ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1327787**	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	: 0224198		
C-O-C number	: ----	Date Samples Received	: 18-DEC-2013
Sampler	: JG	Issue Date	: 23-DEC-2013
Site	: ----		
		No. of samples received	: 10
Quote number	: SY/794/13	No. of samples analysed	: 10

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.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Lana Nguyen	Senior LCMS 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: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.**
- **EP231: PFOA & PFOS results are reported as an aggregate of linear and branched isomers.**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LG_MW01	LG_MW02	LG_MW03	LS_MW02	LO_MW06
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
					ES1327787-001	ES1327787-002	ES1327787-003	ES1327787-004	ES1327787-005
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		**0.006**	**0.017**	**0.007**	**0.010**	**0.002**
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	**0.0030**	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	**0.003**	<0.001
Copper	7440-50-8	0.001	mg/L		**0.002**	<0.001	<0.001	**0.028**	**0.002**
Lead	7439-92-1	0.001	mg/L		**0.011**	<0.001	<0.001	**0.003**	<0.001
Nickel	7440-02-0	0.001	mg/L		**0.005**	**0.001**	**0.002**	**0.657**	**0.011**
Zinc	7440-66-6	0.005	mg/L		**0.016**	**0.011**	**0.016**	**1.45**	**0.025**
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		----	----	----	----	<1
EP074A: Monocyclic Aromatic Hydrocarbons									
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	**5**
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	**15**
Styrene	100-42-5	5	µg/L		<5	<5	<5	<5	<5
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	**10**
Isopropylbenzene	98-82-8	5	µg/L		<5	<5	<5	<5	**6**
n-Propylbenzene	103-65-1	5	µg/L		<5	<5	<5	<5	**6**
1.3.5-Trimethylbenzene	108-67-8	5	µg/L		<5	<5	<5	<5	**7**
sec-Butylbenzene	135-98-8	5	µg/L		<5	<5	<5	<5	**6**
1.2.4-Trimethylbenzene	95-63-6	5	µg/L		<5	<5	<5	<5	**21**
tert-Butylbenzene	98-06-6	5	µg/L		<5	<5	<5	<5	<5
p-Isopropyltoluene	99-87-6	5	µg/L		<5	<5	<5	<5	<5
n-Butylbenzene	104-51-8	5	µg/L		<5	<5	<5	<5	<5
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L		<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L		<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L		<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L		<50	<50	<50	<50	<50
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L		<5	<5	<5	<5	<5

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LG_MW01	LG_MW02	LG_MW03	LS_MW02	LO_MW06
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
					ES1327787-001	ES1327787-002	ES1327787-003	ES1327787-004	ES1327787-005
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	<5	<5
1.2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	<5	<5
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	<5	<5
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	<5	<5
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	<50	<50
1.1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	<5	<5
trans-1.2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	<5	<5
1.1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	<5	<5
cis-1.2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	<5	<5
1.1.1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	<5	<5
1.1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	<5	<5	<5
1.2-Dichloroethane	107-06-2	5	µg/L		<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L		<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L		<5	<5	<5	<5	<5
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	<5	<5	<5
1.3-Dichloropropane	142-28-9	5	µg/L		<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	<5	<5	<5
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	<5	<5	<5
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L		<5	<5	<5	<5	<5
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L		<5	<5	<5	<5	<5
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	<5	<5	<5
1.2.3-Trichloropropane	96-18-4	5	µg/L		<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L		<5	<5	<5	<5	<5
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L		<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LG_MW01	LG_MW02	LG_MW03	LS_MW02	LO_MW06
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327787-001	ES1327787-002	ES1327787-003	ES1327787-004	ES1327787-005
EP074E: Halogenated Aliphatic Compounds - Continued									
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	<5	<5	**10**
Bromobenzene	108-86-1	5	µg/L		<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L		<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L		<5	<5	<5	<5	<5
1.3-Dichlorobenzene	541-73-1	5	µg/L		<5	<5	<5	<5	<5
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	<5	<5	<5
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	<5	<5	**13**
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	<5	<5	<5
1.2.3-Trichlorobenzene	87-61-6	5	µg/L		<5	<5	<5	<5	<5
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L		<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L		<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L		<5	<5	<5	<5	<5
EP074H: Naphthalene									
Naphthalene	91-20-3	7	µg/L		<7	<7	<7	<7	**22**
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	**12.6**
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	**1.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LG_MW01	LG_MW02	LG_MW03	LS_MW02	LO_MW06
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327787-001	ES1327787-002	ES1327787-003	ES1327787-004	ES1327787-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	**2.0**
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	**4.5**
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	**5.4**
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	**25.5**
^ 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	**90**
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	**460**
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	**320**
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	**780**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	**140**
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	**110**
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	<100	<100	<100	**610**
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	**140**
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	**750**
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	**590**
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LG_MW01	LG_MW02	LG_MW03	LS_MW02	LO_MW06
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327787-001	ES1327787-002	ES1327787-003	ES1327787-004	ES1327787-005
EP080: BTEXN - Continued									
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	4
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	14
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	10
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	<2	24
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	28
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	20
EP231: Perfluorinated Compounds									
PFOS	1763-23-1	0.02	µg/L		----	----	----	----	0.43
PFOA	335-67-1	0.02	µg/L		----	----	----	----	0.23
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L		----	----	----	----	<0.1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	----	64.8
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		106	103	102	97.5	102
Toluene-D8	2037-26-5	0.1	%		118	114	112	103	124
4-Bromofluorobenzene	460-00-4	0.1	%		102	99.1	97.7	86.1	119
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		25.0	18.8	19.0	24.0	16.8
2-Chlorophenol-D4	93951-73-6	0.1	%		53.6	48.0	46.7	49.3	43.1
2.4.6-Tribromophenol	118-79-6	0.1	%		94.1	71.7	69.7	64.0	76.9
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		54.5	54.3	52.1	55.1	43.1
Anthracene-d10	1719-06-8	0.1	%		77.8	64.2	65.5	69.5	66.0
4-Terphenyl-d14	1718-51-0	0.1	%		85.7	75.0	73.8	78.0	61.7
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		119	117	116	110	116
Toluene-D8	2037-26-5	0.1	%		104	99.5	97.8	90.4	117
4-Bromofluorobenzene	460-00-4	0.1	%		96.2	92.1	93.6	83.1	122

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW05	R01_161213_JA	TB_8	TS_2	TS_3
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327787-006	ES1327787-007	ES1327787-008	ES1327787-009	ES1327787-010
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		**0.001**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0005**	----	----	----	----
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		**0.136**	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.049**	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L		**17**	<1	----	----	----
Toluene	108-88-3	2	µg/L		<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L		**16**	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	----	----	----
Styrene	100-42-5	5	µg/L		<5	<5	----	----	----
ortho-Xylene	95-47-6	2	µg/L		**15**	<2	----	----	----
Isopropylbenzene	98-82-8	5	µg/L		**6**	<5	----	----	----
n-Propylbenzene	103-65-1	5	µg/L		**7**	<5	----	----	----
1.3.5-Trimethylbenzene	108-67-8	5	µg/L		**21**	<5	----	----	----
sec-Butylbenzene	135-98-8	5	µg/L		<5	<5	----	----	----
1.2.4-Trimethylbenzene	95-63-6	5	µg/L		**33**	<5	----	----	----
tert-Butylbenzene	98-06-6	5	µg/L		<5	<5	----	----	----
p-Isopropyltoluene	99-87-6	5	µg/L		**5**	<5	----	----	----
n-Butylbenzene	104-51-8	5	µg/L		<5	<5	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L		<50	<50	----	----	----
2-Butanone (MEK)	78-93-3	50	µg/L		<50	<50	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L		<50	<50	----	----	----
2-Hexanone (MBK)	591-78-6	50	µg/L		<50	<50	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L		<5	<5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW05	R01_161213_JA	TB_8	TS_2	TS_3
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327787-006	ES1327787-007	ES1327787-008	ES1327787-009	ES1327787-010
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	5	µg/L		<5	<5	----	----	----
1.2-Dichloropropane	78-87-5	5	µg/L		<5	<5	----	----	----
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	----	----	----
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	----	----	----
Chloromethane	74-87-3	50	µg/L		<50	<50	----	----	----
Vinyl chloride	75-01-4	50	µg/L		<50	<50	----	----	----
Bromomethane	74-83-9	50	µg/L		<50	<50	----	----	----
Chloroethane	75-00-3	50	µg/L		<50	<50	----	----	----
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	----	----	----
1.1-Dichloroethene	75-35-4	5	µg/L		<5	<5	----	----	----
Iodomethane	74-88-4	5	µg/L		<5	<5	----	----	----
trans-1.2-Dichloroethene	156-60-5	5	µg/L		<5	<5	----	----	----
1.1-Dichloroethane	75-34-3	5	µg/L		<5	<5	----	----	----
cis-1.2-Dichloroethene	156-59-2	5	µg/L		<5	<5	----	----	----
1.1.1-Trichloroethane	71-55-6	5	µg/L		<5	<5	----	----	----
1.1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	----	----	----
1.2-Dichloroethane	107-06-2	5	µg/L		<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L		<5	<5	----	----	----
Dibromomethane	74-95-3	5	µg/L		<5	<5	----	----	----
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
1.3-Dichloropropane	142-28-9	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L		<5	<5	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
1.2.3-Trichloropropane	96-18-4	5	µg/L		<5	<5	----	----	----
Pentachloroethane	76-01-7	5	µg/L		<5	<5	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW05	R01_161213_JA	TB_8	TS_2	TS_3
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327787-006	ES1327787-007	ES1327787-008	ES1327787-009	ES1327787-010
EP074E: Halogenated Aliphatic Compounds - Continued									
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
Bromobenzene	108-86-1	5	µg/L		<5	<5	----	----	----
2-Chlorotoluene	95-49-8	5	µg/L		<5	<5	----	----	----
4-Chlorotoluene	106-43-4	5	µg/L		<5	<5	----	----	----
1.3-Dichlorobenzene	541-73-1	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		**18**	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
1.2.3-Trichlorobenzene	87-61-6	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
Bromodichloromethane	75-27-4	5	µg/L		<5	<5	----	----	----
Dibromochloromethane	124-48-1	5	µg/L		<5	<5	----	----	----
Bromoform	75-25-2	5	µg/L		<5	<5	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	7	µg/L		**105**	<7	----	----	----
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		**2.7**	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		**5.8**	<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	1.0	µg/L		**4.5**	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW05	R01_161213_JA	TB_8	TS_2	TS_3
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327787-006	ES1327787-007	ES1327787-008	ES1327787-009	ES1327787-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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		**4.5**	<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		**150**	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L		**610**	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		**630**	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		**1240**	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		**240**	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		**190**	<20	<20	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L		**820**	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		**360**	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		**1180**	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		**720**	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		**18**	<1	<1	**17**	**18**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW05	R01_161213_JA	TB_8	TS_2	TS_3
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327787-006	ES1327787-007	ES1327787-008	ES1327787-009	ES1327787-010
EP080: BTEXN - Continued									
Toluene	108-88-3	2	µg/L		<2	<2	<2	**15**	**17**
Ethylbenzene	100-41-4	2	µg/L		**16**	<2	<2	**16**	**17**
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	**16**	**17**
ortho-Xylene	95-47-6	2	µg/L		**15**	<2	<2	**17**	**18**
^ Total Xylenes	1330-20-7	2	µg/L		**15**	<2	<2	**33**	**35**
^ Sum of BTEX	----	1	µg/L		**49**	<1	<1	**81**	**87**
Naphthalene	91-20-3	5	µg/L		**95**	<5	<5	**17**	**18**
EP231: Perfluorinated Compounds									
PFOS	1763-23-1	0.02	µg/L		<0.02	----	----	----	----
PFOA	335-67-1	0.02	µg/L		<0.02	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L		<0.1	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**82.7**	----	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**106**	**102**	----	----	----
Toluene-D8	2037-26-5	0.1	%		**124**	**106**	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**120**	**92.5**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**21.8**	**18.1**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**45.5**	**38.5**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**48.6**	**48.8**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**35.7**	**43.6**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**65.4**	**53.8**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**68.1**	**61.7**	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**120**	**116**	**112**	**112**	**109**
Toluene-D8	2037-26-5	0.1	%		**117**	**92.7**	**115**	**111**	**108**
4-Bromofluorobenzene	460-00-4	0.1	%		**121**	**88.8**	**102**	**101**	**96.7**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	Recovery Limits (%) High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	28.5	129
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	78.3	133.2
Toluene-D8	2037-26-5	79.1	128.9
4-Bromofluorobenzene	460-00-4	80.8	123.7
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	: **ES1327787**	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	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 18-DEC-2013
Sampler	: JG	Issue Date	: 23-DEC-2013
Order number	: 0224198		
		No. of samples received	: 10
Quote number	: SY/794/13	No. of samples analysed	: 10

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 ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Lana Nguyen	Senior LCMS 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: **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: 3222931)									
ES1327617-001	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	0.002	0.002	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.003	0.002	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.010	0.010	0.0	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.007	0.006	0.0	No Limit
ES1327897-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0017	0.0018	6.3	0% - 50%
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.002	0.004	35.7	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	3.04	2.83	7.2	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	11.6	11.3	2.7	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 3222930)									
ES1327617-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1327897-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3220883)									
ES1327787-005	LO_MW06	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3220433)									
ES1327787-001	LG_MW01	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	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 (%)*
EP074B: Oxygenated Compounds (QC Lot: 3220433)									
ES1327787-001	LG_MW01	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 3220433)									
ES1327787-001	LG_MW01	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 3220433)									
ES1327787-001	LG_MW01	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3220433)									
ES1327787-001	LG_MW01	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	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 (%)*
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3220433) - continued									
ES1327787-001	LG_MW01	EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 3220433)									
ES1327787-001	LG_MW01	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 3220433)									
ES1327787-001	LG_MW01	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP074H: Naphthalene (QC Lot: 3220433)									
ES1327787-001	LG_MW01	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3220885)									
ES1327787-005	LO_MW06	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	R01_161213_JA	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

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: 3220885) - continued									
ES1327787-007	R01_161213_JA	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)									
ES1327787-005	LO_MW06	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	R01_161213_JA	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: 3220429)									
ES1327263-009	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	860	930	8.6	0% - 20%
ES1327263-011	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3220434)									

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: 3220434) - continued									
ES1327787-001	LG_MW01	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3220884)									
ES1327787-005	LO_MW06	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	R01_161213_JA	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: 3220429)									
ES1327263-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	1090	1190	8.8	0% - 20%
ES1327263-011	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: 3220434)									
ES1327787-001	LG_MW01	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3220884)									
ES1327787-005	LO_MW06	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	R01_161213_JA	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: 3220429)									
ES1327263-009	Anonymous	EP080: Benzene	71-43-2	1	µg/L	3	4	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	9	10	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	38	41	7.3	0% - 20%
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	139	149	7.3	0% - 20%
		EP080: ortho-Xylene	95-47-6	2	µg/L	59	65	8.6	0% - 20%
		EP080: Naphthalene	91-20-3	5	µg/L	7	7	0.0	No Limit
ES1327263-011	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: 3220434)									
ES1327787-001	LG_MW01	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

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: 3220434) - continued									
ES1327787-001	LG_MW01	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
EP231: Perfluorinated Compounds (QC Lot: 3220832)									
EB1331050-001	Anonymous	EP231: PFOS	1763-23-1	0.02	µg/L	12.6	13.8	9.4	0% - 20%
		EP231: PFOA	335-67-1	0.02	µg/L	3.16	2.98	5.9	0% - 20%
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES1327805-001	Anonymous	EP231: PFOS	1763-23-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231: PFOA	335-67-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	<0.1	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: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3222931)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	92.6	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	99.8	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	88.7	81	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	88.7	80	112
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	102	83	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	87.1	81	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	91.0	80	116
EG035F: Dissolved Mercury by FIMS (QCLot: 3222930)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	94.4	78	114
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3220883)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	78.0	61.6	107
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3220433)								
EP074: Benzene	71-43-2	1	µg/L	<1	10 µg/L	98.6	78	116
EP074: Toluene	108-88-3	2	µg/L	<2	10 µg/L	106	68	128
EP074: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	109	74	118
EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	20 µg/L	104	74	122
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	94.0	74	118
EP074: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	104	77	121
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	102	75	121
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	104	67	123
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	102	70	122
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	105	69	123
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	100	71	121
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	102	70	122
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	100	67	123
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	93.2	62	126
EP074B: Oxygenated Compounds (QCLot: 3220433)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	77.0	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	86.6	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	86.4	61	139
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	82.9	65	137
EP074C: Sulfonated Compounds (QCLot: 3220433)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	106	72.8	127

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074D: Fumigants (QCLot: 3220433)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	91.5	61	119
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	88.6	76	120
EP074: cis-1.3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	79.6	62	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	77.0	61	119
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	92.3	69	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 3220433)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	83.1	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	91.0	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	78.1	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	106	56	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	99.0	63	135
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	100	65	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	97.6	69	123
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	95.9	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	97.9	71	119
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	96.9	75	119
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	98.7	77	117
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	99.6	61	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	98.2	73	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	85.8	63	121
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	92.5	78	122
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	101	74	120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	94.6	74	118
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	91.9	75	123
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	94.8	79	121
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	100	72	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	89.8	66	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	73.8	60	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	76.2	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	92.2	70	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	95.2	74	128
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	110	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	103	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	100	58	132
EP074F: Halogenated Aromatic Compounds (QCLot: 3220433)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	102	80	118
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	95.8	76	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	104	71	121
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	98.9	71	121

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP074F: Halogenated Aromatic Compounds (QCLot: 3220433) - continued								
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	93.7	74	120
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	93.6	72	120
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	94.3	77	117
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	89.8	60	126
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	86.7	67	125
EP074G: Trihalomethanes (QCLot: 3220433)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	96.0	76	118
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	86.4	64	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	102	65	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	88.0	73.5	126
EP074H: Naphthalene (QCLot: 3220433)								
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	90.9	61	125
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)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3220885) - continued								
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	----	----	----	----
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: 3220429)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	103	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220434)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	94.9	75	127
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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220884) - continued								
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	76.4	62	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220429)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	103	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220434)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	93.4	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: BTEXN (QCLot: 3220429)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	107	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	98.8	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	96.8	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	102	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	99.0	70	124
EP080: BTEXN (QCLot: 3220434)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	103	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	93.5	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	92.0	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	94.9	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	88.9	70	124
EP231: Perfluorinated Compounds (QCLot: 3220832)								
EP231: PFOS	1763-23-1	0.02	µg/L	<0.02	0.25 µg/L	111	70	136
EP231: PFOA	335-67-1	0.02	µg/L	<0.02	0.25 µg/L	124	72	134
EP231: 6:2 Fluorotelomer Sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	1.25 µg/L	97.0	61	145

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	Recovery Limits (%): High

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: 3222931)							
ES1327787-003	LG_MW03	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	117	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	99.7	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	106	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	112	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	95.8	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	111	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3222930)							
ES1327787-001	LG_MW01	EG035F: Mercury	7439-97-6	0.0100 mg/L	80.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3220883)							
ES1327787-006	LO_MW05	EP066: Total Polychlorinated biphenyls	----	10 µg/L	78.0	70	130
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3220433)							
ES1327787-001	LG_MW01	EP074: Benzene	71-43-2	25 µg/L	97.5	70	130
		EP074: Toluene	108-88-3	25 µg/L	101	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3220433)							
ES1327787-001	LG_MW01	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	77.2	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	97.4	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3220433)							
ES1327787-001	LG_MW01	EP074: Chlorobenzene	108-90-7	25 µg/L	102	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3220885)							
ES1327787-006	LO_MW05	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	LO_MW05	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: 3220429)							
ES1327263-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	124	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220434)							
ES1327787-001	LG_MW01	EP080: C6 - C9 Fraction	----	325 µg/L	110	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220884)							
ES1327787-006	LO_MW05	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

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: 3220429)							
ES1327263-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	123	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220434)							
ES1327787-001	LG_MW01	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	108	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220884)							
ES1327787-006	LO_MW05	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: BTEXN (QCLot: 3220429)							
ES1327263-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	113	70	130
		EP080: Toluene	108-88-3	25 µg/L	106	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	111	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	116	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	115	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	114	70	130
EP080: BTEXN (QCLot: 3220434)							
ES1327787-001	LG_MW01	EP080: Benzene	71-43-2	25 µg/L	100	70	130
		EP080: Toluene	108-88-3	25 µg/L	99.6	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	98.8	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	93.7	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	99.9	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	92.0	70	130
EP231: Perfluorinated Compounds (QCLot: 3220832)							
EB1331050-001	Anonymous	EP231: PFOS	1763-23-1	0.25 µg/L	# Not Determined	70	136
		EP231: PFOA	335-67-1	0.25 µg/L	# Not Determined	72	134
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	107	61	145

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

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: 3220429)										
ES1327263-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	124	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220429)										
ES1327263-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	123	----	70	130	----	----
EP080: BTEXN (QCLot: 3220429)										
ES1327263-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	113	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	106	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	111	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	116	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	115	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	114	----	70	130	----	----
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3220433)										
ES1327787-001	LG_MW01	EP074: Benzene	71-43-2	25 µg/L	97.5	----	70	130	----	----
		EP074: Toluene	108-88-3	25 µg/L	101	----	70	130	----	----
EP074E: Halogenated Aliphatic Compounds (QCLot: 3220433)										
ES1327787-001	LG_MW01	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	77.2	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	25 µg/L	97.4	----	70	130	----	----
EP074F: Halogenated Aromatic Compounds (QCLot: 3220433)										
ES1327787-001	LG_MW01	EP074: Chlorobenzene	108-90-7	25 µg/L	102	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220434)										
ES1327787-001	LG_MW01	EP080: C6 - C9 Fraction	----	325 µg/L	110	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3220434)										
ES1327787-001	LG_MW01	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	108	----	70	130	----	----
EP080: BTEXN (QCLot: 3220434)										
ES1327787-001	LG_MW01	EP080: Benzene	71-43-2	25 µg/L	100	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	99.6	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	98.8	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	93.7	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	99.9	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	92.0	----	70	130	----	----
EP231: Perfluorinated Compounds (QCLot: 3220832)										
EB1331050-001	Anonymous	EP231: PFOS	1763-23-1	0.25 µg/L	# Not Determined	----	70	136	----	----
		EP231: PFOA	335-67-1	0.25 µg/L	# Not Determined	----	72	134	----	----
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	107	----	61	145	----	----

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
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3220883)										
ES1327787-006	LO_MW05	EP066: Total Polychlorinated biphenyls	----	10 µg/L	78.0	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220884)										
ES1327787-006	LO_MW05	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	LO_MW05	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	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3220885)										
ES1327787-006	LO_MW05	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	LO_MW05	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	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3222930)										
ES1327787-001	LG_MW01	EG035F: Mercury	7439-97-6	0.0100 mg/L	80.0	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3222931)										
ES1327787-003	LG_MW03	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	117	----	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	99.7	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	0.2 mg/L	106	----	70	130	----	----
		EG020A-F: Lead	7439-92-1	0.2 mg/L	112	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	95.8	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	111	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1327787**	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	: ----		
C-O-C number	: ----	Date Samples Received	: 18-DEC-2013
Sampler	: JG	Issue Date	: 23-DEC-2013
Order number	: 0224198		
		No. of samples received	: 10
Quote number	: SY/794/13	No. of samples analysed	: 10

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
EG020F: Dissolved Metals by ICP-MS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F)							
LG_MW01, LG_MW02, LG_MW03, LS_MW02, LO_MW06, LO_MW05	**16-DEC-2013**	**---**	14-JUN-2014	----	**20-DEC-2013**	14-JUN-2014	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LG_MW01, LG_MW02, LG_MW03, LS_MW02, LO_MW06, LO_MW05	**16-DEC-2013**	**---**	13-JAN-2014	----	**20-DEC-2013**	13-JAN-2014	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
LO_MW06, LO_MW05	**16-DEC-2013**	**19-DEC-2013**	23-DEC-2013	✓	**20-DEC-2013**	29-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber Glass Bottle - Unpreserved (EP071)							
LG_MW01, LG_MW02, LG_MW03, LS_MW02, LO_MW06, LO_MW05, R01_161213_JA	**16-DEC-2013**	**19-DEC-2013**	23-DEC-2013	✓	**20-DEC-2013**	28-JAN-2014	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
LG_MW01, LG_MW02, LG_MW03, LS_MW02, LO_MW06, LO_MW05, R01_161213_JA	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LG_MW01, LG_MW02, LG_MW03, LS_MW02, LO_MW06, LO_MW05, R01_161213_JA	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-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
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LG_MW01, LG_MW02, LG_MW03, LS_MW02, LO_MW06, LO_MW05, R01_161213_JA	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074)							
LG_MW01, LG_MW02, LG_MW03, LS_MW02, LO_MW06, LO_MW05, R01_161213_JA	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074)							
LG_MW01, LG_MW02, LG_MW03, LS_MW02, LO_MW06, LO_MW05, R01_161213_JA	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LG_MW01, LG_MW02, LG_MW03, LS_MW02, LO_MW06, LO_MW05, R01_161213_JA	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LG_MW01, LG_MW02, LG_MW03, LS_MW02, LO_MW06, LO_MW05, R01_161213_JA	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074)							
LG_MW01, LG_MW02, LG_MW03, LS_MW02, LO_MW06, LO_MW05, R01_161213_JA	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LG_MW01, LG_MW02, LG_MW03, LS_MW02, LO_MW06, LO_MW05, R01_161213_JA	**16-DEC-2013**	**19-DEC-2013**	23-DEC-2013	✓	**20-DEC-2013**	28-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))								
LG_MW01,	LG_MW02,	**16-DEC-2013**	**19-DEC-2013**	23-DEC-2013	✓	**20-DEC-2013**	28-JAN-2014	✓
LG_MW03,	LS_MW02,							
LO_MW06,	LO_MW05,							
R01_161213_JA								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
LG_MW01,	LG_MW02,	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
LG_MW03,	LS_MW02,							
LO_MW06,	LO_MW05,							
R01_161213_JA,	TB_8,							
TS_2,	TS_3							
EP080/071: Total Petroleum Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP080)								
LG_MW01,	LG_MW02,	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
LG_MW03,	LS_MW02,							
LO_MW06,	LO_MW05,							
R01_161213_JA,	TB_8							
EP231: Perfluorinated Compounds								
HDPE (no PTFE) (EP231)								
LO_MW06,	LO_MW05	**16-DEC-2013**	**---**	14-JUN-2014	----	**19-DEC-2013**	14-JUN-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: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	15	**13.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	13	**15.4**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	2	14	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	14	**7.1**	**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	3	28	**10.7**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	9	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	15	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	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	2	28	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	15	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	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	2	28	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	15	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	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	2	28	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	9	**11.1**	**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
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 (SnCl2)(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 SnCl2 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)
Volatile Organic Compounds	EP074	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. 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)
PFOS and PFOA	EP231	WATER	In-house: Direct injection analysis of fresh and diluted saline waters. In order to meet standard reporting limits, saline waters may be adsorped onto a solid phase extraction medium, the salt washed out and the sample eluted for analysis. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM.

Preparation Methods	Method	Matrix	Method Descriptions
Lab Acidification of Dissolved Metals	EN80F	WATER	US EPA Method 200.8
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 SW 846 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
Matrix Spike (MS) Recoveries							
EP231: Perfluorinated Compounds	EB1331050-001	Anonymous	**PFOS**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231: Perfluorinated Compounds	EB1331050-001	Anonymous	**PFOA**	335-67-1	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

- **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.

