Analysis Holding Time Compliance

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103)							
LB_MW01_1.4, LB_MW15_1.6	**12-DEC-2013**	**----**	----	----	**20-DEC-2013**	26-DEC-2013	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
LB_MW01_1.4, LB_MW15_1.6	**12-DEC-2013**	**19-DEC-2013**	10-JUN-2014	✓	**20-DEC-2013**	10-JUN-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
LB_MW01_1.4, LB_MW15_1.6	**12-DEC-2013**	**19-DEC-2013**	09-JAN-2014	✓	**20-DEC-2013**	09-JAN-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071)							
LB_MW01_1.4, LB_MW15_1.6	**12-DEC-2013**	**19-DEC-2013**	26-DEC-2013	✓	**19-DEC-2013**	28-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075(SIM))							
LB_MW01_1.4, LB_MW15_1.6	**12-DEC-2013**	**19-DEC-2013**	26-DEC-2013	✓	**19-DEC-2013**	28-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
LB_MW01_1.4, LB_MW15_1.6	**12-DEC-2013**	**19-DEC-2013**	26-DEC-2013	✓	**19-DEC-2013**	28-JAN-2014	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
LB_MW01_1.4, LB_MW15_1.6, TB, TS, TSC	**12-DEC-2013**	**19-DEC-2013**	26-DEC-2013	✓	**19-DEC-2013**	26-DEC-2013	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
LB_MW01_1.4, LB_MW15_1.6, TB	**12-DEC-2013**	**19-DEC-2013**	26-DEC-2013	✓	**19-DEC-2013**	26-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

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	10-JUN-2014	✓	**20-DEC-2013**	10-JUN-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T)							
R01_121213_RO	**12-DEC-2013**	**----**	----	----	**19-DEC-2013**	09-JAN-2014	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	26-DEC-2013	✓	**19-DEC-2013**	26-DEC-2013	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	26-DEC-2013	✓	**19-DEC-2013**	26-DEC-2013	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	26-DEC-2013	✓	**19-DEC-2013**	26-DEC-2013	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	26-DEC-2013	✓	**19-DEC-2013**	26-DEC-2013	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	26-DEC-2013	✓	**19-DEC-2013**	26-DEC-2013	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	26-DEC-2013	✓	**19-DEC-2013**	26-DEC-2013	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	26-DEC-2013	✓	**19-DEC-2013**	26-DEC-2013	✓
EP075H: Anilines and Benzidines							
Amber Glass Bottle - Unpreserved (EP075)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	19-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
EP075G: Chlorinated Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	19-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
EP075F: Haloethers							
Amber Glass Bottle - Unpreserved (EP075)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	19-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
EP075E: Nitroaromatics and Ketones							
Amber Glass Bottle - Unpreserved (EP075)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	19-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
EP075D: Nitrosamines							
Amber Glass Bottle - Unpreserved (EP075)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	19-DEC-2013	✓	**21-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
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	19-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
EP075J: Organophosphorus Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	19-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
EP075A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	19-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
EP075C: Phthalate Esters							
Amber Glass Bottle - Unpreserved (EP075)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	19-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
R01_121213_RO	**12-DEC-2013**	**19-DEC-2013**	19-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	1	5	**20.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	6	**16.7**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Semivolatile Organic Compounds	EP075	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	**10.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

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 Control Samples (LCS) - Continued							
Volatile Organic Compounds	EP074	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Semivolatile Organic Compounds	EP075	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	**10.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	**10.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
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
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by 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)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (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)
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)
Semivolatile Organic Compounds	EP075	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)

Preparation Methods	Method	Matrix	Method Descriptions
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA 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							
EP075A: Phenolic Compounds	3845788-002	----	**2-Chlorophenol**	95-57-8	62.8 %	63.1-105%	**Recovery less than lower control limit**
EP075B: Polynuclear Aromatic Hydrocarbons	3845788-002	----	**Acenaphthylene**	208-96-8	61.0 %	64-108%	**Recovery less than lower control limit**
EP075D: Nitrosamines	3845788-002	----	**N-Nitrosodiphenyl & Diphenylamine**	86-30-6 122-39-4	62.4 %	64.6-112%	**Recovery less than lower control limit**
EP075E: Nitroaromatics and Ketones	3845788-002	----	**Acetophenone**	98-86-2	68.1 %	68.3-112%	**Recovery less than lower control limit**
EP075E: Nitroaromatics and Ketones	3845788-002	----	**4-Aminobiphenyl**	92-67-1	39.6 %	60.1-112%	**Recovery less than lower control limit**

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

Regular Sample Surrogates

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

Outliers : Analysis Holding Time Compliance

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

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

Outliers : Frequency of Quality Control Samples

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

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

Subcon / Forward Lab / Split WO
Lab / Analysis: ENVIROLAB T01 - 16/12/13
Organised By / Date: Newcastle 6, 7, 9, PSD.
Relinquished By / Date: ASET Asbestos - 4, 5
Connote / Courier:
WO No: ES1327894
Attach By PO / Internal Sheets:

CHAIN OF CUSTODY

TAT

CLIENT:	ERM
OFFICE:	Pyrmont
PROJECT:	Project Symphony
ORDER NUMBER:	0224198
PROJECT MANAGER:	Joe Fenning
CONTACT PH:	
SAMPLER:	Josh Gnuh
SAMPLER MOBILE:	
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@erm.com
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 HRs please.

ALS QUOTE NO.: SY/794/13

SITE: BAYSWATER / LIDDELL

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:
	Hayley W ALS NW	Hayley W ALS NW	SOW
DATE/TIME:	DATE/TIME: 19/12/13 15:10	DATE/TIME: 19/12/13 1720	DATE/TIME: 19/12/13 1900

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: 4.9 °C
Other comment:

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).

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) CEC + EC	PFOS:PFOA	Asbestos (absence/presence)	Particle Sizing to 75µm (Sieve)	Organic Matter plus Total Organic Carbon (EP004)	Additional Information
1	LI_MW09_0.2	16/12/13	SOIL	1G + Bag	2	X		X						X			
18	LI_MW09 1.0	↓	↓	1G + Bag	2			~~X~~									HOLD
2	LI_MW09 2.8			1G	1	X		X									
3	LI_SB01_2.7			1G	1	X		X									
4	LI_SB02_1.6			1G	1	X		X									
5	LI_SB04_0.1			1G + Bag	2	X		X						X			
6	LI_SB04-1.0			1G + Bag X2	3	X		X				X			X	X	
7	LI_SB05_2.5			1G	1	X		X			X	X			X	X	
8	LV_MW04_2.2			1G	1	X		X			X	X			X	X	
9	LV_MW05_2.7			1G	1	X		X									
10	R01_161213_JG			1G	1	X		X									
11	D01_161213_HC	↓	↓	1G	1	X		X									Fwd. to Envirolab.
—	T01_161213_JG	↓	↓	1G	1	X		X									

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

QAQC.

(19) TB10 = C6-C9 + BTEXN
(20) TS8 = BTEXN only.
(21) R01_161213_JG = TRH, BTEX, 8 metals.
#(22) TSC14
(23) TSC8

Environmental Division
Sydney
Work Order
ES1327894
Telephone: +61-2-8784 8555

CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT: ERM	TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): ☑ Non Standard or urgent TAT (List due date): 48 HRs pls. (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
OFFICE: VERMONT	ALS QUOTE NO.: SY/794/13
PROJECT: Project Symphony	SITE: BAYSWATER / LIDDELL
ORDER NUMBER: 0224198	COC SEQUENCE NUMBER (Circle): COC: 1 2 3 4 5 6 7; OF: 1 2 3 4 5 6 7
PROJECT MANAGER: JOE FERRING	CONTACT PH:
SAMPLER: JOSH ARVIN	SAMPLER MOBILE:
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed):	
Email Invoice to (will default to PM if no other addresses are listed):	

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:	4.9 °C		
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME: 19/12/13 17:10	DATE/TIME: 19/12/13 17:20	DATE/TIME: 19/12/13 (900

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)	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.
13	LV_MW03_1.9	17/12/13	SOIL	1G	1	X		X									
14	LV-MW02-1.7	17/12/13	"	"	1	X		X										X-BTEXN, C6-C9
15	TB6	& LAB	"	"	1													X- BTEXN
16	TS14	& LAB	"	"	1													X TRH, BTEX, metals
17	RO1_171213_JG	& 17/12/13	W	2VC, 1PN, 1G	4													
~~14~~	~~TB6~~																	

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 Bisulphate Preserved; VO = 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 Sulfate Soils; B = Unpreserved Bag.

Phoung Tran

From: Fadi Soro
Sent: Monday, 23 December 2013 3:35 PM
To: Phoung Tran; Kim Phan; Wanida Roberts
Cc: Jacob Waugh
Subject: FW: ES1327894-007 & 009 only 1 jar supplied cannot analyse for PSD

Ladies,

Can one of you please delete PSD from samples #7 & 9 as per the client email below?

Regards

Fadi

-----Original Message-----
From: Joseph Ferring [mailto:Joseph.Ferring@erm.com]
Sent: Monday, 23 December 2013 3:31 PM
To: Fadi Soro
Cc: Barbara Hanna; Loren Schiavon; Clea Henderson
Subject: RE: ES1327894-007 & 009 only 1 jar supplied cannot analyse for PSD

Hi Fadi, thanks for the continued patience with these samples. Please PSD from the list of requested analytes.

Cheers,
Joe

Joe Ferring
Senior Environmental Scientist

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

T: +61 (0)2 8584 8890 (Direct)
T: +61 (0)2 8584 8888 (Office)
F: +61 (0)2 8584 8800
M: +61 424970468
joseph.ferring@erm.com

www.erm.com

-----Original Message-----
From: Fadi Soro [mailto:fadi.soro@alsglobal.com]
Sent: Monday, December 23, 2013 2:29 PM
To: Joseph Ferring
Cc: Barbara Hanna; Loren Schiavon
Subject: ES1327894-007 & 009 only 1 jar supplied cannot analyse for PSD

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES1327894**		
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	: LIDDELL		
Sampler	: JF	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 19-DEC-2013	Issue Date	: 23-DEC-2013 14:48
Client Requested Due Date	: 23-DEC-2013	Scheduled Reporting Date	: **23-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.9'C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 22
Security Seal	: Intact.	No. of samples analysed	: 21

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.
- Asbestos analysis will be subcontracted to ASET.
- **Samples received in appropriately pretreated and preserved containers.**
- **Particle Size analysis will be conducted by ALS Newcastle.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Cancelled PSD analysis from sample LI_SB05_2.5 and LV_MW05_2.7 as per Joseph Ferring on 23/12/13**
- **Sample T01_161213_JG to be forwarded to Envirolab.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - ASB-SOL (Subcontracted) Asbestos - Count (Solid)	SOIL - EA002 pH (1:5)	SOIL - EA150* Particle Size Analysis by Sieving (Default sieves from	SOIL - ED007 Def CEC / Exchangeable Cations (ED007) -Default	SOIL - EP004 (Carbon) Total Organic Carbon (Calc.)	SOIL - EP080 BTEXN	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs
ES1327894-001	16-DEC-2013 15:00	LI_MW09_0.2		✓						
ES1327894-005	16-DEC-2013 15:00	LI_SN04_0.1		✓						
ES1327894-006	16-DEC-2013 15:00	LI_SB04_1.0				✓	✓	✓		
ES1327894-007	16-DEC-2013 15:00	LI_SB05_2.5			✓		✓	✓		
ES1327894-009	16-DEC-2013 15:00	LV_MW05_2.7			✓		✓	✓		
ES1327894-015	[19-DEC-2013]	TB6								✓
ES1327894-016	[19-DEC-2013]	TS14							✓	
ES1327894-018	[19-DEC-2013]	LI_MW09_1.0	✓							
ES1327894-019	[19-DEC-2013]	TB10								✓
ES1327894-020	[19-DEC-2013]	TS8							✓	
ES1327894-022	[19-DEC-2013]	TSC 14							✓	
ES1327894-023	[19-DEC-2013]	TSC 8							✓	

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - S-27 TRH/BTEXN/PAH/Phenols/8Metals
ES1327894-001	16-DEC-2013 15:00	LI_MW09_0.2	✓
ES1327894-002	16-DEC-2013 15:00	LI_MW09_2.8	✓
ES1327894-003	16-DEC-2013 15:00	LI_SB01_2.7	✓
ES1327894-004	16-DEC-2013 15:00	LI_SB02_1.6	✓
ES1327894-005	16-DEC-2013 15:00	LI_SN04_0.1	✓
ES1327894-006	16-DEC-2013 15:00	LI_SB04_1.0	✓
ES1327894-007	16-DEC-2013 15:00	LI_SB05_2.5	✓
ES1327894-008	16-DEC-2013 15:00	LV_MW04_2.2	✓
ES1327894-009	16-DEC-2013 15:00	LV_MW05_2.7	✓
ES1327894-010	16-DEC-2013 15:00	D01_161213_JG	✓
ES1327894-011	16-DEC-2013 15:00	D01_131213_HC	✓
ES1327894-013	17-DEC-2013 15:00	LV_MW03_1.8	✓

			SOIL - S-27 TRH/BTEXN/PAH/Phenols/8Metals
ES1327894-014	17-DEC-2013 15:00	LV_MW02_1.7	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - W-05T TRH/BTEXN/8 Metals (Total)
ES1327894-017	17-DEC-2013 15:00	R01_171213_JG	✓
ES1327894-021	16-DEC-2013 15:00	R01_131213_JG	✓

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
- Attachment - Report (SUBCO)	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) (COC)	Email	symphony.macgen@erm.com
- EDI Format - ENMRG (ENMRG)	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	symphony.macgen@erm.com
- EDI Format - ESDAT (ESDAT)	Email	symphony.macgen@erm.com
- EDI Format - XTab (XTAB)	Email	symphony.macgen@erm.com

THE ACCOUNTS PAYABLE

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

CERTIFICATE OF ANALYSIS

Work Order	: **ES1327894**	Page	: 1 of 16
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	: 19-DEC-2013
Sampler	: JF	Issue Date	: 31-DEC-2013
Site	: LIDDELL		
		No. of samples received	: 22
Quote number	: SY/794/13	No. of samples analysed	: 21

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

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

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
Di-An Dao		Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	LI_MW09_0.2	LI_MW09_2.8	LI_SB01_2.7	LI_SB02_1.6	LI_SN04_0.1
				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		ES1327894-001	ES1327894-002	ES1327894-003	ES1327894-004	ES1327894-005
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		19.0	18.4	20.6	9.0	11.4
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	31	13	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		2	15	27	2	2
Copper	7440-50-8	5	mg/kg		10	13	32	7	10
Lead	7439-92-1	5	mg/kg		10	10	25	8	8
Nickel	7440-02-0	2	mg/kg		3	<2	21	2	4
Zinc	7440-66-6	5	mg/kg		28	18	74	34	25
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg		<2	<2	<2	<2	<2
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		1.4	<0.5	<0.5	0.7	1.1
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		2.9	<0.5	<0.5	1.0	2.4
Pyrene	129-00-0	0.5	mg/kg		1.4	<0.5	<0.5	0.6	1.2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	LI_MW09_0.2	LI_MW09_2.8	LI_SB01_2.7	LI_SB02_1.6	LI_SN04_0.1
				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		ES1327894-001	ES1327894-002	ES1327894-003	ES1327894-004	ES1327894-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	0.5	mg/kg		**0.8**	<0.5	<0.5	<0.5	**0.7**
Chrysene	218-01-9	0.5	mg/kg		**0.9**	<0.5	<0.5	<0.5	**0.8**
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		**1.0**	<0.5	<0.5	<0.5	**0.8**
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		**8.4**	<0.5	<0.5	**2.3**	**7.0**
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.7**	**0.6**	**0.6**	**0.6**	**0.7**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.3**	**1.2**	**1.2**	**1.2**	**1.3**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		**300**	<100	<100	**120**	**300**
C29 - C36 Fraction	----	100	mg/kg		**120**	<100	<100	<100	**110**
^ C10 - C36 Fraction (sum)	----	50	mg/kg		**420**	<50	<50	**120**	**410**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg		**50**	<50	<50	<50	**60**
>C16 - C34 Fraction	----	100	mg/kg		**360**	<100	<100	**140**	**350**
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		**410**	<50	<50	**140**	**410**
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		**50**	<50	<50	<50	**60**
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	LI_MW09_0.2	LI_MW09_2.8	LI_SB01_2.7	LI_SB02_1.6	LI_SN04_0.1
				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		ES1327894-001	ES1327894-002	ES1327894-003	ES1327894-004	ES1327894-005
EP080: BTEXN - Continued									
^ **Total Xylenes**	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**109**	**93.6**	**93.6**	**98.2**	**92.6**
2-Chlorophenol-D4	93951-73-6	0.1	%		**97.2**	**85.0**	**92.1**	**90.6**	**91.3**
2.4.6-Tribromophenol	118-79-6	0.1	%		**86.6**	**78.1**	**74.1**	**73.5**	**74.4**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**97.0**	**89.0**	**93.8**	**87.3**	**91.0**
Anthracene-d10	1719-06-8	0.1	%		**80.5**	**80.5**	**81.2**	**82.6**	**83.8**
4-Terphenyl-d14	1718-51-0	0.1	%		**83.2**	**80.7**	**83.4**	**81.0**	**84.8**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**115**	**117**	**120**	**119**	**110**
Toluene-D8	2037-26-5	0.1	%		**96.9**	**110**	**104**	**106**	**97.0**
4-Bromofluorobenzene	460-00-4	0.1	%		**89.6**	**121**	**114**	**100**	**85.8**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	LI_SB04_1.0	LI_SB05_2.5	LV_MW04_2.2	LV_MW05_2.7	D01_161213_JG
				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		ES1327894-006	ES1327894-007	ES1327894-008	ES1327894-009	ES1327894-010
EA150: Particle Sizing									
+75µm	----	1	%		6	----	----	----	----
+150µm	----	1	%		5	----	----	----	----
+300µm	----	1	%		4	----	----	----	----
+425µm	----	1	%		4	----	----	----	----
+600µm	----	1	%		3	----	----	----	----
+1180µm	----	1	%		2	----	----	----	----
+2.36mm	----	1	%		1	----	----	----	----
+4.75mm	----	1	%		<1	----	----	----	----
+9.5mm	----	1	%		<1	----	----	----	----
+19.0mm	----	1	%		<1	----	----	----	----
+37.5mm	----	1	%		<1	----	----	----	----
+75.0mm	----	1	%		<1	----	----	----	----
EA002 : pH (Soils)									
pH Value	----	0.1	pH Unit		----	7.8	----	4.1	----
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		21.8	19.9	14.8	13.1	14.7
EA150: Soil Classification based on Particle Size									
Fines (<75 µm)	----	1	%		94	----	----	----	----
Sand (>75 µm)	----	1	%		5	----	----	----	----
Gravel (>2mm)	----	1	%		1	----	----	----	----
Cobbles (>6cm)	----	1	%		<1	----	----	----	----
ED007: Exchangeable Cations									
Exchangeable Calcium	----	0.1	meq/100g		7.0	2.7	----	49.1	----
Exchangeable Magnesium	----	0.1	meq/100g		14.3	6.7	----	2.4	----
Exchangeable Potassium	----	0.1	meq/100g		0.1	0.2	----	0.2	----
Exchangeable Sodium	----	0.1	meq/100g		1.5	3.0	----	0.2	----
Cation Exchange Capacity	----	0.1	meq/100g		22.9	12.7	----	52.0	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	22	30	18	42
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		13	61	36	22	8
Copper	7440-50-8	5	mg/kg		14	25	31	25	8
Lead	7439-92-1	5	mg/kg		8	53	25	29	7

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	LI_SB04_1.0	LI_SB05_2.5	LV_MW04_2.2	LV_MW05_2.7	D01_161213_JG
				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		ES1327894-006	ES1327894-007	ES1327894-008	ES1327894-009	ES1327894-010
EG005T: Total Metals by ICP-AES - Continued									
Nickel	7440-02-0	2	mg/kg		8	39	14	9	<2
Zinc	7440-66-6	5	mg/kg		40	80	64	43	12
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP004: Organic Matter									
Organic Matter	----	0.5	%		<0.5	<0.5	----	<0.5	----
Total Organic Carbon	----	0.5	%		<0.5	<0.5	----	<0.5	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg		<2	<2	<2	<2	<2
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	LI_SB04_1.0	LI_SB05_2.5	LV_MW04_2.2	LV_MW05_2.7	D01_161213_JG
				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		ES1327894-006	ES1327894-007	ES1327894-008	ES1327894-009	ES1327894-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	LI_SB04_1.0	LI_SB05_2.5	LV_MW04_2.2	LV_MW05_2.7	D01_161213_JG
				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		ES1327894-006	ES1327894-007	ES1327894-008	ES1327894-009	ES1327894-010
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	0.1	%		84.0	90.3	100	89.6	87.6
2-Chlorophenol-D4	93951-73-6	0.1	%		82.2	87.0	97.5	89.0	82.2
2.4.6-Tribromophenol	118-79-6	0.1	%		74.4	71.5	76.2	66.3	73.7
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		90.8	90.6	96.8	87.9	90.3
Anthracene-d10	1719-06-8	0.1	%		80.7	80.7	83.8	82.4	81.8
4-Terphenyl-d14	1718-51-0	0.1	%		84.4	81.1	80.5	85.6	87.8
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		118	108	119	123	116
Toluene-D8	2037-26-5	0.1	%		106	98.8	104	114	104
4-Bromofluorobenzene	460-00-4	0.1	%		118	113	111	118	109

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	D01_131213_HC	LV_MW03_1.8	LV_MW02_1.7	TB6	TS14
				Client sampling date / time	16-DEC-2013 15:00	17-DEC-2013 15:00	17-DEC-2013 15:00	[19-DEC-2013]	[19-DEC-2013]
Compound	CAS Number	LOR	Unit		ES1327894-011	ES1327894-013	ES1327894-014	ES1327894-015	ES1327894-016
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		29.6	14.2	8.2	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	16	<5	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg		4	18	26	----	----
Copper	7440-50-8	5	mg/kg		10	15	23	----	----
Lead	7439-92-1	5	mg/kg		10	12	10	----	----
Nickel	7440-02-0	2	mg/kg		5	12	28	----	----
Zinc	7440-66-6	5	mg/kg		25	59	89	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg		<2	<2	<2	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		1.2	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		2.1	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		1.2	<0.5	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	D01_131213_HC	LV_MW03_1.8	LV_MW02_1.7	TB6	TS14
				Client sampling date / time	16-DEC-2013 15:00	17-DEC-2013 15:00	17-DEC-2013 15:00	[19-DEC-2013]	[19-DEC-2013]
Compound	CAS Number	LOR	Unit		ES1327894-011	ES1327894-013	ES1327894-014	ES1327894-015	ES1327894-016
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	0.5	mg/kg		**0.7**	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		**0.7**	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		**0.8**	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		**6.7**	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.7**	**0.6**	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.3**	**1.2**	**1.2**	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		**250**	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		**250**	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg		<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		**290**	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		**290**	<50	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	**0.8**
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**21.2**
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**2.7**
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**13.1**
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**5.2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	D01_131213_HC	LV_MW03_1.8	LV_MW02_1.7	TB6	TS14
				Client sampling date / time	16-DEC-2013 15:00	17-DEC-2013 15:00	17-DEC-2013 15:00	[19-DEC-2013]	[19-DEC-2013]
Compound	CAS Number	LOR	Unit		ES1327894-011	ES1327894-013	ES1327894-014	ES1327894-015	ES1327894-016
EP080: BTEXN - Continued									
^ **Total Xylenes**	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**18.3**
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	**43.0**
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**98.8**	**94.1**	**95.3**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**90.2**	**86.1**	**96.6**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**87.5**	**73.7**	**71.7**	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**96.6**	**91.5**	**92.6**	----	----
Anthracene-d10	1719-06-8	0.1	%		**80.4**	**80.4**	**81.2**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**83.2**	**84.8**	**86.8**	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**105**	**118**	**123**	**123**	**110**
Toluene-D8	2037-26-5	0.1	%		**88.0**	**98.9**	**104**	**97.5**	**99.9**
4-Bromofluorobenzene	460-00-4	0.1	%		**77.8**	**104**	**106**	**102**	**98.9**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TB10	TS8	TSC 14	TSC 8	----
				Client sampling date / time	[19-DEC-2013]	[19-DEC-2013]	[19-DEC-2013]	[19-DEC-2013]	----
Compound	CAS Number	LOR	Unit		ES1327894-019	ES1327894-020	ES1327894-022	ES1327894-023	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	0.8	0.8	0.7	----
Toluene	108-88-3	0.5	mg/kg		<0.5	19.4	22.1	20.1	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	2.4	2.6	2.4	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	11.6	12.5	11.9	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	4.7	4.8	4.6	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	16.3	17.3	16.5	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	38.9	42.8	39.7	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		128	103	96.0	100	----
Toluene-D8	2037-26-5	0.1	%		106	94.6	107	115	----
4-Bromofluorobenzene	460-00-4	0.1	%		109	94.4	103	117	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R01_171213_JG	R01_131213_JG	----	----	----
			Client sampling date / time	17-DEC-2013 15:00	16-DEC-2013 15:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1327894-017	ES1327894-021	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R01_171213_JG	R01_131213_JG	----	----	----
			Client sampling date / time	17-DEC-2013 15:00	16-DEC-2013 15:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1327894-017	ES1327894-021	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	114	115	----	----	----
Toluene-D8	2037-26-5	0.1	%	113	113	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	102	101	----	----	----

Surrogate Control Limits

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

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
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

Certificate of Analysis

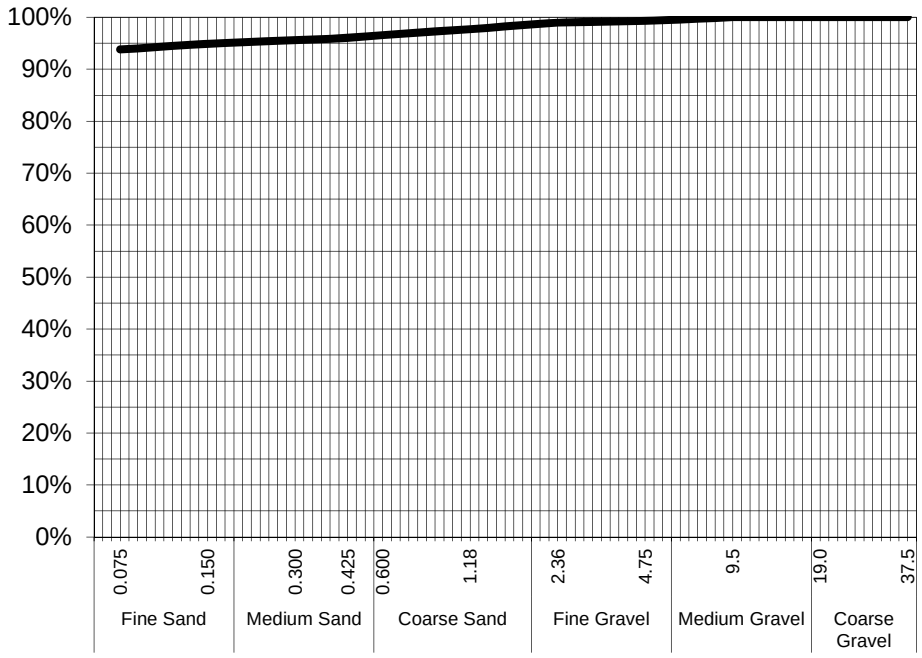
ALS Laboratory Group Pty Ltd
5/585 Maitland Road
Mayfield West, NSW 2304
pH 02 4014 2500
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	Symphony Macgen	**DATE REPORTED:**	31-Dec-2013
COMPANY:	Enviro Resources Management	**DATE RECEIVED:**	19-Dec-2013
ADDRESS:	Ground Floor 33 Saunders Street, Pyrmont NSW 2009	**REPORT NO:**	ES1327894-006 / PSD
PROJECT:	Project Symphony	**SAMPLE ID:**	LI_SB04_1.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	99%
1.18	98%
0.600	97%
0.425	96%
0.300	96%
0.150	95%
0.075	94%

Samples analysed as received.

