPD		
Date extracted	-			12/12/2013	[NT]	[NT]	LCS-W1	12/12/2013
Date analysed	-			12/12/2013	[NT]	[NT]	LCS-W1	12/12/2013
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-030	<0.05	[NT]	[NT]	LCS-W1	82%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
HM in water - dissolved						Base II Duplicate II %RPD		
Date prepared	-			12/12/2013	[NT]	[NT]	LCS-W1	12/12/2013
Date analysed	-			12/12/2013	[NT]	[NT]	LCS-W1	12/12/2013
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	97%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-W1	99%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	91%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	92%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	102%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	LCS-W1	92%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	95%

Client Reference: Project Symphony

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
HM in water - dissolved						Base II Duplicate II %RPD		
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	92%

Report Comments:

Asbestos ID was analysed by Approved Identifier: Not applicable for this job
 Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Subcon Forward Lab / Split WO Lab / Analysis: SA, W, L, F, W, D

EnviroLab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200



CHAIN OF CUSTODY
ALS Laboratory please tick →

CLIENT: **ELM**
OFFICE: **Sydney**
PROJECT: **Project Symphony**
ORDER NUMBER: **0224193**
PROJECT MANAGER: **Joe Ferrin**
SAMPLER: **Nathan Hegerty**
COC emailed to ALS? **YES / NO**

TURNAROUND REQUIREMENTS: **W/D NO: 19/12/13**
Standard TAT may be longer for some tests
Non-hazardous: Hazardous:
Attach by **FO/INTERNAL SHEET**

ALS QUOTE NO: **SV79413**
SITE: **WATERWHEEL**
CONTACT PH: **0424918468**
SAMPLER MOBILE: **0488621876**
EDD FORMAT (or default):

Organised By / Date: **SA, W, L, F, W, D**
Relinquished By / Date: **12/12/13**
Container / Courier: **SA, W, L, F, W, D**

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact: Received by: **W**
Freezer / Cooler Temperature on Receipt: **Yes** Temp: **4°C**
Random Sample Temperature on Receipt: **Yes** Temp: **4°C**
Other comment: **APIS Security, Intact Broken/None**

RECEIVED BY: **KAR**
DATE/TIME: **10/12/13 19:00**

RECEIVED BY: **Rayley W**
DATE/TIME: **10/12/13 15:00**

RECEIVED BY: **Nathan Hegerty**
DATE/TIME: **3/12/13 18:00**

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below	CONTAINER INFORMATION (refer to TOTAL CONTAINERS)	ANALYSIS REQUIRED INCLUDING SUITES (NB. Suite Codes must be listed to allow suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).	ADDITIONAL INFORMATION
1	BG-MW01	3/12/13 09:55	W	3xAG, 4xVS, 1xORC, 1xN	9	17 Metals (As, Ba, Pb, Zn, Hg), W-2 Metals (As, Ba, Pb, Zn, Hg), 17 Metals (As, Ba, Pb, Zn, Hg), Be, Cd, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Ti, Selenium (ORC), VOC Target Scan, PCB, PFOA/FOA, Phenols, W-24 TRH(C6, C10)BTEXN, PAH, ORC Metals	Comments on likely contaminants, dilutions, or samples requiring specific DC analysis etc. 9 metals
2	BG-MW02	11:20		3xAG, 4xVS, 1xORC, 1xN	8		SA, W, L, F, W, D
3	BG-MW03	12:35		3xAG, 4xVS, 1xORC	8		SA, W, L, F, W, D
4	BG-MW04	13:55		3xAG, 4xVS, 1xORC	8		SA, W, L, F, W, D
5	BG-MW05	15:15		3xAG, 4xVS, 1xORC	8		SA, W, L, F, W, D
6	TOI-031213-NH			3xAG, 4xVS, 1xORC, 1xN	9		SA, W, L, F, W, D
7	Trip Blank			1xVS	1		SA, W, L, F, W, D
8	Trip Spike			1xVS	1		SA, W, L, F, W, D
9	BG-MW06	3/12/13 15:54		3xVS, 1xN, 1xAG	5		SA, W, L, F, W, D
		3/12/13 15:54		3xAG, 4xVS, 1xORC	8		SA, W, L, F, W, D

Comments on likely contaminants, dilutions, or samples requiring specific DC analysis etc.

Additional Information

Environmental Division Sydney
Work Order **ES1326994**

Telephone: +61-2-8784 8555

David
12/12
1000

Relinquished by: **BS**





Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway NSW 2007

ph: 02 8584 8888

Fax: 02 8584 8800

Attention: Joe Ferring

Sample log in details:

Your reference:

0224193, Project Symphony

Envirolab Reference:

102321

Date received:

12/12/13

Date results expected to be reported:

19/12/13

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 water
Turnaround time requested:	Standard
Temperature on receipt (°C)	4.9
Cooling Method:	Ice
Sampling Date Provided:	YES

Comments:

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst

ph: 02 9910 6200 fax: 02 9910 6201

email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au