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Polychlorinated Biphenyls (PCB)	1	14	7.1	10.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT: MACQUEN
OFFICE: SYDNEY
PROJECT: Project Symphony
ORDER NUMBER: 022541996
PROJECT MANAGER:
SAMPLER: TH & JW
COC emailed to ALS? (YES / NO)
Email Reports to (will default to PM if no other addresses are listed): Symphony.macquen@senv.com.au
Email Invoice to (will default to PM if no other addresses are listed):
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☐ Standard TAT (List due date):
☒ Non Standard or urgent TAT (List due date): 48 hours TAT
ALS QUOTE NO.: SY/794/13
SITE: BAYSWATER / LIDDELL
CONTACT PH: 0424 970 468
SAMPLER MOBILE: 0428229984
EDD FORMAT (or default):

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
or: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: 4.2 °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
THAYDON			
DATE/TIME: 16/12/13 6:30	DATE/TIME: 18/12/13 15:30	DATE/TIME: 16/12/13 17:00	DATE/TIME: 18/12/13 1900

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 (refer to codes below)	TOTAL CONTAINERS	S-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, Tl, Se)	S-24 TRH(C6-C40)/BTEXN, PAH, Phenols	VOC Target Scan	PCB	pH (1:5)	Exchangeable cations (ED007)	PFOS/PFOA	Asbestos (absence/presence)	Particle Sizing to 75µm (Sieve)	Organic Master plus Total Organic Carbon (EP004)	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LO_MW01	16/12/13	WATER	AG x1 VOA x4 APx1 P(PFOS) x1	7	X		X	X	X			X				
2	LO_MW04			✓	7	X		X	X	X			X				
3	LO_MW03			✓	7	X		X	X	X			X				
4	LJ_MW01			AG x1 VOA x4 APx1	6	X		X	X	X			X				
5	LO_~~MW10~~ MW10			AG x1 VOA x4 APx1 P(PFOS) x1	7	X		X	X	X			X				
6	RO1_161213_JW			AG x1 APx1 VOA x3	5	X		X									
7	RO1_161213_TH	✓	✓	✓ ✓ ✓	5	X		X									
8	TBH																
9	TBH																

TAT

Environmental Division
Sydney
Work Order
ES1327805

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; VS = 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 Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES1327805**		
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	Page	: 1 of 3
Order number	: 0224198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: ----		
Sampler	: TH,JN	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 18-DEC-2013	Issue Date	: 19-DEC-2013 10:49
Client Requested Due Date	: 20-DEC-2013	Scheduled Reporting Date	: **20-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	: 9
Security Seal	: Intact.	No. of samples analysed	: 9

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.**
- **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.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
EG035T : Total Mercury by FIMS		
R01_161213_JN	- Clear HDPE (U-T ORC) - Unspecified; Lab-acidified	- Clear Plastic Bottle - Nitric Acid; Unfiltered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary 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 - EG035F Dissolved Mercury by FIMS	WATER - EG035T Total Mercury by FIMS	WATER - EG094A-F Dissolved Metals in Fresh Water Suite	WATER - EG094A-T Total Metals in Fresh water Suite A by	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP074 (water) Volatile Organic Compounds	WATER - EP080 BTEXN	WATER - EP231 Perfluorooctyl Acids and Sulfonates
ES1327805-001	16-DEC-2013 15:00	LO_MW01	✓		✓		✓	✓		✓
ES1327805-002	16-DEC-2013 15:00	LO_MW04	✓		✓		✓	✓		✓
ES1327805-003	16-DEC-2013 15:00	LO_MW03	✓		✓		✓	✓		✓
ES1327805-004	16-DEC-2013 15:00	LJ_MW01	✓		✓		✓	✓		
ES1327805-005	16-DEC-2013 15:00	LO_MW10	✓		✓		✓	✓		✓
ES1327805-006		R01_161213_JN		✓		✓				
ES1327805-007		R01_161213_TH		✓		✓				
ES1327805-008	16-DEC-2013 15:00	TS4							✓	

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1327805-001	16-DEC-2013 15:00	LO_MW01		✓
ES1327805-002	16-DEC-2013 15:00	LO_MW04		✓
ES1327805-003	16-DEC-2013 15:00	LO_MW03		✓
ES1327805-004	16-DEC-2013 15:00	LJ_MW01		✓
ES1327805-005	16-DEC-2013 15:00	LO_MW10		✓
ES1327805-006	16-DEC-2013 15:00	R01_161213_JN		✓
ES1327805-007	16-DEC-2013 15:00	R01_161213_TH		✓
ES1327805-009	16-DEC-2013 15:00	TB4	✓	

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
- 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
- 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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1327805**	Page	: 1 of 11
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
Order number	: 0224198		
C-O-C number	: ----	Date Samples Received	: 18-DEC-2013
Sampler	: TH,JN	Issue Date	: 23-DEC-2013
Site	: ----		
		No. of samples received	: 9
Quote number	: SY/794/13	No. of samples analysed	: 9

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.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Lana Nguyen	Senior LCMS 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:Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.**
- **EP231: PFOA & PFOS results are reported as an aggregate of linear and branched isomers.**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LO_MW01	LO_MW04	LO_MW03	LJ_MW01	LO_MW10
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
					ES1327805-001	ES1327805-002	ES1327805-003	ES1327805-004	ES1327805-005
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Arsenic	7440-38-2	0.2	µg/L		**6.8**	**1.0**	<0.2	**1.8**	<0.2
Cadmium	7440-43-9	0.05	µg/L		**0.43**	<0.05	**0.17**	<0.05	**0.40**
Chromium	7440-47-3	0.2	µg/L		**1.7**	<0.2	<0.2	<0.2	<0.2
Copper	7440-50-8	0.5	µg/L		<0.5	**1.5**	**1.9**	<0.5	**1.3**
Lead	7439-92-1	0.1	µg/L		**1.2**	**1.0**	**5.7**	<0.1	**5.4**
Nickel	7440-02-0	0.5	µg/L		**171**	**18.8**	**19.4**	**4.6**	**32.3**
Zinc	7440-66-6	1	µg/L		**82**	**22**	**19**	**13**	**18**
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	<1	<1	<1
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		<5	<5	<5	<5	<5
Isopropylbenzene	98-82-8	5	µg/L		<5	<5	<5	<5	<5
n-Propylbenzene	103-65-1	5	µg/L		<5	<5	<5	<5	<5
1.3.5-Trimethylbenzene	108-67-8	5	µg/L		<5	<5	<5	<5	<5
sec-Butylbenzene	135-98-8	5	µg/L		<5	<5	<5	<5	<5
1.2.4-Trimethylbenzene	95-63-6	5	µg/L		<5	<5	<5	<5	<5
tert-Butylbenzene	98-06-6	5	µg/L		<5	<5	<5	<5	<5
p-Isopropyltoluene	99-87-6	5	µg/L		<5	<5	<5	<5	<5
n-Butylbenzene	104-51-8	5	µg/L		<5	<5	<5	<5	<5
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L		<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L		<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L		<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L		<50	<50	<50	<50	<50
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L		<5	<5	<5	<5	<5
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	<5	<5
1.2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	<5	<5
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	<5	<5
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW01	LO_MW04	LO_MW03	LJ_MW01	LO_MW10
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327805-001	ES1327805-002	ES1327805-003	ES1327805-004	ES1327805-005
EP074D: Fumigants - Continued									
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	<50	<50
1.1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	<5	<5
trans-1.2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	<5	<5
1.1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	<5	<5
cis-1.2-Dichloroethene	156-59-2	5	µg/L		<5	<5	48	<5	<5
1.1.1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	<5	<5
1.1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	<5	<5	<5
1.2-Dichloroethane	107-06-2	5	µg/L		<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L		<5	<5	78	<5	<5
Dibromomethane	74-95-3	5	µg/L		<5	<5	<5	<5	<5
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	<5	<5	<5
1.3-Dichloropropane	142-28-9	5	µg/L		<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	334	<5	<5
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	<5	<5	<5
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L		<5	<5	<5	<5	<5
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L		<5	<5	<5	<5	<5
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	<5	<5	<5
1.2.3-Trichloropropane	96-18-4	5	µg/L		<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L		<5	<5	<5	<5	<5
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L		<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L		<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L		<5	<5	<5	<5	<5

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LO_MW01	LO_MW04	LO_MW03	LJ_MW01	LO_MW10
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
					ES1327805-001	ES1327805-002	ES1327805-003	ES1327805-004	ES1327805-005
EP074F: Halogenated Aromatic Compounds - Continued									
4-Chlorotoluene	106-43-4	5	µg/L		<5	<5	<5	<5	<5
1.3-Dichlorobenzene	541-73-1	5	µg/L		<5	<5	<5	<5	<5
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	<5	<5	<5
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	<5	<5	<5
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	<5	<5	<5
1.2.3-Trichlorobenzene	87-61-6	5	µg/L		<5	<5	<5	<5	<5
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L		<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L		<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L		<5	<5	<5	<5	<5
EP074H: Naphthalene									
Naphthalene	91-20-3	7	µg/L		<7	<7	<7	<7	<7
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
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		**1.3**	**1.7**	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L		**2.2**	<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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW01	LO_MW04	LO_MW03	LJ_MW01	LO_MW10
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327805-001	ES1327805-002	ES1327805-003	ES1327805-004	ES1327805-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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		**3.5**	**1.7**	<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	**520**	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	**70**	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		**780**	**180**	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		**80**	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		**860**	**250**	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	**520**	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	**520**	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	**170**	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		**830**	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		**830**	**170**	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	**170**	<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
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW01	LO_MW04	LO_MW03	LJ_MW01	LO_MW10
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327805-001	ES1327805-002	ES1327805-003	ES1327805-004	ES1327805-005
EP080: BTEXN - Continued									
^ 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
EP231: Perfluorinated Compounds									
PFOS	1763-23-1	0.02	µg/L		<0.02	<0.02	<0.02	----	<0.02
PFOA	335-67-1	0.02	µg/L		<0.02	<0.02	0.08	----	<0.02
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L		<0.1	<0.1	<0.1	----	<0.1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		55.0	63.0	77.0	75.0	77.0
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		124	122	123	129	126
Toluene-D8	2037-26-5	0.1	%		118	115	120	124	123
4-Bromofluorobenzene	460-00-4	0.1	%		107	104	110	113	110
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		31.6	31.2	34.5	32.8	32.9
2-Chlorophenol-D4	93951-73-6	0.1	%		82.8	85.4	96.0	98.5	93.3
2.4.6-Tribromophenol	118-79-6	0.1	%		108	89.8	93.3	79.8	70.3
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		70.9	63.9	96.5	112	106
Anthracene-d10	1719-06-8	0.1	%		80.5	82.8	91.7	92.3	87.6
4-Terphenyl-d14	1718-51-0	0.1	%		94.3	102	112	112	105
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		109	108	109	114	112
Toluene-D8	2037-26-5	0.1	%		110	107	111	115	114
4-Bromofluorobenzene	460-00-4	0.1	%		98.6	96.6	102	103	101

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	R01_161213_JN	R01_161213_TH	TS4	TB4	----
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	----
Compound	CAS Number	LOR	Unit		ES1327805-006	ES1327805-007	ES1327805-008	ES1327805-009	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG094T: Total metals in Fresh water by ORC-ICPMS									
Arsenic	7440-38-2	0.2	µg/L		<0.2	<0.2	----	----	----
Cadmium	7440-43-9	0.05	µg/L		<0.05	<0.05	----	----	----
Chromium	7440-47-3	0.2	µg/L		<0.2	<0.2	----	----	----
Copper	7440-50-8	0.5	µg/L		<0.5	<0.5	----	----	----
Lead	7439-92-1	0.1	µg/L		<0.1	<0.1	----	----	----
Nickel	7440-02-0	0.5	µg/L		<0.5	<0.5	----	----	----
Zinc	7440-66-6	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	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R01_161213_JN	R01_161213_TH	TS4	TB4	----
			Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1327805-006	ES1327805-007	ES1327805-008	ES1327805-009	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
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	----	<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	**14**	<1	----
Toluene	108-88-3	2	µg/L	<2	<2	**14**	<2	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	**15**	<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	**17**	<2	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	**33**	<2	----
^ Sum of BTEX	----	1	µg/L	<1	<1	**76**	<1	----
Naphthalene	91-20-3	5	µg/L	<5	<5	**16**	<5	----
EP075(SIM)S: Phenolic Compound Surrogates								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	R01_161213_JN	R01_161213_TH	TS4	TB4	----
				Client sampling date / time	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	16-DEC-2013 15:00	----
Compound	CAS Number	LOR	Unit		ES1327805-006	ES1327805-007	ES1327805-008	ES1327805-009	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	0.1	%		31.7	30.7	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		93.3	90.2	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		115	76.2	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		107	105	----	----	----
Anthracene-d10	1719-06-8	0.1	%		87.3	86.1	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		107	106	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		88.7	83.8	103	81.1	----
Toluene-D8	2037-26-5	0.1	%		80.3	86.1	118	88.9	----
4-Bromofluorobenzene	460-00-4	0.1	%		85.1	91.0	110	95.1	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	28.5	129
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	78.3	133.2
Toluene-D8	2037-26-5	79.1	128.9
4-Bromofluorobenzene	460-00-4	80.8	123.7
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	: **ES1327805**	Page	: 1 of 14
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	: ----		
C-O-C number	: ----	Date Samples Received	: 18-DEC-2013
Sampler	: TH,JN	Issue Date	: 23-DEC-2013
Order number	: 0224198		
		No. of samples received	: 9
Quote number	: SY/794/13	No. of samples analysed	: 9

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 ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Lana Nguyen	Senior LCMS 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: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 3222930)									
ES1327617-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1327897-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3225452)									
ES1327011-009	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1327890-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3223149)									
ES1327617-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3225692)									
ES1327494-006	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.20	0.23	12.4	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	4.3	4.7	7.8	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.4	0.4	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	2.0	2.2	11.0	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	265	293	10.2	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	192	211	9.3	0% - 20%
ES1327805-003	LO_MW03	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.17	0.18	0.0	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	5.7	6.1	6.1	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	1.9	2.0	0.0	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	19.4	19.3	0.9	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	19	19	0.0	0% - 50%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3225695)									
ES1327893-009	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	<1	<1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3222306)									
ES1327805-001	LO_MW01	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3222306) - continued									
ES1327805-001	LO_MW01	EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 3222306)									
ES1327805-001	LO_MW01	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 3222306)									
ES1327805-001	LO_MW01	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 3222306)									
ES1327805-001	LO_MW01	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3222306)									
ES1327805-001	LO_MW01	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3222306) - continued									
ES1327805-001	LO_MW01	EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 3222306)									
ES1327805-001	LO_MW01	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 3222306)									
ES1327805-001	LO_MW01	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP074H: Naphthalene (QC Lot: 3222306)									
ES1327805-001	LO_MW01	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3222307)									
ES1327805-001	LO_MW01	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3222307)									
ES1327805-001	LO_MW01	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 3222307)									
ES1327805-001	LO_MW01	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
EP231: Perfluorinated Compounds (QC Lot: 3220832)									
EB1331050-001	Anonymous	EP231: PFOS	1763-23-1	0.02	µg/L	12.6	13.8	9.4	0% - 20%
		EP231: PFOA	335-67-1	0.02	µg/L	3.16	2.98	5.9	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 (%)*
EP231: Perfluorinated Compounds (QC Lot: 3220832) - continued									
EB1331050-001	Anonymous	EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES1327805-001	LO_MW01	EP231: PFOS	1763-23-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231: PFOA	335-67-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	<0.1	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: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 3222930)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	94.4	78	114
EG035F: Dissolved Mercury by FIMS (QCLot: 3225452)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	95.6	78	114
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3223149)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	94.4	77	115
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3225692)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	108	75	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	103	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	99.0	71	123
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	96.9	77	125
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	112	74	118
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	110	72	128
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	109	76	134
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225695)								
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	107	81	125
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	90.2	77	111
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	98.6	78	126
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	96.0	78	126
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	106	75	123
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	110	82	124
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	103	75	129
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3220870)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	100 µg/L	101	61.6	107
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3222306)								
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	90.9	74	118
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	95.5	75	121
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	93.1	67	123
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	95.5	70	122
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	97.8	69	123
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	96.7	71	121
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	95.9	70	122
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	95.2	67	123
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	92.2	62	126
EP074B: Oxygenated Compounds (QCLot: 3222306)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074B: Oxygenated Compounds (QCLot: 3222306) - continued								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	85.8	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	89.1	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	91.7	61	139
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	96.0	65	137
EP074C: Sulfonated Compounds (QCLot: 3222306)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	85.5	72.8	127
EP074D: Fumigants (QCLot: 3222306)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	92.8	61	119
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	98.3	76	120
EP074: cis-1.3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	79.5	62	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	70.7	61	119
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	95.6	69	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 3222306)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	62.4	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	71.3	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	109	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	81.9	56	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	86.4	63	135
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	96.2	65	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	87.7	69	123
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	82.4	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	91.4	71	119
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	98.4	75	119
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	93.3	77	117
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	98.8	61	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	93.6	73	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	103	63	121
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	104	78	122
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	98.7	74	120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	99.2	74	118
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	96.5	75	123
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	101	79	121
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	92.3	72	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	100	66	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	89.0	60	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	91.2	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	101	70	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	102	74	128
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	104	71.8	126

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 3222306) - continued								
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	100	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	108	58	132
EP074F: Halogenated Aromatic Compounds (QCLot: 3222306)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	96.6	80	118
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	95.6	76	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	98.2	71	121
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	97.1	71	121
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	96.2	74	120
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	94.3	72	120
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	97.0	77	117
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	92.1	60	126
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	99.8	67	125
EP074G: Trihalomethanes (QCLot: 3222306)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	99.9	76	118
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	101	64	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	102	65	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	108	73.5	126
EP074H: Naphthalene (QCLot: 3222306)								
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	103	61	125
EP075(SIM)A: Phenolic Compounds (QCLot: 3220872)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	20 µg/L	45.4	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	20 µg/L	90.5	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	20 µg/L	76.6	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	40 µg/L	75.7	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	20 µg/L	98.5	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	20 µg/L	89.4	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	20 µg/L	89.3	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	20 µg/L	88.2	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	20 µg/L	93.2	63	119
		1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 3220872) - continued								
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	20 µg/L	86.1	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	20 µg/L	87.3	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	40 µg/L	77.9	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3220872)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	20 µg/L	75.5	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	20 µg/L	98.1	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	20 µg/L	86.8	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	20 µg/L	95.4	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	102	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	20 µg/L	106	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	20 µg/L	105	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	20 µg/L	108	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	20 µg/L	106	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	20 µg/L	107	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	20 µg/L	106	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	20 µg/L	97.8	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	94.7	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	20 µg/L	93.1	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	96.2	59.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220871)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	111	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	123	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	90.0	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: 3220871)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	122	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	110	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	86.2	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
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
EP231: Perfluorinated Compounds (QCLot: 3220832)								
EP231: PFOS	1763-23-1	0.02	µg/L	<0.02	0.25 µg/L	111	70	136
EP231: PFOA	335-67-1	0.02	µg/L	<0.02	0.25 µg/L	124	72	134
EP231: 6:2 Fluorotelomer Sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	1.25 µg/L	97.0	61	145

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	SpikeRecovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 3222930)							
ES1327787-001	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	80.0	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3225452)							
ES1327805-001	LO_MW01	EG035F: Mercury	7439-97-6	0.0100 mg/L	86.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3223149)							

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
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3223149) - continued							
ES1327785-003	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	95.3	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3225692)							
ES1327494-006	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	118	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	95.7	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	95.9	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	92.3	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	104	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	# Not Determined	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	102	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225695)							
ES1327805-006	R01_161213_JN	EG094A-T: Arsenic	7440-38-2	50 µg/L	120	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	104	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	113	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	108	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	118	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	121	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	116	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3222306)							
ES1327805-001	LO_MW01	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	80.2	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	112	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3222306)							
ES1327805-001	LO_MW01	EP074: Chlorobenzene	108-90-7	25 µg/L	119	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3222307)							
ES1327805-001	LO_MW01	EP080: C6 - C9 Fraction	----	325 µg/L	123	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3222307)							
ES1327805-001	LO_MW01	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	70	130
EP080: BTEXN (QCLot: 3222307)							
ES1327805-001	LO_MW01	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	108-38-3 106-42-3	25 µg/L	105	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	108	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	109	70	130
EP231: Perfluorinated Compounds (QCLot: 3220832)							
EB1331050-001	Anonymous						

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231: Perfluorinated Compounds (QCLot: 3220832) - continued							
EB1331050-001	Anonymous	EP231: PFOS	1763-23-1	0.25 µg/L	# Not Determined	70	136
		EP231: PFOA	335-67-1	0.25 µg/L	# Not Determined	72	134
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	107	61	145

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**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report: Spike Concentration	Spike Recovery (%): MS	Spike Recovery (%): MSD	Recovery Limits (%): Low	Recovery Limits (%): High	RPDs (%): Value	RPDs (%): Control Limit
EP231: Perfluorinated Compounds (QCLot: 3220832)										
EB1331050-001	Anonymous	EP231: PFOS	1763-23-1	0.25 µg/L	# Not Determined	----	70	136	----	----
		EP231: PFOA	335-67-1	0.25 µg/L	# Not Determined	----	72	134	----	----
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	107	----	61	145	----	----
EP074E: Halogenated Aliphatic Compounds (QCLot: 3222306)										
ES1327805-001	LO_MW01	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	80.2	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	25 µg/L	112	----	70	130	----	----
EP074F: Halogenated Aromatic Compounds (QCLot: 3222306)										
ES1327805-001	LO_MW01	EP074: Chlorobenzene	108-90-7	25 µg/L	119	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3222307)										
ES1327805-001	LO_MW01	EP080: C6 - C9 Fraction	----	325 µg/L	123	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3222307)										
ES1327805-001	LO_MW01	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	----	70	130	----	----
EP080: BTEXN (QCLot: 3222307)										
ES1327805-001	LO_MW01	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	108-38-3 106-42-3	25 µg/L	105	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	108	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	109	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3222930)										
ES1327787-001	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	80.0	----	70	130	----	----

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: 3223149)										
ES1327785-003	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	95.3	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3225452)										
ES1327805-001	LO_MW01	EG035F: Mercury	7439-97-6	0.0100 mg/L	86.7	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3225692)										
ES1327494-006	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	118	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	95.7	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	95.9	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	92.3	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	104	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	102	----	70	130	----	----
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225695)										
ES1327805-006	R01_161213_JN	EG094A-T: Arsenic	7440-38-2	50 µg/L	120	----	70	130	----	----
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	104	----	70	130	----	----
		EG094A-T: Chromium	7440-47-3	50 µg/L	113	----	70	130	----	----
		EG094A-T: Copper	7440-50-8	50 µg/L	108	----	70	130	----	----
		EG094A-T: Lead	7439-92-1	50 µg/L	118	----	70	130	----	----
		EG094A-T: Nickel	7440-02-0	50 µg/L	121	----	70	130	----	----
		EG094A-T: Zinc	7440-66-6	50 µg/L	116	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1327805**	Page	: 1 of 10
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	: ----		
C-O-C number	: ----	Date Samples Received	: 18-DEC-2013
Sampler	: TH,JN	Issue Date	: 23-DEC-2013
Order number	: 0224198		
		No. of samples received	: 9
Quote number	: SY/794/13	No. of samples analysed	: 9

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
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LO_MW04, LO_MW03	**16-DEC-2013**	**---**	13-JAN-2014	----	**20-DEC-2013**	13-JAN-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LO_MW01, LJ_MW01, LO_MW10	**16-DEC-2013**	**---**	13-JAN-2014	----	**21-DEC-2013**	13-JAN-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T)							
R01_161213_TH		**----**	----	----	**20-DEC-2013**	----	----
Clear HDPE (U-T ORC) - Unspecified; Lab-acidified (EG035T)							
R01_161213_JN		**----**	----	----	**20-DEC-2013**	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10	**16-DEC-2013**	**---**	14-JUN-2014	----	**22-DEC-2013**	14-JUN-2014	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T)							
R01_161213_TH		**22-DEC-2013**	---	----	**22-DEC-2013**	----	----
Clear HDPE (U-T ORC) - Unspecified; Lab-acidified (EG094A-T)							
R01_161213_JN		**22-DEC-2013**	---	----	**22-DEC-2013**	----	----
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10	**16-DEC-2013**	**19-DEC-2013**	23-DEC-2013	✓	**20-DEC-2013**	28-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber Glass Bottle - Unpreserved (EP071)							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10, R01_161213_JN, R01_161213_TH	**16-DEC-2013**	**19-DEC-2013**	23-DEC-2013	✓	**19-DEC-2013**	28-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
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-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
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10, R01_161213_JN, R01_161213_TH	**16-DEC-2013**	**19-DEC-2013**	23-DEC-2013	✓	**19-DEC-2013**	28-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10, R01_161213_JN, R01_161213_TH	**16-DEC-2013**	**19-DEC-2013**	23-DEC-2013	✓	**19-DEC-2013**	28-JAN-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10, R01_161213_JN, R01_161213_TH, TS4, TB4	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber VOC Vial - Sulfuric Acid (EP080)							
LO_MW01, LO_MW04, LO_MW03, LJ_MW01, LO_MW10, R01_161213_JN, R01_161213_TH, TB4	**16-DEC-2013**	**19-DEC-2013**	30-DEC-2013	✓	**19-DEC-2013**	30-DEC-2013	✓
EP231: Perfluorinated Compounds							
HDPE (no PTFE) (EP231)							
LO_MW01, LO_MW04, LO_MW03, LO_MW10	**16-DEC-2013**	**---**	14-JUN-2014	----	**19-DEC-2013**	14-JUN-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: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	4	31	**12.9**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	2	14	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	4	**25.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	**20.0**	**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
Volatile Organic Compounds	EP074	1	6	**16.7**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	2	31	**6.5**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	4	**25.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	7	**14.3**	**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
Volatile Organic Compounds	EP074	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	2	31	**6.5**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	4	**25.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	7	**14.3**	**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
Volatile Organic Compounds	EP074	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	2	31	**6.5**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	4	**25.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	**20.0**	**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: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Volatile Organic Compounds	EP074	1	6	**16.7**	**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
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 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)
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 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)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. 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)
Volatile Organic Compounds	EP074	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. 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)

Analytical Methods	Method	Matrix	Method Descriptions
PFOS and PFOA	EP231	WATER	In-house: Direct injection analysis of fresh and diluted saline waters. In order to meet standard reporting limits, saline waters may be adsorped onto a solid phase extraction medium, the salt washed out and the sample eluted for analysis. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM.

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	Modified USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Lab Acidification of Metals	EN80	WATER	USEPA Method 200.8
Lab Acidification of Dissolved Metals	EN80F	WATER	US EPA Method 200.8
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 SW 846 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
Matrix Spike (MS) Recoveries							
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1327494-006	Anonymous	**Nickel**	7440-02-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231: Perfluorinated Compounds	EB1331050-001	Anonymous	**PFOS**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231: Perfluorinated Compounds	EB1331050-001	Anonymous	**PFOA**	335-67-1	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: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	ES1327805-003	LO_MW03	**2-Chlorophenol-D4**	93951-73-6	96.0 %	14-94 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	ES1327805-004	LJ_MW01	**2-Chlorophenol-D4**	93951-73-6	98.5 %	14-94 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	ES1327805-005	LO_MW10	**2-Fluorobiphenyl**	321-60-8	106 %	20-104 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	ES1327805-007	R01_161213_TH	**2-Fluorobiphenyl**	321-60-8	105 %	20-104 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	ES1327805-004	LJ_MW01	**2-Fluorobiphenyl**	321-60-8	112 %	20-104 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	ES1327805-006	R01_161213_JN	**2-Fluorobiphenyl**	321-60-8	107 %	20-104 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	ES1327805-003	LO_MW03	**4-Terphenyl-d14**	1718-51-0	112 %	32-112 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	ES1327805-004	LJ_MW01	**4-Terphenyl-d14**	1718-51-0	112 %	32-112 %	**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: ☐ Standard TAT (List due date): 48hr TAT	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):	Custody Seal Intact?	Yes / No / N/A
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7	
ORDER NUMBER: 0224198	SITE: BAYSWATER / LIDDELL	OF: 1 2 3 4 5 6 7	
PROJECT MANAGER: Joe Fenning	CONTACT PH:	Frozen ice bricks present upon receipt:	Yes / No / N/A
SAMPLER: JN.	SAMPLER MOBILE: 0403132979	Random Sample Temperature on Receipt:	°C
COC emailed to ALS? (YES / (NO)	EDD FORMAT (or default):	Other comment: 4-9c	
Email Reports to (will default to PM if no other addresses are listed): Symphony.pacgen@erm.com	RELINQUISHED BY: Tim Hayden	RECEIVED BY:	RELINQUISHED BY:
Email Invoice to (will default to PM if no other addresses are listed):	DATE/TIME: 18/12/13. 7AM.	DATE/TIME: 19/12 14:10	DATE/TIME: 19/12 17:00

RECEIVED BY: Sony
DATE/TIME: 19/12/13 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 (refer to codes below)	TOTAL CONTAINERS	S-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, Tl, Se) Hg	S-24 TRH(C6-C40)/BTEXN, PAH, Phenols	VOC Target Scan	PCB	pH (1:5)	Exchangeable cations (ED007)	PFOS/PFOA	Asbestos (absence/presence)	Particle Sizing to 75µm (Sieve)	Organic Matter plus Total Organic Carbon (EP004)	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LO_MW13	17-12-13/7:58	GW		9	X		X	X	X			X				
2	LO_MW11	17-12-13/9:13			7	X		X	X	X			X				
3	LO_MW08	17-12-13/11:31			10	X		X	X	X			X				
4	LO_MW17	17-12-13/11:56			10	X		X	X	X			X				
5	LV_MW04	17-12-13/14:26			6	X		X									
6	LI_MW09	17-12-13/15:52			6	X		X									
7	LB_MW13	17-12-13/17:21			6		X	X									
8	R801_171213_JN	17-12-13	GW		6		X	X									
9	TripBlank_171213_JN				1												
10	TripSpike_171213_JN				1												

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

TAT

Environmental Division
Sydney
Work Order
ES1327888

Telephone : +61-2-8784 8555

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES1327888**		
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	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: ----		
Sampler	: JN	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 19-DEC-2013	Issue Date	: 20-DEC-2013 18:01
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	: 10
Security Seal	: Intact.	No. of samples analysed	: 10

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).**
- 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.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES1327888-009 : 17-DEC-2013 15:00 : TRIP BLANK 11_171213_JN

ES1327888-010 : 17-DEC-2013 15:00 : TRIP SPIKE 5_171213_JN

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary 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 - EG035F Dissolved Mercury by FIMS	WATER - EG035T Total Mercury by FIMS	WATER - EG094A-F Dissolved Metals in Fresh Water Suite	WATER - EG094A-T Total Metals in Fresh water Suite A by	WATER - EG094B-F Dissolved Metals in fresh water	WATER - EG094B-T Total Metals in Fresh Water Suite B by	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP074 (water) Volatile Organic Compounds
ES1327888-001	17-DEC-2013 07:58	LO_MW13	✓		✓				✓	✓
ES1327888-002	17-DEC-2013 09:13	LO_MW11							✓	✓
ES1327888-003	17-DEC-2013 11:31	LO_MW08	✓		✓				✓	✓
ES1327888-004	17-DEC-2013 11:50	LO_MW17	✓		✓				✓	✓
ES1327888-005	17-DEC-2013 14:26	LV_MW04	✓		✓					
ES1327888-006	17-DEC-2013 15:50	LI_MW09	✓		✓					
ES1327888-007	17-DEC-2013 17:20	LB_MW13	✓		✓		✓			
ES1327888-008	17-DEC-2013 15:00	R01_1712123_JN		✓		✓		✓		

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP080 BTEXN	WATER - EP231 Perfluorooctyl Acids and Sulfonates	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols	WATER - W-27 TRH/BTEXN/PAH/Phenols/8 Metals
ES1327888-001	17-DEC-2013 07:58	LO_MW13		✓		✓	
ES1327888-002	17-DEC-2013 09:13	LO_MW11		✓			✓
ES1327888-003	17-DEC-2013 11:31	LO_MW08		✓		✓	
ES1327888-004	17-DEC-2013 11:50	LO_MW17		✓		✓	
ES1327888-005	17-DEC-2013 14:26	LV_MW04				✓	
ES1327888-006	17-DEC-2013 15:50	LI_MW09				✓	
ES1327888-007	17-DEC-2013 17:20	LB_MW13				✓	
ES1327888-008	17-DEC-2013 15:00	R01_1712123_JN				✓	
ES1327888-009	17-DEC-2013 15:00	TRIP BLANK 11_171213...			✓		
ES1327888-010	17-DEC-2013 15:00	TRIP SPIKE 5_171213_...	✓				

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1327888**	Page	: 1 of 13
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
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 19-DEC-2013
Sampler	: JN	Issue Date	: 23-DEC-2013
Site	: ----		
		No. of samples received	: 10
Quote number	: SY/794/13	No. of samples analysed	: 10