Sample Comments:		**Analysed:**	30-Dec-13
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Fines		
Test Method:	AS1289.3.6.1		

NATA Accreditation: 825 Site: Newcastle
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Hamish Murray
Laboratory Supervisor, Newcastle
Authorised Signatory

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

Our ref : ASET36697/ 39877 / 1 - 2
Your ref :ES1327894
NATA Accreditation No: 14484

24 December 2013

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

Attn: Ms Nanthini Coilparampil,

Dear Nanthini

Dear Nanthini

Asbestos Identification
This report presents the results of two samples, forwarded by Australian Laboratory Services Pty Ltd on 20 December 2013, for analysis for asbestos.

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

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

3. Results : **Sample No. 1. ASET36697 / 39877 / 1. ES1327894 - 001 - LI - MW09 - 0.2.**
Approx dimensions 10.0 cm x 8.0 cm x 4.5 cm
The sample consisted of a mixture of sandy soil, stones, coal like material and plant matter.
No asbestos detected.

Sample No. 2. ASET36697 / 39877 / 2. ES1327894 - 005 - LI - SB04 - 0.1.
Approx dimensions 10.0 cm x 8.0 cm x 4.5 cm
The sample consisted of a mixture of sandy soil, stones, coal like material and plant matter.
No asbestos detected.

Analysed and reported by,

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

QUALITY CONTROL REPORT

Work Order	: **ES1327894**	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	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 19-DEC-2013
Sampler	: JF	Issue Date	: 31-DEC-2013
Order number	: 0224198		
		No. of samples received	: 22
Quote number	: SY/794/13	No. of samples analysed	: 21

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

This Quality Control Report contains the following information:

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

General Comments

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

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

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

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

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

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
Di-An Dao		Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA002 : pH (Soils) (QC Lot: 3223431)									
ES1327839-001	Anonymous	EA002: pH Value	----	0.1	pH Unit	7.0	7.0	0.0	0% - 20%
EA055: Moisture Content (QC Lot: 3224144)									
ES1327892-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	13.8	12.0	14.0	0% - 50%
ES1327894-011	D01_131213_HC	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	29.6	29.6	0.0	0% - 20%
ED007: Exchangeable Cations (QC Lot: 3223615)									
ES1327894-006	LI_SB04_1.0	ED007: Exchangeable Calcium	----	0.1	meq/100g	7.0	7.5	6.9	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	14.3	14.0	2.2	0% - 20%
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.1	0.1	0.0	0% - 20%
		ED007: Exchangeable Sodium	----	0.1	meq/100g	1.5	1.4	0.0	0% - 20%
		ED007: Cation Exchange Capacity	----	0.1	meq/100g	22.9	23.0	0.0	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 3224041)									
ES1327894-001	LI_MW09_0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	2	4	48.4	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	4	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	11	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	12	21.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	28	26	7.4	No Limit
ES1327894-010	D01_161213_JG	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	10	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	42	12	110	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	<5	51.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	7	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	12	10	18.4	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3224042)									
ES1327894-001	LI_MW09_0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1327894-010	D01_161213_JG	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP004: Organic Matter (QC Lot: 3223793)									
ES1327741-011	Anonymous	EP004: Organic Matter	----	0.5	%	<0.5	<0.5	0.0	No Limit
		EP004: Total Organic Carbon	----	0.5	%	<0.5	<0.5	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3223582)									
ES1327894-001	LI_MW09_0.2	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

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)A: Phenolic Compounds (QC Lot: 3223582) - continued									
ES1327894-001	LI_MW09_0.2	EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1327894-011	D01_131213_HC	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3223582)									
ES1327894-001	LI_MW09_0.2	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	1.4	1.1	25.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	2.9	2.5	13.5	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.4	1.2	14.1	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.8	0.7	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.9	0.8	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	1.0	0.8	20.1	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	8.4	7.1	16.8	0% - 50%

Sub-Matrix: **SOIL**

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: 3223582) - continued									
ES1327894-001	LI_MW09_0.2	EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1327894-011	D01_131213_HC	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	1.2	0.9	26.6	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	2.1	2.0	8.2	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.2	1.0	13.1	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.7	0.6	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.7	0.6	17.1	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	0.8	0.8	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	6.7	5.9	12.7	0% - 50%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3223554)									
ES1327894-001	LI_MW09_0.2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1327894-011	D01_131213_HC	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3223581)									
ES1327894-001	LI_MW09_0.2	EP071: C15 - C28 Fraction	----	100	mg/kg	300	310	5.7	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	120	120	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1327894-011	D01_131213_HC	EP071: C15 - C28 Fraction	----	100	mg/kg	250	240	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3223554)									
ES1327894-001	LI_MW09_0.2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1327894-011	D01_131213_HC	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3223581)									
ES1327894-001	LI_MW09_0.2	EP071: >C16 - C34 Fraction	----	100	mg/kg	360	370	5.1	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	50	60	0.0	No Limit
ES1327894-011	D01_131213_HC	EP071: >C16 - C34 Fraction	----	100	mg/kg	290	280	3.8	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit

Sub-Matrix: **SOIL**

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: 3223554)									
ES1327894-001	LI_MW09_0.2	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1327894-011	D01_131213_HC	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

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 (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3223763)									
ES1327589-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0006	0.0006	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.009	0.008	13.9	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.051	0.052	0.0	No Limit
ES1327706-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3223580)									
ES1327894-017	R01_171213_JG	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	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: 3224988)									
ES1327953-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	50	50	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

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: 3224988) - continued									
ES1327953-001	Anonymous	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

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
ED007: Exchangeable Cations (QCLot: 3223615)								
ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	----	----	----	----
ED007: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	----	----	----	----
ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	----	----	----	----
ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	----	----	----	----
ED007: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3224041)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	112	87	129
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	105	80	122
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	106	71	133
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	113	86	128
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	103	81	123
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	114	84	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	108	81	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3224042)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.9	66	112
EP004: Organic Matter (QCLot: 3223793)								
EP004: Organic Matter	----	0.5	%	<0.5	4.58 %	93.0	85	105
EP004: Total Organic Carbon	----	0.5	%	<0.5	2.66 %	92.9	84	106
EP075(SIM)A: Phenolic Compounds (QCLot: 3223582)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	94.4	74	116
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	94.0	74	116
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	94.6	72	116
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	101	69	123
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	82.8	60.3	117
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	97.2	69	117
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	97.5	68	112
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	102	73	117
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	95.8	76.4	114
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	84.8	57	111
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	89.4	68.9	112
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	31.4	3.9	57
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223582)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	108	80	124
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	100	77	123

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223582) - continued								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	103	79	123
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	104	77	123
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	107	79	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	106	79	123
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	109	79	123
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	104	79	125
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	98.9	73	121
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	108	81	123
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	90.5	70	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	104	77	123
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	96.6	76	122
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	85.0	71	113
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	87.9	71.7	113
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	82.9	72.4	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223554)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	102	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223581)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	80.1	71	131
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	82.8	74	138
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	74.6	64	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223554)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	101	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223581)								
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	77.2	70	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	81.8	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
		50	mg/kg	----	150 mg/kg	66.8	63	131
EP080: BTEXN (QCLot: 3223554)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	100	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	109	62	128
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	104	58	118
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	106	60	120
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	114	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	111	62	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	LCS: Spike Recovery (%)	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 3223763)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	104	79	121
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.7	82	114
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	105	83	115
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	108	83	117
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.0	85	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	110	83	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	116	76	118
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3223580)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	92.0	77	115
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223409)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	91.0	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	98.2	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3224988)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	115	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223409)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	71.9	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	107	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	85.5	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: 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

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3224041)							
ES1327894-001	LI_MW09_0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	107	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	107	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	108	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	110	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	106	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	110	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	106	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3224042)							
ES1327894-001	LI_MW09_0.2	EG035T: Mercury	7439-97-6	5 mg/kg	87.6	70	130
EP004: Organic Matter (QCLot: 3223793)							
ES1327741-011	Anonymous	EP004: Organic Matter	----	0.48 %	93.1	----	----
		EP004: Total Organic Carbon	----	0.28 %	89.3	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3223582)							
ES1327894-001	LI_MW09_0.2	EP075(SIM): Phenol	108-95-2	10 mg/kg	100	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	99.2	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	80.4	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	95.9	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	86.6	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223582)							
ES1327894-001	LI_MW09_0.2	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	100	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.7	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223554)							
ES1327894-001	LI_MW09_0.2	EP080: C6 - C9 Fraction	----	32.5 mg/kg	85.8	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223581)							
ES1327894-001	LI_MW09_0.2	EP071: C10 - C14 Fraction	----	640 mg/kg	74.9	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	77.3	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	65.7	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223554)							
ES1327894-001	LI_MW09_0.2	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	79.0	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223581)							
ES1327894-001	LI_MW09_0.2	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	101	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	69.8	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	53.9	52	132
EP080: BTEXN (QCLot: 3223554)							
ES1327894-001	LI_MW09_0.2	EP080: Benzene	71-43-2	2.5 mg/kg	88.1	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	92.6	70	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Recovery Limits (%) Low	Matrix Spike (MS) Report: Recovery Limits (%) High
EP080: BTEXN (QCLot: 3223554) - continued							
ES1327894-001	LI_MW09_0.2	EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.5	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	82.7	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	85.8	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	72.8	70	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Recovery Limits (%) Low	Matrix Spike (MS) Report: Recovery Limits (%) High
EG020T: Total Metals by ICP-MS (QCLot: 3223763)							
ES1327596-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	110	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	92.5	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	100	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	103	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	97.8	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	86.2	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	95.9	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3223580)							
ES1327894-021	R01_131213_JG	EG035T: Mercury	7439-97-6	0.010 mg/L	83.8	70	130
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

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

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

Sub-Matrix: **SOIL**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report			
Spike	Spike Recovery (%)	Recovery Limits (%)	RPDs (%)

Sub-Matrix: **SOIL**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				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: 3223554)										
ES1327894-001	LI_MW09_0.2	EP080: C6 - C9 Fraction	----	32.5 mg/kg	85.8	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223554)										
ES1327894-001	LI_MW09_0.2	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	79.0	----	70	130	----	----
EP080: BTEXN (QCLot: 3223554)										
ES1327894-001	LI_MW09_0.2	EP080: Benzene	71-43-2	2.5 mg/kg	88.1	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	92.6	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.5	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	82.7	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	85.8	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	72.8	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3223581)										
ES1327894-001	LI_MW09_0.2	EP071: C10 - C14 Fraction	----	640 mg/kg	74.9	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	77.3	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	65.7	----	52	132	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3223581)										
ES1327894-001	LI_MW09_0.2	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	101	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	69.8	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	53.9	----	52	132	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3223582)										
ES1327894-001	LI_MW09_0.2	EP075(SIM): Phenol	108-95-2	10 mg/kg	100	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	99.2	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	80.4	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	95.9	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	86.6	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3223582)										
ES1327894-001	LI_MW09_0.2	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	100	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.7	----	70	130	----	----
EP004: Organic Matter (QCLot: 3223793)										
ES1327741-011	Anonymous	EP004: Organic Matter	----	0.48 %	93.1	----	----	----	----	----
		EP004: Total Organic Carbon	----	0.28 %	89.3	----	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3224041)										
ES1327894-001	LI_MW09_0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	107	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	107	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	108	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	110	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	106	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	110	----	70	130	----	----

Sub-Matrix: **SOIL**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EG005T: Total Metals by ICP-AES (QCLot: 3224041) - continued										
ES1327894-001	LI_MW09_0.2	EG005T: Zinc	7440-66-6	125 mg/kg	106	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3224042)										
ES1327894-001	LI_MW09_0.2	EG035T: Mercury	7439-97-6	5 mg/kg	87.6	----	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: 3223580)										
ES1327894-021	R01_131213_JG	EG035T: Mercury	7439-97-6	0.010 mg/L	83.8	----	70	130	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3223763)										
ES1327596-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	110	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	92.5	----	70	130	----	----
		EG020A-T: Chromium	7440-47-3	1 mg/L	100	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1 mg/L	103	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1 mg/L	97.8	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1 mg/L	86.2	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1 mg/L	95.9	----	70	130	----	----
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	----	----

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1327894**	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	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 19-DEC-2013
Sampler	: JF	Issue Date	: 31-DEC-2013
Order number	: 0224198		
		No. of samples received	: 22
Quote number	: SY/794/13	No. of samples analysed	: 21

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

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA002 : pH (Soils)							
Soil Glass Jar - Unpreserved (EA002)							
LI_SB05_2.5, LV_MW05_2.7	**16-DEC-2013**	**20-DEC-2013**	23-DEC-2013	✓	**20-DEC-2013**	20-DEC-2013	✓
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103)							
LI_MW09_0.2, LI_MW09_2.8, LI_SB01_2.7, LI_SB02_1.6, LI_SN04_0.1, LI_SB04_1.0, LI_SB05_2.5, LV_MW04_2.2, LV_MW05_2.7, D01_161213_JG, D01_131213_HC	**16-DEC-2013**	**----**	----	----	**20-DEC-2013**	30-DEC-2013	✓
Soil Glass Jar - Unpreserved (EA055-103)							
LV_MW03_1.8, LV_MW02_1.7	**17-DEC-2013**	**----**	----	----	**20-DEC-2013**	31-DEC-2013	✓
EA150: Particle Sizing							
Snap Lock Bag (EA150)							
LI_SB04_1.0	**16-DEC-2013**	**---**	14-JUN-2014	----	**31-DEC-2013**	28-JUN-2014	✓
EA150: Soil Classification based on Particle Size							
Snap Lock Bag (EA150)							
LI_SB04_1.0	**16-DEC-2013**	**---**	14-JUN-2014	----	**31-DEC-2013**	28-JUN-2014	✓
ED007: Exchangeable Cations							
Soil Glass Jar - Unpreserved (ED007)							
LI_SB04_1.0, LI_SB05_2.5, LV_MW05_2.7	**16-DEC-2013**	**23-DEC-2013**	13-JAN-2014	✓	**23-DEC-2013**	13-JAN-2014	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
LI_MW09_0.2, LI_MW09_2.8, LI_SB01_2.7, LI_SB02_1.6, LI_SN04_0.1, LI_SB04_1.0, LI_SB05_2.5, LV_MW04_2.2, LV_MW05_2.7, D01_161213_JG, D01_131213_HC	**16-DEC-2013**	**20-DEC-2013**	14-JUN-2014	✓	**22-DEC-2013**	14-JUN-2014	✓
Soil Glass Jar - Unpreserved (EG005T)							
LV_MW03_1.8, LV_MW02_1.7	**17-DEC-2013**	**20-DEC-2013**	15-JUN-2014	✓	**22-DEC-2013**	15-JUN-2014	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
LI_MW09_0.2,	LI_MW09_2.8,	**16-DEC-2013**	**20-DEC-2013**	13-JAN-2014	✓	**21-DEC-2013**	13-JAN-2014	✓
LI_SB01_2.7,	LI_SB02_1.6,							
LI_SN04_0.1,	LI_SB04_1.0,							
LI_SB05_2.5,	LV_MW04_2.2,							
LV_MW05_2.7,	D01_161213_JG,							
D01_131213_HC								
Soil Glass Jar - Unpreserved (EG035T)								
LV_MW03_1.8,	LV_MW02_1.7	**17-DEC-2013**	**20-DEC-2013**	14-JAN-2014	✓	**21-DEC-2013**	14-JAN-2014	✓
EP004: Organic Matter								
Soil Glass Jar - Unpreserved (EP004)								
LI_SB04_1.0,	LI_SB05_2.5,	**16-DEC-2013**	**23-DEC-2013**	13-JAN-2014	✓	**23-DEC-2013**	13-JAN-2014	✓
LV_MW05_2.7								
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Soil Glass Jar - Unpreserved (EP071)								
LI_MW09_0.2,	LI_MW09_2.8,	**16-DEC-2013**	**20-DEC-2013**	30-DEC-2013	✓	**20-DEC-2013**	29-JAN-2014	✓
LI_SB01_2.7,	LI_SB02_1.6,							
LI_SN04_0.1,	LI_SB04_1.0,							
LI_SB05_2.5,	LV_MW04_2.2,							
LV_MW05_2.7,	D01_161213_JG,							
D01_131213_HC								
Soil Glass Jar - Unpreserved (EP071)								
LV_MW03_1.8,	LV_MW02_1.7	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	29-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075(SIM))								
LI_MW09_0.2,	LI_MW09_2.8,	**16-DEC-2013**	**20-DEC-2013**	30-DEC-2013	✓	**20-DEC-2013**	29-JAN-2014	✓
LI_SB01_2.7,	LI_SB02_1.6,							
LI_SN04_0.1,	LI_SB04_1.0,							
LI_SB05_2.5,	LV_MW04_2.2,							
LV_MW05_2.7,	D01_161213_JG,							
D01_131213_HC								
Soil Glass Jar - Unpreserved (EP075(SIM))								
LV_MW03_1.8,	LV_MW02_1.7	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	29-JAN-2014	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
LI_MW09_0.2,	LI_MW09_2.8,	**16-DEC-2013**	**20-DEC-2013**	30-DEC-2013	✓	**20-DEC-2013**	29-JAN-2014	✓
LI_SB01_2.7,	LI_SB02_1.6,							
LI_SN04_0.1,	LI_SB04_1.0,							
LI_SB05_2.5,	LV_MW04_2.2,							
LV_MW05_2.7,	D01_161213_JG,							
D01_131213_HC								
Soil Glass Jar - Unpreserved (EP075(SIM))								
LV_MW03_1.8,	LV_MW02_1.7	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	29-JAN-2014	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
LI_MW09_0.2,	LI_MW09_2.8,	**16-DEC-2013**	**20-DEC-2013**	30-DEC-2013	✓	**20-DEC-2013**	30-DEC-2013	✓
LI_SB01_2.7,	LI_SB02_1.6,							
LI_SN04_0.1,	LI_SB04_1.0,							
LI_SB05_2.5,	LV_MW04_2.2,							
LV_MW05_2.7,	D01_161213_JG,							
D01_131213_HC								
Soil Glass Jar - Unpreserved (EP080)								
LV_MW03_1.8,	LV_MW02_1.7	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	31-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080)								
TB6,	TS14,	**19-DEC-2013**	**20-DEC-2013**	02-JAN-2014	✓	**20-DEC-2013**	02-JAN-2014	✓
TB10,	TS8,							
TSC 14,	TSC 8							
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
LI_MW09_0.2,	LI_MW09_2.8,	**16-DEC-2013**	**20-DEC-2013**	30-DEC-2013	✓	**20-DEC-2013**	30-DEC-2013	✓
LI_SB01_2.7,	LI_SB02_1.6,							
LI_SN04_0.1,	LI_SB04_1.0,							
LI_SB05_2.5,	LV_MW04_2.2,							
LV_MW05_2.7,	D01_161213_JG,							
D01_131213_HC								
Soil Glass Jar - Unpreserved (EP080)								
LV_MW03_1.8,	LV_MW02_1.7	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	31-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP080)								
TB6,	TB10	**19-DEC-2013**	**20-DEC-2013**	02-JAN-2014	✓	**20-DEC-2013**	02-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

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) R01_131213_JG	**16-DEC-2013**	**20-DEC-2013**	14-JUN-2014	✓	**20-DEC-2013**	14-JUN-2014	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) R01_171213_JG	**17-DEC-2013**	**20-DEC-2013**	15-JUN-2014	✓	**20-DEC-2013**	15-JUN-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) R01_131213_JG	**16-DEC-2013**	**----**	----	----	**20-DEC-2013**	13-JAN-2014	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) R01_171213_JG	**17-DEC-2013**	**----**	----	----	**20-DEC-2013**	14-JAN-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) R01_131213_JG	**16-DEC-2013**	**20-DEC-2013**	23-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP071) R01_171213_JG	**17-DEC-2013**	**20-DEC-2013**	24-DEC-2013	✓	**21-DEC-2013**	29-JAN-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) R01_131213_JG	**16-DEC-2013**	**20-DEC-2013**	30-DEC-2013	✓	**20-DEC-2013**	30-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080) R01_171213_JG	**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) R01_131213_JG	**16-DEC-2013**	**20-DEC-2013**	30-DEC-2013	✓	**20-DEC-2013**	30-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080) R01_171213_JG	**17-DEC-2013**	**20-DEC-2013**	31-DEC-2013	✓	**20-DEC-2013**	31-DEC-2013	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Exchangeable Cations	ED007	1	4	**25.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	6	**16.7**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	15	**13.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
pH (1:5)	EA002	1	7	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	14	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	14	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Exchangeable Cations	ED007	1	4	**25.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	15	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Exchangeable Cations	ED007	1	4	**25.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	15	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organic Matter	EP004	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	15	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

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

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

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)							
Total Mercury by FIMS	EG035T	1	3	**33.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	18	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	7	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	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
pH (1:5)	EA002	SOIL	(APHA 21st ed., 4500H+) pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis (Sieving)	EA150	SOIL	Particle Size Analysis by Sieving according to AS1289.3.6.1 - 2009
Exchangeable Cations	ED007	SOIL	Rayment & Lyons (2011) Method 15A1. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM (2013) Schedule B(3) (Method 301)
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by 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)
Organic Matter	EP004	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3) (Method 105)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (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)

Analytical Methods	Method	Matrix	Method Descriptions
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
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
Exchangeable Cations Preparation Method	ED007PR	SOIL	Rayment & Higginson (1992) method 15A1. A 1M NH4Cl extraction by end over end tumbling at a ratio of 1:20. There is no pretreatment for soluble salts. Extracts can be run by ICP for cations.
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Organic Matter	EP004-PR	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3) (Method 105)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA 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

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

Outliers : Analysis Holding Time Compliance

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

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

Outliers : Frequency of Quality Control Samples

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

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

23/12

CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT: ERM	TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): ☑ Non Standard or urgent TAT (List due date): 1 day TAT (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	FOR LABORATORY USE ONLY (Circle)	
OFFICE: Sydney	ALS QUOTE NO.: SY/794/13	Custody Seal Intact?	Yes / No / N/A
PROJECT: Project Symphony	SITE: BAYSWATER / LIDDELL	Free ice / frozen ice bricks present upon receipt?	Yes / No / N/A
ORDER NUMBER: 0224198	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt:	°C
PROJECT MANAGER: Joe Ferris	CONTACT PH: 85848883	Other comment:	
SAMPLER: CP	SAMPLER MOBILE: 0401683753		
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):		
Email Reports to (will default to PM if no other addresses are listed): Symphony.mascon@erm.com	RELINQUISHED BY: Gavin Powell DATE/TIME: 19/12/13	RECEIVED BY: DATE/TIME: 20/12/13 15:30	RELINQUISHED BY: DATE/TIME: 20/12/13 1700
Email Invoice to (will default to PM if no other addresses are listed):			RECEIVED BY: Ran 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)	S-24 TRH(C6-C40)/BTEXN, PAH, Phenols	VOC Target Scan	TRH + BTEX	BTEX + C6-C9	Exchangeable Cations (ED097)	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	LVA_01		SOIL	Jar (Unpres)	1					X							
2	LVA_02				1					X							
3	LVA_03				1					X							
4	LVA_04				1					X							
5	LVA_05				1					X							
~~6~~ 12	LVA_06				1					X							
7	Trip Spike				1						X						
8	Trip Blank				1						X						
~~9~~ extra	~~FS~~ 6																
10	TSC 1																
~~11~~	~~TSC 6~~																

Environmental Division
Sydney
Work Order
ES1328112

Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved Vial; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VA = 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	: **ES1328112**		
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	: 0224198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: LIDDELL		
Sampler	: GP	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

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

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.4'C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 11
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
- **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: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - S-04 TRH/BTEXN	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs
ES1328112-001	[20-DEC-2013]	LVA_01		✓	
ES1328112-002	[20-DEC-2013]	LVA_02		✓	
ES1328112-003	[20-DEC-2013]	LVA_03		✓	
ES1328112-004	[20-DEC-2013]	LVA_04		✓	
ES1328112-005	[20-DEC-2013]	LVA_05		✓	
ES1328112-007	[20-DEC-2013]	TRIP SPIKE 1			✓
ES1328112-008	[20-DEC-2013]	TRIP BLANK			✓
ES1328112-009	[20-DEC-2013]	TS 6	✓		
ES1328112-010	[20-DEC-2013]	TSC 1			✓
ES1328112-011	[20-DEC-2013]	TSC 6	✓		
ES1328112-012	[20-DEC-2013]	LVA_ 06		✓	

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1328112**	Page	: 1 of 5
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224198		
C-O-C number	: ----	Date Samples Received	: 20-DEC-2013
Sampler	: GP	Issue Date	: 24-DEC-2013
Site	: LIDDELL		
		No. of samples received	: 11
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*
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	LVA_01	LVA_02	LVA_03	LVA_04	LVA_05
				Client sampling date / time	[20-DEC-2013]	[20-DEC-2013]	[20-DEC-2013]	[20-DEC-2013]	[20-DEC-2013]
Compound	CAS Number	LOR	Unit		ES1328112-001	ES1328112-002	ES1328112-003	ES1328112-004	ES1328112-005
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		14.9	6.1	9.5	13.9	14.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		110	180	160	250	140
C29 - C36 Fraction	----	100	mg/kg		<100	140	130	200	120
^ C10 - C36 Fraction (sum)	----	50	mg/kg		110	320	290	450	260
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		150	260	230	380	210
>C34 - C40 Fraction	----	100	mg/kg		<100	120	120	160	100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		150	380	350	540	310
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		100	76.8	97.0	97.9	93.8
Toluene-D8	2037-26-5	0.1	%		110	113	114	109	103
4-Bromofluorobenzene	460-00-4	0.1	%		103	110	105	101	98.9

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TRIP SPIKE 1	TRIP BLANK	TSC 1	LVA_ 06	----
				Client sampling date / time	[20-DEC-2013]	[20-DEC-2013]	[20-DEC-2013]	[20-DEC-2013]	----
Compound	CAS Number	LOR	Unit		ES1328112-007	ES1328112-008	ES1328112-010	ES1328112-012	----
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		----	5.9	6.7	13.4	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		102	<10	105	<10	----
C10 - C14 Fraction	----	50	mg/kg		----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg		----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg		----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	10	mg/kg		109	<10	109	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		72	<10	70	<10	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg		----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg		----	----	----	130	----
>C34 - C40 Fraction	----	100	mg/kg		----	----	----	100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	----	----	230	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	----	----	<50	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		0.7	<0.2	0.7	<0.2	----
Toluene	108-88-3	0.5	mg/kg		18.0	<0.5	19.0	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		2.5	<0.5	2.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		11.2	<0.5	11.6	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		4.7	<0.5	4.9	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		15.9	<0.5	16.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		37.1	<0.2	38.7	<0.2	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		94.7	98.6	124	102	----
Toluene-D8	2037-26-5	0.1	%		110	116	117	113	----
4-Bromofluorobenzene	460-00-4	0.1	%		109	119	106	105	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

QUALITY CONTROL REPORT

Work Order	: **ES1328112**	Page	: 1 of 6
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	: 20-DEC-2013
Sampler	: GP	Issue Date	: 24-DEC-2013
Order number	: 0224198		
		No. of samples received	: 11
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*
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics

General Comments

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

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 3224993)									
ES1328112-002	LVA_02	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	6.1	6.1	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3224989)									
ES1328112-001	LVA_01	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1328112-012	LVA_ 06	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3224990)									
ES1328112-001	LVA_01	EP071: C15 - C28 Fraction	----	100	mg/kg	110	120	12.6	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3224989)									
ES1328112-001	LVA_01	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1328112-012	LVA_ 06	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3224990)									
ES1328112-001	LVA_01	EP071: >C16 - C34 Fraction	----	100	mg/kg	150	170	15.1	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEXN (QC Lot: 3224989)									
ES1328112-001	LVA_01	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1328112-012	LVA_ 06	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3224989)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	102	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3224990)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	91.1	71	131
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	93.5	74	138
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	101	64	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3224989)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	127	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3224990)								
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	92.2	70	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	96.0	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
		50	mg/kg	----	150 mg/kg	110	63	131
EP080: BTEXN (QCLot: 3224989)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	102	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	115	62	128
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	112	58	118
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	117	60	120
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	117	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	104	62	138

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

				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: 3224989)							
ES1328112-001	LVA_01	EP080: C6 - C9 Fraction	----	32.5 mg/kg	120	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3224990)							
ES1328112-001	LVA_01	EP071: C10 - C14 Fraction	----	640 mg/kg	86.6	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	78.2	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	64.8	52	132

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3224989)							
ES1328112-001	LVA_01	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	106	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3224990)							
ES1328112-001	LVA_01	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	103	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	70.4	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	52.2	52	132
EP080: BTEXN (QCLot: 3224989)							
ES1328112-001	LVA_01	EP080: Benzene	71-43-2	2.5 mg/kg	80.0	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	85.4	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.5	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	85.6	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	87.6	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	71.7	70	130

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

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

Sub-Matrix: **SOIL**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3224989)										
ES1328112-001	LVA_01	EP080: C6 - C9 Fraction	----	32.5 mg/kg	120	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3224989)										
ES1328112-001	LVA_01	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	106	----	70	130	----	----
EP080: BTEXN (QCLot: 3224989)										
ES1328112-001	LVA_01	EP080: Benzene	71-43-2	2.5 mg/kg	80.0	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	85.4	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.5	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	85.6	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	87.6	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	71.7	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3224990)										
ES1328112-001	LVA_01	EP071: C10 - C14 Fraction	----	640 mg/kg	86.6	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	78.2	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	64.8	----	52	132	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3224990)										

Sub-Matrix: **SOIL**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3224990) - continued										
ES1328112-001	LVA_01	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	103	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	70.4	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	52.2	----	52	132	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1328112**	Page	: 1 of 5
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 20-DEC-2013
Sampler	: GP	Issue Date	: 24-DEC-2013
Order number	: 0224198		
		No. of samples received	: 11
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: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103)							
LVA_01, LVA_02, LVA_03, LVA_04, LVA_05, TRIP BLANK, TSC 1, LVA_ 06	**20-DEC-2013**	**----**	----	----	**20-DEC-2013**	03-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Soil Glass Jar - Unpreserved (EP071)							
LVA_01, LVA_02, LVA_03, LVA_04, LVA_05, LVA_ 06	**20-DEC-2013**	**20-DEC-2013**	03-JAN-2014	✓	**21-DEC-2013**	29-JAN-2014	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
LVA_01, LVA_02, LVA_03, LVA_04, LVA_05, TRIP SPIKE 1, TRIP BLANK, TSC 1, LVA_ 06	**20-DEC-2013**	**20-DEC-2013**	03-JAN-2014	✓	**21-DEC-2013**	03-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Soil Glass Jar - Unpreserved (EP080)							
LVA_01, LVA_02, LVA_03, LVA_04, LVA_05, TRIP SPIKE 1, TRIP BLANK, TSC 1, LVA_ 06	**20-DEC-2013**	**20-DEC-2013**	03-JAN-2014	✓	**21-DEC-2013**	03-JAN-2014	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	1	9	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	6	**16.7**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	13	**15.4**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
TPH - Semivolatile Fraction	EP071	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
TPH - Semivolatile Fraction	EP071	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
TPH - Semivolatile Fraction	EP071	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA 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

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

Outliers : Analysis Holding Time Compliance

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

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

Outliers : Frequency of Quality Control Samples

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

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

ALS Environmental

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ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

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):	FOR LABORATORY USE ONLY (Circle) Custody Seal Intact? (Yes) No N/A; Free ice / frozen ice bricks present upon receipt? (Yes) No N/A
OFFICE: SYDNEY			
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13	COC SEQUENCE NUMBER (Circle) COC: (1) 2 3 4 5 6 7	Random Sample Temperature on Receipt: 4.7 °C
ORDER NUMBER:	SITE: BAYSWATER (LIDDELL)	OF: 1 (2) 3 4 5 6 7	Other comment:
PROJECT MANAGER: Joe Ferring	CONTACT PH: 0424 970 468		
SAMPLER: Tim Haydon.	SAMPLER MOBILE: 0428 229 984.		
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@erm.com			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tim Haydon.	SMF	SMF	Ravinesh
DATE/TIME: 22/11/13.	DATE/TIME: 25/11/13 8:10	DATE/TIME: 25/11/13 17:20	DATE/TIME: 25/11/13 19:15

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, Tl)	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.
3	LD_EW_MW01	21/11/13/9:30am	W	125LAG, 60mL N 40mLVS	6	X						X		
4	LD-EW_MW02	20/11/13/4:30pm	W	" "	6	X						X		
5	LD-EW-MW03	21/11/13/11:00am	W	" "	6	X						X		
6	LD-EW-MW04	21/11/13/1:15pm	W	" "	6	X						X		
7	D01_211113_TH.	21/11/13/1:15pm	W	" "	6	X						X		Envirolab Services 12 Ashley St Chatswood NSW 2067 Ph: (02) 9910 6200
8	LS-EW-MW01	22/11/13	W	" "	6	X						X		
9	LS_EW_MW02	22/11/13	W	" "	6	X						X		Job No: 101668
10	LS_EW_MW03	22/11/13	W	" "	6	X						X		Date Received 2/12/13
11	TO1_221113_TH.	22/11/13.	W	" "	6	X						X		Time Received: 13:25
12	Rinsate_201113-NH	20/11/13	W	" "	6	X						X		Received by: AW
13	Rinsate_211113_TH	21/11/13	W	" "	6	X						X		Temp: Cool/Ambient Cooling: Ice/Icepack
14	Rinsate 221113_TH	22/11/13.	W	" "	6	X						X		Security: Intact/Broken/None

[redacted] TOTAL

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.

ALS Environmental

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ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: ERM
OFFICE: SYDNEY
PROJECT: Project Symphony
ORDER NUMBER:
PROJECT MANAGER: FERRING, JOE
CONTACT PH:
SAMPLER: TIM HAMDON
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): ~~[illegible]~~ *
Email Invoice to (will default to PM if no other addresses are listed):

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):

ALS QUOTE NO.: SY/794/13
SITE: BAYSWATER / (LIDDELL)

COC SEQUENCE NUMBER (Circle)
COC: 1 (2) 3 4 5 6 7
OF: 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: 4.7 °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
TIM HAMDON	SM-r	spme	Ravinesh
DATE/TIME: 22/11/13.	DATE/TIME: 25/11/13 9:00	DATE/TIME: 25/11/13 17:00	DATE/TIME: 25/11/13 19:15

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: * symphony-maiden@erm.com.

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, Tl)	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	Trip Blank		W	trip - 40mL VS	1									TRH & BTEX.
2	Trip Spike.		W	trip - 40mL VS	1									BTEX
~~AG~~	~~ESC~~													

[redacted] TOTAL

Environmental Division
Sydney
Work Order
ES1325573
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.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway NSW 2007

ph: 02 8584 8888
Fax: 02 8584 8800

Attention: Joe Ferring

Sample log in details:

Your reference:	**Project Symphony**
Envirolab Reference:	**101668**
Date received:	02/12/13
Date results expected to be reported:	**9/12/13**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 Water
Turnaround time requested:	Standard
Temperature on receipt (°C)	8.4
Cooling Method:	Ice
Sampling Date Provided:	YES

Comments:

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 101668

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway
NSW 2007

Attention: Joe Ferring

Sample log in details:

Your Reference:	**Project Symphony**		
No. of samples:	1 Water		
Date samples received / completed instructions received	02/12/13	/	02/12/13

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	9/12/13	/	9/12/13
Date of Preliminary Report:	None Issued		

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Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference:	UNITS	101668-1
Your Reference	----------	T01_221113_TH
Date Sampled	----------	22/11/2013
Type of sample		Water
Date extracted	-	03/12/2013
Date analysed	-	04/12/2013
TRHC$_6$ - C$_9$	µg/L	<10
TRHC$_6$ - C$_{10}$	µg/L	<10
TRHC$_6$ - C$_{10}$ less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	97
Surrogate toluene-d8	%	91
Surrogate 4-BFB	%	98

svTRH (C10-C40) in Water		
Our Reference:	UNITS	101668-1
Your Reference	----------	T01_221113_TH
Date Sampled	----------	22/11/2013
Type of sample		Water
Date extracted	-	03/12/2013
Date analysed	-	04/12/2013
$TRHC_{10}$ - C_{14}	µg/L	<50
$TRHC_{15}$ - C_{28}	µg/L	<100
$TRHC_{29}$ - C_{36}	µg/L	<100
$TRH>C_{10}$ - C_{16}	µg/L	<50
$TRH>C_{10}$ - C_{16} less Naphthalene (F2)	µg/L	<50
$TRH>C_{16}$ - C_{34}	µg/L	<100
$TRH>C_{34}$ - C_{40}	µg/L	<100
Surrogate o-Terphenyl	%	115

PAHs in Water		
Our Reference:	UNITS	101668-1
Your Reference	----------	T01_221113_TH
Date Sampled	----------	22/11/2013
Type of sample		Water
Date extracted	-	03/12/2013
Date analysed	-	03/12/2013
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	108

Total Phenolics in Water		
Our Reference:	UNITS	101668-1
Your Reference	----------	T01_221113_TH
Date Sampled	----------	22/11/2013
Type of sample		Water
Date extracted	-	05/12/2013
Date analysed	-	05/12/2013
Total Phenolics (as Phenol)	mg/L	<0.05

HM in water - dissolved		
Our Reference:	UNITS	101668-1
Your Reference	----------	T01_221113_TH
Date Sampled	----------	22/11/2013
Type of sample		Water
Date prepared	-	03/12/2013
Date analysed	-	03/12/2013
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	1.3
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	2
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	38
Zinc-Dissolved	µg/L	20

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 22nd ED 5530 D.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/12/2013	[NT]	[NT]	LCS-W1	03/12/2013
Date analysed	-			04/12/2013	[NT]	[NT]	LCS-W1	04/12/2013
TRH C_6 - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	116%
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	116%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	118%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	120%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	112%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	114%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	113%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	103	[NT]	[NT]	LCS-W1	100%
Surrogate toluene-d8	%		Org-016	97	[NT]	[NT]	LCS-W1	100%
Surrogate 4-BFB	%		Org-016	97	[NT]	[NT]	LCS-W1	99%
QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/12/2013	[NT]	[NT]	LCS-W2	03/12/2013
Date analysed	-			04/12/2013	[NT]	[NT]	LCS-W2	04/12/2013
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W2	88%
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W2	96%
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W2	118%
TRH>C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W2	88%
TRH>C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W2	96%
TRH>C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W2	110%
Surrogate o-Terphenyl	%		Org-003	102	[NT]	[NT]	LCS-W2	95%
QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/12/2013	[NT]	[NT]	LCS-W3	03/12/2013
Date analysed	-			03/12/2013	[NT]	[NT]	LCS-W3	03/12/2013
Naphthalene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	73%
Acenaphthylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	74%
Phenanthrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	72%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	71%
Pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	73%
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	69%
Benzo(b+k)fluoranthene	µg/L	2	Org-012 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	72%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	103	[NT]	[NT]	LCS-W3	73%
QUALITY CONTROL Total Phenolics in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Date analysed	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-030	<0.05	[NT]	[NT]	LCS-W1	87%
QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			03/12/2013	[NT]	[NT]	LCS-W1	03/12/2013
Date analysed	-			03/12/2013	[NT]	[NT]	LCS-W1	03/12/2013
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	96%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-W1	100%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	94%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	93%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	105%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	LCS-W1	92%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	93%

Client Reference: Project Symphony

QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	92%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

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CERTIFICATE OF ANALYSIS 101726

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway
NSW 2007

Attention: Joe Ferring

Sample log in details:

Your Reference:	**Project Symphony**		
No. of samples:	1 Water		
Date samples received / completed instructions received	03/12/13	/	03/12/13

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	10/12/13	/	10/12/13
Date of Preliminary Report:	None Issued		

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Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	 101726-1 Triplicate-271113-TH 27/11/2013 Water
Date extracted	-	03/12/2013
Date analysed	-	05/12/2013
Dichlorodifluoromethane	µg/L	<10
Chloromethane	µg/L	<10
Vinyl Chloride	µg/L	<10
Bromomethane	µg/L	<10
Chloroethane	µg/L	<10
Trichlorofluoromethane	µg/L	<10
1,1-Dichloroethene	µg/L	<1
Trans-1,2-dichloroethene	µg/L	<1
1,1-dichloroethane	µg/L	<1
Cis-1,2-dichloroethene	µg/L	<1
Bromochloromethane	µg/L	<1
Chloroform	µg/L	<1
2,2-dichloropropane	µg/L	<1
1,2-dichloroethane	µg/L	<1
1,1,1-trichloroethane	µg/L	<1
1,1-dichloropropene	µg/L	<1
Cyclohexane	µg/L	<1
Carbon tetrachloride	µg/L	<1
Benzene	µg/L	<1
Dibromomethane	µg/L	<1
1,2-dichloropropane	µg/L	<1
Trichloroethene	µg/L	<1
Bromodichloromethane	µg/L	<1
trans-1,3-dichloropropene	µg/L	<1
cis-1,3-dichloropropene	µg/L	<1
1,1,2-trichloroethane	µg/L	<1
Toluene	µg/L	<1
1,3-dichloropropane	µg/L	<1
Dibromochloromethane	µg/L	<1
1,2-dibromoethane	µg/L	<1
Tetrachloroethene	µg/L	<1
1,1,1,2-tetrachloroethane	µg/L	<1
Chlorobenzene	µg/L	<1
Ethylbenzene	µg/L	<1
Bromoform	µg/L	<1
m+p-xylene	µg/L	<2
Styrene	µg/L	<1
1,1,2,2-tetrachloroethane	µg/L	<1
o-xylene	µg/L	<1

VOCs in water		
Our Reference:	UNITS	101726-1
Your Reference	----------	Triplicate-271113-TH
Date Sampled	----------	27/11/2013
Type of sample		Water
1,2,3-trichloropropane	µg/L	<1
Isopropylbenzene	µg/L	<1
Bromobenzene	µg/L	<1
n-propyl benzene	µg/L	<1
2-chlorotoluene	µg/L	<1
4-chlorotoluene	µg/L	<1
1,3,5-trimethyl benzene	µg/L	<1
Tert-butyl benzene	µg/L	<1
1,2,4-trimethyl benzene	µg/L	<1
1,3-dichlorobenzene	µg/L	<1
Sec-butyl benzene	µg/L	<1
1,4-dichlorobenzene	µg/L	<1
4-isopropyl toluene	µg/L	<1
1,2-dichlorobenzene	µg/L	<1
n-butyl benzene	µg/L	<1
1,2-dibromo-3-chloropropane	µg/L	<1
1,2,4-trichlorobenzene	µg/L	<1
Hexachlorobutadiene	µg/L	<1
1,2,3-trichlorobenzene	µg/L	<1
Surrogate Dibromofluoromethane	%	91
Surrogate toluene-d8	%	97
Surrogate 4-BFB	%	104

vTRH(C6-C10)/BTEXN in Water		
Our Reference:	UNITS	101726-1
Your Reference	----------	Triplicate-271113-TH
Date Sampled	----------	27/11/2013
Type of sample		Water
Date extracted	-	03/12/2013
Date analysed	-	05/12/2013
$TRHC_6$ - C_9	µg/L	<10
$TRHC_6$ - C_{10}	µg/L	<10
$TRHC_6$ - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	91
Surrogate toluene-d8	%	97
Surrogate 4-BFB	%	104

svTRH (C10-C40) in Water		
Our Reference:	UNITS	101726-1
Your Reference	----------	Triplicate-271113-TH
Date Sampled	----------	27/11/2013
Type of sample		Water
Date extracted	-	05/12/2013
Date analysed	-	06/12/2013
$TRHC_{10}$ - C_{14}	µg/L	<50
$TRHC_{15}$ - C_{28}	µg/L	<100
$TRHC_{29}$ - C_{36}	µg/L	<100
$TRH{>}C_{10}$ - C_{16}	µg/L	<50
$TRH{>}C_{10}$ - C_{16} less Naphthalene (F2)	µg/L	<50
$TRH{>}C_{16}$ - C_{34}	µg/L	<100
$TRH{>}C_{34}$ - C_{40}	µg/L	<100
Surrogate o-Terphenyl	%	98

PAHs in Water		
Our Reference:	UNITS	101726-1
Your Reference	----------	Triplicate-271113-TH
Date Sampled	----------	27/11/2013
Type of sample		Water
Date extracted	-	05/12/2013
Date analysed	-	05/12/2013
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	93

Total Phenolics in Water		
Our Reference:	UNITS	101726-1
Your Reference	----------	Triplicate-271113-TH
Date Sampled	----------	27/11/2013
Type of sample		Water
Date extracted	-	05/12/2013
Date analysed	-	05/12/2013
Total Phenolics (as Phenol)	mg/L	<0.05

PCBs in Water		
Our Reference:	UNITS	101726-1
Your Reference	----------	Triplicate-271113-TH
Date Sampled	----------	27/11/2013
Type of sample		Water
Date extracted	-	05/12/2013
Date analysed	-	05/12/2013
Arochlor 1016	µg/L	<2
Arochlor 1221	µg/L	<2
Arochlor 1232	µg/L	<2
Arochlor 1242	µg/L	<2
Arochlor 1248	µg/L	<2
Arochlor 1254	µg/L	<2
Arochlor 1260	µg/L	<2
Surrogate TCLMX	%	95

HM in water - dissolved		
Our Reference:	UNITS	101726-1
Your Reference	----------	Triplicate-271113-TH
Date Sampled	----------	27/11/2013
Type of sample		Water
Date prepared	-	04/12/2013
Date analysed	-	04/12/2013
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	2
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	20
Zinc-Dissolved	µg/L	23

Method ID	Methodology Summary
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 22nd ED 5530 D.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/12/2013	[NT]	[NT]	LCS-W1	03/12/2013
Date analysed	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Dichlorodifluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Bromomethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloroethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trans-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	97%
Cis-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	94%
Chloroform	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
2,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	94%
1,2-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	93%
1,1,1-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Cyclohexane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Carbon tetrachloride	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromomethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	89%
Bromodichloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	90%
trans-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	92%
1,2-dibromoethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tetrachloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	89%
1,1,1,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Chlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Ethylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromoform	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
m+p-xylene	µg/L	2	Org-013	<2	[NT]	[NT]	[NR]	[NR]
Styrene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
o-xylene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
1,2,3-trichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Isopropylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-propyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3,5-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tert-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Sec-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,4-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-isopropyl toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-013	86	[NT]	[NT]	LCS-W1	95%
Surrogate toluene-d8	%		Org-013	98	[NT]	[NT]	LCS-W1	96%
Surrogate 4-BFB	%		Org-013	103	[NT]	[NT]	LCS-W1	104%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/12/2013	[NT]	[NT]	LCS-W1	03/12/2013
Date analysed	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
TRH C_6 - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	108%
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	108%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	103%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	108%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	108%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	109%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	109%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	86	[NT]	[NT]	LCS-W1	92%
Surrogate toluene-d8	%		Org-016	98	[NT]	[NT]	LCS-W1	99%
Surrogate 4-BFB	%		Org-016	103	[NT]	[NT]	LCS-W1	109%
QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Date analysed	-			06/12/2013	[NT]	[NT]	LCS-W1	06/12/2013
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	97%
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	118%
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	140%
TRH>C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	97%
TRH>C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	118%
TRH>C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	140%
Surrogate o-Terphenyl	%		Org-003	107	[NT]	[NT]	LCS-W1	115%
QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Date analysed	-			05/12/2013	[NT]	[NT]	LCS-W1	64%
Naphthalene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	69%
Fluorene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	67%
Phenanthrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	67%
Fluoranthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	71%
Pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	65%
Chrysene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(b+k)fluoranthene	µg/L	2	Org-012 subset	<2	[NT]	[NT]	LCS-W1	71%
Benzo(a)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	77	[NT]	[NT]	LCS-W1	73%
QUALITY CONTROL Total Phenolics in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Date analysed	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-030	<0.05	[NT]	[NT]	LCS-W1	78%
QUALITY CONTROL PCBs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Date analysed	-			05/12/2013	[NT]	[NT]	LCS-W1	05/12/2013
Arochlor 1016	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	µg/L	2	Org-006	<2	[NT]	[NT]	LCS-W1	116%
Arochlor 1260	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	89	[NT]	[NT]	LCS-W1	99%

Client Reference: Project Symphony

QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			04/12/2013	[NT]	[NT]	LCS-W2	04/12/2013
Date analysed	-			04/12/2013	[NT]	[NT]	LCS-W2	04/12/2013
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	96%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-W2	100%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	94%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	93%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	105%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	LCS-W2	100%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	93%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	92%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway NSW 2007

ph: 02 8584 8888
Fax: 02 8584 8800

Attention: Joe Ferring

Sample log in details:

Your reference:	**Project Symphony**
Envirolab Reference:	**101726**
Date received:	03/12/13
Date results expected to be reported:	**10/12/13**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 Water
Turnaround time requested:	Standard
Temperature on receipt (°C)	9.7
Cooling Method:	Ice
Sampling Date Provided:	YES

Comments:

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Envirolab SUSP V36A-B M145

ALS

CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT: ERM
OFFICE: SYDNEY
PROJECT: Project Symphony
ORDER NUMBER: ~~2244~~ 224498
PROJECT MANAGER: Joe Ferring
SAMPLER: Tim Haydon
COC emailed to ALS? (~~YES~~ / NO)
Email Reports to (will default to PM if no other addresses are listed): Symphony-macgen@erm.com
Email Invoice to (will default to PM if no other addresses are listed):

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):
ALS QUOTE NO.: SY/794/13
SITE: ~~BAYSWATER~~ / LIDDELL
CONTACT PH:
SAMPLER MOBILE: 0401 008 181
EDD FORMAT (or default):

COC SEQUENCE NUMBER (Circle)
COC: (1) 2 3 4 5 6 7
OF: (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: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
TIM HAYDON	[signature]	[signature]	[signature] ALS
DATE/TIME: 28/11/13 6:35AM	DATE/TIME: 29/11 16:00	DATE/TIME: 29/11 17:00	DATE/TIME: 29/11/13 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	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, Tl)	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	Trip blank	25/11/13	W		1									
2	Trip spike	25/11/13.			1									
3	LN-MW02	27/11/13 9.10	W	VOA-40mL-4 AG-100mL-3 1xN-bottle 1xAP	9	X			X	X		X		
4	LN_MW06	27/11/13		AG-3 VOA-4 1xAP 1xN	9	X			X	X		X		
5	LN_MW05	27/11/13 3:45	W	VOA-4 AG-3 1xN 1xAP	9	X			X	X		X		
6	LN_MW07	27/11/13 12:10	W	VOA-4 AG-3 1xN 1xAB	9	X			X	X		X		
7	LN_MW01	27/11/13 10:35	W	VOA-4 AG-3 1xN 1xAB	9	X			X	X		X		
8	TRIPLICATE_271113_TH	27/11/13 10:35	W	VOA-3 AG-3 1xN 1xAB	7	X			X	X		X		
9	~~LN_MW02~~	~~27/11/13 9:10~~	~~W~~	~~VOA-4 AG-3 1xN 1xAP~~	~~9~~									

1V (beside row 8)

TOTAL

QA check

Envirolab Services, 12 Ashley St, Chatswood NSW 2067, Ph: (02) 9910 6200
Job No: 101726
Date Received: 3 Dec 2013
Time Received: 13:45pm
Received by: HO
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Subcon / Forward Lab / Split WO
Lab / Analysis: TRIPLICATE
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attach By PO / Internal Sheet:

Environmental Division
Sydney
Work Order
ES1326080

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

(ALS)

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☑ SYDNEY

CLIENT: ERM

OFFICE: Sydney

PROJECT: Project Symphony

ORDER NUMBER: 0224198

PROJECT MANAGER: Joe Ferring

SAMPLER: Nathan Hegerty

COC emailed to ALS? (YES / (NO))

Email Reports to (will default to PM if no other addresses are listed):

Email Invoice to (will default to PM if no other addresses are listed): symphony.macgen@erm.com

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):

ALS QUOTE NO.: SY/794/13

SITE: ~~BAYSWATER~~ / (LIDDELL)

CONTACT PH:

SAMPLER MOBILE: 0488627876

EDD FORMAT (or default):

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 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: °C

Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Nathan Hegerty	Frank ALS		Kevin ALS
DATE/TIME: 30/11/13 15:50	DATE/TIME: 4.12.13 1900	DATE/TIME:	DATE/TIME: 6/12/13 16:45

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).