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.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Lana Nguyen	Senior LCMS Chemist	Sydney Organics
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: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LO_MW13	LO_MW11	LO_MW08	LO_MW17	LV_MW04
				Client sampling date / time	17-DEC-2013 07:58	17-DEC-2013 09:13	17-DEC-2013 11:31	17-DEC-2013 11:50	17-DEC-2013 14:26
					ES1327888-001	ES1327888-002	ES1327888-003	ES1327888-004	ES1327888-005
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		----	**0.006**	----	----	----
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		----	**0.055**	----	----	----
Nickel	7440-02-0	0.001	mg/L		----	**0.005**	----	----	----
Zinc	7440-66-6	0.005	mg/L		----	**0.007**	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Arsenic	7440-38-2	0.2	µg/L		**7.1**	----	**0.8**	**0.2**	**0.9**
Cadmium	7440-43-9	0.05	µg/L		<0.05	----	**6.15**	**0.16**	**0.95**
Chromium	7440-47-3	0.2	µg/L		<0.2	----	**0.2**	<0.2	**0.2**
Copper	7440-50-8	0.5	µg/L		**0.8**	----	**1.5**	**1.0**	**1.3**
Lead	7439-92-1	0.1	µg/L		**31.5**	----	**2.7**	**8.8**	**12.1**
Nickel	7440-02-0	0.5	µg/L		**6.5**	----	**319**	**10.9**	**33.1**
Zinc	7440-66-6	1	µg/L		**9**	----	**212**	**14**	**34**
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	<1	<1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
Styrene	100-42-5	5	µg/L		<5	<5	<5	<5	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
Isopropylbenzene	98-82-8	5	µg/L		<5	<5	<5	<5	----
n-Propylbenzene	103-65-1	5	µg/L		<5	<5	<5	<5	----
1.3.5-Trimethylbenzene	108-67-8	5	µg/L		<5	<5	<5	<5	----
sec-Butylbenzene	135-98-8	5	µg/L		<5	<5	<5	<5	----
1.2.4-Trimethylbenzene	95-63-6	5	µg/L		<5	<5	<5	<5	----
tert-Butylbenzene	98-06-6	5	µg/L		<5	<5	<5	<5	----
p-Isopropyltoluene	99-87-6	5	µg/L		<5	<5	<5	<5	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW13	LO_MW11	LO_MW08	LO_MW17	LV_MW04
				Client sampling date / time	17-DEC-2013 07:58	17-DEC-2013 09:13	17-DEC-2013 11:31	17-DEC-2013 11:50	17-DEC-2013 14:26
Compound	CAS Number	LOR	Unit		ES1327888-001	ES1327888-002	ES1327888-003	ES1327888-004	ES1327888-005
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
n-Butylbenzene	104-51-8	5	µg/L		<5	<5	<5	<5	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L		<50	<50	<50	<50	----
2-Butanone (MEK)	78-93-3	50	µg/L		<50	<50	<50	<50	----
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L		<50	<50	<50	<50	----
2-Hexanone (MBK)	591-78-6	50	µg/L		<50	<50	<50	<50	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L		<5	<5	<5	<5	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	<5	----
1.2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	<5	----
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	<5	----
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	<5	----
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	<5	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	<50	----
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	<50	----
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	<50	----
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	<50	----
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	<50	----
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	<50	----
1.1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	<5	----
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	<5	----
trans-1.2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	<5	----
1.1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	<5	----
cis-1.2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	<5	----
1.1.1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	<5	----
1.1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	<5	----
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	<5	<5	----
1.2-Dichloroethane	107-06-2	5	µg/L		<5	<5	<5	<5	----
Trichloroethene	79-01-6	5	µg/L		<5	<5	<5	<5	----
Dibromomethane	74-95-3	5	µg/L		<5	<5	<5	<5	----
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	<5	<5	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW13	LO_MW11	LO_MW08	LO_MW17	LV_MW04
				Client sampling date / time	17-DEC-2013 07:58	17-DEC-2013 09:13	17-DEC-2013 11:31	17-DEC-2013 11:50	17-DEC-2013 14:26
Compound	CAS Number	LOR	Unit		ES1327888-001	ES1327888-002	ES1327888-003	ES1327888-004	ES1327888-005
EP074E: Halogenated Aliphatic Compounds - Continued									
1.3-Dichloropropane	142-28-9	5	µg/L		<5	<5	<5	<5	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	<5	<5	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	<5	<5	----
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L		<5	<5	<5	<5	----
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L		<5	<5	<5	<5	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	<5	<5	----
1.2.3-Trichloropropane	96-18-4	5	µg/L		<5	<5	<5	<5	----
Pentachloroethane	76-01-7	5	µg/L		<5	<5	<5	<5	----
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L		<5	<5	<5	<5	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	<5	<5	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	<5	<5	----
Bromobenzene	108-86-1	5	µg/L		<5	<5	<5	<5	----
2-Chlorotoluene	95-49-8	5	µg/L		<5	<5	<5	<5	----
4-Chlorotoluene	106-43-4	5	µg/L		<5	<5	<5	<5	----
1.3-Dichlorobenzene	541-73-1	5	µg/L		<5	<5	<5	<5	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	<5	<5	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	<5	<5	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	<5	<5	----
1.2.3-Trichlorobenzene	87-61-6	5	µg/L		<5	<5	<5	<5	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	<5	<5	----
Bromodichloromethane	75-27-4	5	µg/L		<5	<5	<5	<5	----
Dibromochloromethane	124-48-1	5	µg/L		<5	<5	<5	<5	----
Bromoform	75-25-2	5	µg/L		<5	<5	<5	<5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	7	µg/L		<7	<7	<7	<7	----
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW13	LO_MW11	LO_MW08	LO_MW17	LV_MW04
				Client sampling date / time	17-DEC-2013 07:58	17-DEC-2013 09:13	17-DEC-2013 11:31	17-DEC-2013 11:50	17-DEC-2013 14:26
Compound	CAS Number	LOR	Unit		ES1327888-001	ES1327888-002	ES1327888-003	ES1327888-004	ES1327888-005
EP075(SIM)A: Phenolic Compounds - Continued									
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
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	**370**	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	**370**	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW13	LO_MW11	LO_MW08	LO_MW17	LV_MW04
				Client sampling date / time	17-DEC-2013 07:58	17-DEC-2013 09:13	17-DEC-2013 11:31	17-DEC-2013 11:50	17-DEC-2013 14:26
Compound	CAS Number	LOR	Unit		ES1327888-001	ES1327888-002	ES1327888-003	ES1327888-004	ES1327888-005
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued									
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	**140**	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	**280**	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	**420**	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	**140**	<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
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
EP231: Perfluorinated Compounds									
PFOS	1763-23-1	0.02	µg/L		**0.09**	**0.04**	<0.02	<0.02	----
PFOA	335-67-1	0.02	µg/L		**0.03**	<0.02	<0.02	<0.02	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**62.8**	**64.9**	**68.3**	**61.5**	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**125**	**130**	**129**	**128**	----
Toluene-D8	2037-26-5	0.1	%		**119**	**111**	**112**	**111**	----
4-Bromofluorobenzene	460-00-4	0.1	%		**110**	**107**	**104**	**102**	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**41.8**	**36.0**	**44.7**	**38.2**	**31.4**
2-Chlorophenol-D4	93951-73-6	0.1	%		**82.8**	**89.4**	**94.7**	**80.2**	**52.5**
2.4.6-Tribromophenol	118-79-6	0.1	%		**97.1**	**116**	**121**	**98.8**	**78.2**
EP075(SIM)T: PAH Surrogates									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW13	LO_MW11	LO_MW08	LO_MW17	LV_MW04
				Client sampling date / time	17-DEC-2013 07:58	17-DEC-2013 09:13	17-DEC-2013 11:31	17-DEC-2013 11:50	17-DEC-2013 14:26
Compound	CAS Number	LOR	Unit		ES1327888-001	ES1327888-002	ES1327888-003	ES1327888-004	ES1327888-005
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.1	%		97.1	43.8	89.3	88.8	61.6
Anthracene-d10	1719-06-8	0.1	%		84.7	97.1	95.5	79.9	67.1
4-Terphenyl-d14	1718-51-0	0.1	%		105	120	118	99.9	85.5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		117	116	114	114	115
Toluene-D8	2037-26-5	0.1	%		110	102	104	103	102
4-Bromofluorobenzene	460-00-4	0.1	%		102	98.1	94.4	93.9	93.8

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LI_MW09	LB_MW13	R01_1712123_JN	TRIP BLANK 11_171213_JN	TRIP SPIKE 5_171213_JN
				Client sampling date / time	17-DEC-2013 15:50	17-DEC-2013 17:20	17-DEC-2013 15:00	17-DEC-2013 15:00	17-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327888-006	ES1327888-007	ES1327888-008	ES1327888-009	ES1327888-010
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	----	<0.0001	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Selenium	7782-49-2	0.2	µg/L		----	<0.2	----	----	----
Arsenic	7440-38-2	0.2	µg/L		**1.4**	<0.2	----	----	----
Barium	7440-39-3	0.5	µg/L		----	**22.6**	----	----	----
Beryllium	7440-41-7	0.1	µg/L		----	<0.1	----	----	----
Boron	7440-42-8	5	µg/L		----	**1630**	----	----	----
Cadmium	7440-43-9	0.05	µg/L		**0.06**	**0.08**	----	----	----
Chromium	7440-47-3	0.2	µg/L		**0.2**	<0.2	----	----	----
Cobalt	7440-48-4	0.1	µg/L		----	**1.6**	----	----	----
Copper	7440-50-8	0.5	µg/L		**1.4**	**2.2**	----	----	----
Lead	7439-92-1	0.1	µg/L		**8.1**	**1.4**	----	----	----
Manganese	7439-96-5	0.5	µg/L		----	**912**	----	----	----
Molybdenum	7439-98-7	0.1	µg/L		----	**9.0**	----	----	----
Nickel	7440-02-0	0.5	µg/L		**5.3**	**7.9**	----	----	----
Thallium	7440-28-0	0.02	µg/L		----	**0.32**	----	----	----
Vanadium	7440-62-2	0.2	µg/L		----	<0.2	----	----	----
Zinc	7440-66-6	1	µg/L		**17**	**23**	----	----	----
EG094T: Total metals in Fresh water by ORC-ICPMS									
Selenium	7782-49-2	0.2	µg/L		----	----	<0.2	----	----
Arsenic	7440-38-2	0.2	µg/L		----	----	<0.2	----	----
Barium	7440-39-3	0.5	µg/L		----	----	<0.5	----	----
Beryllium	7440-41-7	0.1	µg/L		----	----	<0.1	----	----
Boron	7440-42-8	5	µg/L		----	----	<5	----	----
Cadmium	7440-43-9	0.05	µg/L		----	----	<0.05	----	----
Chromium	7440-47-3	0.2	µg/L		----	----	<0.2	----	----
Cobalt	7440-48-4	0.1	µg/L		----	----	<0.1	----	----
Copper	7440-50-8	0.5	µg/L		----	----	<0.5	----	----
Lead	7439-92-1	0.1	µg/L		----	----	<0.1	----	----
Manganese	7439-96-5	0.5	µg/L		----	----	<0.5	----	----
Molybdenum	7439-98-7	0.1	µg/L		----	----	<0.1	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID: LI_MW09	LB_MW13	R01_1712123_JN	TRIP BLANK 11_171213_JN	TRIP SPIKE 5_171213_JN
				Client sampling date / time: 17-DEC-2013 15:50	17-DEC-2013 17:20	17-DEC-2013 15:00	17-DEC-2013 15:00	17-DEC-2013 15:00
				ES1327888-006	ES1327888-007	ES1327888-008	ES1327888-009	ES1327888-010
EG094T: Total metals in Fresh water by ORC-ICPMS - Continued								
Nickel	7440-02-0	0.5	µg/L	----	----	<0.5	----	----
Titanium	7440-32-6	1	µg/L	----	----	<1	----	----
Vanadium	7440-62-2	0.2	µg/L	----	----	<0.2	----	----
Zinc	7440-66-6	1	µg/L	----	----	<1	----	----
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	----	----
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	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LI_MW09	LB_MW13	R01_1712123_JN	TRIP BLANK 11_171213_JN	TRIP SPIKE 5_171213_JN
				Client sampling date / time	17-DEC-2013 15:50	17-DEC-2013 17:20	17-DEC-2013 15:00	17-DEC-2013 15:00	17-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327888-006	ES1327888-007	ES1327888-008	ES1327888-009	ES1327888-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	17
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	16
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	16
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	<2	31
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	79
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	18
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		27.3	42.8	32.2	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		54.0	74.6	83.3	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		66.9	86.5	103	----	----
EP075(SIM)T: PAH Surrogates									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LI_MW09	LB_MW13	R01_1712123_JN	TRIP BLANK 11_171213_JN	TRIP SPIKE 5_171213_JN
				Client sampling date / time	17-DEC-2013 15:50	17-DEC-2013 17:20	17-DEC-2013 15:00	17-DEC-2013 15:00	17-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327888-006	ES1327888-007	ES1327888-008	ES1327888-009	ES1327888-010
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.1	%		59.9	82.4	93.8	----	----
Anthracene-d10	1719-06-8	0.1	%		56.6	75.6	83.0	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		68.6	87.4	105	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		115	112	110	109	109
Toluene-D8	2037-26-5	0.1	%		103	100	97.1	93.0	93.8
4-Bromofluorobenzene	460-00-4	0.1	%		95.0	94.1	90.4	87.7	94.2

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	28.5	129
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	78.3	133.2
Toluene-D8	2037-26-5	79.1	128.9
4-Bromofluorobenzene	460-00-4	80.8	123.7
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	: **ES1327888**	Page	: 1 of 23
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	: ----		
C-O-C number	: ----	Date Samples Received	: 19-DEC-2013
Sampler	: JN	Issue Date	: 23-DEC-2013
Order number	: ----		
		No. of samples received	: 10
Quote number	: SY/794/13	No. of samples analysed	: 10

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 ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Lana Nguyen	Senior LCMS Chemist	Sydney Organics
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 (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3225453)									
ES1327888-002	LO_MW11	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	0.006	0.006	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	0.055	0.055	0.0	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.005	0.004	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.007	0.006	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3225452)									
ES1327011-009	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1327890-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3225615)									
ES1327888-005	LV_MW04	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1327964-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3225485)									
ES1327888-008	R01_1712123_JN	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3225692)									
ES1327494-006	Anonymous	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.10	0.09	11.3	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.20	0.23	12.4	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	1.3	1.3	0.0	0% - 50%
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	96.1	86.7	10.3	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	4.3	4.7	7.8	0% - 20%
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	0.4	0.5	0.0	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.4	0.4	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	24.6	26.7	8.2	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	2.0	2.2	11.0	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	6060	6710	10.2	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	265	293	10.2	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	192	211	9.3	0% - 20%
		EG094A-F: Boron	7440-42-8	5	µg/L	14	15	0.0	No Limit
ES1327805-003	Anonymous	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.20	0.21	0.0	0% - 50%
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.17	0.18	0.0	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	4.3	4.4	0.0	0% - 20%

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3225692) - continued									
ES1327805-003	Anonymous	EG094A-F: Lead	7439-92-1	0.1	µg/L	5.7	6.1	6.1	0% - 20%
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	2.9	2.8	0.0	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	0.5	0.5	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	33.3	34.2	2.4	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	1.9	2.0	0.0	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	1070	1050	2.4	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	19.4	19.3	0.9	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	19	19	0.0	0% - 50%
		EG094A-F: Boron	7440-42-8	5	µg/L	364	358	1.8	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3225693)									
ES1327494-006	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	0.2	0.3	0.0	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3225695)									
ES1327893-009	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Barium	7440-39-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Titanium	7440-32-6	1	µg/L	<1	<1	0.0	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	<1	<1	0.0	No Limit
		EG094A-T: Boron	7440-42-8	5	µg/L	<5	<5	0.0	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3225696)									
ES1327893-009	Anonymous	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3223004)									
ES1327459-005	Anonymous	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3223004) - continued									
ES1327459-005	Anonymous	EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
ES1327888-001	LO_MW13	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 3223004)									
ES1327459-005	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
ES1327888-001	LO_MW13	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 3223004)									
ES1327459-005	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
ES1327888-001	LO_MW13	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 3223004)									
ES1327459-005	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	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 (%)*
EP074D: Fumigants (QC Lot: 3223004) - continued									
ES1327888-001	LO_MW13	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3223004)									
ES1327459-005	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES1327888-001	LO_MW13	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	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 (%)*
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3223004) - continued									
ES1327888-001	LO_MW13	EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 3223004)									
ES1327459-005	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
ES1327888-001	LO_MW13	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	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 (%)*
EP074F: Halogenated Aromatic Compounds (QC Lot: 3223004) - continued									
ES1327888-001	LO_MW13	EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 3223004)									
ES1327459-005	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
ES1327888-001	LO_MW13	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP074H: Naphthalene (QC Lot: 3223004)									
ES1327459-005	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
ES1327888-001	LO_MW13	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3223323)									
ES1327893-002	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
ES1327890-001	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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3223323)									
ES1327893-002	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	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: 3223323) - continued									
ES1327893-002	Anonymous	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
ES1327890-001	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: 3223003)									
ES1327459-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1327888-001	LO_MW13	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3223322)									
ES1327893-002	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
ES1327890-001	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

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: 3223322) - continued									
ES1327890-001	Anonymous	EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3223003)									
ES1327459-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1327888-001	LO_MW13	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3223322)									
ES1327893-002	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
ES1327890-001	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: BTEXN (QC Lot: 3223003)									
ES1327459-005	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
ES1327888-001	LO_MW13	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
EP231: Perfluorinated Compounds (QC Lot: 3224111)									
EM1313350-001	Anonymous	EP231: PFOS	1763-23-1	0.02	µg/L	0.49	0.43	12.4	0% - 20%
		EP231: PFOA	335-67-1	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES1327893-004	Anonymous	EP231: PFOS	1763-23-1	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231: PFOA	335-67-1	0.02	µg/L	0.08	0.08	0.0	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	<0.1	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: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3225453)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.3	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	88.7	81	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.1	80	112
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.4	83	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	86.2	81	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	88.0	80	116
EG035F: Dissolved Mercury by FIMS (QCLot: 3225452)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	95.6	78	114
EG035F: Dissolved Mercury by FIMS (QCLot: 3225615)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	106	78	114
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225485)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	85.3	77	115
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3225692)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	108	75	129
EG094A-F: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	112	76	120
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	99.7	74	130
EG094A-F: Boron	7440-42-8	5	µg/L	<5	10 µg/L	127	79	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	103	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	99.0	71	123
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	105	79	121
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	96.9	77	125
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	112	74	118
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	103	79	119
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	95.6	69	127
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	110	72	128
EG094A-F: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	102	71	121
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	105	78	116
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	109	76	134
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3225693)								
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	106	75	125
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225695)								
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	107	81	125
EG094A-T: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	99.9	81	117

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225695) - continued								
EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	82.9	71	127
EG094A-T: Boron	7440-42-8	5	µg/L	<5	----	----	----	----
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	90.2	77	111
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	98.6	78	126
EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	106	78	126
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	96.0	78	126
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	106	75	123
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	92.0	81	121
EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	101	77	127
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	110	82	124
EG094A-T: Titanium	7440-32-6	1	µg/L	<1	10 µg/L	93.8	71	127
EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	106	82	118
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	103	75	129
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225696)								
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	104	78	124
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3223325)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	80.0	61.6	107
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3223004)								
EP074: Benzene	71-43-2	1	µg/L	<1	10 µg/L	101	78	116
EP074: Toluene	108-88-3	2	µg/L	<2	10 µg/L	111	68	128
EP074: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	74	118
EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	20 µg/L	98.1	74	122
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	93.8	74	118
EP074: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	105	77	121
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	94.4	75	121
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	91.4	67	123
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	92.2	70	122
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	94.9	69	123
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	92.6	71	121
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	93.8	70	122
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	94.4	67	123
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	91.2	62	126
EP074B: Oxygenated Compounds (QCLot: 3223004)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	86.3	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	92.7	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	91.4	61	139
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	92.2	65	137

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074C: Sulfonated Compounds (QCLot: 3223004)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	86.9	72.8	127
EP074D: Fumigants (QCLot: 3223004)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	85.8	61	119
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	97.6	76	120
EP074: cis-1.3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	74.3	62	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	69.7	61	119
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	92.8	69	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 3223004)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	69.4	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	80.1	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	93.2	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	85.9	56	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	93.0	63	135
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	90.7	65	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	88.7	69	123
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	90.7	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	94.9	71	119
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	97.6	75	119
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	95.3	77	117
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	90.2	61	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	91.8	73	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	91.7	63	121
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	99.2	78	122
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	95.4	74	120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	98.0	74	118
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	94.1	75	123
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	98.3	79	121
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	92.1	72	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	87.0	66	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	88.3	60	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	85.1	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	92.7	70	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	97.4	74	128
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	89.0	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	90.7	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	95.9	58	132
EP074F: Halogenated Aromatic Compounds (QCLot: 3223004)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	95.6	80	118
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	92.7	76	116

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074F: Halogenated Aromatic Compounds (QCLot: 3223004) - continued								
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	95.1	71	121
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	94.4	71	121
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	94.7	74	120
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	93.9	72	120
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	94.9	77	117
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	88.9	60	126
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	94.4	67	125
EP074G: Trihalomethanes (QCLot: 3223004)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	97.0	76	118
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	93.0	64	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	93.6	65	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	98.7	73.5	126
EP074H: Naphthalene (QCLot: 3223004)								
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	107	61	125
EP075(SIM)A: Phenolic Compounds (QCLot: 3223323)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	# 71.0	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	82.9	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	95.6	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	85.9	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	67.4	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	98.5	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	94.4	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	91.4	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	102	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	99.4	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	97.7	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	68.4	8.7	95
		2	µg/L	<2.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)A: Phenolic Compounds (QCLot: 3223327)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	20 µg/L	42.1	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	20 µg/L	95.4	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	20 µg/L	87.5	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	40 µg/L	78.6	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	20 µg/L	74.4	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	20 µg/L	91.0	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	20 µg/L	92.2	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	20 µg/L	92.1	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	20 µg/L	94.6	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	20 µg/L	88.3	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	20 µg/L	91.1	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	40 µg/L	47.8	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223323)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	67.7	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	95.5	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	83.8	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	101	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	93.0	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	93.0	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	104	63.6	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 (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223323) - continued								
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	102	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	115	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	103	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	# 125	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	110	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	111	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	108	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	111	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	118	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: 3223327)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	20 µg/L	77.9	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	20 µg/L	97.1	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	20 µg/L	82.6	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	20 µg/L	92.4	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	20 µg/L	106	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	20 µg/L	108	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	20 µg/L	112	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	20 µg/L	112	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	# 116	62.5	116
		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 (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223327) - continued								
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	20 µg/L	104	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	20 µg/L	90.1	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	20 µg/L	110	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	99.1	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	20 µg/L	96.6	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	102	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: 3223003)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	99.7	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223322)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	113	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	122	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	93.2	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223326)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	79.8	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	121	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	86.9	62	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223003)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	101	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223322)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	95.2	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	113	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	89.6	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223326)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	105	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	90.2	67	127
EP080: BTEXN (QCLot: 3223003)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	94.5	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	95.5	65	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080: BTEXN (QCLot: 3223003) - continued								
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	89.4	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	90.7	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	91.5	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	79.9	70	124
EP231: Perfluorinated Compounds (QCLot: 3224111)								
EP231: PFOS	1763-23-1	0.02	µg/L	<0.02	0.25 µg/L	122	70	136
EP231: PFOA	335-67-1	0.02	µg/L	<0.02	0.25 µg/L	123	72	134
EP231: 6:2 Fluorotelomer Sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	1.25 µg/L	112	61	145

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	Recovery Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3225453)							
ES1327888-002	LO_MW11	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	125	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	120	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	101	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	128	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	110	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	109	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	99.4	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3225452)							
ES1327805-001	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	86.7	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3225615)							
ES1327888-006	LI_MW09	EG035F: Mercury	7439-97-6	0.0100 mg/L	93.3	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225485)							
ES1327888-008	R01_1712123_JN	EG035T: Mercury	7439-97-6	0.010 mg/L	88.9	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3225692)							
ES1327494-006	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	118	70	130
		EG094A-F: Barium	7440-39-3	50 µg/L	108	70	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	89.0	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	95.7	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	95.9	70	130
		EG094A-F: Cobalt	7440-48-4	50 µg/L	128	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
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3225692) - continued							
ES1327494-006	Anonymous	EG094A-F: Copper	7440-50-8	50 µg/L	92.3	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	104	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	# Not Determined	70	130
		EG094A-F: Vanadium	7440-62-2	50 µg/L	105	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	102	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225695)							
ES1327805-006	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	120	70	130
		EG094A-T: Barium	7440-39-3	50 µg/L	115	70	130
		EG094A-T: Beryllium	7440-41-7	50 µg/L	99.1	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	104	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	113	70	130
		EG094A-T: Cobalt	7440-48-4	50 µg/L	119	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	108	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	118	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	108	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	121	70	130
		EG094A-T: Vanadium	7440-62-2	50 µg/L	122	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	116	70	130
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3223004)							
ES1327459-005	Anonymous	EP074: Benzene	71-43-2	25 µg/L	83.0	70	130
		EP074: Toluene	108-88-3	25 µg/L	86.8	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3223004)							
ES1327459-005	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	75.5	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	82.9	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3223004)							
ES1327459-005	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	89.0	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3223323)							
ES1327893-004	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	42.1	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	64.8	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	90.4	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	77.2	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	91.4	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223323)							
ES1327893-004	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	72.4	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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223323) - continued							
ES1327893-004	Anonymous	EP075(SIM): Pyrene	129-00-0	20 µg/L	86.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223003)							
ES1327459-005	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	115	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223322)							
ES1327893-004	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	113	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	97.5	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	106	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223003)							
ES1327459-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	114	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223322)							
ES1327893-004	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	95.2	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	107	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	98.0	67	153
EP080: BTEXN (QCLot: 3223003)							
ES1327459-005	Anonymous	EP080: Benzene	71-43-2	25 µg/L	92.7	70	130
		EP080: Toluene	108-88-3	25 µg/L	100	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	95.1	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	94.9	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	97.0	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	93.7	70	130
EP231: Perfluorinated Compounds (QCLot: 3224111)							
EM1313350-001	Anonymous	EP231: PFOS	1763-23-1	0.25 µg/L	112	70	136
		EP231: PFOA	335-67-1	0.25 µg/L	118	72	134
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	81.4	61	145

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: 3223003)										
ES1327459-005	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	115	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223003)										
ES1327459-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	114	----	70	130	----	----

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: BTEXN (QCLot: 3223003)										
ES1327459-005	Anonymous	EP080: Benzene	71-43-2	25 µg/L	92.7	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	100	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	95.1	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	94.9	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	97.0	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	93.7	----	70	130	----	----
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3223004)										
ES1327459-005	Anonymous	EP074: Benzene	71-43-2	25 µg/L	83.0	----	70	130	----	----
		EP074: Toluene	108-88-3	25 µg/L	86.8	----	70	130	----	----
EP074E: Halogenated Aliphatic Compounds (QCLot: 3223004)										
ES1327459-005	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	75.5	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	25 µg/L	82.9	----	70	130	----	----
EP074F: Halogenated Aromatic Compounds (QCLot: 3223004)										
ES1327459-005	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	89.0	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223322)										
ES1327893-004	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	113	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	97.5	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	106	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223322)										
ES1327893-004	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	95.2	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	107	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	98.0	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3223323)										
ES1327893-004	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	42.1	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	64.8	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	90.4	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	77.2	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	91.4	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223323)										
ES1327893-004	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	72.4	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	86.0	----	70	130	----	----
EP231: Perfluorinated Compounds (QCLot: 3224111)										
EM1313350-001	Anonymous	EP231: PFOS	1763-23-1	0.25 µg/L	112	----	70	136	----	----
		EP231: PFOA	335-67-1	0.25 µg/L	118	----	72	134	----	----
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	81.4	----	61	145	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3225452)										
ES1327805-001	Anonymous									

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
EG035F: Dissolved Mercury by FIMS (QCLot: 3225452) - continued										
ES1327805-001	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	86.7	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3225453)										
ES1327888-002	LO_MW11	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	125	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	120	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	101	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	0.2 mg/L	128	----	70	130	----	----
		EG020A-F: Lead	7439-92-1	0.2 mg/L	110	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	109	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	99.4	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225485)										
ES1327888-008	R01_1712123_JN	EG035T: Mercury	7439-97-6	0.010 mg/L	88.9	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3225615)										
ES1327888-006	LI_MW09	EG035F: Mercury	7439-97-6	0.0100 mg/L	93.3	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3225692)										
ES1327494-006	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	118	----	70	130	----	----
		EG094A-F: Barium	7440-39-3	50 µg/L	108	----	70	130	----	----
		EG094A-F: Beryllium	7440-41-7	50 µg/L	89.0	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	95.7	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	95.9	----	70	130	----	----
		EG094A-F: Cobalt	7440-48-4	50 µg/L	128	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	92.3	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	104	----	70	130	----	----
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Vanadium	7440-62-2	50 µg/L	105	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	102	----	70	130	----	----
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225695)										
ES1327805-006	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	120	----	70	130	----	----
		EG094A-T: Barium	7440-39-3	50 µg/L	115	----	70	130	----	----
		EG094A-T: Beryllium	7440-41-7	50 µg/L	99.1	----	70	130	----	----
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	104	----	70	130	----	----
		EG094A-T: Chromium	7440-47-3	50 µg/L	113	----	70	130	----	----
		EG094A-T: Cobalt	7440-48-4	50 µg/L	119	----	70	130	----	----
		EG094A-T: Copper	7440-50-8	50 µg/L	108	----	70	130	----	----
		EG094A-T: Lead	7439-92-1	50 µg/L	118	----	70	130	----	----
		EG094A-T: Manganese	7439-96-5	50 µg/L	108	----	70	130	----	----
		EG094A-T: Nickel	7440-02-0	50 µg/L	121	----	70	130	----	----

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
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225695) - continued										
ES1327805-006	Anonymous	EG094A-T: Vanadium	7440-62-2	50 µg/L	122	----	70	130	----	----
		EG094A-T: Zinc	7440-66-6	50 µg/L	116	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1327888**	Page	: 1 of 10
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	: ----		
C-O-C number	: ----	Date Samples Received	: 19-DEC-2013
Sampler	: JN	Issue Date	: 23-DEC-2013
Order number	: ----		
		No. of samples received	: 10
Quote number	: SY/794/13	No. of samples analysed	: 10

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
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)							
LO_MW11	**17-DEC-2013**	**---**	15-JUN-2014	----	**21-DEC-2013**	15-JUN-2014	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LO_MW13, LO_MW17	**17-DEC-2013**	**---**	14-JAN-2014	----	**21-DEC-2013**	14-JAN-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LV_MW04, LI_MW09, LB_MW13	**17-DEC-2013**	**---**	14-JAN-2014	----	**22-DEC-2013**	14-JAN-2014	✓
Clear HDPE (U-T ORC) - UHP Nitric Acid; Filtered (EG035F)							
LO_MW08	**17-DEC-2013**	**---**	14-JAN-2014	----	**21-DEC-2013**	14-JAN-2014	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F)							
LO_MW11	**17-DEC-2013**	**---**	14-JAN-2014	----	**21-DEC-2013**	14-JAN-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T)							
R01_1712123_JN	**17-DEC-2013**	**----**	----	----	**21-DEC-2013**	14-JAN-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LO_MW13, LO_MW17, LV_MW04, LI_MW09, LB_MW13	**17-DEC-2013**	**---**	15-JUN-2014	----	**22-DEC-2013**	15-JUN-2014	✓
Clear HDPE (U-T ORC) - UHP Nitric Acid; Filtered (EG094A-F)							
LO_MW08	**17-DEC-2013**	**---**	15-JUN-2014	----	**22-DEC-2013**	15-JUN-2014	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T)							
R01_1712123_JN	**17-DEC-2013**	**22-DEC-2013**	15-JUN-2014	✓	**22-DEC-2013**	15-JUN-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F)							
LB_MW13	**17-DEC-2013**	**---**	15-JUN-2014	----	**22-DEC-2013**	15-JUN-2014	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T)							
R01_1712123_JN	**17-DEC-2013**	**22-DEC-2013**	15-JUN-2014	✓	**22-DEC-2013**	15-JUN-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
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
LO_MW13, LO_MW11, LO_MW08, LO_MW17	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**22-DEC-2013**	29-JAN-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
LV_MW04, LI_MW09, LB_MW13	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP071)							
LO_MW13, LO_MW11, LO_MW08, LO_MW17, R01_1712123_JN	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**22-DEC-2013**	29-JAN-2014	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW13, LO_MW11, LO_MW08, LO_MW17	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	31-DEC-2013	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW13, LO_MW11, LO_MW08, LO_MW17	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	31-DEC-2013	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW13, LO_MW11, LO_MW08, LO_MW17	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	31-DEC-2013	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW13, LO_MW11, LO_MW08, LO_MW17	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	31-DEC-2013	✓
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW13, LO_MW11, LO_MW08, LO_MW17	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	31-DEC-2013	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW13, LO_MW11, LO_MW08, LO_MW17	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	31-DEC-2013	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW13, LO_MW11, LO_MW08, LO_MW17	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	31-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
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW13, LO_MW11, LO_MW08, LO_MW17	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	31-DEC-2013	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LV_MW04, LI_MW09, LB_MW13	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LO_MW13, LO_MW11, LO_MW08, LO_MW17, R01_1712123_JN	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**22-DEC-2013**	29-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LV_MW04, LI_MW09, LB_MW13	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LO_MW13, LO_MW11, LO_MW08, LO_MW17, R01_1712123_JN	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**22-DEC-2013**	29-JAN-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
LO_MW13, LO_MW11, LO_MW08, LO_MW17, LV_MW04, LI_MW09, LB_MW13, R01_1712123_JN, TRIP BLANK 11_171213_JN, TRIP SPIKE 5_171213_JN	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	31-DEC-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber VOC Vial - Sulfuric Acid (EP080)							
LO_MW13, LO_MW11, LO_MW08, LO_MW17, LV_MW04, LI_MW09, LB_MW13, R01_1712123_JN, TRIP BLANK 11_171213_JN	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	31-DEC-2013	✓
EP231: Perfluorinated Compounds							
HDPE (no PTFE) (EP231)							
LO_MW13, LO_MW11, LO_MW08, LO_MW17	**17-DEC-2013**	**---**	15-JUN-2014	----	**20-DEC-2013**	15-JUN-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: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	4	36	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	1	**100.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	10	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	19	**10.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	2	12	**16.7**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	1	**100.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	**20.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	2	**50.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	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
Volatile Organic Compounds	EP074	2	12	**16.7**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	2	36	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	10	**10.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	26	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	12	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	26	**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
Volatile Organic Compounds	EP074	1	12	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	2	36	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	10	**10.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	26	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	12	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	**20.0**	**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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	26	**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
Volatile Organic Compounds	EP074	1	12	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	2	36	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	12	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	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
Volatile Organic Compounds	EP074	1	12	**8.3**	**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
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 (SnCl2)(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 SnCl2 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)
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 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)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)

Analytical Methods	Method	Matrix	Method Descriptions
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)
Volatile Organic Compounds	EP074	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. 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)
PFOS and PFOA	EP231	WATER	In-house: Direct injection analysis of fresh and diluted saline waters. In order to meet standard reporting limits, saline waters may be adsorped onto a solid phase extraction medium, the salt washed out and the sample eluted for analysis. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM.

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	Modified USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Lab Acidification of Metals	EN80	WATER	USEPA Method 200.8
Lab Acidification of Dissolved Metals	EN80F	WATER	US EPA Method 200.8
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 SW 846 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	3848114-007	----	**Phenol**	108-95-2	71.0 %	24.5-61.9%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3848115-011	----	**Benz(a)anthracene**	56-55-3	117 %	64.1-117%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3848115-011	----	**Chrysene**	218-01-9	116 %	62.5-116%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3848114-007	----	**Benzo(b)fluoranthene**	205-99-2	125 %	61.7-119%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1327494-006	Anonymous	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1327494-006	Anonymous	**Nickel**	7440-02-0	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.**

Regular Sample Surrogates

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	ES1327888-003	LO_MW08	**Phenol-d6**	13127-88-3	44.7 %	10.0-44 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	ES1327888-003	LO_MW08	**2-Chlorophenol-D4**	93951-73-6	94.7 %	14-94 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	ES1327888-002	LO_MW11	**4-Terphenyl-d14**	1718-51-0	120 %	32-112 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	ES1327888-003	LO_MW08	**4-Terphenyl-d14**	1718-51-0	118 %	32-112 %	**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.**

ALS

CHAIN OF CUSTODY

ALS Laboratory: please tick ->

CLIENT: ERM	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☐ Standard TAT (List due date): ☒ Non Standard or urgent TAT (List due date): 48 TAT
OFFICE: SYDNEY		
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13	COC SEQUENCE NUMBER (Circle) coc: ① 2 3 4 5 6 7 of: ① 2 3 4 5 6 7
ORDER NUMBER: 0224198	SITE: BAYSWATER / LIDDELL	
PROJECT MANAGER: Joe Ferring	CONTACT PH:	
SAMPLER: T HAYDON	SAMPLER MOBILE: 0428229984	
COC emailed to ALS? (YES / (NO))	EDD FORMAT (or default):	
Email Reports to (will default to PM if no other addresses are listed): symphony.macq@erm.com		
Email Invoice to (will default to PM if no other addresses are listed):		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
T Haydon	[signature]	[signature]	[signature]
DATE/TIME: 18/12/13 7AM	DATE/TIME: 19/12 15:10	DATE/TIME: 19/12 17:00	DATE/TIME: 19/12/13 19:00

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? (Yes) No N/A
Free ice / frozen ice bricks present upon receipt? (Yes) No N/A
Random Sample Temperature on Receipt: 4.8 °C
Other comment:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-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, Tl, Se) Hg	S-24 TRH(C6-C40)/BTEXN, PAH, Phenols	VOC Target Scan	PCB	pH (1:5)	Exchangeable cations (ED007)	PFOS/PFOA	Asbestos (absence/presence)	Particle Sizing to 75µm (Sieve)	Organic Matter plus Total Organic Carbon (EP004)	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LU_MW02	17/12/13 9:30	WATER		5	X		X		X							
2	LO_MW14	17/12/13 12:45			9	X		X	X	X			X				
3	T01-171213_TH	" "			9	X		X	X	X			X				
4	001-171213_TH	" "			9	X		X	X	X			X				
5	LO_MW02	17/12/13 11:10am			9	X		X	X	X			X				
6	LB_MW14	17/12/13 5:58pm			6			X									
7	Trip blank #2 _17/12/13 TH						X	X									
8	Trip spike _17/12/13 TH																
9	also received RO_171213_TH																

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 = For
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

TAT

Environmental Division
Sydney
Work Order
ES1327893

Telephone : +61-2-8784 8555

Jacob Waugh

From: Barbara Hanna
Sent: Friday, 20 December 2013 10:04 AM
To: Fadi Soro; Jacob Waugh
Subject: FW: ES1327893, amendments to analysis requested
Attachments: ES1327893_0_SRN_131219222050.pdf; ES1327893_COC.PDF

Hi Fadi,

Could you please remove the sample 003 (T01_171213_TH) from this workorder and send it to Envirolab ASAP.

Hi Jacob,

Could you please arrange the removal of this sample and the rest of the request below.

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*

EnviroMail 69 - Testing Requirements of the new NEPM - July 2013

EnviroMail 70 - Variation of Naphthalene by SVOC and VOC Methods in Water - July 2013

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F +61 2 8784 8500
D +61 2 8784 8531

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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

From: Clea Henderson [mailto:Clea.Henderson@erm.com]
Sent: Friday, 20 December 2013 9:58 AM
To: Barbara Hanna

Cc: ERM Australia Project Symphony MacGen; Joseph Ferring
Subject: ES1327893, amendments to analysis requested

Hi Barbara,

I'm very sorry, for the attached batch we were supposed to request that sample 003 (T01_171213_TH) be forwarded to Envirolab as an inter-lab qaqc sample. Is it too late to arrange this?

Further, can I please request the following amendments to analysis.

Sample 006:

- Please add 13+ metals analysis (dissolved; ORC or standard, depending on what bottle was supplied)

Sample 009:

- W-24

Thanks Barbara,

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

Jacob Waugh

From: Tim Haydon <Tim.Haydon@erm.com>
Sent: Friday, 20 December 2013 2:01 PM
To: Jacob Waugh
Subject: RE: ES1327893 - COC Clarification

Thanks for the call and email Jacob,

R0_171213 requires S-24 analysis and the 17 metals listed on the COC (incl. mercury)

Please also analyse LB for the 17 metals listed on the COC in addition to the originally requested S-24. Cheers.

Let me know if there are any other issues.

Regards,
Tim Haydon
Environmental Scientist

ERM
Suite 3, 146-150 Gordon Street
PO Box 5711
Port Macquarie NSW 2444

Tel: +61 2 6584 7155
Fax: +61 2 6584 7160

www.erm.com
tim.haydon@erm.com

From: Jacob Waugh [mailto:Jacob.Waugh@alsglobal.com]
Sent: Friday, December 20, 2013 1:18 PM
To: Tim Haydon
Subject: ES1327893 - COC Clarification

Hi Tim,

As discussed in relation to the attached COC:

ALS #7 – TB requested metals + S-24 but we will only analyse 6-9 & BTEX.
ALS #8 – TS no was analysis requested on the COC but BTEX added as per your request.
ALS #9 – Extra sample received RO_171213_TH. Please advise what analysis you need on this sample.

Thanks,

Jacob Waugh

Laboratory Co-ordinator
ALS | Environmental Division

277-289 Woodpark Road
Smithfield NSW 2164 Australia

EnviroMail 68 - Sampling and Analysis Implications of the new NEPM - July 2013

EnviroMail 69 - Testing Requirements of the new NEPM - July 2013

EnviroMail 70 - Variation of Naphthalene by SVOC and VOC Methods in Water - July 2013

EnviroMail 71 - Cryptosporidium Infectivity - July 2013

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Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES1327893**		
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	Page	: 1 of 3
Order number	: 0221198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: ----		
Sampler	: ----	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 19-DEC-2013	Issue Date	: 19-DEC-2013 21:20
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	: 9
Security Seal	: Intact.	No. of samples analysed	: 8

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 R01_171213_TH was received extra and placed on hold. Please advise lab which analysis is required.**
- 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.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES1327893-007 : 17-DEC-2013 15:00 : TRIP BLANK 12_17/12/13TH
ES1327893-008 : 14-DEC-2013 15:00 : TRIP SPIKE 4_14/12/13TH

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary 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*	(On Hold) WATER No analysis requested	WATER - EG035F Dissolved Mercury by FIMS	WATER - EG094A-F Dissolved Metals in Fresh Water Suite A by	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP074 (water) Volatile Organic Compounds	WATER - EP080 BTEXN	WATER - EP231 Perfluorooctyl Acids and Sulfonates by LC/MS/MS	WATER - W-18 TRH(C6 - C9)/BTEXN
ES1327893-001	17-DEC-2013 09:30	LU_MW02		✓	✓					
ES1327893-002	17-DEC-2013 12:45	LO_MW04		✓	✓	✓	✓		✓	
ES1327893-003	17-DEC-2013 12:45	T01_171213_TH		✓	✓	✓	✓		✓	
ES1327893-004	17-DEC-2013 12:45	D01_171213_TH		✓	✓	✓	✓		✓	
ES1327893-005	17-DEC-2013 11:00	LO_MW02		✓	✓	✓	✓		✓	
ES1327893-007	17-DEC-2013 15:00	TRIP BLANK 12_17/12/...								✓
ES1327893-008	14-DEC-2013 15:00	TRIP SPIKE 4_14/12/1...						✓		
ES1327893-009	[19-DEC-2013]	RO_171213_TH	✓							

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1327893-001	17-DEC-2013 09:30	LU_MW02	✓
ES1327893-002	17-DEC-2013 12:45	LO_MW04	✓
ES1327893-003	17-DEC-2013 12:45	T01_171213_TH	✓
ES1327893-004	17-DEC-2013 12:45	D01_171213_TH	✓
ES1327893-005	17-DEC-2013 11:00	LO_MW02	✓
ES1327893-006	17-DEC-2013 17:50	LB_MW14	✓

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1327893**	Page	: 1 of 12
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
Order number	: 0221198		
C-O-C number	: ----	Date Samples Received	: 19-DEC-2013
Sampler	: ----	Issue Date	: 27-DEC-2013
Site	: ----		
		No. of samples received	: 9
Quote number	: SY/794/13	No. of samples analysed	: 8

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.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Lana Nguyen	Senior LCMS Chemist	Sydney Organics
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: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LU_MW02	LO_MW14	D01_171213_TH	LO_MW02	LB_MW14
				Client sampling date / time	17-DEC-2013 09:30	17-DEC-2013 12:45	17-DEC-2013 12:45	17-DEC-2013 11:00	17-DEC-2013 17:50
					ES1327893-001	ES1327893-002	ES1327893-004	ES1327893-005	ES1327893-006
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Selenium	7782-49-2	0.2	µg/L		----	----	----	----	**0.4**
Arsenic	7440-38-2	0.2	µg/L		**3.3**	**11.2**	**11.0**	**1.0**	**0.3**
Barium	7440-39-3	0.5	µg/L		----	----	----	----	**19.6**
Beryllium	7440-41-7	0.1	µg/L		----	----	----	----	**0.2**
Boron	7440-42-8	5	µg/L		----	----	----	----	**1880**
Cadmium	7440-43-9	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	**0.24**
Chromium	7440-47-3	0.2	µg/L		<0.2	<0.2	<0.2	<0.2	<0.2
Cobalt	7440-48-4	0.1	µg/L		----	----	----	----	**42.7**
Copper	7440-50-8	0.5	µg/L		**1.8**	<0.5	<0.5	**1.2**	**3.5**
Lead	7439-92-1	0.1	µg/L		<0.1	<0.1	<0.1	**0.1**	**0.6**
Manganese	7439-96-5	0.5	µg/L		----	----	----	----	**1950**
Molybdenum	7439-98-7	0.1	µg/L		----	----	----	----	**4.4**
Nickel	7440-02-0	0.5	µg/L		**34.9**	**1.7**	**2.4**	**4.1**	**26.5**
Thallium	7440-28-0	0.02	µg/L		----	----	----	----	**0.41**
Vanadium	7440-62-2	0.2	µg/L		----	----	----	----	<0.2
Zinc	7440-66-6	1	µg/L		**20**	**2**	**17**	**16**	**33**
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		----	<1	<1	<1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		----	<5	<5	<5	----
Isopropylbenzene	98-82-8	5	µg/L		----	<5	<5	<5	----
n-Propylbenzene	103-65-1	5	µg/L		----	<5	<5	<5	----
1.3.5-Trimethylbenzene	108-67-8	5	µg/L		----	<5	<5	<5	----
sec-Butylbenzene	135-98-8	5	µg/L		----	<5	<5	<5	----
1.2.4-Trimethylbenzene	95-63-6	5	µg/L		----	<5	<5	<5	----
tert-Butylbenzene	98-06-6	5	µg/L		----	<5	<5	<5	----
p-Isopropyltoluene	99-87-6	5	µg/L		----	<5	<5	<5	----
n-Butylbenzene	104-51-8	5	µg/L		----	<5	<5	<5	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L		----	<50	<50	<50	----
2-Butanone (MEK)	78-93-3	50	µg/L		----	<50	<50	<50	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LU_MW02	LO_MW14	D01_171213_TH	LO_MW02	LB_MW14
				Client sampling date / time	17-DEC-2013 09:30	17-DEC-2013 12:45	17-DEC-2013 12:45	17-DEC-2013 11:00	17-DEC-2013 17:50
					ES1327893-001	ES1327893-002	ES1327893-004	ES1327893-005	ES1327893-006
EP074B: Oxygenated Compounds - Continued									
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L		----	<50	<50	<50	----
2-Hexanone (MBK)	591-78-6	50	µg/L		----	<50	<50	<50	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L		----	<5	<5	<5	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	5	µg/L		----	<5	<5	<5	----
1.2-Dichloropropane	78-87-5	5	µg/L		----	<5	<5	<5	----
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L		----	<5	<5	<5	----
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L		----	<5	<5	<5	----
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L		----	<5	<5	<5	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		----	<50	<50	<50	----
Chloromethane	74-87-3	50	µg/L		----	<50	<50	<50	----
Vinyl chloride	75-01-4	50	µg/L		----	<50	<50	<50	----
Bromomethane	74-83-9	50	µg/L		----	<50	<50	<50	----
Chloroethane	75-00-3	50	µg/L		----	<50	<50	<50	----
Trichlorofluoromethane	75-69-4	50	µg/L		----	<50	<50	<50	----
1.1-Dichloroethene	75-35-4	5	µg/L		----	<5	<5	<5	----
Iodomethane	74-88-4	5	µg/L		----	<5	<5	<5	----
trans-1.2-Dichloroethene	156-60-5	5	µg/L		----	<5	<5	<5	----
1.1-Dichloroethane	75-34-3	5	µg/L		----	<5	<5	<5	----
cis-1.2-Dichloroethene	156-59-2	5	µg/L		----	<5	<5	<5	----
1.1.1-Trichloroethane	71-55-6	5	µg/L		----	<5	<5	<5	----
1.1-Dichloropropylene	563-58-6	5	µg/L		----	<5	<5	<5	----
Carbon Tetrachloride	56-23-5	5	µg/L		----	<5	<5	<5	----
1.2-Dichloroethane	107-06-2	5	µg/L		----	<5	<5	<5	----
Trichloroethene	79-01-6	5	µg/L		----	<5	<5	<5	----
Dibromomethane	74-95-3	5	µg/L		----	<5	<5	<5	----
1.1.2-Trichloroethane	79-00-5	5	µg/L		----	<5	<5	<5	----
1.3-Dichloropropane	142-28-9	5	µg/L		----	<5	<5	<5	----
Tetrachloroethene	127-18-4	5	µg/L		----	<5	<5	<5	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		----	<5	<5	<5	----
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L		----	<5	<5	<5	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LU_MW02	LO_MW14	D01_171213_TH	LO_MW02	LB_MW14
				Client sampling date / time	17-DEC-2013 09:30	17-DEC-2013 12:45	17-DEC-2013 12:45	17-DEC-2013 11:00	17-DEC-2013 17:50
					ES1327893-001	ES1327893-002	ES1327893-004	ES1327893-005	ES1327893-006
EP074E: Halogenated Aliphatic Compounds - Continued									
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L		----	<5	<5	<5	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		----	<5	<5	<5	----
1.2.3-Trichloropropane	96-18-4	5	µg/L		----	<5	<5	<5	----
Pentachloroethane	76-01-7	5	µg/L		----	<5	<5	<5	----
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L		----	<5	<5	<5	----
Hexachlorobutadiene	87-68-3	5	µg/L		----	<5	<5	<5	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		----	<5	<5	<5	----
Bromobenzene	108-86-1	5	µg/L		----	<5	<5	<5	----
2-Chlorotoluene	95-49-8	5	µg/L		----	<5	<5	<5	----
4-Chlorotoluene	106-43-4	5	µg/L		----	<5	<5	<5	----
1.3-Dichlorobenzene	541-73-1	5	µg/L		----	<5	<5	<5	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		----	<5	<5	<5	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		----	<5	<5	<5	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		----	<5	<5	<5	----
1.2.3-Trichlorobenzene	87-61-6	5	µg/L		----	<5	<5	<5	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		----	<5	<5	<5	----
Bromodichloromethane	75-27-4	5	µg/L		----	<5	<5	<5	----
Dibromochloromethane	124-48-1	5	µg/L		----	<5	<5	<5	----
Bromoform	75-25-2	5	µg/L		----	<5	<5	<5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	7	µg/L		----	<7	<7	<7	----
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LU_MW02	LO_MW14	D01_171213_TH	LO_MW02	LB_MW14
				Client sampling date / time	17-DEC-2013 09:30	17-DEC-2013 12:45	17-DEC-2013 12:45	17-DEC-2013 11:00	17-DEC-2013 17:50
Compound	CAS Number	LOR	Unit		ES1327893-001	ES1327893-002	ES1327893-004	ES1327893-005	ES1327893-006
EP075(SIM)A: Phenolic Compounds - Continued									
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
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	**3.8**	<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	**3.8**	<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	**240**	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	**1090**	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	**1330**	<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	**500**	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	**830**	<100

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LU_MW02	LO_MW14	D01_171213_TH	LO_MW02	LB_MW14
				Client sampling date / time	17-DEC-2013 09:30	17-DEC-2013 12:45	17-DEC-2013 12:45	17-DEC-2013 11:00	17-DEC-2013 17:50
Compound	CAS Number	LOR	Unit		ES1327893-001	ES1327893-002	ES1327893-004	ES1327893-005	ES1327893-006
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued									
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	**1330**	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	**500**	<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
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
EP231: Perfluorinated Compounds									
PFOS	1763-23-1	0.02	µg/L		----	**0.06**	**0.06**	**0.08**	----
PFOA	335-67-1	0.02	µg/L		----	**0.08**	**0.08**	**0.02**	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L		----	<0.1	<0.1	<0.1	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	**66.8**	**74.2**	**63.6**	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	**106**	**124**	**123**	----
Toluene-D8	2037-26-5	0.1	%		----	**112**	**128**	**127**	----
4-Bromofluorobenzene	460-00-4	0.1	%		----	**98.4**	**108**	**114**	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**32.7**	**31.0**	**36.5**	**33.8**	**45.1**
2-Chlorophenol-D4	93951-73-6	0.1	%		**79.9**	**60.2**	**61.0**	**87.4**	**76.4**
2.4.6-Tribromophenol	118-79-6	0.1	%		**99.0**	**67.5**	**80.9**	**126**	**84.1**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**90.2**	**69.9**	**67.9**	**98.0**	**75.1**
Anthracene-d10	1719-06-8	0.1	%		**80.6**	**61.1**	**69.8**	**84.4**	**72.4**
4-Terphenyl-d14	1718-51-0	0.1	%		**98.2**	**65.0**	**81.5**	**110**	**79.3**
EP080S: TPH(V)/BTEX Surrogates									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LU_MW02	LO_MW14	D01_171213_TH	LO_MW02	LB_MW14
				Client sampling date / time	17-DEC-2013 09:30	17-DEC-2013 12:45	17-DEC-2013 12:45	17-DEC-2013 11:00	17-DEC-2013 17:50
Compound	CAS Number	LOR	Unit		ES1327893-001	ES1327893-002	ES1327893-004	ES1327893-005	ES1327893-006
EP080S: TPH(V)/BTEX Surrogates - Continued									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		125	120	118	118	134
Toluene-D8	2037-26-5	0.1	%		103	98.4	116	121	106
4-Bromofluorobenzene	460-00-4	0.1	%		95.6	91.9	107	111	96.6

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID: TRIP BLANK 12_17/12/13TH	TRIP SPIKE 4_14/12/13TH	RO_171213_TH	----	----
				Client sampling date / time: 17-DEC-2013 15:00	14-DEC-2013 15:00	[19-DEC-2013]	----	----
				ES1327893-007	ES1327893-008	ES1327893-009	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	----	<0.0001	----	----
EG094T: Total metals in Fresh water by ORC-ICPMS								
Selenium	7782-49-2	0.2	µg/L	----	----	<0.2	----	----
Arsenic	7440-38-2	0.2	µg/L	----	----	<0.2	----	----
Barium	7440-39-3	0.5	µg/L	----	----	<0.5	----	----
Beryllium	7440-41-7	0.1	µg/L	----	----	<0.1	----	----
Boron	7440-42-8	5	µg/L	----	----	<5	----	----
Cadmium	7440-43-9	0.05	µg/L	----	----	<0.05	----	----
Chromium	7440-47-3	0.2	µg/L	----	----	<0.2	----	----
Cobalt	7440-48-4	0.1	µg/L	----	----	<0.1	----	----
Copper	7440-50-8	0.5	µg/L	----	----	<0.5	----	----
Lead	7439-92-1	0.1	µg/L	----	----	<0.1	----	----
Manganese	7439-96-5	0.5	µg/L	----	----	<0.5	----	----
Molybdenum	7439-98-7	0.1	µg/L	----	----	<0.1	----	----
Nickel	7440-02-0	0.5	µg/L	----	----	<0.5	----	----
Thallium	7440-28-0	0.02	µg/L	----	----	<0.02	----	----
Vanadium	7440-62-2	0.2	µg/L	----	----	<0.2	----	----
Zinc	7440-66-6	1	µg/L	----	----	<1	----	----
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	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID: TRIP BLANK 12_17/12/13TH	TRIP SPIKE 4_14/12/13TH	RO_171213_TH	----	----
				Client sampling date / time: 17-DEC-2013 15:00	14-DEC-2013 15:00	[19-DEC-2013]	----	----
				ES1327893-007	ES1327893-008	ES1327893-009	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
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	----	----
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	----	<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	----	<20	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	----	<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								

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID: TRIP BLANK 12_17/12/13TH	TRIP SPIKE 4_14/12/13TH	RO_171213_TH	----	----
				Client sampling date / time: 17-DEC-2013 15:00	14-DEC-2013 15:00	[19-DEC-2013]	----	----
				ES1327893-007	ES1327893-008	ES1327893-009	----	----
EP080: BTEXN - Continued								
Benzene	71-43-2	1	µg/L	<1	**18**	<1	----	----
Toluene	108-88-3	2	µg/L	<2	**16**	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	**15**	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	**15**	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	**16**	<2	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L	<2	**31**	<2	----	----
^ **Sum of BTEX**	----	1	µg/L	<1	**80**	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	**18**	<5	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	----	**25.5**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	**57.0**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	----	**54.8**	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	**72.8**	----	----
Anthracene-d10	1719-06-8	0.1	%	----	----	**86.1**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	**95.9**	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	**130**	**130**	**110**	----	----
Toluene-D8	2037-26-5	0.1	%	**110**	**101**	**112**	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	**97.2**	**97.2**	**101**	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	Recovery Limits (%) High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	28.5	129
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	78.3	133.2
Toluene-D8	2037-26-5	79.1	128.9
4-Bromofluorobenzene	460-00-4	80.8	123.7
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	: **ES1327893**	Page	: 1 of 25
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	: ----		
C-O-C number	: ----	Date Samples Received	: 19-DEC-2013
Sampler	: ----	Issue Date	: 27-DEC-2013
Order number	: 0221198		
		No. of samples received	: 9
Quote number	: SY/794/13	No. of samples analysed	: 8

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 ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Lana Nguyen	Senior LCMS Chemist	Sydney Organics
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: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 3225452)									
ES1327011-009	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1327890-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3225617)									
ES1327800-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3225694)									
ES1327890-002	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	2.01	1.98	1.8	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	7.3	7.0	4.1	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.3	0.3	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.2	0.2	0.0	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	1.9	1.8	0.0	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	354	355	0.3	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	451	450	0.2	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3226297)									
ES1327893-006	LB_MW14	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.41	0.41	0.0	0% - 20%
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.24	0.27	10.5	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	0.2	0.2	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	42.7	49.7	15.0	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.6	0.7	21.4	No Limit
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	4.4	5.0	12.1	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.3	0.3	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	19.6	22.9	15.4	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	3.5	4.1	13.6	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	1950	2270	15.1	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	26.5	30.9	15.4	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	33	38	14.8	0% - 20%
		EG094A-F: Boron	7440-42-8	5	µg/L	1880	1970	4.3	0% - 20%
ES1327964-002	Anonymous	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.03	0.02	0.0	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	2.9	2.9	0.0	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	4.2	3.9	6.4	0% - 20%
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	3.7	3.6	0.0	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	1.7	1.6	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	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 (%)*
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3226297) - continued									
ES1327964-002	Anonymous	EG094A-F: Vanadium	7440-62-2	0.2	µg/L	3.9	3.8	0.0	0% - 50%
		EG094A-F: Barium	7440-39-3	0.5	µg/L	56.8	56.2	1.1	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	3.0	3.0	0.0	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	206	200	2.7	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	5.3	5.3	0.0	0% - 50%
		EG094A-F: Zinc	7440-66-6	1	µg/L	16	16	0.0	0% - 50%
		EG094A-F: Boron	7440-42-8	5	µg/L	236	238	0.6	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3226298)									
ES1327893-006	LB_MW14	EG094B-F: Selenium	7782-49-2	0.2	µg/L	0.4	0.5	0.0	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3225695)									
ES1327893-009	RO_171213_TH	EG094A-T: Thallium	7440-28-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Barium	7440-39-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	<1	<1	0.0	No Limit
		EG094A-T: Boron	7440-42-8	5	µg/L	<5	<5	0.0	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3225696)									
ES1327893-009	RO_171213_TH	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3223324)									
ES1327893-002	LO_MW14	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3223019)									
ES1327890-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	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 (%)*
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3223019) - continued									
ES1327890-002	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 3223019)									
ES1327890-001	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
ES1327890-002	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 3223019)									
ES1327890-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
ES1327890-002	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 3223019)									
ES1327890-001	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
ES1327890-002	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3223019)									
ES1327890-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	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 (%)*
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3223019) - continued									
ES1327890-001	Anonymous	EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES1327890-002	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3223019) - continued									
ES1327890-002	Anonymous	EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 3223019)									
ES1327890-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
ES1327890-002	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 3223019)									
ES1327890-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
ES1327890-002	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP074H: Naphthalene (QC Lot: 3223019)									
ES1327890-001	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
ES1327890-002	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3223323)									

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: 3223323) - continued									
ES1327893-002	LO_MW14	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
ES1327890-001	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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3223323)									
ES1327893-002	LO_MW14	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 sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3223323) - continued									
ES1327893-002	LO_MW14	EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
ES1327890-001	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: 3223020)									
ES1327890-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1327890-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3223322)									
ES1327893-002	LO_MW14	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
ES1327890-001	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: 3224988)									
ES1327953-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	50	50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3223020)									
ES1327890-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1327890-002	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: 3223322)									
ES1327893-002	LO_MW14	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
ES1327890-001	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

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: 3224988)									
ES1327953-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	50	50	0.0	No Limit
EP080: BTEXN (QC Lot: 3223020)									
ES1327890-001	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
ES1327890-002	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: 3224988)									
ES1327953-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	12	12	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
EP231: Perfluorinated Compounds (QC Lot: 3224111)									
EM1313350-001	Anonymous	EP231: PFOS	1763-23-1	0.02	µg/L	0.49	0.43	12.4	0% - 20%
		EP231: PFOA	335-67-1	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES1327893-004	D01_171213_TH	EP231: PFOS	1763-23-1	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231: PFOA	335-67-1	0.02	µg/L	0.08	0.08	0.0	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	<0.1	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: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 3225452)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	95.6	78	114
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225617)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	104	77	115
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3225694)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	114	75	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	100	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	102	71	123
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	102	77	125
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	109	74	118
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	113	72	128
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	114	76	134
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3226297)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	87.0	75	129
EG094A-F: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	93.6	76	120
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	82.2	74	130
EG094A-F: Boron	7440-42-8	5	µg/L	<5	10 µg/L	101	79	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	87.5	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	87.0	71	123
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	90.0	79	121
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	108	77	125
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	111	74	118
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	89.6	79	119
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	83.0	69	127
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	91.0	72	128
EG094A-F: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	82.8	71	121
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	87.6	78	116
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	91.1	76	134
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3226298)								
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	105	75	125
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225695)								
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	107	81	125
EG094A-T: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	99.9	81	117
EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	82.9	71	127
EG094A-T: Boron	7440-42-8	5	µg/L	<5	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225695) - continued								
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	90.2	77	111
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	98.6	78	126
EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	106	78	126
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	96.0	78	126
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	106	75	123
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	92.0	81	121
EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	101	77	127
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	110	82	124
EG094A-T: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	95.8	71	125
EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	106	82	118
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	103	75	129
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225696)								
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	104	78	124
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3223324)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	75.7	61.6	107
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3223325)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	80.0	61.6	107
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3223019)								
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	87.6	74	118
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	95.1	75	121
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	98.0	67	123
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	96.1	70	122
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	97.6	69	123
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	100	71	121
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	99.1	70	122
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	97.4	67	123
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	92.1	62	126
EP074B: Oxygenated Compounds (QCLot: 3223019)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	92.4	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	96.8	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	98.5	61	139
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	96.6	65	137
EP074C: Sulfonated Compounds (QCLot: 3223019)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	84.3	72.8	127
EP074D: Fumigants (QCLot: 3223019)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	92.6	61	119
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	92.7	76	120
EP074: cis-1.3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	79.2	62	120

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074D: Fumigants (QCLot: 3223019) - continued								
EP074: trans-1.3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	73.6	61	119
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	92.2	69	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 3223019)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	79.9	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	84.1	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	86.9	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	89.8	56	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	84.1	63	135
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	92.9	65	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	94.0	69	123
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	84.8	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	89.7	71	119
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	93.0	75	119
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	98.2	77	117
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	88.9	61	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	94.8	73	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	75.6	63	121
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	97.6	78	122
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	103	74	120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	96.6	74	118
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	94.6	75	123
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	94.8	79	121
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	89.8	72	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	83.9	66	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	80.1	60	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	79.5	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	94.4	70	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	85.4	74	128
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	93.2	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	104	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	86.4	58	132
EP074F: Halogenated Aromatic Compounds (QCLot: 3223019)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	97.1	80	118
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	93.2	76	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	95.9	71	121
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	100	71	121
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	95.6	74	120
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	94.1	72	120
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	94.6	77	117