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, Tl)	Selenium (Freshwater ORC)	VOC Target Scan	PCB	PFOS/PFOA	W-24 TRH(C6-C40)/BTEXN, PAH, Phenols	ORC ultratrace Metals	Additional Information
1	LI_MW02	30/11/13 / 14:15	W	1N, 1x ORC, 3x VS, 2x AG	7	X						X	X	Comments on likely contaminant levels, dilutions, or samples requiring specific QC
2	LI_MW03	/ 12:55	↓	↓	↓	X						X	X	
3	LI_MW04	/ 11:45	↓	↓	↓	X						X	X	
4	LI_MW05	/ 10:58	↓	↓	↓	X						X	X	
5	LI_MW06	/ 09:40	↓	↓	↓	X						X	X	
6	LI_MW07	/ 09:50	↓	↓	↓	X						X	X	
7	Rinsate_301113_NH	↓	↓	↓	↓	X						X	X	
8	Trip Spike			1xN, 1xORC, 2xVS, 2xAG	6									
9	Trip Blank.			2x VS	1									
10	D01_301113_NH	30/11/13		1x VS	1									QA/QC check
*	T01_301113_NH	30/11/13	↓	1xN, 1xORC, 3xVS, 2xAG	7	X								QA/QC check
				↓	7	X					X	X		
											X	X		Interlab duplicate. Please send to Envirolab

Subcon / Forward Lab / Split WO

Lab / Analysis: Envirolab _701_301113

Organised By / Date:

Relinquished By / Date:

Connote / Courier:

WO No:

Attach By PO / Internal Sheet:

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
Sydney
Work Order
ES1326637

Telephone : + 61-2-8784 8555

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 101946

Date Received: 6/12/13

Time Received: 1645

Received by: [illegible]

Temp: Cool/Ambient

Cooling: Ice/Icepack

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway NSW 2007

ph: 02 8584 8888
Fax: 02 8584 8800

Attention: Joe Ferring

Sample log in details:

Your reference:	**0224198, Symphony**
Envirolab Reference:	**101946**
Date received:	06/12/13
Date results expected to be reported:	**13/12/13**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 water
Turnaround time requested:	Standard
Temperature on receipt (°C)	10.4
Cooling Method:	Ice Pack
Sampling Date Provided:	YES

Comments:

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 101946

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway
NSW 2007

Attention: Joe Ferring

Sample log in details:

Your Reference:	**0224198, Symphony**		
No. of samples:	1 water		
Date samples received / completed instructions received	06/12/13	/	06/12/13

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	13/12/13	/	13/12/13
Date of Preliminary Report:	Not issued		

NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference:	UNITS	101946-1
Your Reference	----------	T01-301113-NH
Date Sampled	----------	30/11/2013
Type of sample		water
Date extracted	-	09/12/2013
Date analysed	-	09/12/2013
TRHC$_6$ - C$_9$	µg/L	<10
TRHC$_6$ - C$_{10}$	µg/L	<10
TRHC$_6$ - C$_{10}$ less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	86
Surrogate toluene-d8	%	92
Surrogate 4-BFB	%	91

svTRH (C10-C40) in Water		
Our Reference:	UNITS	101946-1
Your Reference	----------	T01-301113-NH
Date Sampled	----------	30/11/2013
Type of sample		water
Date extracted	-	09/12/2013
Date analysed	-	10/12/2013
TRHC$_{10}$ - C$_{14}$	µg/L	<50
TRHC$_{15}$ - C$_{28}$	µg/L	<100
TRHC$_{29}$ - C$_{36}$	µg/L	<100
TRH>C$_{10}$ - C$_{16}$	µg/L	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	µg/L	<50
TRH>C$_{16}$ - C$_{34}$	µg/L	<100
TRH>C$_{34}$ - C$_{40}$	µg/L	<100
Surrogate o-Terphenyl	%	70

PAHs in Water		
Our Reference:	UNITS	101946-1
Your Reference	----------	T01-301113-NH
Date Sampled	----------	30/11/2013
Type of sample		water
Date extracted	-	09/12/2013
Date analysed	-	10/12/2013
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	95

Total Phenolics in Water		
Our Reference:	UNITS	101946-1
Your Reference	----------	T01-301113-NH
Date Sampled	----------	30/11/2013
Type of sample		water
Date extracted	-	10/12/2013
Date analysed	-	10/12/2013
Total Phenolics (as Phenol)	mg/L	<0.05

HM in water - dissolved		
Our Reference:	UNITS	101946-1
Your Reference	----------	T01-301113-NH
Date Sampled	----------	30/11/2013
Type of sample		water
Date prepared	-	09/12/2013
Date analysed	-	09/12/2013
Arsenic-Dissolved	µg/L	5
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	2
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	15
Zinc-Dissolved	µg/L	27

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 22nd ED 5530 D.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			09/12/2013	[NT]	[NT]	LCS-W1	09/12/2013
Date analysed	-			09/12/2013	[NT]	[NT]	LCS-W1	09/12/2013
TRH C_6 - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	109%
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	109%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	101%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	104%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	111%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	115%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	116%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	91	[NT]	[NT]	LCS-W1	122%
Surrogate toluene-d8	%		Org-016	83	[NT]	[NT]	LCS-W1	92%
Surrogate 4-BFB	%		Org-016	85	[NT]	[NT]	LCS-W1	103%

QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			09/12/2013	[NT]	[NT]	LCS-W1	09/12/2013
Date analysed	-			10/12/2013	[NT]	[NT]	LCS-W1	10/12/2013
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	76%
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	84%
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	81%
TRH>C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	76%
TRH>C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	84%
TRH>C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	81%
Surrogate o-Terphenyl	%		Org-003	105	[NT]	[NT]	LCS-W1	90%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			09/12/2013	[NT]	[NT]	LCS-W1	09/12/2013
Date analysed	-			10/12/2013	[NT]	[NT]	LCS-W1	10/12/2013
Naphthalene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	67%
Acenaphthylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	71%
Phenanthrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	69%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	69%
Pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	72%
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	67%
Benzo(b+k)fluoranthene	µg/L	2	Org-012 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	75%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	80	[NT]	[NT]	LCS-W1	69%
QUALITY CONTROL Total Phenolics in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			10/12/2013	[NT]	[NT]	LCS-W1	10/12/2013
Date analysed	-			10/12/2013	[NT]	[NT]	LCS-W1	10/12/2013
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-030	<0.05	[NT]	[NT]	LCS-W1	91%
QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			09/12/2013	[NT]	[NT]	LCS-W4	09/12/2013
Date analysed	-			09/12/2013	[NT]	[NT]	LCS-W4	09/12/2013
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W4	91%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-W4	91%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W4	91%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W4	92%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W4	103%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	LCS-W4	96%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W4	91%

QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W4	89%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Environmental Division
Sydney
Work Order
ES1327437

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

ALS Laboratory: please tick →

Enviro

CLIENT: ERM
OFFICE: Sydney
PROJECT: Project Symphony
ORDER NUMBER: 0224198
PROJECT MANAGER: Joe Ferring
SAMPLER: Sean Penza
COC emailed to ALS? (YES / NO)
Email Reports to (will default to PM if no other addresses are listed): symphony.magen@erm.com
Email Invoice to (will default to PM if no other addresses are listed): john.ewing@erm.com
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): 2 Day
ALS QUOTE NO.: SY/794/13
SITE: BAYSWATER / LIDDELL (circled: LIDDELL)
CONTACT PH: 0402614304
SAMPLER MOBILE: →
EDD FORMAT (or default):

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

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Y
(Free ice) / frozen ice bricks present upon receipt?
Random Sample Temperature on Receipt:
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tim Hayden	[signature]	[signature]	
DATE/TIME: 13/12/13 4:30pm	DATE/TIME: 13/12/13 1645	DATE/TIME: 13/12/13 1700	DATE/TIME:

Subcon / Forward Lab / Split WO: To: - Envirolab
Analysis:
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attach By PO / Internal Sheet

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).

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 Matter plus Total Organic Carbon (EP004)	Additional Information (Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.)
1	LL_MW01	11/12/13 0834	water		6	X		X		X							
2	LL_MW09	" 1022	↓		6	X		X		X							
3	LD_MW01	" 1140			6	X		X									
4	LD_MW05	" 1236			6	X		X									
8	LR_MW03	" 1409			6	X		X									
6	LR_MW04	" 1516			6	X		X		X							
7	LP_MW06	" 1641			6	X		X		X							
8	DSL_111213_SP	" —			6	X		X									
1 → 8	TOL_111213_SP	" —			6	X		X		X							
9	ROL_111213_SP	" —			6	X		X		X							Please forward to EnviroLab
B 3_111213	~~[struck out]~~	" —		Trip Blank	6	X		X									TPH/BTEX/Metals only
S 13_111213	~~[struck out]~~	" —	↓	Trip Spike	1			X									TPH/BTEX only
					1			X									TPH/BTEX only

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
ENVIROLAB
Job No: 102640
Date Received: 16/12/13
Time Received: 17:00
Received by: AW
Temp: Cool/Ambient
Cooling: Ice/Icepack 12.1°C
Security: Intact/Broken/None

TAT

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

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway NSW 2007

ph: 02 8584 8888
Fax: 02 8584 8800

Attention: Joe Ferring

Sample log in details:

Your reference:	**0224198, Symphony**
Envirolab Reference:	**102640**
Date received:	16/12/2013
Date results expected to be reported:	**18/12/13**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 water
Turnaround time requested:	48hr
Temperature on receipt (°C)	12.1
Cooling Method:	Ice Pack
Sampling Date Provided:	YES

Comments:

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 102640

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway
NSW 2007

Attention: Joe Ferring

Sample log in details:

Your Reference:	**0224198, Symphony**
No. of samples:	1 water
Date samples received / completed instructions received	16/12/2013 / 16/12/2013

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	18/12/13 / 18/12/13
Date of Preliminary Report:	Not issued

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Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference:	UNITS	102640-1
Your Reference	----------	T01-111213-SP
Date Sampled	----------	11/12/2013
Type of sample		water
Date extracted	-	17/12/2013
Date analysed	-	17/12/2013
TRHC$_6$ - C$_9$	µg/L	<10
TRHC$_6$ - C$_{10}$	µg/L	<10
TRHC$_6$ - C$_{10}$ less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	102
Surrogate toluene-d8	%	101
Surrogate 4-BFB	%	87

svTRH (C10-C40) in Water		
Our Reference:	UNITS	102640-1
Your Reference	----------	T01-111213-SP
Date Sampled	----------	11/12/2013
Type of sample		water
Date extracted	-	17/12/2013
Date analysed	-	18/12/2013
TRHC$_{10}$ - C$_{14}$	µg/L	<50
TRHC$_{15}$ - C$_{28}$	µg/L	<100
TRHC$_{29}$ - C$_{36}$	µg/L	<100
TRH>C$_{10}$ - C$_{16}$	µg/L	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	µg/L	<50
TRH>C$_{16}$ - C$_{34}$	µg/L	<100
TRH>C$_{34}$ - C$_{40}$	µg/L	<100
Surrogate o-Terphenyl	%	111

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	 102640-1 T01-111213-SP 11/12/2013 water
Date extracted	-	17/12/2013
Date analysed	-	17/12/2013
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	104

PCBs in Water		
Our Reference:	UNITS	102640-1
Your Reference	----------	T01-111213-SP
Date Sampled	----------	11/12/2013
Type of sample		water
Date extracted	-	17/12/2013
Date analysed	-	17/12/2013
Arochlor 1016	µg/L	<2
Arochlor 1221	µg/L	<2
Arochlor 1232	µg/L	<2
Arochlor 1242	µg/L	<2
Arochlor 1248	µg/L	<2
Arochlor 1254	µg/L	<2
Arochlor 1260	µg/L	<2
Surrogate TCLMX	%	75

Total Phenolics in Water		
Our Reference:	UNITS	102640-1
Your Reference	----------	T01-111213-SP
Date Sampled	----------	11/12/2013
Type of sample		water
Date extracted	-	17/12/2013
Date analysed	-	17/12/2013
Total Phenolics (as Phenol)	mg/L	<0.05

HM in water - dissolved		
Our Reference:	UNITS	102640-1
Your Reference	----------	T01-111213-SP
Date Sampled	----------	11/12/2013
Type of sample		water
Date prepared	-	17/12/2013
Date analysed	-	17/12/2013
Arsenic-Dissolved	µg/L	3
Cadmium-Dissolved	µg/L	0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	36
Zinc-Dissolved	µg/L	22

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 22nd ED 5530 D.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/12/2013	[NT]	[NT]	LCS-W3	17/12/2013
Date analysed	-			17/12/2013	[NT]	[NT]	LCS-W3	17/12/2013
$TRHC_6$ - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W3	103%
$TRHC_6$ - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W3	103%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	114%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	102%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	98%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W3	101%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	100%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	96	[NT]	[NT]	LCS-W3	94%
Surrogate toluene-d8	%		Org-016	98	[NT]	[NT]	LCS-W3	98%
Surrogate 4-BFB	%		Org-016	89	[NT]	[NT]	LCS-W3	100%

QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/12/2013	[NT]	[NT]	LCS-W3	17/12/2013
Date analysed	-			17/12/2013	[NT]	[NT]	LCS-W3	18/12/2013
$TRHC_{10}$ - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W3	127%
$TRHC_{15}$ - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W3	70%
$TRHC_{29}$ - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W3	73%
$TRH>C_{10}$ - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W3	127%
$TRH>C_{16}$ - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W3	70%
$TRH>C_{34}$ - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W3	73%
Surrogate o-Terphenyl	%		Org-003	76	[NT]	[NT]	LCS-W3	86%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/12/2013	[NT]	[NT]	LCS-W3	17/12/2013
Date analysed	-			17/12/2013	[NT]	[NT]	LCS-W3	17/12/2013
Naphthalene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	70%
Acenaphthylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	74%
Phenanthrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	72%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	72%
Pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	75%
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	71%
Benzo(b+k)fluoranthene	µg/L	2	Org-012 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	63%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	92	[NT]	[NT]	LCS-W3	95%
QUALITY CONTROL PCBs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/12/2013	[NT]	[NT]	LCS-W3	17/12/2013
Date analysed	-			17/12/2013	[NT]	[NT]	LCS-W3	17/12/2013
Arochlor 1016	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	µg/L	2	Org-006	<2	[NT]	[NT]	LCS-W3	80%
Arochlor 1260	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	76	[NT]	[NT]	LCS-W3	78%

QUALITY CONTROL Total Phenolics in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/12/2013	[NT]	[NT]	LCS-W1	17/12/2013
Date analysed	-			17/12/2013	[NT]	[NT]	LCS-W1	17/12/2013
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-030	<0.05	[NT]	[NT]	LCS-W1	94%
QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			17/12/2013	102640-1	17/12/2013 || 17/12/2013	LCS-W1	17/12/2013
Date analysed	-			17/12/2013	102640-1	17/12/2013 || 17/12/2013	LCS-W1	17/12/2013
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	102640-1	3 || 3 || RPD: 0	LCS-W1	104%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	102640-1	0.1 || <0.1	LCS-W1	103%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	102640-1	<1 || <1	LCS-W1	103%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	102640-1	<1 || <1	LCS-W1	105%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	102640-1	<1 || <1	LCS-W1	103%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	102640-1	<0.05 || [N/T]	LCS-W1	96%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	102640-1	36 || 36 || RPD: 0	LCS-W1	102%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	102640-1	22 || 21 || RPD: 5	LCS-W1	102%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Envo

ALS

CHAIN OF CUSTODY

ALS Laboratory: please tick →

TAT

CLIENT: ERM
OFFICE: Sydney
PROJECT: Project Symphony
ORDER NUMBER: 0224198
PROJECT MANAGER: Joe Ferring
SAMPLER: Sean Penza
COC emailed to ALS? (YES / NO)
Email Reports to (will default to PM if no other addresses are listed): John.ewing@erm.com
Email Invoice to (will default to PM if no other addresses are listed): symphony.mcleggs@erm.com

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): 2 day

ALS QUOTE NO.: SY/794/13
SITE: BAYSWATER / LIDDELL
CONTACT PH:
SAMPLER MOBILE: 0402614304
EDD FORMAT (or default):

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 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: 5.8 °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
[signature]	[signature]	[signature]	Scott
DATE/TIME: 13/12/13 4.30pm	DATE/TIME: 13/12/13 1645	DATE/TIME: 13/12/13 1700	DATE/TIME: 13/12/13

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

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 Matter plus Total Organic Carbon (EP004)	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LS_MW01	12/12/13 0911	Water		5	X		X									
2	LQ_MW05	" 1034			5	X		X		X							Please analysis this sample & discard the LQ MW05 previously provided & put on hold.
3	LH_MW01	" 1136			5	X		X									
4	LH-MW02	" 1234			5	X		X									
8	LH-MW03	1408			5	X		X									
6	DO1_121213_SP	" —			5	X		X									
1 — ~~7~~	TO1_121213_SP	" —			5	X		X									Please forward to Envirolab TPH/BTEX/Metals only
7 ~~8~~	RO1_121213_SP	" —			5	X		X									
8 TB1_121213	~~[illegible]~~	" —		Trip Blank	1			X									TPH/BTEX only
9 TS1_121213	~~[illegible]~~	" —	↓	Trip Spike	1			X									TPH/BTEX only

Subcon / Forward Lab / Split WO: TO1 – Envirolab
Lab / Analysis:
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No: ES1327443
Attach By PO / Internal Sheet:

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

Environmental Division
Sydney
Work Order
ES1327443

Telephone : + 61-2-8784 8555

ENVIROLAB

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 102641
Date Received: 16/12/13
Time Received: 17:00
Received by: AW
Temp: Cool/Ambient
Cooling: Ice/Icepack 12.1°C
Security: Intact/Broken/None

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway NSW 2007

ph: 02 8584 8888
Fax: 02 8584 8800

Attention: Joe Ferring

Sample log in details:

Your reference:	**0224198, Symphony**
Envirolab Reference:	**102641**
Date received:	16/12/2013
Date results expected to be reported:	**18/12/13**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 water
Turnaround time requested:	48hr
Temperature on receipt (°C)	12.1
Cooling Method:	Ice Pack
Sampling Date Provided:	YES

Comments:

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 102641

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway
NSW 2007

Attention: Joe Ferring

Sample log in details:

Your Reference:	**0224198, Symphony**
No. of samples:	1 water
Date samples received / completed instructions received	16/12/2013 / 16/12/2013

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	18/12/13 / 18/12/13
Date of Preliminary Report:	Not issued

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Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference:	UNITS	102641-1
Your Reference	----------	T01_121213_SP
Date Sampled	----------	12/12/2013
Type of sample		water
Date extracted	-	17/12/2013
Date analysed	-	17/12/2013
TRHC$_6$ - C$_9$	µg/L	<10
TRHC$_6$ - C$_{10}$	µg/L	<10
TRHC$_6$ - C$_{10}$ less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	104
Surrogate toluene-d8	%	98
Surrogate 4-BFB	%	87

svTRH (C10-C40) in Water		
Our Reference:	UNITS	102641-1
Your Reference	----------	T01_121213_SP
Date Sampled	----------	12/12/2013
Type of sample		water
Date extracted	-	17/12/2013
Date analysed	-	17/12/2013
TRHC$_{10}$ - C$_{14}$	µg/L	<50
TRHC$_{15}$ - C$_{28}$	µg/L	<100
TRHC$_{29}$ - C$_{36}$	µg/L	<100
TRH>C$_{10}$ - C$_{16}$	µg/L	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	µg/L	<50
TRH>C$_{16}$ - C$_{34}$	µg/L	<100
TRH>C$_{34}$ - C$_{40}$	µg/L	<100
Surrogate o-Terphenyl	%	114

PAHs in Water		
Our Reference:	UNITS	102641-1
Your Reference	----------	T01_121213_SP
Date Sampled	----------	12/12/2013
Type of sample		water
Date extracted	-	17/12/2013
Date analysed	-	17/12/2013
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	116

Total Phenolics in Water		
Our Reference:	UNITS	102641-1
Your Reference	----------	T01_121213_SP
Date Sampled	----------	12/12/2013
Type of sample		water
Date extracted	-	17/12/2013
Date analysed	-	17/12/2013
Total Phenolics (as Phenol)	mg/L	<0.05

HM in water - dissolved		
Our Reference:	UNITS	102641-1
Your Reference	----------	T01_121213_SP
Date Sampled	----------	12/12/2013
Type of sample		water
Date prepared	-	17/12/2013
Date analysed	-	17/12/2013
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	9
Zinc-Dissolved	µg/L	6

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 22nd ED 5530 D.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/12/2013	[NT]	[NT]	LCS-W1	17/12/2013
Date analysed	-			17/12/2013	[NT]	[NT]	LCS-W1	17/12/2013
TRH C_6 - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	103%
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	103%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	114%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	102%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	98%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	101%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	100%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	96	[NT]	[NT]	LCS-W1	94%
Surrogate toluene-d8	%		Org-016	98	[NT]	[NT]	LCS-W1	98%
Surrogate 4-BFB	%		Org-016	89	[NT]	[NT]	LCS-W1	100%

QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/12/2013	[NT]	[NT]	LCS-W1	17/12/2013
Date analysed	-			17/12/2013	[NT]	[NT]	LCS-W1	17/12/2013
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	82%
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	93%
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	108%
TRH>C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	82%
TRH>C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	93%
TRH>C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	108%
Surrogate o-Terphenyl	%		Org-003	99	[NT]	[NT]	LCS-W1	114%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/12/2013	[NT]	[NT]	LCS-W3	17/12/2013
Date analysed	-			17/12/2013	[NT]	[NT]	LCS-W3	17/12/2013
Naphthalene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	70%
Acenaphthylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	74%
Phenanthrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	72%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	72%
Pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	75%
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	71%
Benzo(b+k)fluoranthene	µg/L	2	Org-012 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W3	63%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	92	[NT]	[NT]	LCS-W3	95%
QUALITY CONTROL Total Phenolics in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/12/2013	[NT]	[NT]	LCS-W1	17/12/2013
Date analysed	-			17/12/2013	[NT]	[NT]	LCS-W1	17/12/2013
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-030	<0.05	[NT]	[NT]	LCS-W1	94%
QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			17/12/2013	[NT]	[NT]	LCS-W1	17/12/2013
Date analysed	-			17/12/2013	[NT]	[NT]	LCS-W1	17/12/2013
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	104%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-W1	103%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	103%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	105%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	103%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	LCS-W1	96%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	102%

Client Reference: 0224198, Symphony

QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	102%

QUALITY CONTROL HM in water - dissolved	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	102641-1	17/12/2013
Date analysed	-	[NT]	[NT]	102641-1	17/12/2013
Arsenic-Dissolved	µg/L	[NT]	[NT]	102641-1	104%
Cadmium-Dissolved	µg/L	[NT]	[NT]	102641-1	100%
Chromium-Dissolved	µg/L	[NT]	[NT]	102641-1	98%
Copper-Dissolved	µg/L	[NT]	[NT]	102641-1	98%
Lead-Dissolved	µg/L	[NT]	[NT]	102641-1	94%
Mercury-Dissolved	µg/L	[NT]	[NT]	[NR]	[NR]
Nickel-Dissolved	µg/L	[NT]	[NT]	102641-1	94%
Zinc-Dissolved	µg/L	[NT]	[NT]	102641-1	96%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

SV174
V148C
149A
MG7

CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT: ERM	TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): ☒ Non Standard or urgent TAT (List due date): 48 TAT (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		FOR LABORATORY USE ONLY (Circle)
OFFICE: SYDNEY			Custody Seal Intact? Yes No N/A
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: 0224198	SITE: BAYSWATER / LIDDELL	COC: ① 2 3 4 5 6 7	Random Sample Temperature on Receipt: 4.8 °C
PROJECT MANAGER: Joe Ferring	CONTACT PH:	OF: ① 2 3 4 5 6 7	Other comment:
SAMPLER: THAMDON	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.macog@erm.com			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
[signature]	[signature]	[signature]	[signature] SOJ
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

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

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).

LAB ID (ALS USE)	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)	Additional Information (Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.)
1	LU_MW02	17/12/13 9.30am	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	-			no PFOS insufficient sample
4	D01-171213-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 4	17/12/13 TH	↓														
9	also received RO_171213_TH																

TAT

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
ENVIROLAB
Job No: 103027
Date Received: 23.12.13
Time Received: 12:00
Received by: DT
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Environmental Division
Sydney
Work Order
ES1327893
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

→ ① * T01-171213 Fwd to Envirolab as per attached Email

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway NSW 2007

ph: 02 8584 8888
Fax: 02 8584 8800

Attention: Joe Ferring

Sample log in details:

Your reference:	**0224198, Symphony**
Envirolab Reference:	**103027**
Date received:	23/12/13
Date results expected to be reported:	**2/01/14**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 water
Turnaround time requested:	Standard
Temperature on receipt (°C)	14.6
Cooling Method:	Ice Pack
Sampling Date Provided:	YES

Comments:

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

No PFOS, insufficient sample

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 103027

Client:

Environmental Resources Management Australia
Locked Bag 24
Broadway
NSW 2007

Attention: Joe Ferring

Sample log in details:

Your Reference:	**0224198, Symphony**		
No. of samples:	1 water		
Date samples received / completed instructions received	23/12/13	/	23/12/13

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	2/01/14	/	2/01/14
Date of Preliminary Report:	Not issued		

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Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

VOCs in water		
Our Reference:	UNITS	103027-1
Your Reference	----------	T01-171213-TH
Date Sampled	----------	17/12/2013
Type of sample		water
Date extracted	-	30/12/2013
Date analysed	-	30/12/2013
Dichlorodifluoromethane	µg/L	<10
Chloromethane	µg/L	<10
Vinyl Chloride	µg/L	<10
Bromomethane	µg/L	<10
Chloroethane	µg/L	<10
Trichlorofluoromethane	µg/L	<10
1,1-Dichloroethene	µg/L	<1
Trans-1,2-dichloroethene	µg/L	<1
1,1-dichloroethane	µg/L	<1
Cis-1,2-dichloroethene	µg/L	<1
Bromochloromethane	µg/L	<1
Chloroform	µg/L	<1
2,2-dichloropropane	µg/L	<1
1,2-dichloroethane	µg/L	<1
1,1,1-trichloroethane	µg/L	<1
1,1-dichloropropene	µg/L	<1
Cyclohexane	µg/L	<1
Carbon tetrachloride	µg/L	<1
Benzene	µg/L	<1
Dibromomethane	µg/L	<1
1,2-dichloropropane	µg/L	<1
Trichloroethene	µg/L	<1
Bromodichloromethane	µg/L	<1
trans-1,3-dichloropropene	µg/L	<1
cis-1,3-dichloropropene	µg/L	<1
1,1,2-trichloroethane	µg/L	<1
Toluene	µg/L	<1
1,3-dichloropropane	µg/L	<1
Dibromochloromethane	µg/L	<1
1,2-dibromoethane	µg/L	<1
Tetrachloroethene	µg/L	<1
1,1,1,2-tetrachloroethane	µg/L	<1
Chlorobenzene	µg/L	<1
Ethylbenzene	µg/L	<1
Bromoform	µg/L	<1
m+p-xylene	µg/L	<2
Styrene	µg/L	<1
1,1,2,2-tetrachloroethane	µg/L	<1
o-xylene	µg/L	<1

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	103027-1 T01-171213-TH 17/12/2013 water
1,2,3-trichloropropane	µg/L	<1
Isopropylbenzene	µg/L	<1
Bromobenzene	µg/L	<1
n-propyl benzene	µg/L	<1
2-chlorotoluene	µg/L	<1
4-chlorotoluene	µg/L	<1
1,3,5-trimethyl benzene	µg/L	<1
Tert-butyl benzene	µg/L	<1
1,2,4-trimethyl benzene	µg/L	<1
1,3-dichlorobenzene	µg/L	<1
Sec-butyl benzene	µg/L	<1
1,4-dichlorobenzene	µg/L	<1
4-isopropyl toluene	µg/L	<1
1,2-dichlorobenzene	µg/L	<1
n-butyl benzene	µg/L	<1
1,2-dibromo-3-chloropropane	µg/L	<1
1,2,4-trichlorobenzene	µg/L	<1
Hexachlorobutadiene	µg/L	<1
1,2,3-trichlorobenzene	µg/L	<1
Surrogate Dibromofluoromethane	%	125
Surrogate toluene-d8	%	91
Surrogate 4-BFB	%	85

vTRH(C6-C10)/BTEXN in Water		
Our Reference:	UNITS	103027-1
Your Reference	----------	T01-171213-TH
Date Sampled	----------	17/12/2013
Type of sample		water
Date extracted	-	30/12/2013
Date analysed	-	30/12/2013
$TRHC_6$ - C_9	µg/L	<10
$TRHC_6$ - C_{10}	µg/L	<10
$TRHC_6$ - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	125
Surrogate toluene-d8	%	91
Surrogate 4-BFB	%	85

svTRH (C10-C40) in Water		
Our Reference:	UNITS	103027-1
Your Reference	----------	T01-171213-TH
Date Sampled	----------	17/12/2013
Type of sample		water
Date extracted	-	24/12/2013
Date analysed	-	24/12/2013
$TRHC_{10}$ - C_{14}	µg/L	<50
$TRHC_{15}$ - C_{28}	µg/L	<100
$TRHC_{29}$ - C_{36}	µg/L	<100
$TRH{>}C_{10}$ - C_{16}	µg/L	<50
$TRH{>}C_{10}$ - C_{16} less Naphthalene (F2)	µg/L	<50
$TRH{>}C_{16}$ - C_{34}	µg/L	<100
$TRH{>}C_{34}$ - C_{40}	µg/L	<100
Surrogate o-Terphenyl	%	86

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	 103027-1 T01-171213-TH 17/12/2013 water
Date extracted	-	24/12/2013
Date analysed	-	24/12/2013
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	96

PCBs in Water		
Our Reference:	UNITS	103027-1
Your Reference	----------	T01-171213-TH
Date Sampled	----------	17/12/2013
Type of sample		water
Date extracted	-	24/12/2013
Date analysed	-	24/12/2013
Arochlor 1016	µg/L	<2
Arochlor 1221	µg/L	<2
Arochlor 1232	µg/L	<2
Arochlor 1242	µg/L	<2
Arochlor 1248	µg/L	<2
Arochlor 1254	µg/L	<2
Arochlor 1260	µg/L	<2
Surrogate TCLMX	%	79

Total Phenolics in Water		
Our Reference:	UNITS	103027-1
Your Reference	----------	T01-171213-TH
Date Sampled	----------	17/12/2013
Type of sample		water
Date extracted	-	02/01/2014
Date analysed	-	02/01/2014
Total Phenolics (as Phenol)	mg/L	<0.05

HM in water - dissolved		
Our Reference:	UNITS	103027-1
Your Reference	----------	T01-171213-TH
Date Sampled	----------	17/12/2013
Type of sample		water
Date prepared	-	24/12/2013
Date analysed	-	24/12/2013
Arsenic-Dissolved	µg/L	8
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	1
Zinc-Dissolved	µg/L	<1