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP074F: Halogenated Aromatic Compounds (QCLot: 3223019) - continued								
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	86.7	60	126
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	84.0	67	125
EP074G: Trihalomethanes (QCLot: 3223019)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	98.2	76	118
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	77.8	64	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	94.1	65	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	86.7	73.5	126
EP074H: Naphthalene (QCLot: 3223019)								
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	93.0	61	125
EP075(SIM)A: Phenolic Compounds (QCLot: 3223323)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	# 71.0	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	82.9	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	95.6	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	85.9	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	67.4	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	98.5	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	94.4	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	91.4	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	102	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	99.4	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	97.7	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	68.4	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3223327)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	20 µg/L	42.1	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	20 µg/L	95.4	63.8	110
		1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 3223327) - continued								
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	20 µg/L	87.5	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	40 µg/L	78.6	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	20 µg/L	74.4	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	20 µg/L	91.0	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	20 µg/L	92.2	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	20 µg/L	92.1	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	20 µg/L	94.6	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	20 µg/L	88.3	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	20 µg/L	91.1	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	40 µg/L	47.8	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3226150)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	53.7	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	79.1	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	78.0	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	74.7	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	72.8	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	99.0	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	89.9	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	87.2	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	101	63	119
		1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 3226150) - continued								
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	97.6	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	103	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	86.3	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223323)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	67.7	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	95.5	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	83.8	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	101	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	93.0	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	93.0	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	104	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	102	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	115	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	103	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	# 125	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	110	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	111	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	108	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	111	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	118	59.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	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 (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223327)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	20 µg/L	77.9	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	20 µg/L	97.1	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	20 µg/L	82.6	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	20 µg/L	92.4	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	20 µg/L	106	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	20 µg/L	108	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	20 µg/L	112	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	20 µg/L	112	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	# 116	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	20 µg/L	104	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	20 µg/L	90.1	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	20 µg/L	110	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	99.1	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	20 µg/L	96.6	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	102	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: 3226150)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	77.9	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	101	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	91.2	62.2	113
		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 (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3226150) - continued								
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	97.8	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	96.5	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	95.1	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	104	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	110	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	109	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	112	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	114	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	94.6	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	112	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	98.4	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	101	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	108	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: 3223020)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	101	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223322)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	113	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	122	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	93.2	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223326)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	79.8	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	121	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	86.9	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3224988)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	115	75	127

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3226149)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	87.9	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	99.9	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	96.0	62	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223020)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	100	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223322)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	95.2	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	113	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	89.6	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223326)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	105	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	90.2	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3224988)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	116	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3226149)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	85.6	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	79.5	67	127
EP080: BTEXN (QCLot: 3223020)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	110	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	105	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	92.1	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	89.2	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	88.7	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	91.5	70	124
EP080: BTEXN (QCLot: 3224988)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	122	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	113	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	117	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	118	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	116	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	112	70	124

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231: Perfluorinated Compounds (QCLot: 3224111)								
EP231: PFOS	1763-23-1	0.02	µg/L	<0.02	0.25 µg/L	122	70	136
EP231: PFOA	335-67-1	0.02	µg/L	<0.02	0.25 µg/L	123	72	134
EP231: 6:2 Fluorotelomer Sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	1.25 µg/L	112	61	145

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	Recovery Limits (%): High
EG035F: Dissolved Mercury by FIMS (QCLot: 3225452)							
ES1327805-001	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	86.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225617)							
ES1327800-002	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	98.4	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3225694)							
ES1327890-004	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	93.4	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	73.7	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	105	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	105	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	70.8	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	# Not Determined	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	# Not Determined	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3226297)							
ES1327963-008	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	122	70	130
		EG094A-F: Barium	7440-39-3	50 µg/L	87.2	70	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	99.8	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	120	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	118	70	130
		EG094A-F: Cobalt	7440-48-4	50 µg/L	121	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	128	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	120	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	106	70	130
		EG094A-F: Vanadium	7440-62-2	50 µg/L	124	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
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3226297) - continued							
ES1327963-008	Anonymous	EG094A-F: Zinc	7440-66-6	50 µg/L	115	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225695)							
ES1327805-006	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	120	70	130
		EG094A-T: Barium	7440-39-3	50 µg/L	115	70	130
		EG094A-T: Beryllium	7440-41-7	50 µg/L	99.1	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	104	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	113	70	130
		EG094A-T: Cobalt	7440-48-4	50 µg/L	119	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	108	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	118	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	108	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	121	70	130
		EG094A-T: Vanadium	7440-62-2	50 µg/L	122	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	116	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3223324)							
ES1327893-004	D01_171213_TH	EP066: Total Polychlorinated biphenyls	----	10 µg/L	85.0	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3223019)							
ES1327890-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	97.5	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	103	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3223019)							
ES1327890-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	108	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3223323)							
ES1327893-004	D01_171213_TH	EP075(SIM): Phenol	108-95-2	20 µg/L	42.1	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	64.8	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	90.4	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	77.2	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	91.4	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223323)							
ES1327893-004	D01_171213_TH	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	72.4	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	86.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223020)							
ES1327890-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	110	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223322)							
ES1327893-004	D01_171213_TH	EP071: C10 - C14 Fraction	----	200 µg/L	113	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	97.5	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	106	67	153

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3224988)							
ES1327953-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	128	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223020)							
ES1327890-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	110	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223322)							
ES1327893-004	D01_171213_TH	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	95.2	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	107	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	98.0	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3224988)							
ES1327953-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	127	70	130
EP080: BTEXN (QCLot: 3223020)							
ES1327890-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	108	70	130
		EP080: Toluene	108-88-3	25 µg/L	100	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	100	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	96.1	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	98.6	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	97.1	70	130
EP080: BTEXN (QCLot: 3224988)							
ES1327953-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	119	70	130
		EP080: Toluene	108-88-3	25 µg/L	111	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	120	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	116	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	120	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	114	70	130
EP231: Perfluorinated Compounds (QCLot: 3224111)							
EM1313350-001	Anonymous	EP231: PFOS	1763-23-1	0.25 µg/L	112	70	136
		EP231: PFOA	335-67-1	0.25 µg/L	118	72	134
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	81.4	61	145

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**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report: Spike Concentration	Spike Recovery (%): MS	Spike Recovery (%): MSD	Recovery Limits (%): Low	Recovery Limits (%): High	RPDs (%): Value	RPDs (%): Control Limit

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
EP074E: Halogenated Aliphatic Compounds (QCLot: 3223019)										
ES1327890-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	97.5	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	25 µg/L	103	----	70	130	----	----
EP074F: Halogenated Aromatic Compounds (QCLot: 3223019)										
ES1327890-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	108	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223020)										
ES1327890-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	110	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223020)										
ES1327890-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	110	----	70	130	----	----
EP080: BTEXN (QCLot: 3223020)										
ES1327890-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	108	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	100	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	100	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	96.1	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	98.6	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	97.1	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223322)										
ES1327893-004	D01_171213_TH	EP071: C10 - C14 Fraction	----	200 µg/L	113	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	97.5	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	106	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223322)										
ES1327893-004	D01_171213_TH	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	95.2	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	107	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	98.0	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3223323)										
ES1327893-004	D01_171213_TH	EP075(SIM): Phenol	108-95-2	20 µg/L	42.1	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	64.8	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	90.4	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	77.2	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	91.4	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223323)										
ES1327893-004	D01_171213_TH	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	72.4	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	86.0	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3223324)										
ES1327893-004	D01_171213_TH	EP066: Total Polychlorinated biphenyls	----	10 µg/L	85.0	----	70	130	----	----
EP231: Perfluorinated Compounds (QCLot: 3224111)										
EM1313350-001	Anonymous	EP231: PFOS	1763-23-1	0.25 µg/L	112	----	70	136	----	----

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
EP231: Perfluorinated Compounds (QCLot: 3224111) - continued										
EM1313350-001	Anonymous	EP231: PFOA	335-67-1	0.25 µg/L	118	----	72	134	----	----
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	81.4	----	61	145	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3224988)										
ES1327953-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	128	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3224988)										
ES1327953-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	127	----	70	130	----	----
EP080: BTEXN (QCLot: 3224988)										
ES1327953-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	119	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	111	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	120	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	116	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	120	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	114	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3225452)										
ES1327805-001	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	86.7	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225617)										
ES1327800-002	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	98.4	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3225694)										
ES1327890-004	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	93.4	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	73.7	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	105	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	105	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	70.8	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	# Not Determined	----	70	130	----	----
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225695)										
ES1327805-006	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	120	----	70	130	----	----
		EG094A-T: Barium	7440-39-3	50 µg/L	115	----	70	130	----	----
		EG094A-T: Beryllium	7440-41-7	50 µg/L	99.1	----	70	130	----	----
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	104	----	70	130	----	----
		EG094A-T: Chromium	7440-47-3	50 µg/L	113	----	70	130	----	----
		EG094A-T: Cobalt	7440-48-4	50 µg/L	119	----	70	130	----	----
		EG094A-T: Copper	7440-50-8	50 µg/L	108	----	70	130	----	----
		EG094A-T: Lead	7439-92-1	50 µg/L	118	----	70	130	----	----
		EG094A-T: Manganese	7439-96-5	50 µg/L	108	----	70	130	----	----

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
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3225695) - continued										
ES1327805-006	Anonymous	EG094A-T: Nickel	7440-02-0	50 µg/L	121	----	70	130	----	----
		EG094A-T: Vanadium	7440-62-2	50 µg/L	122	----	70	130	----	----
		EG094A-T: Zinc	7440-66-6	50 µg/L	116	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3226297)										
ES1327963-008	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	122	----	70	130	----	----
		EG094A-F: Barium	7440-39-3	50 µg/L	87.2	----	70	130	----	----
		EG094A-F: Beryllium	7440-41-7	50 µg/L	99.8	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	120	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	118	----	70	130	----	----
		EG094A-F: Cobalt	7440-48-4	50 µg/L	121	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	128	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	120	----	70	130	----	----
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	106	----	70	130	----	----
		EG094A-F: Vanadium	7440-62-2	50 µg/L	124	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	115	----	70	130	----	----

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1327893**	Page	: 1 of 10
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	: ----		
C-O-C number	: ----	Date Samples Received	: 19-DEC-2013
Sampler	: ----	Issue Date	: 27-DEC-2013
Order number	: 0221198		
		No. of samples received	: 9
Quote number	: SY/794/13	No. of samples analysed	: 8

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
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LU_MW02, LO_MW14, D01_171213_TH, LO_MW02, LB_MW14	**17-DEC-2013**	**---**	14-JAN-2014	----	**21-DEC-2013**	14-JAN-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T)							
RO_171213_TH	**19-DEC-2013**	**----**	----	----	**22-DEC-2013**	16-JAN-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LU_MW02, LO_MW14, D01_171213_TH, LO_MW02	**17-DEC-2013**	**---**	15-JUN-2014	----	**22-DEC-2013**	15-JUN-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LB_MW14	**17-DEC-2013**	**---**	15-JUN-2014	----	**23-DEC-2013**	15-JUN-2014	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T)							
RO_171213_TH	**19-DEC-2013**	**22-DEC-2013**	17-JUN-2014	✓	**22-DEC-2013**	17-JUN-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F)							
LB_MW14	**17-DEC-2013**	**---**	15-JUN-2014	----	**23-DEC-2013**	15-JUN-2014	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T)							
RO_171213_TH	**19-DEC-2013**	**22-DEC-2013**	17-JUN-2014	✓	**22-DEC-2013**	17-JUN-2014	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
LO_MW14, D01_171213_TH	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP066)							
LO_MW02	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**22-DEC-2013**	29-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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Amber Glass Bottle - Unpreserved (EP071)								
LO_MW14, LB_MW14	D01_171213_TH,	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP071)								
LU_MW02,	LO_MW02	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**22-DEC-2013**	29-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP071)								
RO_171213_TH		**19-DEC-2013**	**23-DEC-2013**	26-DEC-2013	✓	**23-DEC-2013**	01-FEB-2014	✓
EP074D: Fumigants								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW14, LO_MW02	D01_171213_TH,	**17-DEC-2013**	**---**	31-DEC-2013	----	**20-DEC-2013**	31-DEC-2013	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW14, LO_MW02	D01_171213_TH,	**17-DEC-2013**	**---**	31-DEC-2013	----	**20-DEC-2013**	31-DEC-2013	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW14, LO_MW02	D01_171213_TH,	**17-DEC-2013**	**---**	31-DEC-2013	----	**20-DEC-2013**	31-DEC-2013	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW14, LO_MW02	D01_171213_TH,	**17-DEC-2013**	**---**	31-DEC-2013	----	**20-DEC-2013**	31-DEC-2013	✓
EP074H: Naphthalene								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW14, LO_MW02	D01_171213_TH,	**17-DEC-2013**	**---**	31-DEC-2013	----	**20-DEC-2013**	31-DEC-2013	✓
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW14, LO_MW02	D01_171213_TH,	**17-DEC-2013**	**---**	31-DEC-2013	----	**20-DEC-2013**	31-DEC-2013	✓
EP074C: Sulfonated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW14, LO_MW02	D01_171213_TH,	**17-DEC-2013**	**---**	31-DEC-2013	----	**20-DEC-2013**	31-DEC-2013	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW14, LO_MW02	D01_171213_TH,	**17-DEC-2013**	**---**	31-DEC-2013	----	**20-DEC-2013**	31-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
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LO_MW14, LB_MW14	D01_171213_TH,	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LU_MW02,	LO_MW02	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**22-DEC-2013**	29-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
RO_171213_TH		**19-DEC-2013**	**23-DEC-2013**	26-DEC-2013	✓	**23-DEC-2013**	01-FEB-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LO_MW14, LB_MW14	D01_171213_TH,	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LU_MW02,	LO_MW02	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**22-DEC-2013**	29-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
RO_171213_TH		**19-DEC-2013**	**23-DEC-2013**	26-DEC-2013	✓	**23-DEC-2013**	01-FEB-2014	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
TRIP SPIKE 4_14/12/13TH		**14-DEC-2013**	**---**	28-DEC-2013	----	**20-DEC-2013**	28-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
LU_MW02, D01_171213_TH, LB_MW14,	LO_MW14, LO_MW02, TRIP BLANK 12_17/12/13TH	**17-DEC-2013**	**---**	31-DEC-2013	----	**20-DEC-2013**	31-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
RO_171213_TH		**19-DEC-2013**	**20-DEC-2013**	02-JAN-2014	✓	**20-DEC-2013**	02-JAN-2014	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP080)								
LU_MW02, D01_171213_TH, LB_MW14,	LO_MW14, LO_MW02, TRIP BLANK 12_17/12/13TH	**17-DEC-2013**	**---**	31-DEC-2013	----	**20-DEC-2013**	31-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
RO_171213_TH		**19-DEC-2013**	**20-DEC-2013**	02-JAN-2014	✓	**20-DEC-2013**	02-JAN-2014	✓
EP231: Perfluorinated Compounds								
HDPE (no PTFE) (EP231)								
LO_MW14, LO_MW02	D01_171213_TH,	**17-DEC-2013**	**---**	15-JUN-2014	----	**20-DEC-2013**	15-JUN-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: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	16	**12.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	3	21	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	5	**20.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	19	**10.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	2	12	**16.7**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	6	**16.7**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	**20.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	2	**50.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	19	**10.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	3	24	**12.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	11	**18.2**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	21	**9.5**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	3	27	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	12	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	7	**28.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	3	27	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	24	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	11	**9.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	21	**9.5**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	3	27	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	12	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	7	**28.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	3	27	**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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
TPH Volatiles/BTEX	EP080	2	24	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	11	**9.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	21	**9.5**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	12	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	24	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	11	**9.1**	**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
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 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)
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 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)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. 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)

Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds	EP074	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. 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)
PFOS and PFOA	EP231	WATER	In-house: Direct injection analysis of fresh and diluted saline waters. In order to meet standard reporting limits, saline waters may be adsorped onto a solid phase extraction medium, the salt washed out and the sample eluted for analysis. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM.

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	Modified USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Lab Acidification of Metals	EN80	WATER	USEPA Method 200.8
Lab Acidification of Dissolved Metals	EN80F	WATER	US EPA Method 200.8
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 SW 846 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	3848114-007	----	**Phenol**	108-95-2	71.0 %	24.5-61.9%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3848115-011	----	**Benz(a)anthracene**	56-55-3	117 %	64.1-117%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3848115-011	----	**Chrysene**	218-01-9	116 %	62.5-116%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3848114-007	----	**Benzo(b)fluoranthene**	205-99-2	125 %	61.7-119%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1327963-008	Anonymous	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1327890-004	Anonymous	**Nickel**	7440-02-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1327890-004	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: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	ES1327893-006	LB_MW14	**Phenol-d6**	13127-88-3	45.1 %	10.0-44 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	ES1327893-005	LO_MW02	**2.4.6-Tribromophenol**	118-79-6	126 %	17-125 %	**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: Macquarie Generation	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☐ Standard TAT (List due date): ☒ Non Standard or urgent TAT (List due date): 48 hr ⅄A+	FOR LABORATORY USE ONLY (Circle)
OFFICE:			Custody Seal Intact? (circled) 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 circled) No N/A
ORDER NUMBER:	SITE: BAYSWATER / LIDDELL (LIDDELL circled)	COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: 4.4 °C
PROJECT MANAGER: Joe Ferring	CONTACT PH: 0474 970 468	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Sam Campbell	SAMPLER MOBILE: 0413 508660		
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):		
Email Reports to (will default to PM if no other addresses are listed): Symphony.Macgen@ern.com			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Sam Campbell	Hayley W	Hayley W	Ken
DATE/TIME: 19.12.13	DATE/TIME: 20/12/13 14:45	DATE/TIME: 20/12/13 1700	DATE/TIME: 20/12 19:00

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 (refer to codes below)	TOTAL CONTAINERS	S-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, Tl, Se) Hg	S-24 TRH(C6-C40)/BTEXN, PAH, Phenols	VOC Target Scan	PCB	pH (1:5)	Exchangeable cations (ED007)	PFOS/PFOA	Asbestos (absence/presence)	Particle Sizing to 75µm (Sieve)	Organic Matter plus Total Organic Carbon (EP004)	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LL_MW02	18.12.13/1010	water		7	X		X									
2	LB_MW05	18.12.13/1620	↓		6		X	X									
3	LB_MW06	18.12.13/1700	↓		0		↓	↓									
4	LB_MW08	18.12.13/1400	↓		6		↓	↓									
5	LB_MW01	18.12.13/1207	↓		6		↓	↓									
6	LL_MW03	18.12.13/0900	↓		7	X		X									
	~~[scribbled out]~~		↓														
7	R01_181213_SC	18.12.13/1730	↓				X	X									

Environmental Division
Sydney
Work Order
ES1327964

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 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

Jacob Waugh

From: Catherine Bondoc
Sent: Monday, 23 December 2013 1:12 PM
To: Jacob Waugh
Subject: FW: ES1327964 additional analysis
Attachments: ES1327964_0_SRN_131220224438.pdf; ES1327964_COC.PDF

Hi Jacob,

Please see email below.

Thanks!!

Kind Regards

Catherine Bondoc

Client Services Officer
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 Enviromails:

EnviroMail 68 - Sampling and Analysis Implications of the new NEPM - July 2013

EnviroMail 69 - Testing Requirements of the new NEPM - July 2013

EnviroMail 70 - Variation of Naphthalene by SVOC and VOC Methods in Water - July 2013

EnviroMail 71 - Cryptosporidium Infectivity - July 2013

T +61 2 8784 8555
D +61 2 8784 8523
F +61 2 8784 8500

www.alsglobal.com

From: Clea Henderson [mailto:Clea.Henderson@erm.com]
Sent: Monday, 23 December 2013 1:00 PM
To: Catherine Bondoc
Cc: ERM Australia Project Symphony MacGen; Joseph Ferring; ALSEnviro Sydney
Subject: ES1327964 additional analysis

Hi Catherine,

My apologies, can I please request the following analysis be added to the attached batch?

Sample 001 and 006 also need to be analysed for:

- PCBs

Many 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

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES1327964**		
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 2
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: LIDDELL		
Sampler	: SC	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 19-DEC-2013	Issue Date	: 23-DEC-2013 12:31
Client Requested Due Date	: 24-DEC-2013	Scheduled Reporting Date	: **30-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.4'C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 7
Security Seal	: Intact.	No. of samples analysed	: 7

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.
- **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 neccessary 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 - EG035F Dissolved Mercury by FIMS	WATER - EG035T Total Mercury by FIMS	WATER - EG094A-F Dissolved Metals in Fresh Water Suite A by	WATER - EG094A-T Total Metals in Fresh water Suite A by ORC-ICPMS	WATER - EG094B-F Dissolved Metals in fresh water Suite B by	WATER - EG094B-T Total Metals in Fresh Water Suite B by ORC-ICPMS	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1327964-001	18-DEC-2013 10:10	LL_MW02	✓		✓				✓	✓
ES1327964-002	18-DEC-2013 16:20	LB_MW05	✓		✓		✓			✓
ES1327964-003	18-DEC-2013 17:00	LB_MW06	✓		✓		✓			✓
ES1327964-004	18-DEC-2013 14:00	LB_MW08	✓		✓		✓			✓
ES1327964-005	18-DEC-2013 12:07	LB_MW01	✓		✓		✓			✓
ES1327964-006	18-DEC-2013 09:00	LL_MW03	✓		✓				✓	✓
ES1327964-007	18-DEC-2013 17:30	R01_181213_SC		✓		✓		✓		✓

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

CERTIFICATE OF ANALYSIS

Work Order	: **ES1327964**	Page	: 1 of 10
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	: ----		
C-O-C number	: ----	Date Samples Received	: 19-DEC-2013
Sampler	: SC	Issue Date	: 30-DEC-2013
Site	: LIDDELL		
		No. of samples received	: 7
Quote number	: SY/794/13	No. of samples analysed	: 7

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.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Lana Nguyen	Senior LCMS 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: Results for sample LL_MW02 have been confirmed by re-analysis.**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LL_MW02	LB_MW05	LB_MW06	LB_MW08	LB_MW01
				Client sampling date / time	18-DEC-2013 10:10	18-DEC-2013 16:20	18-DEC-2013 17:00	18-DEC-2013 14:00	18-DEC-2013 12:07
					ES1327964-001	ES1327964-002	ES1327964-003	ES1327964-004	ES1327964-005
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Selenium	7782-49-2	0.2	µg/L		----	**0.3**	**4.7**	**2.6**	**218**
Arsenic	7440-38-2	0.2	µg/L		**12.1**	**1.7**	**8.5**	**3.0**	**2.5**
Barium	7440-39-3	0.5	µg/L		----	**56.8**	**144**	**37.3**	**49.0**
Beryllium	7440-41-7	0.1	µg/L		----	<0.1	**1.8**	<0.1	<0.1
Boron	7440-42-8	5	µg/L		----	**236**	**2770**	**1220**	**226**
Cadmium	7440-43-9	0.05	µg/L		<0.05	<0.05	**0.78**	**0.11**	**0.15**
Chromium	7440-47-3	0.2	µg/L		**0.4**	<0.2	**13.2**	<0.2	**0.9**
Cobalt	7440-48-4	0.1	µg/L		----	**2.9**	**90.1**	**3.7**	**20.2**
Copper	7440-50-8	0.5	µg/L		**1.0**	**3.0**	**13.7**	**2.3**	**20.7**
Lead	7439-92-1	0.1	µg/L		**0.2**	**4.2**	**92.4**	**0.6**	**18.9**
Manganese	7439-96-5	0.5	µg/L		----	**206**	**2690**	**438**	**301**
Molybdenum	7439-98-7	0.1	µg/L		----	**3.7**	**3.8**	**207**	**4.2**
Nickel	7440-02-0	0.5	µg/L		**95.8**	**5.3**	**34.2**	**13.0**	**108**
Titanium	7440-32-6	1	µg/L		----	<1	**3**	<1	<1
Vanadium	7440-62-2	0.2	µg/L		----	**3.9**	**26.0**	**0.4**	**1.7**
Zinc	7440-66-6	1	µg/L		**25**	**16**	**53**	**22**	**146**
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	----	----	----	----
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

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LL_MW02	LB_MW05	LB_MW06	LB_MW08	LB_MW01
				Client sampling date / time	18-DEC-2013 10:10	18-DEC-2013 16:20	18-DEC-2013 17:00	18-DEC-2013 14:00	18-DEC-2013 12:07
					ES1327964-001	ES1327964-002	ES1327964-003	ES1327964-004	ES1327964-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LL_MW02	LB_MW05	LB_MW06	LB_MW08	LB_MW01
				Client sampling date / time	18-DEC-2013 10:10	18-DEC-2013 16:20	18-DEC-2013 17:00	18-DEC-2013 14:00	18-DEC-2013 12:07
Compound	CAS Number	LOR	Unit		ES1327964-001	ES1327964-002	ES1327964-003	ES1327964-004	ES1327964-005
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		**3**	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		**3**	<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		**6**	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**63.8**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**32.0**	**32.3**	**42.8**	**25.3**	**38.7**
2-Chlorophenol-D4	93951-73-6	0.1	%		**51.9**	**54.0**	**74.8**	**43.6**	**72.2**
2.4.6-Tribromophenol	118-79-6	0.1	%		**37.8**	**22.2**	**14.9**	**66.5**	**18.4**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**57.7**	**55.6**	**85.7**	**47.7**	**80.5**
Anthracene-d10	1719-06-8	0.1	%		**68.5**	**74.0**	**102**	**63.3**	**93.0**
4-Terphenyl-d14	1718-51-0	0.1	%		**72.6**	**78.0**	**111**	**60.9**	**100**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**101**	**97.0**	**95.8**	**100**	**96.6**
Toluene-D8	2037-26-5	0.1	%		**124**	**98.8**	**98.5**	**99.7**	**102**
4-Bromofluorobenzene	460-00-4	0.1	%		**124**	**81.9**	**80.2**	**82.6**	**81.4**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LL_MW03	R01_181213_SC	----	----	----
				Client sampling date / time	18-DEC-2013 09:00	18-DEC-2013 17:30	----	----	----
Compound	CAS Number	LOR	Unit		ES1327964-006	ES1327964-007	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	<0.0001	----	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Arsenic	7440-38-2	0.2	µg/L		**12.8**	----	----	----	----
Cadmium	7440-43-9	0.05	µg/L		<0.05	----	----	----	----
Chromium	7440-47-3	0.2	µg/L		**0.3**	----	----	----	----
Copper	7440-50-8	0.5	µg/L		<0.5	----	----	----	----
Lead	7439-92-1	0.1	µg/L		<0.1	----	----	----	----
Nickel	7440-02-0	0.5	µg/L		**170**	----	----	----	----
Zinc	7440-66-6	1	µg/L		**1**	----	----	----	----
EG094T: Total metals in Fresh water by ORC-ICPMS									
Selenium	7782-49-2	0.2	µg/L		----	<0.2	----	----	----
Arsenic	7440-38-2	0.2	µg/L		----	<0.2	----	----	----
Barium	7440-39-3	0.5	µg/L		----	<0.5	----	----	----
Beryllium	7440-41-7	0.1	µg/L		----	<0.1	----	----	----
Boron	7440-42-8	5	µg/L		----	<5	----	----	----
Cadmium	7440-43-9	0.05	µg/L		----	<0.05	----	----	----
Chromium	7440-47-3	0.2	µg/L		----	<0.2	----	----	----
Cobalt	7440-48-4	0.1	µg/L		----	<0.1	----	----	----
Copper	7440-50-8	0.5	µg/L		----	<0.5	----	----	----
Lead	7439-92-1	0.1	µg/L		----	<0.1	----	----	----
Manganese	7439-96-5	0.5	µg/L		----	<0.5	----	----	----
Molybdenum	7439-98-7	0.1	µg/L		----	<0.1	----	----	----
Nickel	7440-02-0	0.5	µg/L		----	<0.5	----	----	----
Titanium	7440-32-6	1	µg/L		----	<1	----	----	----
Vanadium	7440-62-2	0.2	µg/L		----	<0.2	----	----	----
Zinc	7440-66-6	1	µg/L		----	<1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		**2.2**	<1.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	<1.0	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LL_MW03	R01_181213_SC	----	----	----
				Client sampling date / time	18-DEC-2013 09:00	18-DEC-2013 17:30	----	----	----
Compound	CAS Number	LOR	Unit		ES1327964-006	ES1327964-007	----	----	----
EP075(SIM)A: Phenolic Compounds - Continued									
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	1.0	µg/L		**1.1**	<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		**1.1**	<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		**30**	<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	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LL_MW03	R01_181213_SC	----	----	----
				Client sampling date / time	18-DEC-2013 09:00	18-DEC-2013 17:30	----	----	----
Compound	CAS Number	LOR	Unit		ES1327964-006	ES1327964-007	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		**30**	<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	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		**8**	<1	----	----	----
Toluene	108-88-3	2	µg/L		**6**	<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		**14**	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**63.4**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**30.1**	**26.7**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**56.6**	**54.9**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**52.0**	**14.8**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**56.6**	**57.8**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**67.8**	**71.5**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**73.1**	**78.5**	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**99.3**	**94.2**	----	----	----
Toluene-D8	2037-26-5	0.1	%		**102**	**95.4**	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**83.0**	**78.5**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	LL_MW03	R01_181213_SC	----	----	----
			Client sampling date / time	18-DEC-2013 09:00	18-DEC-2013 17:30	----	----	----
Compound	CAS Number	LOR	Unit	ES1327964-006	ES1327964-007	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued								

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) 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	: **ES1327964**	Page	: 1 of 15
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	: 19-DEC-2013
Sampler	: SC	Issue Date	: 30-DEC-2013
Order number	: ----		
		No. of samples received	: 7
Quote number	: SY/794/13	No. of samples analysed	: 7

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 ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Lana Nguyen	Senior LCMS 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: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG035F: Dissolved Mercury by FIMS (QC Lot: 3225615)									
ES1327888-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1327964-001	LL_MW02	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3225995)									
ES1327964-007	R01_181213_SC	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3226297)									
ES1327893-006	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.24	0.27	10.5	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	0.2	0.2	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	42.7	49.7	15.0	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.6	0.7	21.4	No Limit
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	4.4	5.0	12.1	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.3	0.3	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	19.6	22.9	15.4	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	3.5	4.1	13.6	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	1950	2270	15.1	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	26.5	30.9	15.4	0% - 20%
		EG094A-F: Titanium	7440-32-6	1	µg/L	<1	<1	0.0	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	33	38	14.8	0% - 20%
		EG094A-F: Boron	7440-42-8	5	µg/L	1880	1970	4.3	0% - 20%
ES1327964-002	LB_MW05	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	2.9	2.9	0.0	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	4.2	3.9	6.4	0% - 20%
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	3.7	3.6	0.0	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	1.7	1.6	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	3.9	3.8	0.0	0% - 50%
		EG094A-F: Barium	7440-39-3	0.5	µg/L	56.8	56.2	1.1	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	3.0	3.0	0.0	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	206	200	2.7	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	5.3	5.3	0.0	0% - 50%
		EG094A-F: Titanium	7440-32-6	1	µg/L	<1	<1	0.0	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	16	16	0.0	0% - 50%
		EG094A-F: Boron	7440-42-8	5	µg/L	236	238	0.6	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3226298)									

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3226298) - continued									
ES1327893-006	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	0.4	0.5	0.0	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3227093)									
ES1327964-007	R01_181213_SC	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Barium	7440-39-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Titanium	7440-32-6	1	µg/L	<1	<1	0.0	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	<1	1	0.0	No Limit
		EG094A-T: Boron	7440-42-8	5	µg/L	<5	<5	0.0	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3227094)									
ES1327964-007	R01_181213_SC	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3227374)									
ES1327964-001	LL_MW02	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3226325)									
ES1327964-001	LL_MW02	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
ES1327964-004	LB_MW08	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

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: 3226325) - continued									
ES1327964-004	LB_MW08	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: 3226325)									
ES1327964-001	LL_MW02	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
ES1327964-004	LB_MW08	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: 3225681)									