Method ID	Methodology Summary
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 22nd ED 5530 D.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			30/12/2013	[NT]	[NT]	LCS-W1	30/12/2013
Date analysed	-			30/12/2013	[NT]	[NT]	LCS-W1	30/12/2013
Dichlorodifluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Bromomethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloroethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trans-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	100%
Cis-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Chloroform	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	100%
2,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	93%
1,1,1-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	98%
1,1-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Cyclohexane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Carbon tetrachloride	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromomethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	98%
Bromodichloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	101%
trans-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	104%
1,2-dibromoethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tetrachloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	96%
1,1,1,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Chlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Ethylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromoform	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
m+p-xylene	µg/L	2	Org-013	<2	[NT]	[NT]	[NR]	[NR]
Styrene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
o-xylene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
1,2,3-trichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Isopropylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-propyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3,5-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tert-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Sec-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,4-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-isopropyl toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-013	108	[NT]	[NT]	LCS-W1	100%
Surrogate toluene-d8	%		Org-013	110	[NT]	[NT]	LCS-W1	104%
Surrogate 4-BFB	%		Org-013	82	[NT]	[NT]	LCS-W1	101%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			30/12/2013	[NT]	[NT]	LCS-W1	30/12/2013
Date analysed	-			30/12/2013	[NT]	[NT]	LCS-W1	30/12/2013
TRH C_6 - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	112%
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	112%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	107%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	110%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	110%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	116%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	115%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	108	[NT]	[NT]	LCS-W1	113%
Surrogate toluene-d8	%		Org-016	110	[NT]	[NT]	LCS-W1	98%
Surrogate 4-BFB	%		Org-016	82	[NT]	[NT]	LCS-W1	104%
QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/12/2013	[NT]	[NT]	LCS-W1	24/12/2013
Date analysed	-			24/12/2013	[NT]	[NT]	LCS-W1	24/12/2013
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	82%
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	95%
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	88%
TRH>C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	82%
TRH>C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	95%
TRH>C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	88%
Surrogate o-Terphenyl	%		Org-003	91	[NT]	[NT]	LCS-W1	99%
QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/12/2013	[NT]	[NT]	LCS-W1	24/12/2013
Date analysed	-			24/12/2013	[NT]	[NT]	LCS-W1	24/12/2013
Naphthalene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	96%
Acenaphthylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	93%
Phenanthrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	92%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	95%
Pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	99%
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	80%
Benzo(b+k)fluoranthene	µg/L	2	Org-012 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	92%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	94	[NT]	[NT]	LCS-W1	103%
QUALITY CONTROL PCBs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/12/2013	[NT]	[NT]	LCS-W1	24/12/2013
Date analysed	-			24/12/2013	[NT]	[NT]	LCS-W1	24/12/2013
Arochlor 1016	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	µg/L	2	Org-006	<2	[NT]	[NT]	LCS-W1	80%
Arochlor 1260	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	93	[NT]	[NT]	LCS-W1	85%

QUALITY CONTROL Total Phenolics in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			02/01/2014	[NT]	[NT]	LCS-W1	01/02/2014
Date analysed	-			02/01/2014	[NT]	[NT]	LCS-W1	01/02/2014
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-030	<0.05	[NT]	[NT]	LCS-W1	98%
QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			24/12/2013	103027-1	24/12/2013 || 24/12/2013	LCS-W1	24/12/2013
Date analysed	-			24/12/2013	103027-1	24/12/2013 || 24/12/2013	LCS-W1	24/12/2013
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	103027-1	8 || 7 || RPD: 13	LCS-W1	82%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	103027-1	<0.1 || <0.1	LCS-W1	92%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	103027-1	<1 || <1	LCS-W1	95%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	103027-1	<1 || <1	LCS-W1	93%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	103027-1	<1 || <1	LCS-W1	104%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	103027-1	<0.05 || <0.05	LCS-W1	96%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	103027-1	1 || 1 || RPD: 0	LCS-W1	98%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	103027-1	<1 || <1	LCS-W1	80%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
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MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
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MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgeemail@alsglobal.com
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TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: ERM	TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)	
OFFICE: SYDNEY	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):	Custody Seal intact?	Yes / No / N/A
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13	Free ice / frozen ice bricks present upon receipt?	Yes / No / N/A
ORDER NUMBER:	SITE: BAYSWATER / LIDDELL	Random Sample Temperature on Receipt:	°C
PROJECT MANAGER: Joe Ferriny	CONTACT PH: 0424 970 468	Other comment:	
SAMPLER: TIM HAMDON.	SAMPLER MOBILE: 0428 229 984.		
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@erm.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:
TIM HAMDON.	SMF	SMF	Ravnesh
DATE/TIME: 22/11/13.	DATE/TIME: 25/11/13 8:10	DATE/TIME: 25/11/13 17:20	DATE/TIME: 25/11/13 19:15

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.
3	LD_EW_MW01	21/11/13/9:30am	W	125LAG, 60mL N 40mL VS	6	X						X		
4	LD_EW_MW02	20/11/13/4:30pm	W	" "	6	X						X		
5	LD_EW_MW03	21/11/13/11:00am	W	" "	6	X						X		
6	LD_EW_MW04	21/11/13/1:15pm	W	" "	6	X						X		
7	DO1_211113_TH.	21/11/13./1:15pm	W	" "	6	X						X		
8	LS_EW_MW01	22/11/13	W	" "	6	X						X		
9	LS_EW_MW02	22/11/13	W	" "	6	X						X		
10	LS_EW_MW03	22/11/13	W	" "	6	X						X		
11	TRIP_221113_TH.	22/11/13.	W	" "	6	X						X		
12	Rinsate_201113_NH	20/11/13	W	" "	6	X						X		
13	Rinsate_211113_TH	21/11/13	W	" "	6	X						X		
14	Rinsate 221113_TH	22/11/13.	W	" "	6	X						X		
				TOTAL										

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

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samplesbrisbane@alsglobal.com

GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5699 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 0735 E: mudgee.mail@alsglobal.com

NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com

NOWRA 215 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com

PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-16 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

ALS Environmental

CLIENT: ERM	TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)	
OFFICE: SYDNEY	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact?	Yes No N/A
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13	Free ice / frozen ice bricks present upon receipt?	Yes No N/A
ORDER NUMBER:	SITE: BAYSWATER LIDDELL	Random Sample Temperature on Receipt:	4.7 °C
PROJECT MANAGER: FERRING, JOE	CONTACT PH:	Other comment:	
SAMPLER: TIM HAYDON	SAMPLER MOBILE: 0428229484	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7	
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):		
Email Reports to (will default to PM if no other addresses are listed): ~~[illegible]~~ *			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
TIM HAYDON	[illegible]	[illegible]	Ravinesh
DATE/TIME: 22/11/13	DATE/TIME: 25/11/13 9:10	DATE/TIME: 25/11/13 17:20	DATE/TIME: 25/11/13 19:15

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: * symphony-haydon@erm.com.

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, Tl)	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	Trip Blank		W	trip – VS 40mL	1									TRH & BTEX.
2	Trip Spike.		W	trip – VS 40mL	1									BTEX
~~46~~	~~Esc~~													
				TOTAL										

Environmental Division
Sydney
Work Order
ES1325573

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: Barbara Hanna
Sent: Friday, 29 November 2013 3:55 PM
To: Jacob Waugh
Subject: FW: ERM Symphony: labelling and additional analysis
Attachments: image001.jpg

Hi Jacob,

Could you please arrange the following and I will arrange the sample ID changes.

Thanks!!!

Additionally:

ES1325573-011 (T01_221113_TH) – please forward to Envirolab for analysis

ES1325883-001 (BI_MW03_0.6) – analyse for Electrical Conductivity (paste)

ES1325882-001 (BH_SB06_1.6) – analyse for Electrical Conductivity (paste)
ES1325882-002 (BH_MW04_3.0) – analyse for Electrical Conductivity (paste)
ES1325882-003 (BH_SB08_3.0) – analyse for Electrical Conductivity (paste)
ES1325882-004 (BH_MW03_4.5) – analyse for Electrical Conductivity (paste)

ES1325879-002 (BI_MW01_3.0) – analyse for Electrical Conductivity (paste)

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

www.alsglobal.com

From: Kate Fox [mailto:Kate.Fox@erm.com]
Sent: Friday, 29 November 2013 2:27 PM
To: Barbara Hanna
Cc: ERM Australia Project Symphony MacGen
Subject: ERM Symphony: labelling and additional analysis

Hi Barbara,

A few more requests re: Symphony samples please!

Could the following be re-labelled:

Lab Sample ID	Current ID	Correct ID
ES1325579-001	LO_SB06_2.9-3.0	LO_SB06_3.0
ES1325579-002	LO_SB07_2.9-3.0	LO_SB07_3.0
ES1325579-003	LO_SB09_2.9-3.0	LO_SB09_3.0
ES1325579-004	LP_MW01_2.9-3.0	LP_MW01_3.0
ES1325579-005	LP_SB11_1.1-1.2	LP_SB11_1.2
ES1325579-006	LP_SB11_2.9-3.0	LP_SB11_3.0
ES1325579-007	LP_SB12_0.7-0.8	LP_SB12_0.8
ES1325579-008	LP_SB12_2.9-3.0	LP_SB12_3.0
ES1325579-009	LN_MW04_2.9-3.0	LN_MW04_3.0
ES1325572-001	BR_MW05_14 mbgs	BR_MW05_14.0
ES1325572-002	BR_MW05_31 mbgs	BR_MW05_31.0
ES1325572-003	TRIP BLANK_(10)	TB10_151113
ES1325572-004	TRIP SPIKE_WG(2)	TS2_151113
ES1325572-005	TSC	TSC_151113
ES1325880-001	BU_SB02_2.5	BV_SB02_2.5
ES1325880-009	TRIP BLANK 1	TB1_201113
ES1325880-010	TRIP BLANK 7	TB7_201113
ES1325573-001	TRIP BLANK	TB_221113
ES1325573-002	TRIP SPIKE	TS_221113
ES1325573-012	RINSATE_201113_NH	R01_201113_TH
ES1325573-013	RINSATE_211113_TH	R01_211113_TH
ES1325573-014	RINSATE_221113_TH	R01_221113_TH

Additionally:

ES1325573-011 (T01_221113_TH) – please forward to Envirolab for analysis

ES1325883-001 (BI_MW03_0.6) – analyse for Electrical Conductivity (paste)

ES1325882-001 (BH_SB06_1.6) – analyse for Electrical Conductivity (paste)
ES1325882-002 (BH_MW04_3.0) – analyse for Electrical Conductivity (paste)
ES1325882-003 (BH_SB08_3.0) – analyse for Electrical Conductivity (paste)
ES1325882-004 (BH_MW03_4.5) – analyse for Electrical Conductivity (paste)

ES1325879-002 (BI_MW01_3.0) – analyse for Electrical Conductivity (paste)

Many thanks,
Kate

Kate Fox
Environmental Resources Management
Level 1, 60 Leichhardt Street
Spring Hill, Brisbane, QLD, 4000

Switch: +61 7 3839 8393 | Direct : +61 7 3007 8439 | www.erm.com

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES1325573**		
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: LIDDELL		
Sampler	: TH	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 25-NOV-2013	Issue Date	: 29-NOV-2013 15:12
Client Requested Due Date	: 02-DEC-2013	Scheduled Reporting Date	: **02-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 8'C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 14
Security Seal	: Intact.	No. of samples analysed	: 14

General Comments

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

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 - EP080 BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-27 TRH/BTEXN/PAH/Phenols/8 Metals	WATER - W-27T TRH/BTEXN/PAH/Phenols/Total 8 Metals
ES1325573-001	[25-NOV-2013]	TB_221113		✓		
ES1325573-002	[25-NOV-2013]	TS_221113	✓			
ES1325573-003	21-NOV-2013 09:30	LD_EW_MW01			✓	
ES1325573-004	20-NOV-2013 16:30	LD_EW_MW02			✓	
ES1325573-005	21-NOV-2013 11:00	LD_EW_MW03			✓	
ES1325573-006	21-NOV-2013 13:15	LD_EW_MW04			✓	
ES1325573-007	21-NOV-2013 13:15	D01_211113_TH			✓	
ES1325573-008	22-NOV-2013 15:00	LS_EW_MW01			✓	
ES1325573-009	22-NOV-2013 15:00	LS_EW_MW02			✓	
ES1325573-010	22-NOV-2013 15:00	LS_EW_MW03			✓	
ES1325573-011	22-NOV-2013 15:00	T01_221113_TH			✓	
ES1325573-012	20-NOV-2013 15:00	R01_201113_TH				✓
ES1325573-013	21-NOV-2013 15:00	R01_211113_TH				✓
ES1325573-014	22-NOV-2013 15:00	R01_221113_TH				✓

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
- A4 - AU Tax Invoice (INV)	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	: **ES1325573**	Page	: 1 of 12
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 25-NOV-2013
Sampler	: TH	Issue Date	: 02-DEC-2013
Site	: LIDDELL		
		No. of samples received	: 14
Quote number	: SY/794/13	No. of samples analysed	: 13

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

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

- **EG020T: Positive results for sample ES1325573 # 014 confirmed.**
- **EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB_221113	TS_221113	LD_EW_MW01	LD_EW_MW02	LD_EW_MW03
				Client sampling date / time	[25-NOV-2013]	[25-NOV-2013]	21-NOV-2013 09:30	20-NOV-2013 16:30	21-NOV-2013 11:00
Compound	CAS Number	LOR	Unit		ES1325573-001	ES1325573-002	ES1325573-003	ES1325573-004	ES1325573-005
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		----	----	**0.001**	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L		----	----	<0.0001	**0.0001**	<0.0001
Chromium	7440-47-3	0.001	mg/L		----	----	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		----	----	**0.009**	**0.013**	**0.008**
Lead	7439-92-1	0.001	mg/L		----	----	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		----	----	**0.029**	**0.012**	**0.005**
Zinc	7440-66-6	0.005	mg/L		----	----	**0.045**	**0.014**	**0.019**
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	----	<0.0001	<0.0001	<0.0001
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		----	----	<1.0	<1.0	<1.0
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

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	TB_221113	TS_221113	LD_EW_MW01	LD_EW_MW02	LD_EW_MW03
				Client sampling date / time	[25-NOV-2013]	[25-NOV-2013]	21-NOV-2013 09:30	20-NOV-2013 16:30	21-NOV-2013 11:00
					ES1325573-001	ES1325573-002	ES1325573-003	ES1325573-004	ES1325573-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L		----	----	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		----	----	<1.0	<1.0	<1.0
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L		----	----	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L		----	----	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		----	----	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		----	----	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		----	----	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		----	----	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	----	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L		----	----	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		----	----	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		----	----	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		----	----	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		----	----	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	**16**	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	**16**	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	**15**	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	**15**	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	**15**	<2	<2	<2
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	**30**	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	**77**	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	**19**	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB_221113	TS_221113	LD_EW_MW01	LD_EW_MW02	LD_EW_MW03
				Client sampling date / time	[25-NOV-2013]	[25-NOV-2013]	21-NOV-2013 09:30	20-NOV-2013 16:30	21-NOV-2013 11:00
Compound	CAS Number	LOR	Unit		ES1325573-001	ES1325573-002	ES1325573-003	ES1325573-004	ES1325573-005
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	0.1	%		----	----	23.4	28.9	30.5
2-Chlorophenol-D4	93951-73-6	0.1	%		----	----	52.9	68.6	67.4
2.4.6-Tribromophenol	118-79-6	0.1	%		----	----	47.6	54.3	41.0
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		----	----	63.4	77.3	72.6
Anthracene-d10	1719-06-8	0.1	%		----	----	62.6	77.5	73.5
4-Terphenyl-d14	1718-51-0	0.1	%		----	----	63.0	78.4	72.3
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		101	79.8	102	113	104
Toluene-D8	2037-26-5	0.1	%		99.2	95.0	106	110	116
4-Bromofluorobenzene	460-00-4	0.1	%		88.0	87.1	103	103	102

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LD_EW_MW04	D01_211113_TH	LS_EW_MW01	LS_EW_MW02	LS_EW_MW03
				Client sampling date / time	21-NOV-2013 13:15	21-NOV-2013 13:15	22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
					ES1325573-006	ES1325573-007	ES1325573-008	ES1325573-009	ES1325573-010
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L		**0.0004**	**0.0003**	<0.0001	**0.0003**	**0.0013**
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.007**	**0.005**	**0.013**	**0.015**	**0.005**
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		**0.082**	**0.085**	**0.010**	**0.024**	**0.041**
Zinc	7440-66-6	0.005	mg/L		**0.055**	**0.050**	**0.031**	**0.028**	**0.015**
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LD_EW_MW04	D01_211113_TH	LS_EW_MW01	LS_EW_MW02	LS_EW_MW03
				Client sampling date / time	21-NOV-2013 13:15	21-NOV-2013 13:15	22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit		ES1325573-006	ES1325573-007	ES1325573-008	ES1325573-009	ES1325573-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LD_EW_MW04	D01_211113_TH	LS_EW_MW01	LS_EW_MW02	LS_EW_MW03
				Client sampling date / time	21-NOV-2013 13:15	21-NOV-2013 13:15	22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit		ES1325573-006	ES1325573-007	ES1325573-008	ES1325573-009	ES1325573-010
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	0.1	%		29.8	38.0	33.5	23.6	27.9
2-Chlorophenol-D4	93951-73-6	0.1	%		67.1	75.3	70.3	52.1	61.1
2.4.6-Tribromophenol	118-79-6	0.1	%		24.4	36.1	36.8	24.4	20.9
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		69.0	73.8	70.6	54.7	72.1
Anthracene-d10	1719-06-8	0.1	%		73.0	85.5	80.8	62.3	76.6
4-Terphenyl-d14	1718-51-0	0.1	%		73.6	83.2	76.1	59.0	75.1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		103	103	107	92.1	98.6
Toluene-D8	2037-26-5	0.1	%		119	104	113	98.4	107
4-Bromofluorobenzene	460-00-4	0.1	%		108	99.3	109	88.8	96.4

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	R01_201113_TH	R01_211113_TH	R01_221113_TH	----	----
				Client sampling date / time	20-NOV-2013 15:00	21-NOV-2013 15:00	22-NOV-2013 15:00	----	----
Compound	CAS Number	LOR	Unit		ES1325573-012	ES1325573-013	ES1325573-014	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	**0.002**	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	<0.005	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	<1.0	<1.0	----	----
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	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	R01_201113_TH	R01_211113_TH	R01_221113_TH	----	----
				Client sampling date / time	20-NOV-2013 15:00	21-NOV-2013 15:00	22-NOV-2013 15:00	----	----
Compound	CAS Number	LOR	Unit		ES1325573-012	ES1325573-013	ES1325573-014	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	----	----
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	----	----
^ 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	<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	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP075(SIM)S: Phenolic Compound Surrogates									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R01_201113_TH	R01_211113_TH	R01_221113_TH	----	----
			Client sampling date / time	20-NOV-2013 15:00	21-NOV-2013 15:00	22-NOV-2013 15:00	----	----
Compound	CAS Number	LOR	Unit	ES1325573-012	ES1325573-013	ES1325573-014	----	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	0.1	%	29.6	35.2	28.8	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	63.9	75.2	54.8	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	23.0	29.8	38.3	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	83.4	105	27.6	----	----
Anthracene-d10	1719-06-8	0.1	%	80.1	108	46.0	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	80.6	108	63.4	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	94.2	100	97.4	----	----
Toluene-D8	2037-26-5	0.1	%	98.0	109	105	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	91.1	103	92.8	----	----

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	: **ES1325573**	Page	: 1 of 12
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 25-NOV-2013
Sampler	: TH	Issue Date	: 02-DEC-2013
Order number	: ----		
		No. of samples received	: 14
Quote number	: SY/794/13	No. of samples analysed	: 13

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

This Quality Control Report contains the following information:

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

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
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: 3181835)									
ES1325555-002	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	0.003	0.002	41.7	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.012	0.012	0.0	0% - 50%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.038	0.036	6.0	No Limit
ES1325573-011	T01_221113_TH	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0013	0.0015	15.5	0% - 50%
		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	0.004	0.005	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.042	0.041	0.0	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.024	0.025	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 3182919)									
ES1325573-012	R01_201113_TH	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
ES1325588-008	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0009	0.0008	15.3	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.002	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.005	0.005	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.162	0.162	0.0	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.142	0.148	4.6	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 3181834)									
ES1325545-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1325573-010	LS_EW_MW03	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: 3181296)									
EB1328769-006	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1325703-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	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: 3181850)									
ES1325573-003	LD_EW_MW01	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
ES1325573-009	LS_EW_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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3181850)									
ES1325573-003	LD_EW_MW01	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3181850) - continued									
ES1325573-003	LD_EW_MW01	EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
ES1325573-009	LS_EW_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
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3181849)									
ES1325573-003	LD_EW_MW01	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	60	0.0	No Limit
ES1325573-009	LS_EW_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
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3186190)									
ES1325458-011	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1325573-006	LD_EW_MW04	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3181849)									
ES1325573-003	LD_EW_MW01	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
ES1325573-009	LS_EW_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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3186190)									
ES1325458-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1325573-006	LD_EW_MW04	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 3186190)									
ES1325458-011	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	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 (%)
EP080: BTEXN (QC Lot: 3186190) - continued									
ES1325458-011	Anonymous	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
ES1325573-006	LD_EW_MW04	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
EG020F: Dissolved Metals by ICP-MS (QCLot: 3181835)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.5	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	92.0	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	93.6	81	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.2	80	112
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.8	83	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	100	81	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.8	80	116
EG020T: Total Metals by ICP-MS (QCLot: 3182919)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.8	79	121
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.5	82	114
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.1	83	115
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.3	83	117
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.7	85	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.4	83	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	91.2	76	118
EG035F: Dissolved Mercury by FIMS (QCLot: 3181834)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	104	78	114
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3181296)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	109	77	115
EP075(SIM)A: Phenolic Compounds (QCLot: 3181850)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	# 64.4	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	83.9	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	81.4	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	76.6	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	76.4	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	80.8	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	78.7	59.3	122
		1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 3181850) - continued								
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	77.4	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	77.2	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	75.6	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	67.1	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	34.2	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3181850)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	77.5	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	83.5	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	78.7	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	82.7	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	80.3	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	80.8	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	85.8	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	84.3	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	84.2	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	79.9	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	83.0	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	83.0	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	82.9	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	79.0	59.9	118
		1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3181850) - continued								
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	81.8	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	86.4	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: 3181849)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	92.2	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	97.4	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	95.9	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3186190)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	114	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181849)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	101	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	93.1	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	104	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3186190)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	119	75	127
EP080: BTEXN (QCLot: 3186190)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	88.6	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	107	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	99.7	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	98.0	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	98.4	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
EG020F: Dissolved Metals by ICP-MS (QCLot: 3181835)							
ES1325573-003	LD_EW_MW01	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	100	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	93.7	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	94.7	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3181835) - continued							
ES1325573-003	LD_EW_MW01	EG020A-F: Copper	7440-50-8	0.2 mg/L	93.3	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	87.8	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	89.1	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	93.1	70	130
EG020T: Total Metals by ICP-MS (QCLot: 3182919)							
ES1325573-013	R01_211113_TH	EG020A-T: Arsenic	7440-38-2	1 mg/L	87.3	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	82.8	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	84.5	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	87.4	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	86.1	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	82.1	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	84.8	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3181834)							
ES1325573-004	LD_EW_MW02	EG035F: Mercury	7439-97-6	0.0100 mg/L	73.1	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3181296)							
ES1325573-012	R01_201113_TH	EG035T: Mercury	7439-97-6	0.010 mg/L	94.8	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3181850)							
ES1325573-005	LD_EW_MW03	EP075(SIM): Phenol	108-95-2	20 µg/L	44.9	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	79.3	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	102	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	83.9	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	85.9	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3181850)							
ES1325573-005	LD_EW_MW03	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	84.3	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	95.8	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181849)							
ES1325573-005	LD_EW_MW03	EP071: C10 - C14 Fraction	----	200 µg/L	106	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	94.7	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	98.4	67	153
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3186190)							
ES1325458-011	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	114	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181849)							
ES1325573-005	LD_EW_MW03	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	75.2	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	93.9	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	94.8	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3186190)							

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: 3186190) - continued							
ES1325458-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	117	70	130
EP080: BTEXN (QCLot: 3186190)							
ES1325458-011	Anonymous	EP080: Benzene	71-43-2	25 µg/L	73.0	70	130
		EP080: Toluene	108-88-3	25 µg/L	87.1	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	92.9	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	87.0	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	88.3	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	99.4	70	130

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

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

Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3181296)										
ES1325573-012	R01_201113_TH	EG035T: Mercury	7439-97-6	0.010 mg/L	94.8	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3181834)										
ES1325573-004	LD_EW_MW02	EG035F: Mercury	7439-97-6	0.0100 mg/L	73.1	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3181835)										
ES1325573-003	LD_EW_MW01	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	100	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	93.7	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	94.7	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	0.2 mg/L	93.3	----	70	130	----	----
		EG020A-F: Lead	7439-92-1	0.2 mg/L	87.8	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	89.1	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	93.1	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181849)										
ES1325573-005	LD_EW_MW03	EP071: C10 - C14 Fraction	----	200 µg/L	106	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	94.7	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	98.4	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181849)										
ES1325573-005	LD_EW_MW03	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	75.2	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	93.9	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	94.8	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3181850)										

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
EP075(SIM)A: Phenolic Compounds (QCLot: 3181850) - continued										
ES1325573-005	LD_EW_MW03	EP075(SIM): Phenol	108-95-2	20 µg/L	44.9	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	79.3	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	102	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	83.9	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	85.9	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3181850)										
ES1325573-005	LD_EW_MW03	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	84.3	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	95.8	----	70	130	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3182919)										
ES1325573-013	R01_211113_TH	EG020A-T: Arsenic	7440-38-2	1 mg/L	87.3	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	82.8	----	70	130	----	----
		EG020A-T: Chromium	7440-47-3	1 mg/L	84.5	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1 mg/L	87.4	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1 mg/L	86.1	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1 mg/L	82.1	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1 mg/L	84.8	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3186190)										
ES1325458-011	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	114	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3186190)										
ES1325458-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	117	----	70	130	----	----
EP080: BTEXN (QCLot: 3186190)										
ES1325458-011	Anonymous	EP080: Benzene	71-43-2	25 µg/L	73.0	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	87.1	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	92.9	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	87.0	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	88.3	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	99.4	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1325573**	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	: 25-NOV-2013
Sampler	: TH	Issue Date	: 02-DEC-2013
Order number	: ----		
		No. of samples received	: 14
Quote number	: SY/794/13	No. of samples analysed	: 13

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

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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