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: 3225681) - continued									
ES1327964-002	LB_MW05	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1328114-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3225682)									
ES1328110-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	30	30	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3226324)									
ES1327964-001	LL_MW02	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
ES1327964-004	LB_MW08	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: 3225681)									
ES1327964-002	LB_MW05	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1328114-004	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: 3225682)									
ES1328110-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	30	30	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3226324)									
ES1327964-001	LL_MW02	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
ES1327964-004	LB_MW08	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: 3225681)									
ES1327964-002	LB_MW05	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
ES1328114-004	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: 3225682)									

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 3225682) - continued									
ES1328110-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	2	2	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	6	6	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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 3225615)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	106	78	114
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225995)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	94.2	77	115
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3226297)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	87.0	75	129
EG094A-F: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	93.6	76	120
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	82.2	74	130
EG094A-F: Boron	7440-42-8	5	µg/L	<5	10 µg/L	101	79	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	87.5	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	87.0	71	123
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	90.0	79	121
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	108	77	125
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	111	74	118
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	89.6	79	119
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	83.0	69	127
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	91.0	72	128
EG094A-F: Titanium	7440-32-6	1	µg/L	<1	10 µg/L	89.6	71	125
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	87.6	78	116
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	91.1	76	134
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3226298)								
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	105	75	125
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3227093)								
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	88.8	81	125
EG094A-T: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	87.1	81	117
EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	107	71	127
EG094A-T: Boron	7440-42-8	5	µg/L	<5	10 µg/L	104	70	130
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	93.5	77	111
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	99.8	78	126
EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	91.4	78	126
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	100	78	126
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	93.9	75	123
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	98.1	81	121
EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	94.4	77	127
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	91.1	82	124

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3227093) - continued								
EG094A-T: Titanium	7440-32-6	1	µg/L	<1	10 µg/L	98.8	71	127
EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	94.1	82	118
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	88.9	75	129
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3227094)								
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	100 µg/L	114	78	124
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3227374)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	80.0	61.6	107
EP075(SIM)A: Phenolic Compounds (QCLot: 3226325)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	41.0	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	65.4	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	65.6	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	59.3	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	70.4	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	76.5	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	74.1	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	71.7	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	85.4	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	77.1	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	70.9	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	# 105	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3226325)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	67.6	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	79.6	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	71.4	62.2	113
		1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3226325) - continued								
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	77.0	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	76.3	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	75.8	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	83.6	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	80.7	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	84.5	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	82.1	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	79.8	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	86.1	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	82.5	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	74.0	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	75.2	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	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: 3225681)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	120	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225682)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	92.3	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3226324)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	98.1	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	115	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	99.4	62	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225681)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	122	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225682)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	95.7	75	127

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3226324)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	92.7	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	111	67	127
EP080: BTEXN (QCLot: 3225681)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	122	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	113	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	97.6	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	95.5	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	97.0	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	108	70	124
EP080: BTEXN (QCLot: 3225682)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	99.7	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	112	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	106	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	98.3	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	93.2	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	90.6	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: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 3225615)							
ES1327888-006	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	93.3	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225995)							
ES1328108-002	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	88.4	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3226297)							
ES1327963-008	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	122	70	130
		EG094A-F: Barium	7440-39-3	50 µg/L	87.2	70	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	99.8	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	120	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	118	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
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3226297) - continued							
ES1327963-008	Anonymous	EG094A-F: Cobalt	7440-48-4	50 µg/L	121	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	128	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	120	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	106	70	130
		EG094A-F: Vanadium	7440-62-2	50 µg/L	124	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	115	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3227093)							
ES1328110-006	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	107	70	130
		EG094A-T: Barium	7440-39-3	50 µg/L	109	70	130
		EG094A-T: Beryllium	7440-41-7	50 µg/L	117	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	117	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	123	70	130
		EG094A-T: Cobalt	7440-48-4	50 µg/L	112	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	125	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	125	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	125	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	110	70	130
		EG094A-T: Vanadium	7440-62-2	50 µg/L	116	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	111	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3227374)							
ES1327964-001	LL_MW03	EP066: Total Polychlorinated biphenyls	----	10 µg/L	100	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3226325)							
ES1327964-001	LL_MW02	EP075(SIM): Phenol	108-95-2	20 µg/L	60.2	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	91.2	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	99.3	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	108	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	106	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3226325)							
ES1327964-001	LL_MW02	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	101	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	114	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225681)							
ES1327964-002	LB_MW05	EP080: C6 - C9 Fraction	----	325 µg/L	126	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225682)							
ES1328110-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	122	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3226324)							

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 Petroleum Hydrocarbons (QCLot: 3226324) - continued							
ES1327964-001	LL_MW02	EP071: C10 - C14 Fraction	----	200 µg/L	118	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	106	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	107	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225681)							
ES1327964-002	LB_MW05	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225682)							
ES1328110-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	121	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3226324)							
ES1327964-001	LL_MW02	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	108	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	105	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	103	67	153
EP080: BTEXN (QCLot: 3225681)							
ES1327964-002	LB_MW05	EP080: Benzene	71-43-2	25 µg/L	104	70	130
		EP080: Toluene	108-88-3	25 µg/L	102	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	92.3	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	89.8	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	93.6	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	92.8	70	130
EP080: BTEXN (QCLot: 3225682)							
ES1328110-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	106	70	130
		EP080: Toluene	108-88-3	25 µg/L	125	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	115	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	113	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	107	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	91.1	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
EG035F: Dissolved Mercury by FIMS (QCLot: 3225615)										
ES1327888-006	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	93.3	----	70	130	----	----

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: 3225681)										
ES1327964-002	LB_MW05	EP080: C6 - C9 Fraction	----	325 µg/L	126	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225681)										
ES1327964-002	LB_MW05	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	----	70	130	----	----
EP080: BTEXN (QCLot: 3225681)										
ES1327964-002	LB_MW05	EP080: Benzene	71-43-2	25 µg/L	104	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	102	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	92.3	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	89.8	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	93.6	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	92.8	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225682)										
ES1328110-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	122	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225682)										
ES1328110-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	121	----	70	130	----	----
EP080: BTEXN (QCLot: 3225682)										
ES1328110-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	106	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	125	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	115	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	113	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	107	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	91.1	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225995)										
ES1328108-002	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	88.4	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3226297)										
ES1327963-008	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	122	----	70	130	----	----
		EG094A-F: Barium	7440-39-3	50 µg/L	87.2	----	70	130	----	----
		EG094A-F: Beryllium	7440-41-7	50 µg/L	99.8	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	120	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	118	----	70	130	----	----
		EG094A-F: Cobalt	7440-48-4	50 µg/L	121	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	128	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	120	----	70	130	----	----
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	106	----	70	130	----	----
		EG094A-F: Vanadium	7440-62-2	50 µg/L	124	----	70	130	----	----

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
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3226297) - continued										
ES1327963-008	Anonymous	EG094A-F: Zinc	7440-66-6	50 µg/L	115	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3226324)										
ES1327964-001	LL_MW02	EP071: C10 - C14 Fraction	----	200 µg/L	118	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	106	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	107	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3226324)										
ES1327964-001	LL_MW02	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	108	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	105	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	103	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3226325)										
ES1327964-001	LL_MW02	EP075(SIM): Phenol	108-95-2	20 µg/L	60.2	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	91.2	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	99.3	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	108	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	106	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3226325)										
ES1327964-001	LL_MW02	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	101	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	114	----	70	130	----	----
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3227093)										
ES1328110-006	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	107	----	70	130	----	----
		EG094A-T: Barium	7440-39-3	50 µg/L	109	----	70	130	----	----
		EG094A-T: Beryllium	7440-41-7	50 µg/L	117	----	70	130	----	----
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	117	----	70	130	----	----
		EG094A-T: Chromium	7440-47-3	50 µg/L	123	----	70	130	----	----
		EG094A-T: Cobalt	7440-48-4	50 µg/L	112	----	70	130	----	----
		EG094A-T: Copper	7440-50-8	50 µg/L	125	----	70	130	----	----
		EG094A-T: Lead	7439-92-1	50 µg/L	125	----	70	130	----	----
		EG094A-T: Manganese	7439-96-5	50 µg/L	125	----	70	130	----	----
		EG094A-T: Nickel	7440-02-0	50 µg/L	110	----	70	130	----	----
		EG094A-T: Vanadium	7440-62-2	50 µg/L	116	----	70	130	----	----
		EG094A-T: Zinc	7440-66-6	50 µg/L	111	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3227374)										
ES1327964-001	LL_MW03	EP066: Total Polychlorinated biphenyls	----	10 µg/L	100	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1327964**	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	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 19-DEC-2013
Sampler	: SC	Issue Date	: 30-DEC-2013
Order number	: ----		
		No. of samples received	: 7
Quote number	: SY/794/13	No. of samples analysed	: 7

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
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LL_MW02, LB_MW05, LB_MW06, LB_MW08, LB_MW01, LL_MW03	**18-DEC-2013**	**---**	15-JAN-2014	----	**22-DEC-2013**	15-JAN-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T)							
R01_181213_SC	**18-DEC-2013**	**----**	----	----	**23-DEC-2013**	15-JAN-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LL_MW02, LB_MW05, LB_MW06, LB_MW08, LB_MW01, LL_MW03	**18-DEC-2013**	**---**	16-JUN-2014	----	**23-DEC-2013**	16-JUN-2014	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T)							
R01_181213_SC	**18-DEC-2013**	**23-DEC-2013**	16-JUN-2014	✓	**23-DEC-2013**	16-JUN-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F)							
LB_MW05, LB_MW06, LB_MW08, LB_MW01	**18-DEC-2013**	**---**	16-JUN-2014	----	**23-DEC-2013**	16-JUN-2014	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T)							
R01_181213_SC	**18-DEC-2013**	**23-DEC-2013**	16-JUN-2014	✓	**23-DEC-2013**	16-JUN-2014	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
LL_MW02, LL_MW03	**18-DEC-2013**	**23-DEC-2013**	25-DEC-2013	✓	**27-DEC-2013**	05-FEB-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
LL_MW02, LB_MW05, LB_MW06, LB_MW08, LB_MW01, LL_MW03, R01_181213_SC	**18-DEC-2013**	**23-DEC-2013**	25-DEC-2013	✓	**23-DEC-2013**	01-FEB-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))							
LL_MW02, LB_MW05, LB_MW06, LB_MW08, LB_MW01, LL_MW03, R01_181213_SC	**18-DEC-2013**	**23-DEC-2013**	25-DEC-2013	✓	**23-DEC-2013**	01-FEB-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LL_MW02, LB_MW05, LB_MW06, LB_MW08, LB_MW01, LL_MW03, R01_181213_SC	**18-DEC-2013**	**23-DEC-2013**	25-DEC-2013	✓	**23-DEC-2013**	01-FEB-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
LL_MW02, LB_MW05, LB_MW06, LB_MW08, LB_MW01, LL_MW03, R01_181213_SC	**18-DEC-2013**	**22-DEC-2013**	01-JAN-2014	✓	**22-DEC-2013**	01-JAN-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080)							
LL_MW02, LB_MW05, LB_MW06, LB_MW08, LB_MW01, LL_MW03, R01_181213_SC	**18-DEC-2013**	**22-DEC-2013**	01-JAN-2014	✓	**22-DEC-2013**	01-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: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	14	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	5	**20.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	18	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	**33.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	**33.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	1	**100.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	18	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	3	26	**11.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	26	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	26	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	**5.6**	**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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	26	**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
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 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)
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 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)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. 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)

Analytical Methods	Method	Matrix	Method Descriptions
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 - ORC	EN25-ORC	WATER	Modified USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Lab Acidification of Metals	EN80	WATER	USEPA Method 200.8
Lab Acidification of Dissolved Metals	EN80F	WATER	US EPA Method 200.8
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 SW 846 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	3851877-007	----	**Pentachlorophenol**	87-86-5	105 %	8.7-95%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1327963-008	Anonymous	**Manganese**	7439-96-5	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: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	ES1327964-003	LB_MW06	**2.4.6-Tribromophenol**	118-79-6	14.9 %	17-125 %	**Recovery less than lower data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	ES1327964-007	R01_181213_SC	**2.4.6-Tribromophenol**	118-79-6	14.8 %	17-125 %	**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 tick →

CLIENT: Macquarie generation	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Standard TAT (List due date): ☒ Non Standard or urgent TAT (List due date): 48 hrs turn.
OFFICE: Sydney	
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13
ORDER NUMBER: 0224198	SITE: ~~BAYSWATER~~ LIDDELL (circled)
PROJECT MANAGER: Joe Ferning	CONTACT PH: ~~0403132979~~
SAMPLER: JW	SAMPLER MOBILE: 0403132979
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): symphony@macgen.com.	
Email Invoice to (will default to PM if no other addresses are listed):	

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
	[signature]	[signature]	Ravi
DATE/TIME:	DATE/TIME: 20/12 15:55	DATE/TIME: 20/12/13 1720	DATE/TIME: 20/12 1920

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? (Yes) No N/A
Free ice / frozen ice bricks present upon receipt? (Yes) No N/A
Random Sample Temperature on Receipt: 9.4 °C
Other comment:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE: LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	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 TRH(C6-C40)/BTEXN, PAH, Phenols	Metal (13)	BTEX C6-C9	Additional Information: Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LB_MW11	18.12.13/8:30	W		6							X	X		
2	LO_MW12	18.12.13/9:42			7	X			X	X	X	X			
3	LI_MW01	18.12.13/11:23			4	X			~~X~~			X			
4	LI_MW08	18.12.13/15:55			7	X						X			
5	LV_MW05	18.12.13			5	X						X			
6	LR_MW01	19.12.13			5	X				X		X			
7	LB_MW03	19.12.13			8	~~X~~						X	X		
8	TB13													X	
9	TB14													X	
10	R01_181213	18.12.13			6							X	X		
11															
also received	CN MW02														
12	TB8 - 2x 40ml vials														

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 Plas
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division
Sydney
Work Order
ES1328114

Telephone : +61-2-8784 8555

Jacob Waugh

From: Catherine Bondoc
Sent: Monday, 23 December 2013 12:40 PM
To: Jacob Waugh
Subject: FW: ES1328114 - metals analysis

Hi Jacob,

Can you add B, Mo, Tl and Se to sample 1 and 7 of this work order as clients request below?

Thanks

Kind Regards

Catherine Bondoc

Client Services Officer
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 Enviromails:

EnviroMail 68 - Sampling and Analysis Implications of the new NEPM - July 2013

EnviroMail 69 - Testing Requirements of the new NEPM - July 2013

EnviroMail 70 - Variation of Naphthalene by SVOC and VOC Methods in Water - July 2013

EnviroMail 71 - Cryptosporidium Infectivity - July 2013

T +61 2 8784 8555
D +61 2 8784 8523
F +61 2 8784 8500

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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

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From: Clea Henderson [mailto:Clea.Henderson@erm.com]
Sent: Monday, 23 December 2013 12:07 PM
To: Catherine Bondoc
Cc: ALSEnviro Sydney; ERM Australia Project Symphony MacGen; Joseph Ferring
Subject: ES1328114 - metals analysis

Hi Catherine,

I'm trying to work out if the correct metals analysis is listed on the attached SRN as all metals analysis appears to be the same but, in fact, some samples require additional metals. Can you please ensure that the following metals analysis has been booked? Note: All other analysis appears to be correct.

Sample 001 (LB_MW11) and 007 (LB_MW03) require:

- Dissolved metals (arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, manganese, nickel, lead, mercury, vanadium zinc plus boron, molybdenum, thallium and selenium)

Samples 002, 003, 004, 005, 006 require:

- Dissolved metals (arsenic, cadmium, chromium, copper, nickel, lead, mercury and zinc)

Can you email me back and let me know what analysis codes I should be looking out for on SRNs for these two different metals requirements so that I am able to tell in the future?

1. Dissolved metals (arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, manganese, nickel, lead, mercury, vanadium zinc plus boron, molybdenum, thallium and selenium)
2. Dissolved metals (arsenic, cadmium, chromium, copper, nickel, lead, mercury and zinc)

Further, regarding the additional sample received and placed on hold (sample 011 CN_MW02). The Client sample does not seem to be right. Are you able to tell me what bottles you received and send through a photo of a label so I can try and work out what sample it is?

Many 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

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES1328114**		
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	Page	: 1 of 3
Order number	: 0224198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: ----		
Sampler	: JW	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 20-DEC-2013	Issue Date	: 21-DEC-2013 07:26
Client Requested Due Date	: 24-DEC-2013	Scheduled Reporting Date	: **24-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.4'C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 12
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.**
- **Sample CN_MW02 was received extra and placed on hold.**
- **Sample TS8 was received extra and will be analysed for BTEXN.**
- 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 neccessary 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	(On Hold) WATER No analysis requested	WATER - EG035F Dissolved Mercury by FIMS	WATER - EG035T Total Mercury by FIMS	WATER - EG094A-F Dissolved Metals in Fresh Water Suite	WATER - EG094A-T Total Metals in Fresh water Suite A by	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP074 (water) Volatile Organic Compounds	WATER - EP080 BTEXN
ES1328114-001	18-DEC-2013 08:30	LB_MW11		✓		✓				
ES1328114-002	18-DEC-2013 09:42	LO_MW12		✓		✓		✓	✓	
ES1328114-003	18-DEC-2013 11:25	LI_MW01		✓		✓				
ES1328114-004	18-DEC-2013 15:55	LI_MW08		✓		✓				
ES1328114-005	18-DEC-2013 15:00	LV_MW05		✓		✓				
ES1328114-006	19-DEC-2013 15:00	LR_MW01		✓		✓		✓		
ES1328114-007	19-DEC-2013 15:00	LB_MW03		✓		✓				
ES1328114-010	18-DEC-2013 15:00	R01_181213			✓		✓			
ES1328114-011	[20-DEC-2013]	CN_MW02	✓							
ES1328114-012	[20-DEC-2013]	TS 8								✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP231 Perfluorooctyl Acids and Sulfonates	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1328114-001	18-DEC-2013 08:30	LB_MW11			✓
ES1328114-002	18-DEC-2013 09:42	LO_MW12	✓		✓
ES1328114-003	18-DEC-2013 11:25	LI_MW01			✓
ES1328114-004	18-DEC-2013 15:55	LI_MW08			✓
ES1328114-005	18-DEC-2013 15:00	LV_MW05			✓
ES1328114-006	19-DEC-2013 15:00	LR_MW01			✓
ES1328114-007	19-DEC-2013 15:00	LB_MW03			✓
ES1328114-008	[20-DEC-2013]	TB13		✓	
ES1328114-009	[20-DEC-2013]	TB14		✓	
ES1328114-010	18-DEC-2013 15:00	R01_181213			✓

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1328114**	Page	: 1 of 14
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
Order number	: 0224198		
C-O-C number	: ----	Date Samples Received	: 20-DEC-2013
Sampler	: JW	Issue Date	: 27-DEC-2013
Site	: ----		
		No. of samples received	: 12
Quote number	: SY/794/13	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

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
Lana Nguyen	Senior LCMS 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

- **EG035: Poor matrix spike recovery was obtained for Mercury on sample ES1328114#2. Confirmed by reanalysis.**
- **EG035:Positive mercury results have been confirmed by re-analysis**
- **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.**
- **EP231: PFOA & PFOS results are reported as an aggregate of linear and branched isomers.**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LB_MW11	LO_MW12	LI_MW01	LI_MW08	LV_MW05
				Client sampling date / time	18-DEC-2013 08:30	18-DEC-2013 09:42	18-DEC-2013 11:25	18-DEC-2013 15:55	18-DEC-2013 15:00
					ES1328114-001	ES1328114-002	ES1328114-003	ES1328114-004	ES1328114-005
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		**0.0001**	<0.0001	<0.0001	<0.0001	<0.0001
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Selenium	7782-49-2	0.2	µg/L		**0.8**	----	----	----	----
Arsenic	7440-38-2	0.2	µg/L		**1.2**	**2.5**	**3.3**	**13.7**	**2.2**
Barium	7440-39-3	0.5	µg/L		**78.9**	----	----	----	----
Beryllium	7440-41-7	0.1	µg/L		<0.1	----	----	----	----
Boron	7440-42-8	5	µg/L		**151**	----	----	----	----
Cadmium	7440-43-9	0.05	µg/L		**0.06**	<0.05	**0.37**	**1.63**	**5.94**
Chromium	7440-47-3	0.2	µg/L		**0.2**	<0.2	<0.2	**6.5**	**0.9**
Cobalt	7440-48-4	0.1	µg/L		**6.2**	----	----	----	----
Copper	7440-50-8	0.5	µg/L		**4.7**	**1.1**	**4.9**	**19.7**	**7.5**
Lead	7439-92-1	0.1	µg/L		**3.2**	**1.8**	**0.2**	**9.4**	**9.2**
Manganese	7439-96-5	0.5	µg/L		**1420**	----	----	----	----
Molybdenum	7439-98-7	0.1	µg/L		**2.4**	----	----	----	----
Nickel	7440-02-0	0.5	µg/L		**8.2**	**21.9**	**20.6**	**391**	**1030**
Thallium	7440-28-0	0.02	µg/L		**0.05**	----	----	----	----
Vanadium	7440-62-2	0.2	µg/L		**1.9**	----	----	----	----
Zinc	7440-66-6	1	µg/L		**20**	**14**	**31**	**911**	**1450**
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		----	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		----	<5	----	----	----
Isopropylbenzene	98-82-8	5	µg/L		----	<5	----	----	----
n-Propylbenzene	103-65-1	5	µg/L		----	<5	----	----	----
1.3.5-Trimethylbenzene	108-67-8	5	µg/L		----	<5	----	----	----
sec-Butylbenzene	135-98-8	5	µg/L		----	<5	----	----	----
1.2.4-Trimethylbenzene	95-63-6	5	µg/L		----	<5	----	----	----
tert-Butylbenzene	98-06-6	5	µg/L		----	<5	----	----	----
p-Isopropyltoluene	99-87-6	5	µg/L		----	<5	----	----	----
n-Butylbenzene	104-51-8	5	µg/L		----	<5	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L		----	<50	----	----	----
2-Butanone (MEK)	78-93-3	50	µg/L		----	<50	----	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LB_MW11	LO_MW12	LI_MW01	LI_MW08	LV_MW05
				Client sampling date / time	18-DEC-2013 08:30	18-DEC-2013 09:42	18-DEC-2013 11:25	18-DEC-2013 15:55	18-DEC-2013 15:00
					ES1328114-001	ES1328114-002	ES1328114-003	ES1328114-004	ES1328114-005
EP074B: Oxygenated Compounds - Continued									
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L		----	<50	----	----	----
2-Hexanone (MBK)	591-78-6	50	µg/L		----	<50	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L		----	<5	----	----	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	5	µg/L		----	<5	----	----	----
1.2-Dichloropropane	78-87-5	5	µg/L		----	<5	----	----	----
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L		----	<5	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L		----	<5	----	----	----
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L		----	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		----	<50	----	----	----
Chloromethane	74-87-3	50	µg/L		----	<50	----	----	----
Vinyl chloride	75-01-4	50	µg/L		----	<50	----	----	----
Bromomethane	74-83-9	50	µg/L		----	<50	----	----	----
Chloroethane	75-00-3	50	µg/L		----	<50	----	----	----
Trichlorofluoromethane	75-69-4	50	µg/L		----	<50	----	----	----
1.1-Dichloroethene	75-35-4	5	µg/L		----	<5	----	----	----
Iodomethane	74-88-4	5	µg/L		----	<5	----	----	----
trans-1.2-Dichloroethene	156-60-5	5	µg/L		----	<5	----	----	----
1.1-Dichloroethane	75-34-3	5	µg/L		----	<5	----	----	----
cis-1.2-Dichloroethene	156-59-2	5	µg/L		----	<5	----	----	----
1.1.1-Trichloroethane	71-55-6	5	µg/L		----	<5	----	----	----
1.1-Dichloropropylene	563-58-6	5	µg/L		----	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		----	<5	----	----	----
1.2-Dichloroethane	107-06-2	5	µg/L		----	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L		----	<5	----	----	----
Dibromomethane	74-95-3	5	µg/L		----	<5	----	----	----
1.1.2-Trichloroethane	79-00-5	5	µg/L		----	<5	----	----	----
1.3-Dichloropropane	142-28-9	5	µg/L		----	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		----	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		----	<5	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L		----	<5	----	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LB_MW11	LO_MW12	LI_MW01	LI_MW08	LV_MW05
				Client sampling date / time	18-DEC-2013 08:30	18-DEC-2013 09:42	18-DEC-2013 11:25	18-DEC-2013 15:55	18-DEC-2013 15:00
					ES1328114-001	ES1328114-002	ES1328114-003	ES1328114-004	ES1328114-005
EP074E: Halogenated Aliphatic Compounds - Continued									
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L		----	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		----	<5	----	----	----
1.2.3-Trichloropropane	96-18-4	5	µg/L		----	<5	----	----	----
Pentachloroethane	76-01-7	5	µg/L		----	<5	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L		----	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		----	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		----	<5	----	----	----
Bromobenzene	108-86-1	5	µg/L		----	<5	----	----	----
2-Chlorotoluene	95-49-8	5	µg/L		----	<5	----	----	----
4-Chlorotoluene	106-43-4	5	µg/L		----	<5	----	----	----
1.3-Dichlorobenzene	541-73-1	5	µg/L		----	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		----	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		----	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		----	<5	----	----	----
1.2.3-Trichlorobenzene	87-61-6	5	µg/L		----	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		----	<5	----	----	----
Bromodichloromethane	75-27-4	5	µg/L		----	<5	----	----	----
Dibromochloromethane	124-48-1	5	µg/L		----	<5	----	----	----
Bromoform	75-25-2	5	µg/L		----	<5	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	7	µg/L		----	<7	----	----	----
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LB_MW11	LO_MW12	LI_MW01	LI_MW08	LV_MW05
				Client sampling date / time	18-DEC-2013 08:30	18-DEC-2013 09:42	18-DEC-2013 11:25	18-DEC-2013 15:55	18-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1328114-001	ES1328114-002	ES1328114-003	ES1328114-004	ES1328114-005
EP075(SIM)A: Phenolic Compounds - Continued									
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
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	<0.6	<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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LB_MW11	LO_MW12	LI_MW01	LI_MW08	LV_MW05
				Client sampling date / time	18-DEC-2013 08:30	18-DEC-2013 09:42	18-DEC-2013 11:25	18-DEC-2013 15:55	18-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1328114-001	ES1328114-002	ES1328114-003	ES1328114-004	ES1328114-005
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued									
>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									
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
EP231: Perfluorinated Compounds									
PFOS	1763-23-1	0.02	µg/L		----	<0.02	----	----	----
PFOA	335-67-1	0.02	µg/L		----	<0.02	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L		----	<0.1	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	**64.6**	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	**92.1**	----	----	----
Toluene-D8	2037-26-5	0.1	%		----	**122**	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		----	**104**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**31.4**	**41.3**	**40.6**	**31.8**	**34.2**
2-Chlorophenol-D4	93951-73-6	0.1	%		**62.1**	**83.7**	**69.5**	**65.3**	**65.3**
2.4.6-Tribromophenol	118-79-6	0.1	%		**62.4**	**61.0**	**71.2**	**57.3**	**49.8**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**65.2**	**86.0**	**81.8**	**76.8**	**75.2**
Anthracene-d10	1719-06-8	0.1	%		**86.2**	**108**	**102**	**96.9**	**86.1**
4-Terphenyl-d14	1718-51-0	0.1	%		**78.4**	**105**	**103**	**97.8**	**84.0**
EP080S: TPH(V)/BTEX Surrogates									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LB_MW11	LO_MW12	LI_MW01	LI_MW08	LV_MW05
				Client sampling date / time	18-DEC-2013 08:30	18-DEC-2013 09:42	18-DEC-2013 11:25	18-DEC-2013 15:55	18-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1328114-001	ES1328114-002	ES1328114-003	ES1328114-004	ES1328114-005
EP080S: TPH(V)/BTEX Surrogates - Continued									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**96.4**	**99.3**	**99.6**	**99.2**	**101**
Toluene-D8	2037-26-5	0.1	%		**99.7**	**117**	**98.6**	**100**	**97.1**
4-Bromofluorobenzene	460-00-4	0.1	%		**79.5**	**113**	**81.0**	**80.2**	**79.5**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LR_MW01	LB_MW03	TB13	TB14	R01_181213
				Client sampling date / time	19-DEC-2013 15:00	19-DEC-2013 15:00	[20-DEC-2013]	[20-DEC-2013]	18-DEC-2013 15:00
					ES1328114-006	ES1328114-007	ES1328114-008	ES1328114-009	ES1328114-010
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	----	----	----	<0.0001
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Selenium	7782-49-2	0.2	µg/L		----	**0.2**	----	----	----
Arsenic	7440-38-2	0.2	µg/L		**32.0**	**0.4**	----	----	----
Barium	7440-39-3	0.5	µg/L		----	**19.1**	----	----	----
Beryllium	7440-41-7	0.1	µg/L		----	<0.1	----	----	----
Boron	7440-42-8	5	µg/L		----	**1540**	----	----	----
Cadmium	7440-43-9	0.05	µg/L		<0.05	**0.07**	----	----	----
Chromium	7440-47-3	0.2	µg/L		<0.2	<0.2	----	----	----
Cobalt	7440-48-4	0.1	µg/L		----	**30.3**	----	----	----
Copper	7440-50-8	0.5	µg/L		<0.5	**2.9**	----	----	----
Lead	7439-92-1	0.1	µg/L		**0.9**	**0.5**	----	----	----
Manganese	7439-96-5	0.5	µg/L		----	**951**	----	----	----
Molybdenum	7439-98-7	0.1	µg/L		----	**12.7**	----	----	----
Nickel	7440-02-0	0.5	µg/L		**90.8**	**56.6**	----	----	----
Thallium	7440-28-0	0.02	µg/L		----	**0.14**	----	----	----
Vanadium	7440-62-2	0.2	µg/L		----	**0.4**	----	----	----
Zinc	7440-66-6	1	µg/L		<1	**33**	----	----	----
EG094T: Total metals in Fresh water by ORC-ICPMS									
Arsenic	7440-38-2	0.2	µg/L		----	----	----	----	<0.2
Barium	7440-39-3	0.5	µg/L		----	----	----	----	<0.5
Beryllium	7440-41-7	0.1	µg/L		----	----	----	----	<0.1
Cadmium	7440-43-9	0.05	µg/L		----	----	----	----	<0.05
Chromium	7440-47-3	0.2	µg/L		----	----	----	----	<0.2
Cobalt	7440-48-4	0.1	µg/L		----	----	----	----	<0.1
Copper	7440-50-8	0.5	µg/L		----	----	----	----	<0.5
Lead	7439-92-1	0.1	µg/L		----	----	----	----	<0.1
Manganese	7439-96-5	0.5	µg/L		----	----	----	----	<0.5
Nickel	7440-02-0	0.5	µg/L		----	----	----	----	<0.5
Vanadium	7440-62-2	0.2	µg/L		----	----	----	----	<0.2
Zinc	7440-66-6	1	µg/L		----	----	----	----	<1

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LR_MW01	LB_MW03	TB13	TB14	R01_181213
				Client sampling date / time	19-DEC-2013 15:00	19-DEC-2013 15:00	[20-DEC-2013]	[20-DEC-2013]	18-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1328114-006	ES1328114-007	ES1328114-008	ES1328114-009	ES1328114-010
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	----	----	----	----
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
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