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

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

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) LD_EW_MW02	**20-NOV-2013**	**---**	19-MAY-2014	----	**27-NOV-2013**	19-MAY-2014	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) LD_EW_MW01, LD_EW_MW03, LD_EW_MW04, D01_211113_TH	**21-NOV-2013**	**---**	20-MAY-2014	----	**27-NOV-2013**	20-MAY-2014	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) LS_EW_MW01, LS_EW_MW02, LS_EW_MW03	**22-NOV-2013**	**---**	21-MAY-2014	----	**27-NOV-2013**	21-MAY-2014	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) R01_221113_TH	**22-NOV-2013**	**28-NOV-2013**	21-MAY-2014	✓	**28-NOV-2013**	21-MAY-2014	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T) R01_201113_TH	**20-NOV-2013**	**28-NOV-2013**	19-MAY-2014	✓	**28-NOV-2013**	19-MAY-2014	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T) R01_211113_TH	**21-NOV-2013**	**28-NOV-2013**	20-MAY-2014	✓	**28-NOV-2013**	20-MAY-2014	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) LD_EW_MW02	**20-NOV-2013**	**---**	18-DEC-2013	----	**28-NOV-2013**	18-DEC-2013	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) LD_EW_MW01, LD_EW_MW03, LD_EW_MW04, D01_211113_TH	**21-NOV-2013**	**---**	19-DEC-2013	----	**28-NOV-2013**	19-DEC-2013	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) LS_EW_MW01, LS_EW_MW02, LS_EW_MW03	**22-NOV-2013**	**---**	20-DEC-2013	----	**28-NOV-2013**	20-DEC-2013	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) R01_221113_TH	**22-NOV-2013**	**----**	----	----	**27-NOV-2013**	20-DEC-2013	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) R01_201113_TH	**20-NOV-2013**	**----**	----	----	**27-NOV-2013**	18-DEC-2013	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) R01_211113_TH	**21-NOV-2013**	**----**	----	----	**27-NOV-2013**	19-DEC-2013	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
LD_EW_MW02,	R01_201113_TH	**20-NOV-2013**	**27-NOV-2013**	27-NOV-2013	✓	**30-NOV-2013**	08-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP071)								
LD_EW_MW01,	LD_EW_MW03,	**21-NOV-2013**	**27-NOV-2013**	28-NOV-2013	✓	**30-NOV-2013**	08-JAN-2014	✓
LD_EW_MW04,	D01_211113_TH,							
R01_211113_TH								
Amber Glass Bottle - Unpreserved (EP071)								
LS_EW_MW01,	LS_EW_MW02,	**22-NOV-2013**	**27-NOV-2013**	29-NOV-2013	✓	**30-NOV-2013**	08-JAN-2014	✓
LS_EW_MW03,	R01_221113_TH							
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LD_EW_MW02,	R01_201113_TH	**20-NOV-2013**	**27-NOV-2013**	27-NOV-2013	✓	**30-NOV-2013**	08-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LD_EW_MW01,	LD_EW_MW03,	**21-NOV-2013**	**27-NOV-2013**	28-NOV-2013	✓	**30-NOV-2013**	08-JAN-2014	✓
LD_EW_MW04,	D01_211113_TH,							
R01_211113_TH								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LS_EW_MW01,	LS_EW_MW02,	**22-NOV-2013**	**27-NOV-2013**	29-NOV-2013	✓	**30-NOV-2013**	08-JAN-2014	✓
LS_EW_MW03,	R01_221113_TH							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LD_EW_MW02,	R01_201113_TH	**20-NOV-2013**	**27-NOV-2013**	27-NOV-2013	✓	**30-NOV-2013**	08-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LD_EW_MW01,	LD_EW_MW03,	**21-NOV-2013**	**27-NOV-2013**	28-NOV-2013	✓	**30-NOV-2013**	08-JAN-2014	✓
LD_EW_MW04,	D01_211113_TH,							
R01_211113_TH								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LS_EW_MW01,	LS_EW_MW02,	**22-NOV-2013**	**27-NOV-2013**	29-NOV-2013	✓	**30-NOV-2013**	08-JAN-2014	✓
LS_EW_MW03,	R01_221113_TH							
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
LD_EW_MW02,	R01_201113_TH	**20-NOV-2013**	**30-NOV-2013**	04-DEC-2013	✓	**30-NOV-2013**	04-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
LD_EW_MW01,	LD_EW_MW03,	**21-NOV-2013**	**30-NOV-2013**	05-DEC-2013	✓	**30-NOV-2013**	05-DEC-2013	✓
LD_EW_MW04,	D01_211113_TH,							
R01_211113_TH								
Amber VOC Vial - Sulfuric Acid (EP080)								
LS_EW_MW01,	LS_EW_MW02,	**22-NOV-2013**	**30-NOV-2013**	06-DEC-2013	✓	**30-NOV-2013**	06-DEC-2013	✓
LS_EW_MW03,	R01_221113_TH							
Amber VOC Vial - Sulfuric Acid (EP080)								
TB_221113,	TS_221113	**25-NOV-2013**	**30-NOV-2013**	09-DEC-2013	✓	**30-NOV-2013**	09-DEC-2013	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080)							
LD_EW_MW02, R01_201113_TH	**20-NOV-2013**	**30-NOV-2013**	04-DEC-2013	✓	**30-NOV-2013**	04-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
LD_EW_MW01, LD_EW_MW03, LD_EW_MW04, D01_211113_TH, R01_211113_TH	**21-NOV-2013**	**30-NOV-2013**	05-DEC-2013	✓	**30-NOV-2013**	05-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
LS_EW_MW01, LS_EW_MW02, LS_EW_MW03, R01_221113_TH	**22-NOV-2013**	**30-NOV-2013**	06-DEC-2013	✓	**30-NOV-2013**	06-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
TB_221113	**25-NOV-2013**	**30-NOV-2013**	09-DEC-2013	✓	**30-NOV-2013**	09-DEC-2013	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	13	**15.4**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	**10.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	16	**12.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	13	**15.4**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	17	**11.8**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	18	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	19	**10.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	**5.9**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	**5.9**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	**5.9**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

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.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
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)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)

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

Preparation Methods	Method	Matrix	Method Descriptions
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	3796977-007	----	**Phenol**	108-95-2	64.4 %	24.5-61.9%	**Recovery greater than upper control limit**

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

Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)T: PAH Surrogates	ES1325573-013	R01_211113_TH	**2-Fluorobiphenyl**	321-60-8	105 %	20-104 %	**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.**

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MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
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NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
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WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: EDM
OFFICE: SYDNEY
PROJECT: Project Symphony
ORDER NUMBER: 224198
PROJECT MANAGER: Joe Ferrigno
SAMPLER: Tim Haydon
COC emailed to ALS? (YES) / NO
Email Reports to (will default to PM if no other addresses are listed): symphony.mcqgn@arm.com
Email Invoice to (will default to PM if no other addresses are listed):

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):

ALS QUOTE NO.: SY/794/13
SITE: ~~BAYSWATER~~ LIDDELL
CONTACT PH: 0424 970 468
SAMPLER MOBILE: 0401005181

COC SEQUENCE NUMBER (Circle)
COC: (1) 2 3 4 5 6 7
OF: 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: 5.2 °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tim Haydon.	SME	SME	Rawnsley
DATE/TIME: 26/11/13 5:30pm	DATE/TIME: 28/11/13 05:30	DATE/TIME: 28/11/13 12:00	DATE/TIME: 28/11/13 1920

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, Tl)	Selenium (Freshwater ORC)	VOC Target Scan	PCB	PFOS/PFOA	W-24 TRH(C6-C40)/BTEXN, PAH, Phenols	ULTRA TRACE ORC METALS	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LM-MW02	26/11/13 3:10pm	W	VOA-40mL N-60mL AG-125mL AP-60mL	7	X						X	X	
2	LM-MW01.	26/11/13 1:40pm	W	✓	7	X						X	X	
3	RINSATE_26113-TH	26/11/13 3:10pm	W		7	X						X	X	
4	LT-MW03	26/11/13 11am	W		7	X						X	X	
5	LT-MW02	26/11/13 9:30am	W		7	X						X	X	
6	LTMW01	25/11/13 10:45			7	X						X	X	
7	LT-MW04.	25/11/13 2:50pm			7	X						X	X	
8	LC-EW-L3.	25/11/13 12:50pm		VOA-40mL, N-60mL AG-125mL	6	X						X		
9	LC-EW-L2.	25/11/13 11:50pm			6	X						X		
10	LC-EW-L4	25/11/13 10:20am			6	X						X		
11	LC-EW-L1.	25/11/13 9AM			6	X						X		
12	DUP-25113-TH.	25/11/13 10:20am			6	X						X		
				TOTAL										

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

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☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee mail@alsglobal.com
☐NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
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☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: ERM	TURNAROUND REQUIREMENTS: ☒ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)	
OFFICE: SYDNEY	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact?	Yes / No / N/A
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13	Free ice / frozen ice bricks present upon receipt?	Yes / No / N/A
ORDER NUMBER: 224198	SITE: ~~BAYSWATER~~ / LIDDELL	Random Sample Temperature on Receipt:	°C
PROJECT MANAGER: Joe Fenning	CONTACT PH: 0424 970 468	Other comment:	
SAMPLER: Tim Haldon	SAMPLER MOBILE: 0401008 R1	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7	
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):	OF: 1 2 3 4 5 6 7	
Email Reports to (will default to PM if no other addresses are listed): SYMPHONY.MACGEN@ERM.COM			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tim Haldon	SM	SM	Rowinski
DATE/TIME: 26/11/13 5:30pm.	DATE/TIME: 28/11/13 10:30	DATE/TIME: 28/11/13 12:00	DATE/TIME: 28/11/13 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	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, Tl)	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.
13	RINSATE_251113_TM.	25/11/13 16:45.	W	VOA-40mL AG-125mL N-60mL	6	X						X		
14	TRIP SPIKE				1									QA Check
15	TRIP BLANK.				1									QA Check.
				TOTAL										

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	: **ES1325845**		
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	Page	: 1 of 3
Order number	: 224198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: LIDDELL		
Sampler	: TH	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 28-NOV-2013	Issue Date	: 28-NOV-2013 21:42
Client Requested Due Date	: 05-DEC-2013	Scheduled Reporting Date	: **05-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: ----
No. of coolers/boxes	: 1 HARD	No. of samples received	: 15
Security Seal	: Intact.	No. of samples analysed	: 15

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 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
EG093A-T : Total Metals in Saline Water Suite A by ORC-ICPMS		
RINSATE.261113_TG	- Clear Plastic Bottle - Nitric Acid; Unfiltered	- Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered
EG093B-T : Total Metals in Saline Water -Suite B by ORC-ICPMS		
RINSATE.261113_TG	- Clear Plastic Bottle - Unfiltered; Lab-acidified	- Clear HDPE (U-T ORC) - UHP 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 - EG093A-F Dissolved metals in saline water by	WATER - EG093A-T Total metals in Saline Water Suite A	WATER - EG093B-F Dissolved Metals in Saline Water Suite	WATER - EG093B-T Total Metals in Saline Water -Suite B	WATER - EP080 BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN
ES1325845-001	26-NOV-2013 15:10	LM_MW02	✓		✓		✓			
ES1325845-002	26-NOV-2013 13:40	LM_MW01	✓		✓		✓			
ES1325845-003	26-NOV-2013 15:10	RINSATE.261113_TG		✓		✓		✓		
ES1325845-004	26-NOV-2013 11:00	LT_MW03	✓		✓		✓			
ES1325845-005	26-NOV-2013 09:30	LT_MW02	✓		✓		✓			
ES1325845-006	25-NOV-2013 16:45	LTMW01	✓		✓		✓			
ES1325845-007	25-NOV-2013 14:50	LT_MW04	✓		✓		✓			
ES1325845-014	[28-NOV-2013]	TRIP SPIKE							✓	
ES1325845-015	[28-NOV-2013]	TRIP BLANK								✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-24 TRH/BTEXN/PAH/Phenols	WATER - W-27 TRH/BTEXN/PAH/Phenols/8 Metals	WATER - W-27T TRH/BTEXN/PAH/Phenols/Total 8
ES1325845-001	26-NOV-2013 15:10	LM_MW02	✓		
ES1325845-002	26-NOV-2013 13:40	LM_MW01	✓		
ES1325845-003	26-NOV-2013 15:10	RINSATE.261113_TG	✓		
ES1325845-004	26-NOV-2013 11:00	LT_MW03	✓		
ES1325845-005	26-NOV-2013 09:30	LT_MW02	✓		
ES1325845-006	25-NOV-2013 16:45	LTMW01	✓		
ES1325845-007	25-NOV-2013 14:50	LT_MW04	✓		
ES1325845-008	25-NOV-2013 12:50	LC_EW_L3		✓	
ES1325845-009	25-NOV-2013 11:50	LC_EW_L2		✓	
ES1325845-010	25-NOV-2013 10:20	LC_EW_L4		✓	

			WATER - W-24 TRH/BTEXN/PAH/Phenols	WATER - W-27 TRH/BTEXN/PAH/Phenols/8 Metals	WATER - W-27T TRH/BTEXN/PAH/Phenols/Total 8
ES1325845-011	25-NOV-2013 09:00	LC_EW_L1		✓	
ES1325845-012	25-NOV-2013 10:20	D01_251113_TH		✓	
ES1325845-013	25-NOV-2013 16:45	RINSATE_251113_TH			✓

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

THE ACCOUNTS PAYABLE

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1325845**	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	: 224198		
C-O-C number	: ----	Date Samples Received	: 28-NOV-2013
Sampler	: TH	Issue Date	: 05-DEC-2013
Site	: LIDDELL		
		No. of samples received	: 15
Quote number	: SY/794/13	No. of samples analysed	: 15

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

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

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EG020: Positive result for sample ES1325845-13 has been confirmed by reanalysis.**
- **EG035:Positive mercury results have been confirmed by re-analysis**
- **EP075(SIM): Particular samples required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.**
- **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.**
- **Total PAH reported as the sum of Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene and Benzo(g,h,i)perylene.**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LM_MW02	LM_MW01	RINSATE.261113_TG	LT_MW03	LT_MW02
				Client sampling date / time	26-NOV-2013 15:10	26-NOV-2013 13:40	26-NOV-2013 15:10	26-NOV-2013 11:00	26-NOV-2013 09:30
Compound	CAS Number	LOR	Unit		ES1325845-001	ES1325845-002	ES1325845-003	ES1325845-004	ES1325845-005
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	<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		**1.0**	**7.0**	----	**0.3**	**0.2**
Arsenic	7440-38-2	0.2	µg/L		**0.8**	**2.1**	----	**0.4**	**0.4**
Barium	7440-39-3	0.5	µg/L		**31.6**	**66.7**	----	**13.2**	**33.9**
Beryllium	7440-41-7	0.1	µg/L		<0.1	<0.1	----	**1.7**	<0.1
Boron	7440-42-8	5	µg/L		**68**	**83**	----	**640**	**420**
Cadmium	7440-43-9	0.05	µg/L		**0.46**	**1.00**	----	**2.15**	**0.11**
Chromium	7440-47-3	0.2	µg/L		<0.2	<0.2	----	<0.2	<0.2
Cobalt	7440-48-4	0.1	µg/L		**21.9**	**39.9**	----	**178**	**12.9**
Copper	7440-50-8	0.5	µg/L		**0.6**	**1.6**	----	<0.5	<0.5
Lead	7439-92-1	0.1	µg/L		**16.0**	**48.4**	----	**0.2**	**0.8**
Manganese	7439-96-5	0.5	µg/L		**1130**	**1240**	----	**7540**	**2400**
Molybdenum	7439-98-7	0.1	µg/L		**3.3**	**8.0**	----	**0.2**	**2.3**
Nickel	7440-02-0	0.5	µg/L		**36.4**	**51.7**	----	**412**	**26.0**
Thallium	7440-28-0	0.02	µg/L		**0.26**	**0.77**	----	**0.06**	**0.05**
Vanadium	7440-62-2	0.2	µg/L		**1.0**	**2.6**	----	<0.2	**0.3**
Zinc	7440-66-6	1	µg/L		**10**	**10**	----	**81**	**4**
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	LM_MW02	LM_MW01	RINSATE.261113_TG	LT_MW03	LT_MW02
				Client sampling date / time	26-NOV-2013 15:10	26-NOV-2013 13:40	26-NOV-2013 15:10	26-NOV-2013 11:00	26-NOV-2013 09:30
					ES1325845-001	ES1325845-002	ES1325845-003	ES1325845-004	ES1325845-005
EG094T: Total metals in Fresh water by ORC-ICPMS - Continued									
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	<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		<1.0	<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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LM_MW02	LM_MW01	RINSATE.261113_TG	LT_MW03	LT_MW02
				Client sampling date / time	26-NOV-2013 15:10	26-NOV-2013 13:40	26-NOV-2013 15:10	26-NOV-2013 11:00	26-NOV-2013 09:30
Compound	CAS Number	LOR	Unit		ES1325845-001	ES1325845-002	ES1325845-003	ES1325845-004	ES1325845-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ 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	**230**
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	**340**
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	**570**
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	**370**
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	**190**
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	**560**
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	**370**
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
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**25.2**	**27.5**	**28.4**	**42.6**	**40.3**
2-Chlorophenol-D4	93951-73-6	0.1	%		**62.9**	**46.4**	**72.4**	**97.3**	**93.1**
2.4.6-Tribromophenol	118-79-6	0.1	%		**70.8**	**65.6**	**69.5**	**95.4**	**105**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**75.8**	**58.4**	**53.8**	**70.5**	**59.5**
Anthracene-d10	1719-06-8	0.1	%		**100**	**107**	**58.7**	**98.4**	**75.2**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LM_MW02	LM_MW01	RINSATE.261113_TG	LT_MW03	LT_MW02
				Client sampling date / time	26-NOV-2013 15:10	26-NOV-2013 13:40	26-NOV-2013 15:10	26-NOV-2013 11:00	26-NOV-2013 09:30
Compound	CAS Number	LOR	Unit		ES1325845-001	ES1325845-002	ES1325845-003	ES1325845-004	ES1325845-005
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.1	%		104	99.2	86.7	112	106
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		112	102	96.1	107	92.3
Toluene-D8	2037-26-5	0.1	%		117	103	102	118	99.8
4-Bromofluorobenzene	460-00-4	0.1	%		97.9	96.5	90.5	112	88.8

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LTMW01	LT_MW04	LC_EW_L3	LC_EW_L2	LC_EW_L4
				Client sampling date / time	25-NOV-2013 16:45	25-NOV-2013 14:50	25-NOV-2013 12:50	25-NOV-2013 11:50	25-NOV-2013 10:20
					ES1325845-006	ES1325845-007	ES1325845-008	ES1325845-009	ES1325845-010
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		----	----	<0.001	**0.001**	**0.001**
Cadmium	7440-43-9	0.0001	mg/L		----	----	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		----	----	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		----	----	**0.002**	**0.002**	**0.001**
Lead	7439-92-1	0.001	mg/L		----	----	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		----	----	**0.028**	**0.019**	**0.008**
Zinc	7440-66-6	0.005	mg/L		----	----	**0.043**	**0.012**	**0.013**
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**	<0.2	----	----	----
Arsenic	7440-38-2	0.2	µg/L		**0.3**	**0.3**	----	----	----
Barium	7440-39-3	0.5	µg/L		**24.8**	**33.0**	----	----	----
Beryllium	7440-41-7	0.1	µg/L		<0.1	<0.1	----	----	----
Boron	7440-42-8	5	µg/L		**74**	**275**	----	----	----
Cadmium	7440-43-9	0.05	µg/L		**0.09**	<0.05	----	----	----
Chromium	7440-47-3	0.2	µg/L		<0.2	<0.2	----	----	----
Cobalt	7440-48-4	0.1	µg/L		**4.8**	**4.2**	----	----	----
Copper	7440-50-8	0.5	µg/L		**0.5**	<0.5	----	----	----
Lead	7439-92-1	0.1	µg/L		**1.6**	<0.1	----	----	----
Manganese	7439-96-5	0.5	µg/L		**371**	**382**	----	----	----
Molybdenum	7439-98-7	0.1	µg/L		**2.3**	**2.6**	----	----	----
Nickel	7440-02-0	0.5	µg/L		**9.4**	**6.2**	----	----	----
Thallium	7440-28-0	0.02	µg/L		**0.05**	<0.02	----	----	----
Vanadium	7440-62-2	0.2	µg/L		**0.5**	**0.6**	----	----	----
Zinc	7440-66-6	1	µg/L		**2**	**6**	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	<1.0	<1.0	**2.9**	<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	**17.5**	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	<2.0	<2.0	**11.7**	<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	**5.4**	<1.0

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LTMW01	LT_MW04	LC_EW_L3	LC_EW_L2	LC_EW_L4
				Client sampling date / time	25-NOV-2013 16:45	25-NOV-2013 14:50	25-NOV-2013 12:50	25-NOV-2013 11:50	25-NOV-2013 10:20
Compound	CAS Number	LOR	Unit		ES1325845-006	ES1325845-007	ES1325845-008	ES1325845-009	ES1325845-010
EP075(SIM)A: Phenolic Compounds - Continued									
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	**7.3**	<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	**1.1**
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	**7.3**	**1.1**
^ 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	**50**	**280**	**38900**	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	**800**	**60**
C15 - C28 Fraction	----	100	µg/L		<100	<100	**710**	**300**	**220**
C29 - C36 Fraction	----	50	µg/L		<50	<50	**60**	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	**770**	**1100**	**280**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	**70**	**280**	**39500**	<20

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LTMW01	LT_MW04	LC_EW_L3	LC_EW_L2	LC_EW_L4
				Client sampling date / time	25-NOV-2013 16:45	25-NOV-2013 14:50	25-NOV-2013 12:50	25-NOV-2013 11:50	25-NOV-2013 10:20
Compound	CAS Number	LOR	Unit		ES1325845-006	ES1325845-007	ES1325845-008	ES1325845-009	ES1325845-010
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	**30**	**150**	**21200**	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	<100	<100	**650**	**130**
>C16 - C34 Fraction	----	100	µg/L		<100	<100	**680**	**230**	**160**
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	**680**	**880**	**290**
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	**650**	**130**
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	**2**	**7**	**2370**	<1
Toluene	108-88-3	2	µg/L		<2	**25**	**82**	**12200**	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	**4**	**357**	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	**9**	**24**	**2240**	<2
ortho-Xylene	95-47-6	2	µg/L		<2	**4**	**12**	**1170**	<2
^ Total Xylenes	1330-20-7	2	µg/L		<2	**13**	**36**	**3410**	<2
^ Sum of BTEX	----	1	µg/L		<1	**40**	**129**	**18300**	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<50	<5
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**28.0**	**24.4**	**41.8**	**26.7**	**51.4**
2-Chlorophenol-D4	93951-73-6	0.1	%		**73.8**	**61.2**	**97.0**	**36.5**	**99.5**
2.4.6-Tribromophenol	118-79-6	0.1	%		**71.1**	**54.7**	**111**	**104**	**102**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**53.5**	**48.3**	**73.7**	**50.2**	**48.1**
Anthracene-d10	1719-06-8	0.1	%		**96.7**	**82.8**	**103**	**70.3**	**111**
4-Terphenyl-d14	1718-51-0	0.1	%		**83.1**	**74.2**	**115**	**84.3**	**112**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**94.2**	**104**	**86.1**	**105**	**117**
Toluene-D8	2037-26-5	0.1	%		**99.7**	**105**	**98.9**	**99.5**	**107**
4-Bromofluorobenzene	460-00-4	0.1	%		**93.9**	**98.1**	**87.0**	**93.0**	**100**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LC_EW_L1	D01_251113_TH	RINSATE_251113_TH	TRIP SPIKE	TRIP BLANK
				Client sampling date / time	25-NOV-2013 09:00	25-NOV-2013 10:20	25-NOV-2013 16:45	[28-NOV-2013]	[28-NOV-2013]
Compound	CAS Number	LOR	Unit		ES1325845-011	ES1325845-012	ES1325845-013	ES1325845-014	ES1325845-015
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		**0.002**	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.074**	**0.008**	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.020**	**0.006**	----	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		----	----	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L		----	----	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L		----	----	<0.001	----	----
Copper	7440-50-8	0.001	mg/L		----	----	**0.001**	----	----
Lead	7439-92-1	0.001	mg/L		----	----	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L		----	----	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L		----	----	<0.005	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		**0.0002**	<0.0001	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	----	<0.0001	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		**6.3**	<1.0	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L		<2.4	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L		**43.6**	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		**34.8**	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L		<2.4	<1.0	<1.0	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L		**23.7**	<1.0	<1.0	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<2.4	<1.0	<1.0	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<2.4	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<2.4	<1.0	<1.0	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<2.4	<1.0	<1.0	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<2.4	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L		<4.8	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LC_EW_L1	D01_251113_TH	RINSATE_251113_TH	TRIP SPIKE	TRIP BLANK
				Client sampling date / time	25-NOV-2013 09:00	25-NOV-2013 10:20	25-NOV-2013 16:45	[28-NOV-2013]	[28-NOV-2013]
					ES1325845-011	ES1325845-012	ES1325845-013	ES1325845-014	ES1325845-015
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	1.0	µg/L		**49.4**	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<2.4	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L		<2.4	**1.4**	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L		<2.4	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L		<2.4	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L		<2.4	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L		<2.4	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L		<2.4	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<2.4	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L		<2.4	<1.0	<1.0	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<2.4	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<2.4	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<2.4	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<2.4	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<2.4	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<2.4	<1.0	<1.0	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L		**49.4**	**1.4**	<0.5	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L		<1.2	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		**198000**	<20	<20	----	<20
C10 - C14 Fraction	----	50	µg/L		**3270**	**70**	<50	----	----
C15 - C28 Fraction	----	100	µg/L		**260**	**190**	<100	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		**3530**	**260**	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		**204000**	<20	<20	----	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		**110000**	<20	<20	----	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L		**1790**	**130**	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		**200**	**150**	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		**1990**	**280**	<100	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		**1560**	**130**	<100	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LC_EW_L1	D01_251113_TH	RINSATE_251113_TH	TRIP SPIKE	TRIP BLANK
				Client sampling date / time	25-NOV-2013 09:00	25-NOV-2013 10:20	25-NOV-2013 16:45	[28-NOV-2013]	[28-NOV-2013]
					ES1325845-011	ES1325845-012	ES1325845-013	ES1325845-014	ES1325845-015
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		**7670**	<1	<1	**17**	<1
Toluene	108-88-3	2	µg/L		**59700**	<2	<2	**15**	<2
Ethylbenzene	100-41-4	2	µg/L		**3060**	<2	<2	**15**	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		**15700**	<2	<2	**15**	<2
ortho-Xylene	95-47-6	2	µg/L		**7960**	<2	<2	**16**	<2
^ **Total Xylenes**	1330-20-7	2	µg/L		**23700**	<2	<2	**31**	<2
^ **Sum of BTEX**	----	1	µg/L		**94100**	<1	<1	**78**	<1
Naphthalene	91-20-3	5	µg/L		**229**	<5	<5	**17**	<5
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**26.0**	**30.0**	**30.6**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**50.9**	**65.6**	**64.1**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**56.1**	**102**	**98.0**	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**57.6**	**45.5**	**58.7**	----	----
Anthracene-d10	1719-06-8	0.1	%		**77.8**	**95.0**	**66.7**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**63.7**	**92.7**	**111**	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**89.7**	**88.0**	**116**	**113**	**112**
Toluene-D8	2037-26-5	0.1	%		**118**	**96.4**	**108**	**104**	**104**
4-Bromofluorobenzene	460-00-4	0.1	%		**98.0**	**85.9**	**106**	**97.3**	**101**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	Recovery Limits (%) 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	: **ES1325845**	Page	: 1 of 14
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 28-NOV-2013
Sampler	: TH	Issue Date	: 05-DEC-2013
Order number	: 224198		
		No. of samples received	: 15
Quote number	: SY/794/13	No. of samples analysed	: 15

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

This Quality Control Report contains the following information:

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

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

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

General Comments

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

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3187942)									
ES1325845-008	LC_EW_L3	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	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.028	0.028	0.0	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.043	0.048	9.9	No Limit
ES1325870-006	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.023	0.024	7.4	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3187941)									
ES1325845-001	LM_MW02	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1325845-012	D01_251113_TH	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: 3185708)									
ES1325781-008	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1325901-004	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: 3190471)									
ES1325845-001	LM_MW02	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.26	0.24	8.5	0% - 50%
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.46	0.45	3.5	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	21.9	19.9	9.6	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	16.0	14.8	7.5	0% - 20%
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	3.3	3.0	9.7	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.8	0.7	14.5	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	1.0	1.0	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	31.6	29.2	7.9	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	0.6	0.8	34.8	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	1130	1090	3.6	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	36.4	32.5	11.2	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	10	9	15.5	0% - 50%
		EG094A-F: Boron	7440-42-8	5	µg/L	68	71	4.7	0% - 50%

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: 3190472)									
ES1325845-001	LM_MW02	EG094B-F: Selenium	7782-49-2	0.2	µg/L	1.0	0.9	17.8	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3190476)									
ES1325901-001	Anonymous	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	0.6	0.6	0.0	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	0.4	0.4	0.0	No Limit
		EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	23.2	24.7	6.0	0% - 20%
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	6.0	6.4	6.8	0% - 20%
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	0.6	0.5	0.0	No Limit
		EG094A-T: Vanadium	7440-62-2	0.2	µg/L	1.0	1.1	0.0	No Limit
		EG094A-T: Barium	7440-39-3	0.5	µg/L	46.5	49.1	5.6	0% - 20%
		EG094A-T: Copper	7440-50-8	0.5	µg/L	29.1	31.4	7.7	0% - 20%
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	198	203	2.5	0% - 20%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	10.1	10.9	7.8	0% - 20%
		EG094A-T: Zinc	7440-66-6	1	µg/L	9	10	0.0	No Limit
		EG094A-T: Boron	7440-42-8	5	µg/L	228	239	5.0	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3190477)									
ES1325901-001	Anonymous	EG094B-T: Selenium	7782-49-2	0.2	µg/L	0.6	0.8	26.4	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3190939)									
ES1325845-008	LC_EW_L3	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
ES1325845-012	D01_251113_TH	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

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: 3190939) - continued									
ES1325845-012	D01_251113_TH	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: 3190939)									
ES1325845-008	LC_EW_L3	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
ES1325845-012	D01_251113_TH	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	1.4	<1.0	36.1	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: 3188144)									
ES1325845-001	LM_MW02	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1325845-006	LTMW01	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3190938)									
ES1325845-008	LC_EW_L3	EP071: C15 - C28 Fraction	----	100	µg/L	710	650	8.5	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	60	<50	24.6	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3188144)									
ES1325845-001	LM_MW02	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1325845-006	LTMW01	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3190938)									
ES1325845-008	LC_EW_L3	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	680	580	15.3	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080: BTEXN (QC Lot: 3188144)									
ES1325845-001	LM_MW02	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
ES1325845-006	LTMW01	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
EG020F: Dissolved Metals by ICP-MS (QCLot: 3187942)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.5	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.5	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	100	81	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.7	80	112
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.0	83	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.5	81	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.3	80	116
EG035F: Dissolved Mercury by FIMS (QCLot: 3187941)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	94.4	78	114
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3185708)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	86.2	77	115
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3190471)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	97.5	75	129
EG094A-F: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	99.4	76	120
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	102	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	98.3	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	99.7	79	121
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	103	77	125
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	93.9	74	118
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	102	79	119
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	89.2	69	127
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	101	72	128
EG094A-F: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	96.8	71	121
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	102	78	116
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	101	76	134
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3190472)								
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	101	75	125
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3190476)								
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	99.4	81	125
EG094A-T: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	105	81	117
EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	100	71	127
EG094A-T: Boron	7440-42-8	5	µg/L	<5	10 µg/L	73.7	70	130

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: 3190476) - continued								
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	98.2	77	111
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	104	78	126
EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	101	78	126
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	104	78	126
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	99.4	75	123
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	105	81	121
EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	102	77	127
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	102	82	124
EG094A-T: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	100	71	125
EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	104	82	118
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	96.2	75	129
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3190477)								
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	102	78	124
EP075(SIM)A: Phenolic Compounds (QCLot: 3190939)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	40.0	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	76.7	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	73.4	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	65.6	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	70.0	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	66.9	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	70.4	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	65.1	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	64.6	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	19.9	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3190939)								

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: 3190939) - continued								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	67.9	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	76.1	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	71.5	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	72.6	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	92.2	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	89.5	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	96.4	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	84.7	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	85.4	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	80.2	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	78.3	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	93.8	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	82.8	63.3	117
		0.5	µg/L	<0.5	----	----	----	----
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	5 µg/L	97.6	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	95.8	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	86.0	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: 3188144)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	96.2	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3190938)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	98.4	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	95.3	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	101	62	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3188144)								

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: 3188144) - continued								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	102	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3190938)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	107	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	96.6	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	102	67	127
EP080: BTEXN (QCLot: 3188144)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	86.6	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	84.9	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	91.0	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	83.5	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	88.4	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	92.3	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
EG020F: Dissolved Metals by ICP-MS (QCLot: 3187942)							
ES1325845-009	LC_EW_L2	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	100	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	93.3	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	92.9	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	101	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	90.4	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	88.0	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	105	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3187941)							
ES1325845-002	LM_MW01	EG035F: Mercury	7439-97-6	0.0100 mg/L	90.9	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3185708)							
ES1325781-009	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	104	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3190471)							
ES1325845-002	LM_MW01	EG094A-F: Arsenic	7440-38-2	50 µg/L	115	70	130
		EG094A-F: Barium	7440-39-3	50 µg/L	117	70	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	74.6	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: 3190471) - continued							
ES1325845-002	LM_MW01	EG094A-F: Cadmium	7440-43-9	12.5 µg/L	99.2	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	90.0	70	130
		EG094A-F: Cobalt	7440-48-4	50 µg/L	116	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	107	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	92.4	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	107	70	130
		EG094A-F: Vanadium	7440-62-2	50 µg/L	94.8	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	107	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3190476)							
ES1325901-002	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	100	70	130
		EG094A-T: Barium	7440-39-3	50 µg/L	101	70	130
		EG094A-T: Beryllium	7440-41-7	50 µg/L	130	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	98.0	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	100	70	130
		EG094A-T: Cobalt	7440-48-4	50 µg/L	97.6	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	94.9	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	90.3	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	95.3	70	130
		EG094A-T: Vanadium	7440-62-2	50 µg/L	102	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	94.6	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3190939)							
ES1325845-010	LC_EW_L4	EP075(SIM): Phenol	108-95-2	20 µg/L	54.3	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	77.8	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	84.3	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	93.7	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	97.1	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3190939)							
ES1325845-010	LC_EW_L4	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	89.5	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	112	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3188144)							
ES1325845-001	LM_MW02	EP080: C6 - C9 Fraction	----	325 µg/L	120	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3190938)							
ES1325845-010	LC_EW_L4	EP071: C10 - C14 Fraction	----	200 µg/L	103	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	104	77	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 Petroleum Hydrocarbons (QCLot: 3190938) - continued							
ES1325845-010	LC_EW_L4	EP071: C29 - C36 Fraction	----	200 µg/L	95.4	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3188144)							
ES1325845-001	LM_MW02	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	114	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3190938)							
ES1325845-010	LC_EW_L4	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	98.1	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	104	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	96.3	67	153
EP080: BTEXN (QCLot: 3188144)							
ES1325845-001	LM_MW02	EP080: Benzene	71-43-2	25 µg/L	82.0	70	130
		EP080: Toluene	108-88-3	25 µg/L	109	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	107	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	110	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	98.9	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	106	70	130

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

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

Sub-Matrix: **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: 3185708)										
ES1325781-009	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	104	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3187941)										
ES1325845-002	LM_MW01	EG035F: Mercury	7439-97-6	0.0100 mg/L	90.9	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3187942)										
ES1325845-009	LC_EW_L2	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	100	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	93.3	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	92.9	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	0.2 mg/L	101	----	70	130	----	----
		EG020A-F: Lead	7439-92-1	0.2 mg/L	90.4	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	88.0	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	105	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3188144)										
ES1325845-001	LM_MW02	EP080: C6 - C9 Fraction	----	325 µg/L	120	----	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: 3188144)										
ES1325845-001	LM_MW02	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	114	----	70	130	----	----
EP080: BTEXN (QCLot: 3188144)										
ES1325845-001	LM_MW02	EP080: Benzene	71-43-2	25 µg/L	82.0	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	109	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	107	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	110	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	98.9	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	106	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3190471)										
ES1325845-002	LM_MW01	EG094A-F: Arsenic	7440-38-2	50 µg/L	115	----	70	130	----	----
		EG094A-F: Barium	7440-39-3	50 µg/L	117	----	70	130	----	----
		EG094A-F: Beryllium	7440-41-7	50 µg/L	74.6	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	99.2	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	90.0	----	70	130	----	----
		EG094A-F: Cobalt	7440-48-4	50 µg/L	116	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	107	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	92.4	----	70	130	----	----
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	107	----	70	130	----	----
		EG094A-F: Vanadium	7440-62-2	50 µg/L	94.8	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	107	----	70	130	----	----
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3190476)										
ES1325901-002	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	100	----	70	130	----	----
		EG094A-T: Barium	7440-39-3	50 µg/L	101	----	70	130	----	----
		EG094A-T: Beryllium	7440-41-7	50 µg/L	130	----	70	130	----	----
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	98.0	----	70	130	----	----
		EG094A-T: Chromium	7440-47-3	50 µg/L	100	----	70	130	----	----
		EG094A-T: Cobalt	7440-48-4	50 µg/L	97.6	----	70	130	----	----
		EG094A-T: Copper	7440-50-8	50 µg/L	94.9	----	70	130	----	----
		EG094A-T: Lead	7439-92-1	50 µg/L	90.3	----	70	130	----	----
		EG094A-T: Manganese	7439-96-5	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-T: Nickel	7440-02-0	50 µg/L	95.3	----	70	130	----	----
		EG094A-T: Vanadium	7440-62-2	50 µg/L	102	----	70	130	----	----
		EG094A-T: Zinc	7440-66-6	50 µg/L	94.6	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3190938)										
ES1325845-010	LC_EW_L4	EP071: C10 - C14 Fraction	----	200 µg/L	103	----	74	150	----	----

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: 3190938) - continued										
ES1325845-010	LC_EW_L4	EP071: C15 - C28 Fraction	----	300 µg/L	104	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	95.4	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3190938)										
ES1325845-010	LC_EW_L4	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	98.1	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	104	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	96.3	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3190939)										
ES1325845-010	LC_EW_L4	EP075(SIM): Phenol	108-95-2	20 µg/L	54.3	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	77.8	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	84.3	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	93.7	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	97.1	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3190939)										
ES1325845-010	LC_EW_L4	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	89.5	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	112	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1325845**	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
Site	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 28-NOV-2013
Sampler	: TH	Issue Date	: 05-DEC-2013
Order number	: 224198		
		No. of samples received	: 15
Quote number	: SY/794/13	No. of samples analysed	: 15

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

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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

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

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

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
LC_EW_L3, LC_EW_L2, LC_EW_L4, LC_EW_L1, D01_251113_TH	**25-NOV-2013**	---	24-MAY-2014	----	**02-DEC-2013**	24-MAY-2014	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)							
RINSATE_251113_TH	**25-NOV-2013**	**02-DEC-2013**	24-MAY-2014	✓	**02-DEC-2013**	24-MAY-2014	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
LTMW01, LT_MW04, LC_EW_L3, LC_EW_L2, LC_EW_L4, LC_EW_L1, D01_251113_TH	**25-NOV-2013**	---	23-DEC-2013	----	**03-DEC-2013**	23-DEC-2013	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
LM_MW02, LM_MW01, LT_MW03, LT_MW02	**26-NOV-2013**	---	24-DEC-2013	----	**03-DEC-2013**	24-DEC-2013	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
RINSATE_251113_TH	**25-NOV-2013**	**----**	----	----	**29-NOV-2013**	23-DEC-2013	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
RINSATE.261113_TG	**26-NOV-2013**	**----**	----	----	**29-NOV-2013**	24-DEC-2013	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LTMW01, LT_MW04	**25-NOV-2013**	---	24-MAY-2014	----	**03-DEC-2013**	24-MAY-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LM_MW02, LM_MW01, LT_MW03, LT_MW02	**26-NOV-2013**	---	25-MAY-2014	----	**03-DEC-2013**	25-MAY-2014	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG094A-T)							
RINSATE.261113_TG	**26-NOV-2013**	**03-DEC-2013**	25-MAY-2014	✓	**03-DEC-2013**	25-MAY-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
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F)							
LTMW01, LT_MW04	**25-NOV-2013**	---	24-MAY-2014	----	**03-DEC-2013**	24-MAY-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F)							
LM_MW02, LM_MW01, LT_MW03, LT_MW02	**26-NOV-2013**	---	25-MAY-2014	----	**03-DEC-2013**	25-MAY-2014	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG094B-T)							
RINSATE.261113_TG	**26-NOV-2013**	**03-DEC-2013**	25-MAY-2014	✓	**03-DEC-2013**	25-MAY-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
LTMW01, LT_MW04, LC_EW_L3, LC_EW_L2, LC_EW_L4, LC_EW_L1, D01_251113_TH, RINSATE_251113_TH	**25-NOV-2013**	**02-DEC-2013**	02-DEC-2013	✓	**04-DEC-2013**	12-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP071)							
LT_MW02	**26-NOV-2013**	**02-DEC-2013**	03-DEC-2013	✓	**04-DEC-2013**	12-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP071)							
LM_MW02, LM_MW01, RINSATE.261113_TG, LT_MW03	**26-NOV-2013**	**03-DEC-2013**	03-DEC-2013	✓	**04-DEC-2013**	12-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LTMW01, LT_MW04, LC_EW_L3, LC_EW_L2, LC_EW_L4, LC_EW_L1, D01_251113_TH, RINSATE_251113_TH	**25-NOV-2013**	**02-DEC-2013**	02-DEC-2013	✓	**04-DEC-2013**	12-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LT_MW02	**26-NOV-2013**	**02-DEC-2013**	03-DEC-2013	✓	**04-DEC-2013**	12-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LM_MW02, LM_MW01, RINSATE.261113_TG, LT_MW03	**26-NOV-2013**	**03-DEC-2013**	03-DEC-2013	✓	**04-DEC-2013**	12-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LTMW01, LT_MW04, LC_EW_L3, LC_EW_L2, LC_EW_L4, LC_EW_L1, D01_251113_TH, RINSATE_251113_TH	**25-NOV-2013**	**02-DEC-2013**	02-DEC-2013	✓	**04-DEC-2013**	12-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LT_MW02	**26-NOV-2013**	**02-DEC-2013**	03-DEC-2013	✓	**04-DEC-2013**	12-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LM_MW02, LM_MW01, RINSATE.261113_TG, LT_MW03	**26-NOV-2013**	**03-DEC-2013**	03-DEC-2013	✓	**04-DEC-2013**	12-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: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) LTMW01, LT_MW04, LC_EW_L3, LC_EW_L2, LC_EW_L4, LC_EW_L1, D01_251113_TH, RINSATE_251113_TH	**25-NOV-2013**	**02-DEC-2013**	09-DEC-2013	✓	**02-DEC-2013**	09-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080) LM_MW02, LM_MW01, RINSATE.261113_TG, LT_MW03, LT_MW02	**26-NOV-2013**	**02-DEC-2013**	10-DEC-2013	✓	**02-DEC-2013**	10-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080) TRIP SPIKE, TRIP BLANK	**28-NOV-2013**	**02-DEC-2013**	12-DEC-2013	✓	**02-DEC-2013**	12-DEC-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber VOC Vial - Sulfuric Acid (EP080) LTMW01, LT_MW04, LC_EW_L3, LC_EW_L2, LC_EW_L4, LC_EW_L1, D01_251113_TH, RINSATE_251113_TH	**25-NOV-2013**	**02-DEC-2013**	09-DEC-2013	✓	**02-DEC-2013**	09-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080) LM_MW02, LM_MW01, RINSATE.261113_TG, LT_MW03, LT_MW02	**26-NOV-2013**	**02-DEC-2013**	10-DEC-2013	✓	**02-DEC-2013**	10-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080) TRIP BLANK	**28-NOV-2013**	**02-DEC-2013**	12-DEC-2013	✓	**02-DEC-2013**	12-DEC-2013	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	11	**18.2**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	15	**13.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	7	**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	7	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	17	**11.8**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	7	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**10.0**	×	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	11	**9.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	**5.9**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	11	**9.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	**5.9**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	11	**9.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	**5.9**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	**14.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
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.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
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)

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

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
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	ES1325845-002	LM_MW01	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG094T: Total metals in Fresh water by ORC-ICPMS	ES1325901-002	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.**
- **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	ES1325845-010	LC_EW_L4	**Phenol-d6**	13127-88-3	51.4 %	10.0-44 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	ES1325845-004	LT_MW03	**2-Chlorophenol-D4**	93951-73-6	97.3 %	14-94 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	ES1325845-008	LC_EW_L3	**2-Chlorophenol-D4**	93951-73-6	97.0 %	14-94 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	ES1325845-010	LC_EW_L4	**2-Chlorophenol-D4**	93951-73-6	99.5 %	14-94 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	ES1325845-008	LC_EW_L3	**4-Terphenyl-d14**	1718-51-0	115 %	32-112 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	ES1325845-010	LC_EW_L4	**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.

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
TPH - Semivolatile Fraction	1	20	5.0	10.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: ERM	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☒ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle): Custody Seal Intact? Yes No N/A
OFFICE: SYDNEY		☐ Non Standard or urgent TAT (List due date):	Free ice / Frozen ice bricks present upon receipt? Yes No N/A
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13	COC SEQUENCE NUMBER (Circle)	Random Sample Temperature on Receipt: °C
ORDER NUMBER: ~~ES1326~~ 224198	SITE: ~~BALSWATER~~ / LIDDELL	COC: 1 2 3 4 5 6 7	Other comment:
PROJECT MANAGER: JOE FERRING	CONTACT PH:	OF: 1 2 3 4 5 6 7	
SAMPLER: TIM HAMON	SAMPLER MOBILE: 0401 008 181	RELINQUISHED BY: TIM HAMON	RECEIVED BY:
COC emailed to ALS? ~~(YES)~~ NO	EDD FORMAT (or default):	DATE/TIME: 28/11/13 6:35AM	DATE/TIME: 29/11 16:00
Email Reports to (will default to PM if no other addresses are listed): Symphony-macge@erm.com		RELINQUISHED BY:	RECEIVED BY:
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME: 29/11 17:00	DATE/TIME: 29/11/13 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	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	Trip blank	25/11/13	W		1									QA check
2	Trip spike	25/11/13.			1									QA check
3	LN-MW02	27/11/13 9.10	W	VOA-40mL-4 1xN-60mL AG-100mL-3 1xAP	9	X			X	X		X		
4	LN_MW06	27/11/13		AG-3 1xAP VOA-4 1xN	9	X			X	X		X		
5	LN-MW05	27/11/13 3:45	W	VOA-4 1xN AG-3 1xAP	9	X			X	X		X		
6	LN_MW07	27/11/13 12:10	W	VOA-4 1xN AG-3 1xAP	9	X			X	X		X		
7	LN_MW01	27/11/13 10:35	W	VOA-4 1xN AG-3 1xAP	9	X			X	X		X		
8	TRIPLICATE_271113_TH	27/11/13 10:35	W	VOA-3 1xN AG-3 1xAP	7	X			X	X		X		Interlab QA check
9	LN-MW02	27/11/13 9:10	W	VOA-3 1xAP AG-3 1xAP	6									
				TOTAL										

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 Pr
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
ES1326080

Telephone : +61-2-8784 8555

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES1326080**		
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	: 224198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: LIDDELL		
Sampler	: TIM.H	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 29-NOV-2013	Issue Date	: 02-DEC-2013 16:31
Client Requested Due Date	: 06-DEC-2013	Scheduled Reporting Date	: **06-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 8.3'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.**
- **Triplicate_27/11/13 send to Envirolab**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP074 (water) Volatile Organic Compounds	WATER - EP080 BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-27 TRH/BTEXN/PAH/Phenols/8 Metals
ES1326080-001	25-NOV-2013 15:00	TRIP BLANK				✓	
ES1326080-002	25-NOV-2013 15:00	TRIP SPIKE			✓		
ES1326080-003	27-NOV-2013 09:10	LN_MW02	✓	✓			✓
ES1326080-004	27-NOV-2013 15:00	LN_MW06	✓	✓			✓
ES1326080-005	27-NOV-2013 15:45	LN_MW05	✓	✓			✓
ES1326080-006	27-NOV-2013 12:10	LN_MW07	✓	✓			✓
ES1326080-007	27-NOV-2013 10:35	LN_MW01	✓	✓			✓

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
- A4 - AU Tax Invoice (INV)	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	: **ES1326080**	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	: 224198		
C-O-C number	: ----	Date Samples Received	: 29-NOV-2013
Sampler	: TIM.H	Issue Date	: 06-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
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TRIP BLANK	TRIP SPIKE	LN_MW02	LN_MW06	LN_MW05
				Client sampling date / time	25-NOV-2013 15:00	25-NOV-2013 15:00	27-NOV-2013 09:10	27-NOV-2013 15:00	27-NOV-2013 15:45
Compound	CAS Number	LOR	Unit		ES1326080-001	ES1326080-002	ES1326080-003	ES1326080-004	ES1326080-005
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		----	----	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L		----	----	<0.0001	**0.0001**	<0.0001
Chromium	7440-47-3	0.001	mg/L		----	----	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		----	----	**0.001**	**0.002**	**0.002**
Lead	7439-92-1	0.001	mg/L		----	----	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		----	----	**0.007**	**0.010**	**0.010**
Zinc	7440-66-6	0.005	mg/L		----	----	**0.007**	**0.020**	**0.014**
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	----	<0.0001	<0.0001	<0.0001
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
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TRIP BLANK	TRIP SPIKE	LN_MW02	LN_MW06	LN_MW05
				Client sampling date / time	25-NOV-2013 15:00	25-NOV-2013 15:00	27-NOV-2013 09:10	27-NOV-2013 15:00	27-NOV-2013 15:45
Compound	CAS Number	LOR	Unit		ES1326080-001	ES1326080-002	ES1326080-003	ES1326080-004	ES1326080-005
EP074D: Fumigants - Continued									
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
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

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	TRIP BLANK	TRIP SPIKE	LN_MW02	LN_MW06	LN_MW05
				Client sampling date / time	25-NOV-2013 15:00	25-NOV-2013 15:00	27-NOV-2013 09:10	27-NOV-2013 15:00	27-NOV-2013 15:45
					ES1326080-001	ES1326080-002	ES1326080-003	ES1326080-004	ES1326080-005
EP074F: Halogenated Aromatic Compounds - Continued									
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
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

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	TRIP BLANK	TRIP SPIKE	LN_MW02	LN_MW06	LN_MW05
				Client sampling date / time	25-NOV-2013 15:00	25-NOV-2013 15:00	27-NOV-2013 09:10	27-NOV-2013 15:00	27-NOV-2013 15:45
					ES1326080-001	ES1326080-002	ES1326080-003	ES1326080-004	ES1326080-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Fluoranthene	206-44-0	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L		----	----	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		----	----	<1.0	<1.0	<1.0
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L		----	----	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L		----	----	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		----	----	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		----	----	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		----	----	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		----	----	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	----	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L		----	----	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		----	----	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		----	----	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		----	----	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		----	----	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	**15**	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	**16**	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	**15**	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	**15**	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	**15**	<2	<2	<2

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TRIP BLANK	TRIP SPIKE	LN_MW02	LN_MW06	LN_MW05
				Client sampling date / time	25-NOV-2013 15:00	25-NOV-2013 15:00	27-NOV-2013 09:10	27-NOV-2013 15:00	27-NOV-2013 15:45
Compound	CAS Number	LOR	Unit		ES1326080-001	ES1326080-002	ES1326080-003	ES1326080-004	ES1326080-005
EP080: BTEXN - Continued									
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	**30**	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	**76**	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	**18**	<5	<5	<5
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	**85.9**	**122**	**90.9**
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	----	**112**	**116**	**118**
Toluene-D8	2037-26-5	0.1	%		----	----	**113**	**109**	**116**
4-Bromofluorobenzene	460-00-4	0.1	%		----	----	**106**	**105**	**108**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		----	----	**38.7**	**37.1**	**30.2**
2-Chlorophenol-D4	93951-73-6	0.1	%		----	----	**72.0**	**72.9**	**62.2**
2.4.6-Tribromophenol	118-79-6	0.1	%		----	----	**103**	**88.3**	**80.4**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		----	----	**68.6**	**62.3**	**58.2**
Anthracene-d10	1719-06-8	0.1	%		----	----	**89.8**	**96.5**	**102**
4-Terphenyl-d14	1718-51-0	0.1	%		----	----	**105**	**108**	**80.5**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**111**	**112**	**102**	**106**	**108**
Toluene-D8	2037-26-5	0.1	%		**94.5**	**103**	**105**	**101**	**107**
4-Bromofluorobenzene	460-00-4	0.1	%		**97.5**	**99.8**	**101**	**99.1**	**103**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LN_MW07	LN_MW01	----	----	----
				Client sampling date / time	27-NOV-2013 12:10	27-NOV-2013 10:35	----	----	----
Compound	CAS Number	LOR	Unit		ES1326080-006	ES1326080-007	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0004**	**0.0001**	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		**0.002**	**0.002**	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.009**	**0.024**	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.031**	**0.025**	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		<5	<5	----	----	----
Isopropylbenzene	98-82-8	5	µg/L		<5	<5	----	----	----
n-Propylbenzene	103-65-1	5	µg/L		<5	<5	----	----	----
1.3.5-Trimethylbenzene	108-67-8	5	µg/L		<5	<5	----	----	----
sec-Butylbenzene	135-98-8	5	µg/L		<5	<5	----	----	----
1.2.4-Trimethylbenzene	95-63-6	5	µg/L		<5	<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	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LN_MW07	LN_MW01	----	----	----
				Client sampling date / time	27-NOV-2013 12:10	27-NOV-2013 10:35	----	----	----
Compound	CAS Number	LOR	Unit		ES1326080-006	ES1326080-007	----	----	----
EP074D: Fumigants - Continued									
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	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	LN_MW07	LN_MW01	----	----	----
			Client sampling date / time	27-NOV-2013 12:10	27-NOV-2013 10:35	----	----	----
Compound	CAS Number	LOR	Unit	ES1326080-006	ES1326080-007	----	----	----
EP074F: Halogenated Aromatic Compounds - Continued								
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	<5	<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	<7	<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	<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	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	LN_MW07	LN_MW01	----	----	----
			Client sampling date / time	27-NOV-2013 12:10	27-NOV-2013 10:35	----	----	----
Compound	CAS Number	LOR	Unit	ES1326080-006	ES1326080-007	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LN_MW07	LN_MW01	----	----	----
				Client sampling date / time	27-NOV-2013 12:10	27-NOV-2013 10:35	----	----	----
Compound	CAS Number	LOR	Unit		ES1326080-006	ES1326080-007	----	----	----
EP080: BTEXN - Continued									
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		96.9	112	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		119	116	----	----	----
Toluene-D8	2037-26-5	0.1	%		120	116	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		109	108	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		33.0	28.5	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		59.2	58.6	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		79.2	73.0	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		64.8	53.5	----	----	----
Anthracene-d10	1719-06-8	0.1	%		102	96.5	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		84.4	78.5	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		109	107	----	----	----
Toluene-D8	2037-26-5	0.1	%		110	108	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		102	104	----	----	----

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	: **ES1326080**	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	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 29-NOV-2013
Sampler	: TIM.H	Issue Date	: 06-DEC-2013
Order number	: 224198		
		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
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: 3192376)									
ES1326042-001	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	0.016	0.017	0.0	0% - 50%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.009	0.008	12.4	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.030	0.026	13.8	No Limit
ES1326058-001	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	0.016	0.014	13.0	0% - 50%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.004	0.004	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.017	0.017	0.0	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.103	0.092	10.7	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 3192374)									
ES1325947-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1325994-002	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: 3192378)									
ES1326080-007	LN_MW01	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3194056)									
ES1326080-004	LN_MW06	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3191999)									
ES1326080-003	LN_MW02	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
ES1326179-001	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

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: 3191999) - continued									
ES1326179-001	Anonymous	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: 3191999)									
ES1326080-003	LN_MW02	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
ES1326179-001	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: 3191999)									
ES1326080-003	LN_MW02	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
ES1326179-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 3191999)									
ES1326080-003	LN_MW02	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
ES1326179-001	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: 3191999)									
ES1326080-003	LN_MW02	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

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: 3191999) - continued									
ES1326080-003	LN_MW02	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
ES1326179-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	37	40	6.7	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	96	98	1.9	0% - 50%
		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