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID: LR_MW01	LB_MW03	TB13	TB14	R01_181213
				Client sampling date / time: 19-DEC-2013 15:00	19-DEC-2013 15:00	[20-DEC-2013]	[20-DEC-2013]	18-DEC-2013 15:00
				ES1328114-006	ES1328114-007	ES1328114-008	ES1328114-009	ES1328114-010
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	**60**	----	----	<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	**60**	----	----	<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
>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								
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
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**73.1**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**12.2**	**31.3**	----	----	**40.6**
2-Chlorophenol-D4	93951-73-6	0.1	%	**12.2**	**59.3**	----	----	**69.1**
2.4.6-Tribromophenol	118-79-6	0.1	%	**74.4**	**71.2**	----	----	**79.6**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**46.1**	**70.5**	----	----	**78.2**
Anthracene-d10	1719-06-8	0.1	%	**91.2**	**71.8**	----	----	**68.0**
4-Terphenyl-d14	1718-51-0	0.1	%	**104**	**76.2**	----	----	**72.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LR_MW01	LB_MW03	TB13	TB14	R01_181213
				Client sampling date / time	19-DEC-2013 15:00	19-DEC-2013 15:00	[20-DEC-2013]	[20-DEC-2013]	18-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1328114-006	ES1328114-007	ES1328114-008	ES1328114-009	ES1328114-010
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**97.5**	**100**	**97.4**	**102**	**99.1**
Toluene-D8	2037-26-5	0.1	%		**99.3**	**94.6**	**90.0**	**97.2**	**98.4**
4-Bromofluorobenzene	460-00-4	0.1	%		**79.7**	**81.0**	**74.0**	**81.8**	**81.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TS 8	----	----	----	----
				Client sampling date / time	[20-DEC-2013]	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1328114-012	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		**16**	----	----	----	----
Toluene	108-88-3	2	µg/L		**15**	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		**17**	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		**18**	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		**17**	----	----	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L		**35**	----	----	----	----
^ **Sum of BTEX**	----	1	µg/L		**83**	----	----	----	----
Naphthalene	91-20-3	5	µg/L		**16**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**100**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**94.1**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**81.7**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	28.5	129
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	78.3	133.2
Toluene-D8	2037-26-5	79.1	128.9
4-Bromofluorobenzene	460-00-4	80.8	123.7
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	: **ES1328114**	Page	: 1 of 21
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	: ----		
C-O-C number	: ----	Date Samples Received	: 20-DEC-2013
Sampler	: JW	Issue Date	: 27-DEC-2013
Order number	: 0224198		
		No. of samples received	: 12
Quote number	: SY/794/13	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 ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Lana Nguyen	Senior LCMS 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: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG035F: Dissolved Mercury by FIMS (QC Lot: 3225616)									
ES1328110-004	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3228781)									
ES1328114-001	LB_MW11	EG035F: Mercury	7439-97-6	0.0001	mg/L	0.0001	0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3228376)									
ES1326350-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3227202)									
ES1328108-001	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.8	1.0	17.3	0% - 50%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	6.3	6.4	0.0	0% - 20%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	16.7	16.5	1.3	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	5.4	5.3	0.0	0% - 50%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	104	105	0.7	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	352	353	0.0	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3228350)									
ES1327849-003	Anonymous	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.12	0.11	0.0	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	14.9	15.0	0.0	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.6	0.6	0.0	No Limit
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	0.3	0.2	0.0	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.4	0.4	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	111	111	0.2	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	2.5	2.5	0.0	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	1220	1190	1.9	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	35.7	35.4	0.7	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	56	56	0.0	0% - 20%
		EG094A-F: Boron	7440-42-8	5	µg/L	21	21	0.0	No Limit
ES1327850-007	Anonymous	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.04	0.03	0.0	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	4.0	4.1	0.0	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	2.9	2.8	0.0	0% - 20%

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3228350) - continued									
ES1327850-007	Anonymous	EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.7	0.7	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	0.9	1.0	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	102	102	0.1	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	705	709	0.6	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	4.1	4.1	0.0	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	4	4	0.0	No Limit
		EG094A-F: Boron	7440-42-8	5	µg/L	23	24	0.0	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3228351)									
ES1327849-003	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
ES1327850-007	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3228352)									
ES1328114-007	LB_MW03	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.14	0.15	0.0	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.07	0.06	17.3	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	30.3	29.8	1.4	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.5	0.5	0.0	No Limit
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	12.7	12.2	4.3	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.4	0.4	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	0.4	0.4	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	19.1	18.8	1.8	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	2.9	3.0	0.0	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	951	855	10.7	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	56.6	55.7	1.7	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	33	32	0.0	0% - 20%
		EG094A-F: Boron	7440-42-8	5	µg/L	1540	1580	2.8	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3228961)									
ES1327963-002	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	0.3	87.6	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Barium	7440-39-3	0.5	µg/L	<0.5	0.6	0.0	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	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 (%)*
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3228961) - continued									
ES1327963-002	Anonymous	EG094A-T: Zinc	7440-66-6	1	µg/L	<1	<1	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3225992)									
ES1328110-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3225683)									
ES1328110-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 3225683)									
ES1328110-001	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 3225683)									
ES1328110-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 3225683)									
ES1328110-001	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3225683)									
ES1328110-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	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 (%)*
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3225683) - continued									
ES1328110-001	Anonymous	EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 3225683)									
ES1328110-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 3225683)									
ES1328110-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP074H: Naphthalene (QC Lot: 3225683)									
ES1328110-001	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3225994)									
ES1328110-004	Anonymous	EP075(SIM): Phenol	108-95-2	1.0	µg/L	5.9	4.8	21.1	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

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: 3225994) - continued									
ES1328110-004	Anonymous	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	12.5	7.1	55.6	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
ES1328114-004	LV_MW05	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: 3225994)									
ES1328110-004	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
ES1328114-004	LV_MW05	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.6	<0.6	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

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: 3225994) - continued									
ES1328114-004	LV_MW05	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: 3225681)									
ES1327964-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1328114-004	LI_MW08	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3225682)									
ES1328110-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	30	30	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3225993)									
ES1328110-004	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
ES1328114-005	LV_MW05	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: 3225681)									
ES1327964-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1328114-004	LI_MW08	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3225682)									
ES1328110-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	30	30	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3225993)									
ES1328110-004	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
ES1328114-005	LV_MW05	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: 3225681)									
ES1327964-002	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

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: 3225681) - continued									
ES1327964-002	Anonymous	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
ES1328114-004	LI_MW08	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: 3225682)									
ES1328110-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	2	2	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	6	6	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
EP231: Perfluorinated Compounds (QC Lot: 3225890)									
ES1328110-001	Anonymous	EP231: PFOS	1763-23-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231: PFOA	335-67-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	<0.1	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: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 3225616)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	106	78	114
EG035F: Dissolved Mercury by FIMS (QCLot: 3228781)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	109	78	114
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3228376)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	108	77	115
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	105	75	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	102	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	91.2	71	123
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	100	77	125
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	98.7	74	118
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	106	72	128
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	84.2	76	134
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3228350)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	97.2	75	129
EG094A-F: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	101	76	120
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	106	74	130
EG094A-F: Boron	7440-42-8	5	µg/L	<5	10 µg/L	108	79	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	96.8	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	97.5	71	123
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	104	79	121
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	98.7	77	125
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	98.6	74	118
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	97.5	79	119
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	93.2	69	127
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	104	72	128
EG094A-F: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	93.8	71	121
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	96.7	78	116
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	106	76	134
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3228351)								
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	107	75	125
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3228352)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	94.3	75	129
EG094A-F: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	93.3	76	120

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3228352) - continued								
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	76.4	74	130
EG094A-F: Boron	7440-42-8	5	µg/L	<5	10 µg/L	89.4	79	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	91.1	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	102	71	123
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	110	79	121
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	102	77	125
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	103	74	118
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	95.4	79	119
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	90.0	69	127
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	107	72	128
EG094A-F: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	94.7	71	121
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	103	78	116
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	102	76	134
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3228961)								
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	88.8	81	125
EG094A-T: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	87.1	81	117
EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	107	71	127
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	93.5	77	111
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	99.8	78	126
EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	91.4	78	126
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	100	78	126
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	93.9	75	123
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	98.1	81	121
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	91.1	82	124
EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	94.1	82	118
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	88.9	75	129
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3225992)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	79.6	61.6	107
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3225683)								
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	106	74	118
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	98.3	75	121
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	102	67	123
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	100	70	122
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	98.4	69	123
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	100	71	121
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	101	70	122
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	101	67	123
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	95.2	62	126

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074B: Oxygenated Compounds (QCLot: 3225683)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	90.9	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	105	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	114	61	139
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	116	65	137
EP074C: Sulfonated Compounds (QCLot: 3225683)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	91.6	72.8	127
EP074D: Fumigants (QCLot: 3225683)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	85.6	61	119
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	99.3	76	120
EP074: cis-1.3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	87.9	62	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	85.9	61	119
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	105	69	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 3225683)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	69.0	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	80.4	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	70.0	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	115	56	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	102	63	135
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	81.4	65	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	98.4	69	123
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	86.5	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	101	71	119
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	93.4	75	119
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	103	77	117
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	83.3	61	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	97.3	73	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	74.4	63	121
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	86.6	78	122
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	95.1	74	120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	96.4	74	118
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	107	75	123
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	106	79	121
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	95.0	72	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	97.1	66	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	96.1	60	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	90.2	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	112	70	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	101	74	128
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	114	71.8	126

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 3225683) - continued								
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	106	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	93.5	58	132
EP074F: Halogenated Aromatic Compounds (QCLot: 3225683)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	113	80	118
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	113	76	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	110	71	121
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	108	71	121
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	106	74	120
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	109	72	120
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	104	77	117
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	106	60	126
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	102	67	125
EP074G: Trihalomethanes (QCLot: 3225683)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	90.2	76	118
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	83.4	64	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	80.0	65	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	86.8	73.5	126
EP074H: Naphthalene (QCLot: 3225683)								
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	109	61	125
EP075(SIM)A: Phenolic Compounds (QCLot: 3225994)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	46.1	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	91.2	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	72.3	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	71.4	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	70.5	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	97.4	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	82.2	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	78.7	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	108	63	119
		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 (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)A: Phenolic Compounds (QCLot: 3225994) - continued								
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	84.6	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	87.5	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	# 118	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3225994)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	70.8	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	87.4	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	76.2	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	86.5	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	93.0	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	91.7	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	103	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	102	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	91.7	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	95.8	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	97.3	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	86.4	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	95.6	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	76.9	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	77.1	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	86.7	59.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225681)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	120	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225682)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	92.3	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225993)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	88.7	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	99.7	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	102	62	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225681)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	122	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225682)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	95.7	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225993)								
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	87.4	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	105	67	127
EP080: BTEXN (QCLot: 3225681)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	122	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	113	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	97.6	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	95.5	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	97.0	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	108	70	124
EP080: BTEXN (QCLot: 3225682)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	99.7	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	112	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	106	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	98.3	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	93.2	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	90.6	70	124
EP231: Perfluorinated Compounds (QCLot: 3225890)								
EP231: PFOS	1763-23-1	0.02	µg/L	<0.02	0.25 µg/L	92.4	70	136
EP231: PFOA	335-67-1	0.02	µg/L	<0.02	0.25 µg/L	111	72	134
EP231: 6:2 Fluorotelomer Sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	1.25 µg/L	92.0	61	145

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**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 3225616)							
ES1328110-005	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	80.8	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3228781)							
ES1328114-002	LO_MW12	EG035F: Mercury	7439-97-6	0.0100 mg/L	# 62.0	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3228376)							
ES1327953-003	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	97.2	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202)							
ES1328108-003	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	119	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	110	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.6	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	116	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	83.0	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	118	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	124	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3228350)							
ES1327849-006	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	122	70	130
		EG094A-F: Barium	7440-39-3	50 µg/L	112	70	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	127	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	101	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	103	70	130
		EG094A-F: Cobalt	7440-48-4	50 µg/L	# Not Determined	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	103	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	101	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	# Not Determined	70	130
		EG094A-F: Vanadium	7440-62-2	50 µg/L	105	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	# Not Determined	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3228352)							
ES1328114-007	LB_MW03	EG094A-F: Arsenic	7440-38-2	50 µg/L	122	70	130
		EG094A-F: Barium	7440-39-3	50 µg/L	113	70	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	87.5	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	102	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
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3228352) - continued							
ES1328114-007	LB_MW03	EG094A-F: Chromium	7440-47-3	50 µg/L	108	70	130
		EG094A-F: Cobalt	7440-48-4	50 µg/L	124	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	112	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	99.4	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	116	70	130
		EG094A-F: Vanadium	7440-62-2	50 µg/L	112	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	113	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3225992)							
ES1328110-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	10 µg/L	88.0	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3225683)							
ES1328110-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	120	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	114	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3225683)							
ES1328110-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	122	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3225994)							
ES1328110-004	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	38.7	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	62.3	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	75.6	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	72.3	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	107	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3225994)							
ES1328110-004	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	72.5	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	71.5	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225681)							
ES1327964-002	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	126	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225682)							
ES1328110-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	122	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225993)							
ES1328110-004	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	102	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	88.4	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	98.4	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225681)							
ES1327964-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225682)							

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: 3225682) - continued							
ES1328110-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	121	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225993)							
ES1328110-004	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	84.8	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	81.4	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	92.3	67	153
EP080: BTEXN (QCLot: 3225681)							
ES1327964-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	104	70	130
		EP080: Toluene	108-88-3	25 µg/L	102	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	92.3	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	89.8	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	93.6	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	92.8	70	130
EP080: BTEXN (QCLot: 3225682)							
ES1328110-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	106	70	130
		EP080: Toluene	108-88-3	25 µg/L	125	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	115	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	113	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	107	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	91.1	70	130
EP231: Perfluorinated Compounds (QCLot: 3225890)							
ES1328110-001	Anonymous	EP231: PFOS	1763-23-1	0.25 µg/L	122	70	136
		EP231: PFOA	335-67-1	0.25 µg/L	126	72	134
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	112	61	145

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
EG035F: Dissolved Mercury by FIMS (QCLot: 3225616)										
ES1328110-005	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	80.8	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225681)										
ES1327964-002	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	126	----	70	130	----	----

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 Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225681)										
ES1327964-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	----	70	130	----	----
EP080: BTEXN (QCLot: 3225681)										
ES1327964-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	104	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	102	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	92.3	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	89.8	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	93.6	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	92.8	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225682)										
ES1328110-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	122	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225682)										
ES1328110-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	121	----	70	130	----	----
EP080: BTEXN (QCLot: 3225682)										
ES1328110-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	106	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	125	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	115	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	113	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	107	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	91.1	----	70	130	----	----
EP074E: Halogenated Aliphatic Compounds (QCLot: 3225683)										
ES1328110-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	120	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	25 µg/L	114	----	70	130	----	----
EP074F: Halogenated Aromatic Compounds (QCLot: 3225683)										
ES1328110-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	122	----	70	130	----	----
EP231: Perfluorinated Compounds (QCLot: 3225890)										
ES1328110-001	Anonymous	EP231: PFOS	1763-23-1	0.25 µg/L	122	----	70	136	----	----
		EP231: PFOA	335-67-1	0.25 µg/L	126	----	72	134	----	----
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	112	----	61	145	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3225992)										
ES1328110-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	10 µg/L	88.0	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225993)										
ES1328110-004	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	102	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	88.4	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	98.4	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225993)										

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 Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225993) - continued										
ES1328110-004	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	84.8	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	81.4	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	92.3	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3225994)										
ES1328110-004	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	38.7	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	62.3	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	75.6	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	72.3	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	107	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3225994)										
ES1328110-004	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	72.5	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	71.5	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202)										
ES1328108-003	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	119	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	110	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.6	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	116	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	83.0	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	118	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	124	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3228350)										
ES1327849-006	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	122	----	70	130	----	----
		EG094A-F: Barium	7440-39-3	50 µg/L	112	----	70	130	----	----
		EG094A-F: Beryllium	7440-41-7	50 µg/L	127	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	101	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	103	----	70	130	----	----
		EG094A-F: Cobalt	7440-48-4	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	103	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	101	----	70	130	----	----
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Vanadium	7440-62-2	50 µg/L	105	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	# Not Determined	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3228352)										
ES1328114-007	LB_MW03	EG094A-F: Arsenic	7440-38-2	50 µg/L	122	----	70	130	----	----

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
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3228352) - continued										
ES1328114-007	LB_MW03	EG094A-F: Barium	7440-39-3	50 µg/L	113	----	70	130	----	----
		EG094A-F: Beryllium	7440-41-7	50 µg/L	87.5	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	102	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	108	----	70	130	----	----
		EG094A-F: Cobalt	7440-48-4	50 µg/L	124	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	112	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	99.4	----	70	130	----	----
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	116	----	70	130	----	----
		EG094A-F: Vanadium	7440-62-2	50 µg/L	112	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	113	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3228376)										
ES1327953-003	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	97.2	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3228781)										
ES1328114-002	LO_MW12	EG035F: Mercury	7439-97-6	0.0100 mg/L	# 62.0	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1328114**	Page	: 1 of 10
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	: ----		
C-O-C number	: ----	Date Samples Received	: 20-DEC-2013
Sampler	: JW	Issue Date	: 27-DEC-2013
Order number	: 0224198		
		No. of samples received	: 12
Quote number	: SY/794/13	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
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LB_MW11, LI_MW01, LV_MW05, LO_MW12, LI_MW08,	**18-DEC-2013**	**---**	15-JAN-2014	----	**24-DEC-2013**	15-JAN-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LR_MW01	**19-DEC-2013**	**---**	16-JAN-2014	----	**22-DEC-2013**	16-JAN-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LB_MW03	**19-DEC-2013**	**---**	16-JAN-2014	----	**24-DEC-2013**	16-JAN-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T)							
R01_181213	**18-DEC-2013**	**----**	----	----	**24-DEC-2013**	15-JAN-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LB_MW11, LI_MW01, LV_MW05, LO_MW12, LI_MW08,	**18-DEC-2013**	**---**	16-JUN-2014	----	**24-DEC-2013**	16-JUN-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LR_MW01	**19-DEC-2013**	**---**	17-JUN-2014	----	**23-DEC-2013**	17-JUN-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LB_MW03	**19-DEC-2013**	**---**	17-JUN-2014	----	**24-DEC-2013**	17-JUN-2014	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T)							
R01_181213	**18-DEC-2013**	**24-DEC-2013**	16-JUN-2014	✓	**24-DEC-2013**	16-JUN-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F)							
LB_MW11	**18-DEC-2013**	**---**	16-JUN-2014	----	**24-DEC-2013**	16-JUN-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F)							
LB_MW03	**19-DEC-2013**	**---**	17-JUN-2014	----	**24-DEC-2013**	17-JUN-2014	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
LO_MW12	**18-DEC-2013**	**23-DEC-2013**	25-DEC-2013	✓	**23-DEC-2013**	01-FEB-2014	✓
Amber Glass Bottle - Unpreserved (EP066)							
LR_MW01	**19-DEC-2013**	**23-DEC-2013**	26-DEC-2013	✓	**23-DEC-2013**	01-FEB-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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber Glass Bottle - Unpreserved (EP071)							
LB_MW11, LO_MW12, LI_MW01, LI_MW08, LV_MW05, R01_181213	**18-DEC-2013**	**23-DEC-2013**	25-DEC-2013	✓	**23-DEC-2013**	01-FEB-2014	✓
Amber Glass Bottle - Unpreserved (EP071)							
LR_MW01, LB_MW03	**19-DEC-2013**	**23-DEC-2013**	26-DEC-2013	✓	**23-DEC-2013**	01-FEB-2014	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW12	**18-DEC-2013**	**22-DEC-2013**	01-JAN-2014	✓	**22-DEC-2013**	01-JAN-2014	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW12	**18-DEC-2013**	**22-DEC-2013**	01-JAN-2014	✓	**22-DEC-2013**	01-JAN-2014	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW12	**18-DEC-2013**	**22-DEC-2013**	01-JAN-2014	✓	**22-DEC-2013**	01-JAN-2014	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW12	**18-DEC-2013**	**22-DEC-2013**	01-JAN-2014	✓	**22-DEC-2013**	01-JAN-2014	✓
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW12	**18-DEC-2013**	**22-DEC-2013**	01-JAN-2014	✓	**22-DEC-2013**	01-JAN-2014	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW12	**18-DEC-2013**	**22-DEC-2013**	01-JAN-2014	✓	**22-DEC-2013**	01-JAN-2014	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW12	**18-DEC-2013**	**22-DEC-2013**	01-JAN-2014	✓	**22-DEC-2013**	01-JAN-2014	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW12	**18-DEC-2013**	**22-DEC-2013**	01-JAN-2014	✓	**22-DEC-2013**	01-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LB_MW11, LO_MW12, LI_MW01, LI_MW08, LV_MW05, R01_181213	**18-DEC-2013**	**23-DEC-2013**	25-DEC-2013	✓	**23-DEC-2013**	01-FEB-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LR_MW01, LB_MW03	**19-DEC-2013**	**23-DEC-2013**	26-DEC-2013	✓	**23-DEC-2013**	01-FEB-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))							
LB_MW11, LO_MW12, LI_MW01, LI_MW08, LV_MW05, R01_181213	**18-DEC-2013**	**23-DEC-2013**	25-DEC-2013	✓	**23-DEC-2013**	01-FEB-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LR_MW01, LB_MW03	**19-DEC-2013**	**23-DEC-2013**	26-DEC-2013	✓	**23-DEC-2013**	01-FEB-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
LB_MW11, LO_MW12, LI_MW01, LI_MW08, LV_MW05, R01_181213	**18-DEC-2013**	**22-DEC-2013**	01-JAN-2014	✓	**22-DEC-2013**	01-JAN-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
LR_MW01, LB_MW03	**19-DEC-2013**	**22-DEC-2013**	02-JAN-2014	✓	**22-DEC-2013**	02-JAN-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
TB13, TB14, TS 8	**20-DEC-2013**	**22-DEC-2013**	03-JAN-2014	✓	**22-DEC-2013**	03-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber VOC Vial - Sulfuric Acid (EP080)							
LB_MW11, LO_MW12, LI_MW01, LI_MW08, LV_MW05, R01_181213	**18-DEC-2013**	**22-DEC-2013**	01-JAN-2014	✓	**22-DEC-2013**	01-JAN-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
LR_MW01, LB_MW03	**19-DEC-2013**	**22-DEC-2013**	02-JAN-2014	✓	**22-DEC-2013**	02-JAN-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
TB13, TB14	**20-DEC-2013**	**22-DEC-2013**	03-JAN-2014	✓	**22-DEC-2013**	03-JAN-2014	✓
EP231: Perfluorinated Compounds							
HDPE (no PTFE) (EP231)							
LO_MW12	**18-DEC-2013**	**---**	16-JUN-2014	----	**23-DEC-2013**	16-JUN-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: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	9	**22.2**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	4	30	**13.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	2	17	**11.8**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	14	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	3	**33.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**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 in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	2	**50.0**	**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	3	26	**11.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	7	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	2	9	**22.2**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	3	30	**10.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	17	**5.9**	**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
PFOS and PFOA	EP231	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**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 in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	2	**50.0**	**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	2	26	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	2	9	**22.2**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	3	30	**10.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	17	**5.9**	**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
PFOS and PFOA	EP231	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**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 in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	2	**50.0**	**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	2	26	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Dissolved Mercury by FIMS	EG035F	2	9	**22.2**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	3	30	**10.0**	**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
PFOS and PFOA	EP231	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**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
TPH - Semivolatile Fraction	EP071	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	26	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	7	**14.3**	**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
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 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)
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 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)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. 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)
Volatile Organic Compounds	EP074	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. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)

Analytical Methods	Method	Matrix	Method Descriptions
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)
PFOS and PFOA	EP231	WATER	In-house: Direct injection analysis of fresh and diluted saline waters. In order to meet standard reporting limits, saline waters may be adsorped onto a solid phase extraction medium, the salt washed out and the sample eluted for analysis. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM.

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	Modified USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Lab Acidification of Metals	EN80	WATER	USEPA Method 200.8
Lab Acidification of Dissolved Metals	EN80F	WATER	US EPA Method 200.8
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 SW 846 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	3851465-011	----	**Pentachlorophenol**	87-86-5	118 %	8.7-95%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG035F: Dissolved Mercury by FIMS	ES1328114-002	LO_MW12	**Mercury**	7439-97-6	62.0 %	70-130%	**Recovery less than lower data quality objective**
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1327849-006	Anonymous	**Cobalt**	7440-48-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1328114-007	LB_MW03	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1327849-006	Anonymous	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1327849-006	Anonymous	**Nickel**	7440-02-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1327849-006	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: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	ES1328114-006	LR_MW01	**2-Chlorophenol-D4**	93951-73-6	12.2 %	14-94 %	**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.**

8194

TAT

CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT: RM Sydney	TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): ☑ Non Standard or urgent TAT (List due date): 30 day TAT (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	FOR LABORATORY USE ONLY (Circle): Custody 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: 5-7
OFFICE: Sydney		
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7
ORDER NUMBER: 0224193	SITE: BAYSWATER / LIDDELL	
PROJECT MANAGER: JP	CONTACT PH:	
SAMPLER: HC	SAMPLER MOBILE:	RELINQUISHED BY: DATE/TIME: 23/12/13 3pm
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):	RECEIVED BY: DATE/TIME: 23/12/13 1715
Email Reports to (will default to PM if no other addresses are listed): [illegible].Symphony.mcgee@rpsm		RELINQUISHED BY: DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed):		RECEIVED BY: 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 (refer to codes below)	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 TRH(C6-C40)/BTEXN, PAH, Phenols		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LV_MW03	20-12-13	W	ICE	3xVial 1xplastic 1xnatural 1xmetals	X						X		

Environmental Division Sydney
Work Order
ES1328184
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 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.

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES1328184**		
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: SYMPHONY DELTAWEST	Contact	: Barbara Hanna
Address	: GRND FLOOR, 33 SAUNDERS STREET PYRMONT NSW AUSTRALIA 2009	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: symphony.deltawest@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		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: BAYSWATER		
Sampler	: HC	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 23-DEC-2013	Issue Date	: 23-DEC-2013 18:48
Client Requested Due Date	: 31-DEC-2013	Scheduled Reporting Date	: **31-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 5.7'C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 1
Security Seal	: Intact.	No. of samples analysed	: 1

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).**
- 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 neccessary 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 - EG035F Dissolved Mercury by FIMS	WATER - EG094A-F Dissolved Metals in Fresh Water Suite A by	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1328184-001	20-DEC-2013 15:00	LV_MW03	✓	✓	✓

Proactive Holding Time Report

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

Requested Deliverables

SYMPHONY DELTAWEST

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

THE ACCOUNTS PAYABLE

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

CERTIFICATE OF ANALYSIS

Work Order	: **ES1328184**	Page	: 1 of 6
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: SYMPHONY DELTAWEST	Contact	: Barbara Hanna
Address	: GRND FLOOR, 33 SAUNDERS STREET PYRMONT NSW AUSTRALIA 2009	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: symphony.deltawest@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	: 23-DEC-2013
Sampler	: HC	Issue Date	: 31-DEC-2013
Site	: BAYSWATER		
		No. of samples received	: 1
Quote number	: SY/794/13	No. of samples analysed	: 1

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.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
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	LV_MW03	----	----	----	----
				Client sampling date / time	20-DEC-2013 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1328184-001	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Arsenic	7440-38-2	0.2	µg/L		**0.3**	----	----	----	----
Cadmium	7440-43-9	0.05	µg/L		**0.42**	----	----	----	----
Chromium	7440-47-3	0.2	µg/L		<0.2	----	----	----	----
Copper	7440-50-8	0.5	µg/L		**2.2**	----	----	----	----
Lead	7439-92-1	0.1	µg/L		**0.2**	----	----	----	----
Nickel	7440-02-0	0.5	µg/L		**33.1**	----	----	----	----
Zinc	7440-66-6	1	µg/L		**28**	----	----	----	----
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	LV_MW03	----	----	----	----
				Client sampling date / time	20-DEC-2013 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1328184-001	----	----	----	----
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		**200**	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		**200**	----	----	----	----
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		**240**	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		**240**	----	----	----	----
^ >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	LV_MW03	----	----	----	----
				Client sampling date / time	20-DEC-2013 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1328184-001	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	0.1	%		**37.6**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**93.8**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**107**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**105**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**98.6**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**117**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**123**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**112**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**102**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) 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	: **ES1328184**	Page	: 1 of 7
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: SYMPHONY DELTAWEST	Contact	: Barbara Hanna
Address	: GRND FLOOR, 33 SAUNDERS STREET PYRMONT NSW AUSTRALIA 2009	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: symphony.deltawest@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	: 23-DEC-2013
Sampler	: HC	Issue Date	: 31-DEC-2013
Order number	: 0224193		
		No. of samples received	: 1
Quote number	: SY/794/13	No. of samples analysed	: 1

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 ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
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: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG035F: Dissolved Mercury by FIMS (QC Lot: 3231752)									
ES1328184-001	LV_MW03	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3231836)									
ES1327568-001	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	1.2	1.1	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	14.0	14.0	0.0	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	7	7	0.0	No Limit
ES1328110-010	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.34	0.34	0.0	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	45.7	44.8	1.8	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	4.2	4.1	3.8	0% - 20%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	14.3	14.4	0.8	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	6.9	7.0	0.0	0% - 50%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	68.7	68.3	0.5	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	157	154	1.6	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3232442)									
ES1328184-001	LV_MW03	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3232442)									
ES1328184-001	LV_MW03	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 3232442)									
ES1328184-001	LV_MW03	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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 3231752)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	92.7	78	114
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3231836)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	97.5	75	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	96.9	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	95.4	71	123
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	93.9	77	125
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	91.9	74	118
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	105	72	128
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	101	76	134
EP075(SIM)A: Phenolic Compounds (QCLot: 3229251)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	20 µg/L	33.0	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	20 µg/L	73.4	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	20 µg/L	71.4	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	40 µg/L	53.1	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	20 µg/L	95.5	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	20 µg/L	66.3	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	20 µg/L	79.7	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	20 µg/L	82.8	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	20 µg/L	80.2	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	20 µg/L	89.0	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	20 µg/L	82.3	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	40 µg/L	42.9	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3229251)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3229251) - continued								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	20 µg/L	78.4	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	20 µg/L	77.9	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	20 µg/L	77.5	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	20 µg/L	82.0	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	20 µg/L	84.3	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	20 µg/L	79.0	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	20 µg/L	87.8	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	20 µg/L	87.1	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	20 µg/L	88.2	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	20 µg/L	88.8	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	20 µg/L	100	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	20 µg/L	89.0	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	20 µg/L	77.0	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	88.0	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	20 µg/L	88.7	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	89.8	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: 3229250)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	77.0	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	100	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	80.3	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3232442)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	118	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3229250)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3229250) - continued								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	81.2	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	94.5	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	79.0	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3232442)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	120	75	127
EP080: BTEXN (QCLot: 3232442)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	116	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	113	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	107	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	114	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	109	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	Recovery Limits (%): High
EG035F: Dissolved Mercury by FIMS (QCLot: 3231752)							
ES1328184-001	LV_MW03	EG035F: Mercury	7439-97-6	0.0100 mg/L	96.6	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3231836)							
ES1327568-004	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	120	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	104	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	108	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	102	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	105	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	111	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	108	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3232442)							
ES1328184-001	LV_MW03	EP080: C6 - C9 Fraction	----	325 µg/L	109	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3232442)							
ES1328184-001	LV_MW03	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	112	70	130
EP080: BTEXN (QCLot: 3232442)							

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: BTEXN (QCLot: 3232442) - continued							
ES1328184-001	LV_MW03	EP080: Benzene	71-43-2	25 µg/L	116	70	130
		EP080: Toluene	108-88-3	25 µg/L	117	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	122	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	114	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	116	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	112	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
EG035F: Dissolved Mercury by FIMS (QCLot: 3231752)										
ES1328184-001	LV_MW03	EG035F: Mercury	7439-97-6	0.0100 mg/L	96.6	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3231836)										
ES1327568-004	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	120	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	104	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	108	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	102	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	105	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	111	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	108	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3232442)										
ES1328184-001	LV_MW03	EP080: C6 - C9 Fraction	----	325 µg/L	109	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3232442)										
ES1328184-001	LV_MW03	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	112	----	70	130	----	----
EP080: BTEXN (QCLot: 3232442)										
ES1328184-001	LV_MW03	EP080: Benzene	71-43-2	25 µg/L	116	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	117	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	122	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	114	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	116	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	112	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1328184**	Page	: 1 of 5
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: SYMPHONY DELTAWEST	Contact	: Barbara Hanna
Address	: GRND FLOOR, 33 SAUNDERS STREET PYRMONT NSW AUSTRALIA 2009	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: symphony.deltawest@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	: 23-DEC-2013
Sampler	: HC	Issue Date	: 31-DEC-2013
Order number	: 0224193		
		No. of samples received	: 1
Quote number	: SY/794/13	No. of samples analysed	: 1

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
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LV_MW03	**20-DEC-2013**	**---**	17-JAN-2014	----	**30-DEC-2013**	17-JAN-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LV_MW03	**20-DEC-2013**	**---**	18-JUN-2014	----	**30-DEC-2013**	18-JUN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber Glass Bottle - Unpreserved (EP071)							
LV_MW03	**20-DEC-2013**	**27-DEC-2013**	27-DEC-2013	✓	**30-DEC-2013**	08-FEB-2014	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LV_MW03	**20-DEC-2013**	**27-DEC-2013**	27-DEC-2013	✓	**30-DEC-2013**	08-FEB-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LV_MW03	**20-DEC-2013**	**27-DEC-2013**	27-DEC-2013	✓	**30-DEC-2013**	08-FEB-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
LV_MW03	**20-DEC-2013**	**30-DEC-2013**	03-JAN-2014	✓	**30-DEC-2013**	03-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber VOC Vial - Sulfuric Acid (EP080)							
LV_MW03	**20-DEC-2013**	**30-DEC-2013**	03-JAN-2014	✓	**30-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: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	1	**100.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	11	**18.2**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	4	**25.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	11	**9.1**	**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	4	**25.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	11	**9.1**	**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	4	**25.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	11	**9.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	4	**25.0**	**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
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 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)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. 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
Lab Acidification of Dissolved Metals	EN80F	WATER	US EPA Method 200.8
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 SW 846 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: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)T: PAH Surrogates	ES1328184-001	LV_MW03	**2-Fluorobiphenyl**	321-60-8	105 %	20-104 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	ES1328184-001	LV_MW03	**4-Terphenyl-d14**	1718-51-0	117 %	32-112 %	**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.**

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET36559/ 39739-1 / 1 - 1
Your ref : ES1326974
NATA Accreditation No: 14484

14 January 2014

Australian Laboratory Services Pty Ltd
277 – 284 Woodpark Road
Smithfield NSW 2164

Attn: Ms Nanthini Coilparampil

Dear Nanthini

Asbestos Identification
This report presents the results of one sample, forwarded by Australian Laboratory Services Pty Ltd on 12 December 2013, for analysis for asbestos.

1.Introduction: One sample forwarded was examined and analysed for the presence of asbestos.

2. Methods : The sample was examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method **(Safer Environment Method 1 and Australian Guidelines AS 4964 - 2004 and WA/ NEPM Guidelines**)

This report is consistent with the analytical procedures and reporting recommendations in the Western Australia Guidelines for the Assessment Remediation and Management of Asbestos contaminated sites in Western Australia.

3. Results : **Sample No. 2. ASET36559 / 39739-1 / 2. ES1326974 - LJ _ MW02 _ 0.5.**
Approx dimensions 8.4 cm x 7.5 cm x 7.3 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fibres^ and fragments of plaster*.
Unidentified asbestiform mineral fibres^ and mineral*detected. (Estimated approximate weight = 0.024g) asbestos detected. (An independent confirmatory analytical technique is advised.)
Estimated approximate total fibre weight = 0.024g.
Estimated approximate fibre weight of UMF = 0.017g
Approximate total weight of Loose fibres = 0.007g.
Approximate total weight of UMF = 0.068g.
Approximate total weight of soil = 583g.
Estimated approximate w/w % = 0.004%

Analysed and reported by,

Laxman Dias. BSc
Analyst / Approved Identifier
Approved Signatory

NATA
WORLD RECOGNISED ACCREDITATION

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

The approx; weights given above can be used only as a guide. They do not represent absolute weights of each kind of asbestos as it is impossible to extract all loose fibres from soil and other asbestos containing building material samples using this method. However above figures may be used as closest approximations to the exact values in each case. Estimation and/ or reporting of asbestos fibre weights in asbestos containing materials and soil is out of the Scope of the NATA Accreditation. NATA Accreditation covers only the qualitative part of the results reported.

ACM - Asbestos Containing Material - Products or materials that contain asbestos in an inert bound matrix such as cement or resin. Here taken to be sound material, even as fragments and not fitting through a 7mm X 7 mm sieve.

AF -Includes asbestos free fibres, small fibre bundles and also ACM fragments that pass through a 7mm X 7 mm sieve.

FA -Friable asbestos material such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products.

***denotes fibres in bonded form in fragments**

^denotes loose fibres in Soil/ Dust

All samples indicating " No asbestos detected" are assumed to be less than 0.001 % unless the actual approximate weight is given.

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD
ABN 36 088 095 112

Our ref : ASET36449/ 39629-1 / 1 - 16
Your ref : ES1326237
NATA Accreditation No: 14484

14 January 2014

Australian Laboratory Services Pty Ltd
277 - 234 Woodpark Road
Smithfield NSW 2164

Attn: Ms Nanthini Coilparampil

Dear Nanthini,

Asbestos Identification
This report presents the results of sixteen samples, forwarded by Australian Laboratory Services Pty Ltd on 6 December 2013, for analysis for asbestos.

1.Introduction: Sixteen 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 and Australian Guidelines AS 4964 - 2004 and WA/ NEPM Guidelines**)

This report is consistent with the analytical procedures and reporting recommendations in the Western Australia Guidelines for the Assessment Remediation and Management of Asbestos contaminated sites in Western Australia.

3. Results :

Sample No. 1. ASET36449 / 39629-1 / 1. ES1326237 - LB _SV15 _0.0.
Approx dimensions 7.7 cm x 7.4 cm x 7.3 cm
The sample consisted of a mixture of soil, stones, plant matter, fibres^, fragments of cement*, plaster, glass, cement and debris.
Chrysotile^* (Estimated approximate weight = 0.0044g) asbestos and Amosite^* (Estimated approximate weight= 0.0031g) asbestos detected.
Estimated approximate total weight of asbestos = 0.0075g.
Estimated approximate total asbestos weight in AF(Cement < 7mmx7mm) = 0.0072g.
Approximate total asbestos weight in AF(Loose fibres) = 0.0003g.
Approximate total weight of AF = 0.06g.
Approximate total weight of soil = 428g.
Estimated approximate w/w % = 0.0018%

Sample No. 5. ASET36449 / 39629-1 / 5. ES1326237 - LB _SV19 _0.0.
Approx dimensions 8.5 cm x 8.2 cm x 7.5 cm
The sample consisted of a mixture of soil, stones, plant matter, fibres^, fragments of plaster, cement and corroded metal.
Chrysotile^ (Approximate weight = 0.0005g) asbestos and Amosite^ (Approximate weight= 0.0003g) asbestos detected.
Approximate total weight of asbestos = 0.0008g.
Approximate total asbestos weight in AF(Loose fibres) = 0.0008g.
Approximate total weight of soil = 452g.
Approximate w/w % = 0.00018%

Sample No. 8. ASET36449 / 39629-1 / 8. ES1326237 - LB _SV22 _0.0.
Approx dimensions 8.1 cm x 7.9 cm x 7.6 cm
The sample consisted of a mixture of soil, stones, plant matter, fibres^, fragments of plaster, cement and corroded metal.
Chrysotile^ (Approximate weight= 0.0004g) asbestos and Amosite^ (Approximate weight= 0.0003g) asbestos detected.
Approximate total weight of asbestos = 0.0007g.
Approximate total asbestos weight in AF(Loose fibres) = 0.0007g.
Approximate total weight of soil = 438g.
Approximate w/w % = 0.00016%

Sample No. 11. ASET36449 / 39629-1 / 11. ES1326237 - LB _SV25 _0.0.
Approx dimensions 8.4 cm x 8.1 cm x 7.6 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fibres^, fragments of plaster and shale.
Chrysotile^ (Approximate weight= 0.00045g) asbestos and Amosite^ (Approximate weight= 0.0003g) asbestos detected.
Approximate total weight of asbestos = 0.00075g.
Approximate total asbestos weight in AF(Loose fibres) = 0.00075g.
Approximate total weight of soil = 482g.
Approximate w/w % = 0.00016%

Sample No. 17. ASET36449 / 39629-1 / 17. ES1326237 - LB _SV31_0.0.
Approx dimensions 8.1 cm x 7.8 cm x 7.4 cm
The sample consisted of a mixture of soil, stones, plant matter, fibres^, fragments of plaster and glass.
Amosite^ (Approximate weight= 0.0004g) asbestos detected.
Approximate total weight of asbestos = 0.0004g.
Approximate total asbestos weight in AF(Loose fibres) = 0.0004g.
Approximate total weight of soil = 471g.
Approximate w/w % = 0.00008%

Sample No. 19. ASET36449 / 39629-1 / 19. ES1326237 - LB _SV33 _0.0.
Approx dimensions 8.3 cm x 7.7 cm x 7.5 cm
The sample consisted of a mixture of clayish soil, stones, plant matter and fibres^.
Chrysotile^ (Approximate weight= 0.0006g) asbestos detected.
Approximate total weight of asbestos = 0.0006g.
Approximate total asbestos weight in AF(Loose fibres) = 0.0006g.
Approximate total weight of soil = 429g.
Approximate w/w % = 0.00014%

Sample No. 21. ASET36449 / 39629-1 / 21. ES1326237 - LB _SV35 _0.0.
Approx dimensions 8.4 cm x 7.5 cm x 7.3 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fibres^ and fragments of shale.
Amosite^ (Approximate weight= 0.00045g) asbestos detected.
Approximate total weight of asbestos = 0.00045g.
Approximate total asbestos weight in AF(Loose fibres) = 0.00045g.
Approximate total weight of soil = 456g.
Approximate w/w % = 0.000 1%

Sample No. 22. ASET36449 / 39629-1 / 22. ES1326237 - LB _SV36 _0.0.
Approx dimensions 8.2 cm x 7.6 cm x 7.3 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fibres^ and fragments of shale.
Chrysotile^ (Approximate weight= 0.0006g) asbestos and Amosite^ (Approximate weight= 0.0002g) asbestos detected.
Approximate total weight of asbestos = 0.0008g.
Approximate total asbestos weight in AF(Loose fibres) = 0.0008g.
Approximate total weight of soil = 418g.
Approximate w/w % = 0.00019%

Sample No. 29. ASET36449 / 39629-1 / 29. ES1326237 - LB _SV06 _0.0.
Approx dimensions 8.7 cm x 8.4 cm x 8.3 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fibres^, fragments of shale and debris.
Amosite^ (Approximate weight= 0.0007g) asbestos detected.
Approximate total weight of asbestos = 0.0007g.
Approximate total asbestos weight in AF(Loose fibres) = 0.0007g.
Approximate total weight of soil = 466g.
Approximate w/w % = 0.00015%

Sample No. 34. ASET36449 / 39629-1 / 34. ES1326237 - LB _SV11 _0.0.
Approx dimensions 8.6 cm x 8.4 cm x 8.2 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fibres^, fragments of shale and debris.
Chrysotile^(Approximate weight = 0.0005g) asbestos detected.
Approximate total weight of asbestos = 0.0005g.
Approximate total asbestos weight in AF(Loose fibres) = 0.0005g.
Approximate total weight of soil = 499g.
Approximate w/w % = 0.0001%

Sample No. 38. ASET36449 / 39629-1 / 38. ES1326237 - LB _SV38 _0.0.
Approx dimensions 8.8 cm x 8.6 cm x 8.4 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fibres^, fragments of plaster, glass, shale, corroded metal and debris.
Chrysotile^ (Approximate weight= 0.00055g) asbestos detected.
Approximate total weight of asbestos = 0.00055g.
Approximate total asbestos weight in AF(Loose fibres) = 0.00055g.
Approximate total weight of soil = 486g.
Approximate w/w % = 0.00011%

Sample No. 39. ASET36449 / 39629-1 / 39. ES1326237 - LB _SV39 _0.0.
Approx dimensions 9.3 cm x 8.7 cm x 7.6 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fibres^ and fragments of cement.
Chrysotile^ (Approximate weight= 0.0006g) asbestos and Amosite^ (Approximate weight= 0.0003g) asbestos detected.
Approximate total weight of asbestos = 0.0009g.
Approximate total asbestos weight in AF(Loose fibres) = 0.0009g.
Approximate total weight of soil = 512g.
Approximate w/w % = 0.00018%

Sample No. 40. ASET36449 / 39629-1 / 40. ES1326237 - LB _SV40_0.0.
Approx dimensions 9.1 cm x 8.8 cm x 7.5 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fibres^, fragments of plaster and glass.
Chrysotile^ (Approximate weight= 0.0004g) asbestos and Amosite^ (Approximate weight= 0.00015g) asbestos detected.
Approximate total weight of asbestos = 0.00055g.
Approximate total asbestos weight in AF(Loose fibres) = 0.00055g.
Approximate total weight of soil = 488g.
Approximate w/w % = 0.00011%

Sample No. 41. ASET36449 / 39629-1 / 41. ES1326237 - LB _SV41 _0.0.
Approx dimensions 9.3 cm x 8.4 cm x 7.5 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fibres^, fragments of fibre cement*, plaster and shale.
Chrysotile^* (Estimated approximate weight= 0.1442g) asbestos and Amosite* (Estimated approximate weight= 0.048g) asbestos detected.
Estimated approximate total weight of asbestos = 0.1922g.
Estimated approximate total asbestos weight in ACM(Fibre Cement > 7mmx7mm) = 0.192g.
Approximate total asbestos weight in AF(Loose fibres) = 0.0002g.
Approximate total weight of ACM = 1.6g.
Approximate total weight of soil = 543g.
Estimated approximate w/w % = 0.035%

Sample No. 42. ASET36449 / 39629-1 / 42. ES1326237 - LB _SV42 _0.0.
Approx dimensions 9.1 cm x 8.5 cm x 8.2 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fibres^, fragments of plaster and brick.
Chrysotile^ (Approximate weight= 0.00025g) asbestos detected.
Approximate total weight of asbestos = 0.00025g.
Approximate total asbestos weight in AF(Loose fibres) = 0.00025g.
Approximate total weight of soil = 538g.
Approximate w/w % = 0.00005%

Sample No. 46. ASET36449 / 39629-1 / 46. ES1326237 - LB _SV46 _0.0.
Approx dimensions 8.6 cm x 7.5 cm x 7.3 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fragments of fibre cement* and plaster.
Chrysotile* (Estimated approximate weight= 1.6g) asbestos, Amosite (Estimated approximate weight= 0.48g) asbestos and Crocidolite* (Estimated approximate weight= 0.64g) asbestos detected.
Estimated approximate total weight of asbestos = 2.72g.
Estimated approximate total asbestos weight in ACM(Fibre Cement > 7mmx7mm) = 2.72g.
Approximate total weight of ACM = 16g.
Approximate total weight of soil = 429g.
Estimated approximate w/w % = 0.63%

Analysed and reported by,

Laxman Dias. BSc
Analyst / Approved Identifier
Approved Signatory

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

The approx; weights given above can be used only as a guide. They do not represent absolute weights of each kind of asbestos as it is impossible to extract all loose fibres from soil and other asbestos containing building material samples using this method. However above figures may be used as closest approximations to the exact values in each case. Estimation and/ or reporting of asbestos fibre weights in asbestos containing materials and soil is out of the Scope of the NATA Accreditation. NATA Accreditation covers only the qualitative part of the results reported.

ACM - Asbestos Containing Material - Products or materials that contain asbestos in an inert bound matrix such as cement or resin. Here taken to be sound material, even as fragments and not fitting through a 7mm X 7 mm sieve.

AF -Includes asbestos free fibres, small fibre bundles and also ACM fragments that pass through a 7mm X 7 mm sieve.

FA -Friable asbestos material such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products.

***denotes fibres in bonded form in fragments**

^denotes loose fibres in Sol/ Dust

All samples indicating " No asbestos detected" are assumed to be less than 0.001 % unless the actual approximate weight is given.

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET36141/ 39321-1 / 1 - 1
Your ref : ES1324723
NATA Accreditation No: 14484

14 January 2014

Australian Laboratory Services Pty Ltd
277 – 284 Woodpark Road
Smithfield NSW 2164

Attn: Ms Nanthini Coilparampil

Dear Nanthini

Asbestos Identification
This report presents the results of one sample, forwarded by Australian Laboratory Services Pty Ltd on 18 November 2013, for analysis for asbestos.

1.Introduction: One sample forwarded was examined and analysed for the presence of asbestos.

2. Methods : The sample was examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method **(Safer Environment Method 1 and Australian Guidelines AS 4964 - 2004 and WA/ NEPM Guidelines**)

This report is consistent with the analytical procedures and reporting recommendations in the Western Australia Guidelines for the Assessment Remediation and Management of Asbestos contaminated sites in Western Australia.

3. Results : **Sample No. 1. ASET36141 / 39321-1 / 1. ES1324723 - LO_SB08_0.5.**
Approx dimensions 3.6 cm x 3.4 cm x 3.1 cm
The sample consisted of a mixture of soil, stones, plant matter, fibres^ and fragments of cement.
Chrysotile^(Approximate weight = 0.002g) asbestos detected.42,0.002
Approximate total weight of asbestos = 0.002g.
Approximate total asbestos weight in AF(Loose fibres) = 0.002g.
Approximate total weight of soil = 42g.
Approximate w/w % = 0.0047%

Analysed and reported by,

Laxman Dias. BSc
Analyst / Approved Identifier
Approved Signatory

NATA
WORLD RECOGNISED ACCREDITATION

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

The approx; weights given above can be used only as a guide. They do not represent absolute weights of each kind of asbestos as it is impossible to extract all loose fibres from soil and other asbestos containing building material samples using this method. However above figures may be used as closest approximations to the exact values in each case. Estimation and/ or reporting of asbestos fibre weights in asbestos containing materials and soil is out of the Scope of the NATA Accreditation. NATA Accreditation covers only the qualitative part of the results reported.

ACM - Asbestos Containing Material - Products or materials that contain asbestos in an inert bound matrix such as cement or resin. Here taken to be sound material, even as fragments and not fitting through a 7mm X 7 mm sieve.

AF -Includes asbestos free fibres, small fibre bundles and also ACM fragments that pass through a 7mm X 7 mm sieve.

FA -Friable asbestos material such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products.

^denotes loose fibres in Soil/ Dust

All samples indicating " No asbestos detected" are assumed to be less than 0.001 % unless the actual approximate weight is given.

Annex I

Ecological Investigation Level Calculations

Inputs
Select contaminant from list below
Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
19.8
Enter soil pH (calcium chloride method) (values from 1 to 14)
5.95
Enter organic carbon content (%OC) (values from 0 to 50%)
0.45
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
18
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
or for aged ABCs only
Enter State (or closest State)
Enter traffic volume (high or low)

Outputs		
Land use	Cu soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	40	45
Urban residential and open public spaces	60	100
Commercial and industrial	80	140

Inputs
Select contaminant from list below
Zn
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
19.8
Enter soil pH (calcium chloride method) (values from 1 to 14)
5.95
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
50
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
or for aged ABCs only
Enter State (or closest State)
Enter traffic volume (high or low)

Outputs		
Land use	Zn soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	90	130
Urban residential and open public spaces	200	440
Commercial and industrial	290	650

Inputs
Select contaminant from list below
Cr_III
Below needed to calculate fresh and aged ACLs
Enter % clay (values from 0 to 100%)
5
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
23
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
or for aged ABCs only
Enter State (or closest State)
Enter traffic volume (high or low)

Outputs		
Land use	Cr III soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	65	130
Urban residential and open public spaces	150	340
Commercial and industrial	230	550

Inputs
Select contaminant from list below
Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
16
Enter soil pH (calcium chloride method) (values from 1 to 14)
7.2
Enter organic carbon content (%OC) (values from 0 to 50%)
0.4
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
18
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
or for aged ABCs only
Enter State (or closest State)
Enter traffic volume (high or low)

Outputs		
Land use	Cu soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	60	75
Urban residential and open public spaces	110	190
Commercial and industrial	150	270

Inputs
Select contaminant from list below
Ni
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
16
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
15
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
or for aged ABCs only
Enter State (or closest State)
Enter traffic volume (high or low)

Outputs		
Land use	Ni soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	25	55
Urban residential and open public spaces	85	240
Commercial and industrial	160	410

Inputs
Select contaminant from list below
Zn
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
16
Enter soil pH (calcium chloride method) (values from 1 to 14)
7.2
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
50
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
or for aged ABCs only
Enter State (or closest State)
Enter traffic volume (high or low)

Outputs		
Land use	Zn soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	110	180
Urban residential and open public spaces	270	630
Commercial and industrial	410	960

Annex J

Survey Data

MONITORING WELL NAME	MGA EAST	MGA NORTH	AHD CASING LEVEL	AHD SURFACE LEVEL
LA-MW01	309564.71	6416231.67	137.35	137.46
LA-MW02	309594.55	6416220.73	136.06	136.12
LA-MW03	309590.62	6416241.65	137.06	137.14
LB-MW01	306537.82	6418183.35	191.61	191.00
LB-MW03	305751.57	6417245.51	176.10	175.48
LB-MW05	305949.49	6416021.02	188.00	187.40
LB-MW06	306546.99	6415790.91	193.70	193.01
LB-MW08	306881.80	6416600.19	189.28	188.70
LB-MW11	308018.18	6417132.54	151.80	151.10
LB-MW13	308078.76	6417340.95	166.43	165.77
LB-MW14	307838.42	6417627.11	158.41	157.85
LD-MW01	308905.54	6415780.61	135.61	135.69
LD-MW02	308901.40	6415840.83	136.85	136.95
LD-MW04	308859.71	6415826.36	136.47	135.69
LD-MW05	308862.45	6415869.06	137.69	136.77
LE-MW01	309848.39	6416276.58	134.32	133.45
LE-MW02	309884.28	6416277.39	133.87	132.90
LE-MW03	309897.96	6416310.39	132.83	132.90
LE-MW04	309889.20	6416356.69	132.80	132.87
LE-MW05	309833.97	6416419.17	133.09	133.26
LE-MW06	309854.85	6416320.50	133.29	133.38
LE-MW07	309882.19	6416396.25	133.13	133.24
LE-MW08	309866.41	6416408.22	133.04	133.16
LE-MW09	309850.15	6416416.79	133.04	133.17
LG-MW01	309745.07	6416759.36	133.23	133.35
LG-MW02	309736.37	6416756.28	133.39	133.49
LG-MW03	309736.61	6416762.92	133.41	133.53
LH-MW01	309776.87	6416419.69	133.10	133.16
LH-MW02	309766.97	6416396.70	133.20	133.26
LH-MW03	309802.87	6416365.02	133.19	133.26
LI-MW01	308935.25	6415938.17	140.12	139.23
LI-MW02	309562.85	6416118.12	133.41	133.51
LI-MW03	309547.20	6415959.64	133.33	133.42
LI-MW04	309519.20	6415808.16	132.66	132.75
LI-MW05	309503.78	6415700.97	131.82	131.91
LI-MW06	309437.20	6415600.13	132.25	132.31
LI-MW07	309338.85	6415571.38	133.16	133.25
LI-MW08	309199.73	6415589.12	133.72	133.79
LI-MW09	308977.73	6415486.84	131.00	130.47
LJ-MW01	309698.00	6416794.20	133.64	133.73
LJ-MW02	309809.98	6416767.15	133.04	133.14
LJ-MW04	309922.85	6416770.49	132.95	133.04
LL-MW01	308782.99	6414580.52	134.23	134.32
LL-MW02	308755.29	6414598.05	135.02	135.13
LL-MW03	308736.31	6414609.08	136.20	136.29
LL-MW06	308750.48	6414560.27	134.70	134.79
LL-MW07	308763.55	6414583.49	134.52	134.62
LL-MW09	308718.43	6414617.95	137.29	137.42

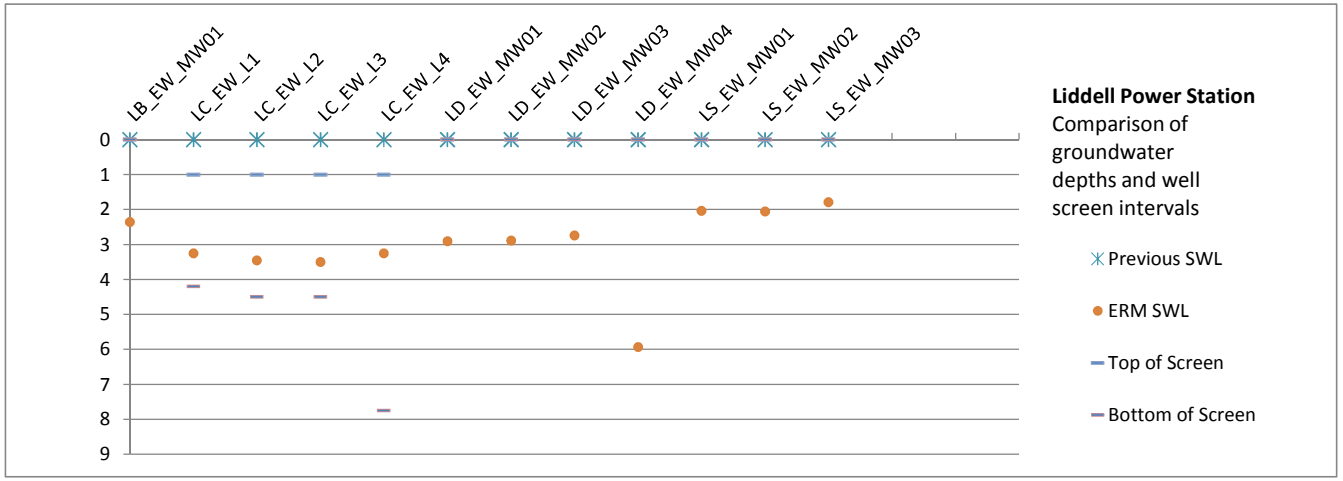
MONITORING WELL NAME	MGA EAST	MGA NORTH	AHD CASING LEVEL	AHD SURFACE LEVEL
LM-MW01	309336.90	6416303.21	148.01	148.03
LM-MW02	309427.73	6416233.04	142.53	142.58
LN-MW01	310050.47	6416591.40	132.75	131.77
LN-MW02	310105.27	6416610.04	131.67	131.80
LN-MW04	310181.32	6416584.83	131.13	130.37
LN-MW05	310169.96	6416559.13	131.31	131.35
LN-MW06	310139.04	6416548.59	131.41	131.47
LN-MW07	310102.02	6416553.31	131.72	131.81
LO-MW01	309672.52	6416772.80	133.54	133.66
LO-MW02	309780.06	6416760.36	133.34	133.46
LO-MW03	309830.80	6416731.46	133.27	133.40
LO-MW04	309840.86	6416704.03	133.27	133.37
LO-MW05	309841.55	6416677.34	133.04	133.14
LO-MW06	309829.74	6416633.72	133.45	133.50
LO-MW08	309903.94	6416595.71	132.87	132.95
LO-MW10	309837.09	6416531.95	133.07	133.22
LO-MW11	309809.08	6416483.77	133.05	133.12
LO-MW12	309915.87	6416503.63	133.22	133.32
LO-MW13	309805.72	6416463.22	133.08	133.17
LO-MW14	309728.21	6416402.63	133.20	133.31
LO-MW15	309800.40	6416328.57	134.28	134.35
LO-MW16	309736.78	6416285.10	135.46	135.58
LO-MW17	309943.14	6416669.71	132.78	132.90
LP-MW01	310024.47	6416819.32	132.07	132.15
LP-MW02	309989.76	6415996.59	132.17	131.30
LP-MW03	310017.10	6416377.91	131.92	131.22
LP-MW04	310209.82	6416468.15	130.84	129.93
LP-MW05	310205.44	6416665.99	131.78	131.84
LP-MW06	310021.66	6415736.92	129.99	129.34
LQ-MW01	309619.71	6416460.29	133.41	133.50
LQ-MW03	309632.33	6416551.60	133.41	133.47
LQ-MW05	309643.32	6416671.59	133.35	133.47
LQ-MW06	309651.69	6416684.90	133.35	133.47
LQ-MW07	309656.56	6416717.19	133.33	133.46
LR-MW01	309538.32	6416750.16	150.79	151.03
LR-MW03	309309.01	6416491.01	160.65	159.69
LR-MW04	309446.17	6416387.52	152.28	151.36
LS-MW01	309862.45	6415625.90	130.46	129.59
LS-MW02	309595.66	6415656.08	130.63	129.84
LT-MW01	309804.49	6416934.70	132.61	132.71
LT-MW02	309787.07	6416874.08	133.66	133.81
LT-MW03	309704.46	6416948.75	132.97	133.10
LT-MW04	309863.14	6416964.19	130.99	130.21
LU-MW02	309635.85	6416403.31	133.21	133.30
LU-MW03	309670.48	6416426.26	133.37	133.47
LV-MW03	308245.84	6417856.77	141.58	141.10
LV-MW04	308816.45	6415027.32	133.61	132.99
LV-MW05	308371.45	6415027.32	140.05	139.32

Annex K

Existing Monitoring Well Suitability

Well ID	Top of screen	Bottom of Screen	Previous SWL	ERM SWL (mbTOC)	Screened Geological Unit / Comments
LB_EW_MW01	N/A	N/A	N/A	2.36	N/A - well construction information not available.
LC_EW_L1	1	4.2	N/A	3.25	Gravelly sands / fractured rock. Well screened appropriately to allow ingress of LNAPL.
LC_EW_L2	1	4.5	N/A	3.45	Gravelly sands / fractured rock. Well screened appropriately to allow ingress of LNAPL.
LC_EW_L3	1	4.5	N/A	3.50	Gravelly sands / fractured rock. Well screened appropriately to allow ingress of LNAPL.
LC_EW_L4	1	7.75	N/A	3.25	Gravelly sands / fractured rock. Well screened appropriately to allow ingress of LNAPL.
LD_EW_MW01	N/A	N/A	N/A	2.91	N/A - well construction information not available.
LD_EW_MW02	N/A	N/A	N/A	2.89	N/A - well construction information not available.
LD_EW_MW03	N/A	N/A	N/A	2.75	N/A - well construction information not available.
LD_EW_MW04	N/A	N/A	N/A	5.94	N/A - well construction information not available. SWL from TOC is lower due to standpipe above ground level.
LS_EW_MW01	N/A	N/A	N/A	2.03	N/A - well construction information not available.
LS_EW_MW02	N/A	N/A	N/A	2.05	N/A - well construction information not available.
LS_EW_MW03	N/A	N/A	N/A	1.79	N/A - well construction information not available.

Notes:
N/A - data not available



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Environmental Resources Management

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

T: 61 2 8584 8888
F: 61 2 8584 8800
www.erm.com

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