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: 3191999) - continued									
ES1326179-001	Anonymous	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: 3191999)									
ES1326080-003	LN_MW02	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
ES1326179-001	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: 3191999)									
ES1326080-003	LN_MW02	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
ES1326179-001	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: 3191999)									
ES1326080-003	LN_MW02	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
ES1326179-001	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3194058)									
ES1326080-004	LN_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

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: 3194058) - continued									
ES1326080-004	LN_MW06	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: 3194058)									
ES1326080-004	LN_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	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3191045)									
ES1326080-001	TRIP BLANK	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1326081-009	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3192000)									
ES1326080-003	LN_MW02	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1326179-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	60	60	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3194057)									
ES1326080-004	LN_MW06	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3191045)									
ES1326080-001	TRIP BLANK	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1326081-009	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: 3192000)									

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: 3192000) - continued									
ES1326080-003	LN_MW02	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1326179-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	60	70	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3194057)									
ES1326080-004	LN_MW06	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080: BTEXN (QC Lot: 3191045)									
ES1326080-001	TRIP BLANK	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
ES1326081-009	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: 3192000)									
ES1326080-003	LN_MW02	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
ES1326179-001	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

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: 3192376)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	85.6	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	110	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	93.8	81	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	86.9	80	112
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	101	83	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.8	81	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	91.4	80	116
EG035F: Dissolved Mercury by FIMS (QCLot: 3192374)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	93.3	78	114
EG035F: Dissolved Mercury by FIMS (QCLot: 3192378)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	92.3	78	114
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3194056)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	83.0	61.6	107
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3191999)								
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	96.5	74	118
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	96.5	75	121
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	95.2	67	123
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	95.4	70	122
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	96.0	69	123
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	95.9	71	121
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	97.8	70	122
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	93.4	67	123
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	91.6	62	126
EP074B: Oxygenated Compounds (QCLot: 3191999)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	96.8	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	104	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	118	61	139
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	114	65	137
EP074C: Sulfonated Compounds (QCLot: 3191999)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	73.4	72.8	127
EP074D: Fumigants (QCLot: 3191999)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	90.1	61	119
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	96.2	76	120
EP074: cis-1.3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	77.2	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: 3191999) - continued								
EP074: trans-1.3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	95.9	61	119
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	103	69	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 3191999)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	66.5	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	75.2	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	71.5	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	80.8	56	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	73.4	63	135
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	81.1	65	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	81.9	69	123
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	86.3	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	86.4	71	119
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	98.5	75	119
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	100	77	117
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	89.4	61	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	93.8	73	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	84.7	63	121
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	101	78	122
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	92.6	74	120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	96.2	74	118
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	106	75	123
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	104	79	121
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	86.2	72	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	76.4	66	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	100	60	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	103	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	104	70	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	105	74	128
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	91.1	71.8	126
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	84.7	58	132
EP074F: Halogenated Aromatic Compounds (QCLot: 3191999)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	97.0	80	118
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	97.4	76	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	98.8	71	121
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	96.7	71	121
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	93.9	74	120
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	96.1	72	120
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	97.1	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: 3191999) - continued								
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	87.8	60	126
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	89.3	67	125
EP074G: Trihalomethanes (QCLot: 3191999)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	95.7	76	118
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	71.3	64	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	86.6	65	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	96.4	73.5	126
EP074H: Naphthalene (QCLot: 3191999)								
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	96.4	61	125
EP075(SIM)A: Phenolic Compounds (QCLot: 3194058)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	48.0	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	72.8	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	69.2	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	74.6	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	79.0	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	67.3	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	91.0	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	73.9	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	79.2	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	63.4	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	67.7	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	31.4	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3194058)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	69.9	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	81.1	63.6	114
		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: 3194058) - continued								
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	83.9	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	87.8	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	75.2	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	86.6	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	97.0	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	92.0	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	89.0	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	77.0	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	102	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	100	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	71.6	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	82.2	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	83.6	59.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3191045)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	104	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192000)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	96.1	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3194057)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	95.2	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	104	62	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3191045)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	108	75	127

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: 3192000)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	97.5	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3194057)								
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	92.5	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	100	67	127
EP080: BTEXN (QCLot: 3191045)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	98.1	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	108	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	103	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	106	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	108	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	105	70	124
EP080: BTEXN (QCLot: 3192000)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	102	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	93.7	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	96.1	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	94.4	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	99.8	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	92.9	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
EG020F: Dissolved Metals by ICP-MS (QCLot: 3192376)							
ES1326042-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	108	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	107	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	94.7	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	94.2	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	102	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	92.5	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	112	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
EG035F: Dissolved Mercury by FIMS (QCLot: 3192374)							
ES1325947-003	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	72.4	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3192378)							
ES1326080-007	LN_MW01	EG035F: Mercury	7439-97-6	0.0100 mg/L	77.4	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3194056)							
ES1326080-003	LN_MW02	EP066: Total Polychlorinated biphenyls	----	10 µg/L	87.5	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3191999)							
ES1326080-003	LN_MW02	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	95.6	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	106	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3191999)							
ES1326080-003	LN_MW02	EP074: Chlorobenzene	108-90-7	25 µg/L	114	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3194058)							
ES1326080-003	LN_MW02	EP075(SIM): Phenol	108-95-2	20 µg/L	39.3	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	74.7	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	74.5	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	79.4	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	52.9	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3194058)							
ES1326080-003	LN_MW02	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	76.2	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	96.8	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3191045)							
ES1326080-001	TRIP BLANK	EP080: C6 - C9 Fraction	----	325 µg/L	124	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192000)							
ES1326080-003	LN_MW02	EP080: C6 - C9 Fraction	----	325 µg/L	109	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3194057)							
ES1326080-003	LN_MW02	EP071: C10 - C14 Fraction	----	200 µg/L	105	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	98.2	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	102	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3191045)							
ES1326080-001	TRIP BLANK	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	120	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192000)							
ES1326080-003	LN_MW02	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	109	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3194057)							
ES1326080-003	LN_MW02	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	103	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	98.5	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	101	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: BTEXN (QCLot: 3191045)							
ES1326080-001	TRIP BLANK	EP080: Benzene	71-43-2	25 µg/L	97.8	70	130
		EP080: Toluene	108-88-3	25 µg/L	109	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	115	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	114	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	115	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	109	70	130
EP080: BTEXN (QCLot: 3192000)							
ES1326080-003	LN_MW02	EP080: Benzene	71-43-2	25 µg/L	106	70	130
		EP080: Toluene	108-88-3	25 µg/L	106	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	102	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	110	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	106	70	130

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

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

Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3191045)										
ES1326080-001	TRIP BLANK	EP080: C6 - C9 Fraction	----	325 µg/L	124	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3191045)										
ES1326080-001	TRIP BLANK	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	120	----	70	130	----	----
EP080: BTEXN (QCLot: 3191045)										
ES1326080-001	TRIP BLANK	EP080: Benzene	71-43-2	25 µg/L	97.8	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	109	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	115	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	114	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	115	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	109	----	70	130	----	----
EP074E: Halogenated Aliphatic Compounds (QCLot: 3191999)										
ES1326080-003	LN_MW02	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	95.6	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	25 µg/L	106	----	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
EP074F: Halogenated Aromatic Compounds (QCLot: 3191999)										
ES1326080-003	LN_MW02	EP074: Chlorobenzene	108-90-7	25 µg/L	114	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192000)										
ES1326080-003	LN_MW02	EP080: C6 - C9 Fraction	----	325 µg/L	109	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192000)										
ES1326080-003	LN_MW02	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	109	----	70	130	----	----
EP080: BTEXN (QCLot: 3192000)										
ES1326080-003	LN_MW02	EP080: Benzene	71-43-2	25 µg/L	106	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	106	----	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	102	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	110	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	106	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3192374)										
ES1325947-003	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	72.4	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3192376)										
ES1326042-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	108	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	107	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	94.7	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	0.2 mg/L	94.2	----	70	130	----	----
		EG020A-F: Lead	7439-92-1	0.2 mg/L	102	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	92.5	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	112	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3192378)										
ES1326080-007	LN_MW01	EG035F: Mercury	7439-97-6	0.0100 mg/L	77.4	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3194056)										
ES1326080-003	LN_MW02	EP066: Total Polychlorinated biphenyls	----	10 µg/L	87.5	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3194057)										
ES1326080-003	LN_MW02	EP071: C10 - C14 Fraction	----	200 µg/L	105	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	98.2	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	102	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3194057)										
ES1326080-003	LN_MW02	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	103	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	98.5	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	101	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3194058)										
ES1326080-003	LN_MW02	EP075(SIM): Phenol	108-95-2	20 µg/L	39.3	----	20	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
EP075(SIM)A: Phenolic Compounds (QCLot: 3194058) - continued										
ES1326080-003	LN_MW02	EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	74.7	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	74.5	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	79.4	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	52.9	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3194058)										
ES1326080-003	LN_MW02	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	76.2	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	96.8	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1326080**	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	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 29-NOV-2013
Sampler	: TIM.H	Issue Date	: 06-DEC-2013
Order number	: 224198		
		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
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**---**	26-MAY-2014	----	**04-DEC-2013**	26-MAY-2014	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**---**	25-DEC-2013	----	**05-DEC-2013**	25-DEC-2013	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	04-DEC-2013	✓	**05-DEC-2013**	13-JAN-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	04-DEC-2013	✓	**05-DEC-2013**	13-JAN-2014	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	11-DEC-2013	✓	**04-DEC-2013**	11-DEC-2013	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	11-DEC-2013	✓	**04-DEC-2013**	11-DEC-2013	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	11-DEC-2013	✓	**04-DEC-2013**	11-DEC-2013	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	11-DEC-2013	✓	**04-DEC-2013**	11-DEC-2013	✓
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	11-DEC-2013	✓	**04-DEC-2013**	11-DEC-2013	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	11-DEC-2013	✓	**04-DEC-2013**	11-DEC-2013	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	11-DEC-2013	✓	**04-DEC-2013**	11-DEC-2013	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	11-DEC-2013	✓	**04-DEC-2013**	11-DEC-2013	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	04-DEC-2013	✓	**05-DEC-2013**	13-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	04-DEC-2013	✓	**05-DEC-2013**	13-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: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
TRIP BLANK, TRIP SPIKE	**25-NOV-2013**	**03-DEC-2013**	09-DEC-2013	✓	**03-DEC-2013**	09-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	11-DEC-2013	✓	**04-DEC-2013**	11-DEC-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber VOC Vial - Sulfuric Acid (EP080)							
TRIP BLANK	**25-NOV-2013**	**03-DEC-2013**	09-DEC-2013	✓	**03-DEC-2013**	09-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
LN_MW02, LN_MW06, LN_MW05, LN_MW07, LN_MW01	**27-NOV-2013**	**04-DEC-2013**	11-DEC-2013	✓	**04-DEC-2013**	11-DEC-2013	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	3	21	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	**20.0**	**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
TPH - Semivolatile Fraction	EP071	1	5	**20.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	38	**10.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	2	21	**9.5**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	**20.0**	**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
TPH - Semivolatile Fraction	EP071	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	38	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	2	21	**9.5**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	**20.0**	**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
TPH - Semivolatile Fraction	EP071	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	38	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	2	21	**9.5**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	**20.0**	**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
TPH - Semivolatile Fraction	EP071	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	38	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
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)

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

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

Regular Sample Surrogates

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

Outliers : Analysis Holding Time Compliance

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

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

Outliers : Frequency of Quality Control Samples

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

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

CRC

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

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Environmental Division Sydney

Work Order

ES1326216

Telephone : +61-2-8784 8555

CLIENT: ERM	TURNAROUND REQUIREMENTS: ☒ Standard TAT (List due date): (Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):		FOR LABORATORY USE: Custody Seal Intact? Free ice / frozen ice bricks pres receipt? Random Sample Temperature Other comment:
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: 224198	SITE: ~~BAYSWATER~~ / LIDDELL		
PROJECT MANAGER: Jane Ferrin	CONTACT PH: ~~0429~~ 0424970968		
SAMPLER: Tim Hayden	SAMPLER MOBILE: 0401 008 181	RELINQUISHED BY: Tim Hayden.	RECEIVED BY: [signature]
COC emailed to ALS? (YES) / NO	EDD FORMAT (or default):	DATE/TIME: 29/11/13 3pm	DATE/TIME: 29/11 1650
Email Reports to (will default to PM if no other addresses are listed): Symphony.Manager@erm.com			
Email Invoice to (will default to PM if no other addresses are listed):			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

RELINQUISHED BY: [signature] DATE/TIME: 29/11/13 1700

RAZ 29/11/13 1920

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, Tl)	Selenium (Freshwater ORC)	VOC Target Scan	PCB	PFOS/PFOA	W-24 TRH(C6-C40)/BTEXN, PAH, Phenols	Ultra trace ORC	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LP_MW05.	28/11/13 9AM.	W	2xAG 1xAP 3xVOA 1xN	7	X						X	X	
2	LP_MW03	28/11/13 2:45PM		" "	7	X						X	X	
3	LP_MW04	28/11/13 2pm		" "	7	X						X	X	
4	LP_MW02	28/11/13 12:10PM		" "	7	X						X	X	
5	LN_MW04	28/11/13 10:40AM		2xAG 1xAP 3xVOA. 1xN.	~~8~~ 9	X			X	X		X	X	
6	LP_MW02.	28/11/13 4:10PM		2xAG 1xAP 3xVOA 1xN	7	X						X	X	
7	RINSATE_281113_TH	28/11/13 4:10pm.		" "	7	X						X	X	
8	TRIP_BLANK													LAB QA/QC.
9	TRIP_SPIKE.													LAB QA/QC.
10	RINSATE_271113_TH	28/11/13 9am.		3xAG 4xVOA 1xN 1xAP	9	X			X	X		X	X	
11	LA_MW01	29/11/13 8:30AM		3x AG 3xVOA 1xAP 1xN	7	X						X		
12	LA MW03	29/11/13 10AM		" "	7	X						X		
				TOTAL										

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

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com

☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

☐NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com

☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com

☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townesville.environmental@alsglobal.com

☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: ERM

OFFICE: SYDNEY

PROJECT: Project Symphony

ORDER NUMBER: 324198

PROJECT MANAGER: Joe Ferro

SAMPLER: Tim Hayden

COC emailed to ALS? ~~YES~~ NO

Email Reports to (will default to PM if no other addresses are listed): [redacted]

Email Invoice to (will default to PM if no other addresses are listed): [redacted]

TURNAROUND REQUIREMENTS: ☒ Standard TAT (List due date):

(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SY/794/13

SITE: ~~BATSWATER~~ LIDDELL

CONTACT PH: 0424 970 468

SAMPLER MOBILE: 0401 008 181

EDD FORMAT (or default):

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 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: °C

Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tim Hayden			KAR
DATE/TIME: 29/11/13 3pm	DATE/TIME: 29/11 16.50	DATE/TIME:	DATE/TIME: 29/11/13 1920

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: symphony.manager@erm.com.

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, Tl)	Selenium (Freshwater ORC)	VOC Target Scan	PCB	PFOS/PFOA	W-24 TRH(C6-C40)/BTEXN, PAH, Phenols	Ultra Trace ORC	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	LE_MW02	29/11/13 1:30pm	W	2AR 1AP 3VOA 2xN.	7	X						X	X	
14	LA_MW02	29/11/13 12:10pm	W	" "	7	X						X	X	
				TOTAL										

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	: **ES1326216**		
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	Page	: 1 of 3
Order number	: 0224198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: LIDDELL		
Sampler	: T.H	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 29-NOV-2013	Issue Date	: 03-DEC-2013 14:47
Client Requested Due Date	: 06-DEC-2013	Scheduled Reporting Date	: **06-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 5.4'C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 14
Security Seal	: Intact.	No. of samples analysed	: 14

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
- 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 - EG093A-F Dissolved metals in saline water by ORC-ICPMS	WATER - EG093B-F Dissolved Metals in Saline Water Suite B by	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP074 (water) Volatile Organic Compounds	WATER - EP080 BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1326216-001	28-NOV-2013 09:00	LP_MW05	✓							✓
	28-NOV-2013 13:30	LP_MW05		✓	✓					
ES1326216-002	28-NOV-2013 13:30	LP_MW03		✓	✓					
	28-NOV-2013 14:45	LP_MW03	✓							✓
ES1326216-003	28-NOV-2013 13:30	LP_MW04		✓	✓					
	28-NOV-2013 14:00	LP_MW04	✓							✓
ES1326216-004	28-NOV-2013 12:10	LP_MW01	✓							✓
	28-NOV-2013 13:30	LP_MW01		✓	✓					
ES1326216-005		LN_MW04		✓	✓					
	28-NOV-2013 10:40	LN_MW04	✓			✓	✓			✓
ES1326216-006	28-NOV-2013 13:30	LP_MW02		✓	✓					
	28-NOV-2013 16:10	LP_MW02	✓							✓
ES1326216-008	28-NOV-2013 15:00	TRIP_BLANK							✓	
ES1326216-009	28-NOV-2013 15:00	TRIP_SPIKE						✓		
ES1326216-013	28-NOV-2013 13:30	LE_MW02		✓	✓					
	29-NOV-2013 13:30	LE_MW02	✓							✓
ES1326216-014	28-NOV-2013 13:30	LA_MW02		✓	✓					
	29-NOV-2013 12:10	LA_MW02	✓							✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-27 TRH/BTEXN/PAH/Phenols/8 Metals	WATER - W-27T TRH/BTEXN/PAH/Phenols/Total 8 Metals
ES1326216-007	28-NOV-2013 16:10	R01_281113_TH		✓
ES1326216-010	28-NOV-2013 09:00	R01_271113_TH		✓
ES1326216-011	29-NOV-2013 08:30	LA_MW01	✓	
ES1326216-012	29-NOV-2013 10:00	LA_MW03	✓	

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
- A4 - AU Tax Invoice (INV)	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	: **ES1326216**	Page	: 1 of 14
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224198		
C-O-C number	: ----	Date Samples Received	: 29-NOV-2013
Sampler	: T.H	Issue Date	: 06-DEC-2013
Site	: LIDDELL		
		No. of samples received	: 14
Quote number	: SY/794/13	No. of samples analysed	: 14

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*
Pabi Subba	Senior Organic Chemist	Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EG035: Poor matrix spike recovery was obtained for Mercury on sample ES1326215#1due to matrix interference. Confirmed by reanalysis**
- **EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LP_MW05	LP_MW03	LP_MW04	LP_MW01	LN_MW04
				Client sampling date / time	28-NOV-2013 13:30	28-NOV-2013 14:45	28-NOV-2013 14:00	28-NOV-2013 13:30	28-NOV-2013 10:40
Compound	CAS Number	LOR	Unit		ES1326216-001	ES1326216-002	ES1326216-003	ES1326216-004	ES1326216-005
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**	**0.8**	**0.2**	**0.7**	**1.0**
Arsenic	7440-38-2	0.2	µg/L		**0.7**	**1.2**	**3.3**	**0.8**	**0.5**
Barium	7440-39-3	0.5	µg/L		**19.8**	**32.2**	**35.3**	**54.6**	**43.5**
Beryllium	7440-41-7	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	**0.5**
Boron	7440-42-8	5	µg/L		**49**	**665**	**532**	**321**	**76**
Cadmium	7440-43-9	0.05	µg/L		<0.05	**0.12**	<0.05	**0.06**	**0.61**
Chromium	7440-47-3	0.2	µg/L		<0.2	<0.2	<0.2	**0.3**	**0.4**
Cobalt	7440-48-4	0.1	µg/L		**2.6**	**48.5**	**3.4**	**4.9**	**161**
Copper	7440-50-8	0.5	µg/L		<0.5	**1.4**	<0.5	<0.5	**2.5**
Lead	7439-92-1	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	**0.3**
Manganese	7439-96-5	0.5	µg/L		**128**	**3450**	**1520**	**1000**	**1920**
Molybdenum	7439-98-7	0.1	µg/L		**0.7**	**2.8**	**2.7**	**1.0**	**0.1**
Nickel	7440-02-0	0.5	µg/L		**3.1**	**31.8**	**3.7**	**7.5**	**102**
Thallium	7440-28-0	0.02	µg/L		**0.09**	**0.22**	<0.02	**0.05**	**0.25**
Vanadium	7440-62-2	0.2	µg/L		**0.4**	**0.3**	**0.2**	**1.3**	**0.5**
Zinc	7440-66-6	1	µg/L		**7**	**27**	**6**	**18**	**140**
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	LP_MW05	LP_MW03	LP_MW04	LP_MW01	LN_MW04
				Client sampling date / time	28-NOV-2013 13:30	28-NOV-2013 14:45	28-NOV-2013 14:00	28-NOV-2013 13:30	28-NOV-2013 10:40
					ES1326216-001	ES1326216-002	ES1326216-003	ES1326216-004	ES1326216-005
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)				Client sample ID	LP_MW05	LP_MW03	LP_MW04	LP_MW01	LN_MW04
				Client sampling date / time	28-NOV-2013 13:30	28-NOV-2013 14:45	28-NOV-2013 14:00	28-NOV-2013 13:30	28-NOV-2013 10:40
Compound	CAS Number	LOR	Unit		ES1326216-001	ES1326216-002	ES1326216-003	ES1326216-004	ES1326216-005
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	LP_MW05	LP_MW03	LP_MW04	LP_MW01	LN_MW04
				Client sampling date / time	28-NOV-2013 13:30	28-NOV-2013 14:45	28-NOV-2013 14:00	28-NOV-2013 13:30	28-NOV-2013 10:40
Compound	CAS Number	LOR	Unit		ES1326216-001	ES1326216-002	ES1326216-003	ES1326216-004	ES1326216-005
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	**1.6**	<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	**1.6**	<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	LP_MW05	LP_MW03	LP_MW04	LP_MW01	LN_MW04
				Client sampling date / time	28-NOV-2013 13:30	28-NOV-2013 14:45	28-NOV-2013 14:00	28-NOV-2013 13:30	28-NOV-2013 10:40
Compound	CAS Number	LOR	Unit		ES1326216-001	ES1326216-002	ES1326216-003	ES1326216-004	ES1326216-005
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
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	----	84.3
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	----	----	----	116
Toluene-D8	2037-26-5	0.1	%		----	----	----	----	122
4-Bromofluorobenzene	460-00-4	0.1	%		----	----	----	----	108
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		18.0	18.1	32.5	29.4	37.8
2-Chlorophenol-D4	93951-73-6	0.1	%		33.3	32.9	66.1	54.7	63.9
2.4.6-Tribromophenol	118-79-6	0.1	%		44.3	45.2	83.6	59.0	71.3
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		36.9	32.2	69.2	55.1	62.6
Anthracene-d10	1719-06-8	0.1	%		50.9	48.3	102	87.6	103
4-Terphenyl-d14	1718-51-0	0.1	%		47.3	47.9	100	85.5	99.5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		103	92.8	106	100	122
Toluene-D8	2037-26-5	0.1	%		117	97.6	115	104	114
4-Bromofluorobenzene	460-00-4	0.1	%		102	82.0	97.8	90.3	108

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LP_MW02	R01_281113_TH	TRIP_BLANK	TRIP_SPIKE	R01_271113_TH
				Client sampling date / time	28-NOV-2013 16:10	28-NOV-2013 16:10	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 09:00
Compound	CAS Number	LOR	Unit		ES1326216-006	ES1326216-007	ES1326216-008	ES1326216-009	ES1326216-010
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		----	<0.001	----	----	<0.001
Cadmium	7440-43-9	0.0001	mg/L		----	<0.0001	----	----	<0.0001
Chromium	7440-47-3	0.001	mg/L		----	<0.001	----	----	<0.001
Copper	7440-50-8	0.001	mg/L		----	<0.001	----	----	<0.001
Lead	7439-92-1	0.001	mg/L		----	<0.001	----	----	<0.001
Nickel	7440-02-0	0.001	mg/L		----	<0.001	----	----	<0.001
Zinc	7440-66-6	0.005	mg/L		----	<0.005	----	----	<0.005
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	----	----	<0.0001
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Selenium	7782-49-2	0.2	µg/L		**21.6**	----	----	----	----
Arsenic	7440-38-2	0.2	µg/L		**19.4**	----	----	----	----
Barium	7440-39-3	0.5	µg/L		**35.3**	----	----	----	----
Beryllium	7440-41-7	0.1	µg/L		**20.6**	----	----	----	----
Boron	7440-42-8	5	µg/L		**26**	----	----	----	----
Cadmium	7440-43-9	0.05	µg/L		**2.47**	----	----	----	----
Chromium	7440-47-3	0.2	µg/L		**10.9**	----	----	----	----
Cobalt	7440-48-4	0.1	µg/L		**820**	----	----	----	----
Copper	7440-50-8	0.5	µg/L		**20.7**	----	----	----	----
Lead	7439-92-1	0.1	µg/L		**10.4**	----	----	----	----
Manganese	7439-96-5	0.5	µg/L		**626**	----	----	----	----
Molybdenum	7439-98-7	0.1	µg/L		<0.1	----	----	----	----
Nickel	7440-02-0	0.5	µg/L		**627**	----	----	----	----
Thallium	7440-28-0	0.02	µg/L		**0.49**	----	----	----	----
Vanadium	7440-62-2	0.2	µg/L		**1.0**	----	----	----	----
Zinc	7440-66-6	1	µg/L		**967**	----	----	----	----
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LP_MW02	R01_281113_TH	TRIP_BLANK	TRIP_SPIKE	R01_271113_TH
				Client sampling date / time	28-NOV-2013 16:10	28-NOV-2013 16:10	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 09:00
Compound	CAS Number	LOR	Unit		ES1326216-006	ES1326216-007	ES1326216-008	ES1326216-009	ES1326216-010
EP075(SIM)A: Phenolic Compounds - Continued									
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
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

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LP_MW02	R01_281113_TH	TRIP_BLANK	TRIP_SPIKE	R01_271113_TH
				Client sampling date / time	28-NOV-2013 16:10	28-NOV-2013 16:10	28-NOV-2013 15:00	28-NOV-2013 15:00	28-NOV-2013 09:00
					ES1326216-006	ES1326216-007	ES1326216-008	ES1326216-009	ES1326216-010
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	**14**	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	**15**	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	**15**	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	**15**	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	**16**	<2
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	**31**	<2
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	**75**	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	**18**	<5
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**32.1**	**45.1**	----	----	**37.8**
2-Chlorophenol-D4	93951-73-6	0.1	%		**55.6**	**76.8**	----	----	**64.5**
2.4.6-Tribromophenol	118-79-6	0.1	%		**71.9**	**78.7**	----	----	**61.9**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**57.1**	**76.4**	----	----	**64.8**
Anthracene-d10	1719-06-8	0.1	%		**95.2**	**98.1**	----	----	**98.5**
4-Terphenyl-d14	1718-51-0	0.1	%		**101**	**110**	----	----	**97.8**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**91.4**	**108**	**104**	**108**	**104**
Toluene-D8	2037-26-5	0.1	%		**103**	**102**	**98.3**	**114**	**106**
4-Bromofluorobenzene	460-00-4	0.1	%		**85.8**	**102**	**90.1**	**93.7**	**104**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LA_MW01	LA_MW03	LE_MW02	LA_MW02	----
				Client sampling date / time	29-NOV-2013 08:30	29-NOV-2013 10:00	29-NOV-2013 13:30	29-NOV-2013 12:10	----
					ES1326216-011	ES1326216-012	ES1326216-013	ES1326216-014	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		**0.001**	**0.001**	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0026**	**0.0002**	----	----	----
Chromium	7440-47-3	0.001	mg/L		**0.002**	**0.009**	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.113**	**0.012**	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.057**	**0.019**	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<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		----	----	**23.8**	**3.6**	----
Arsenic	7440-38-2	0.2	µg/L		----	----	**20.9**	**0.9**	----
Barium	7440-39-3	0.5	µg/L		----	----	**19.2**	**58.2**	----
Beryllium	7440-41-7	0.1	µg/L		----	----	**27.0**	**0.6**	----
Boron	7440-42-8	5	µg/L		----	----	**10**	**122**	----
Cadmium	7440-43-9	0.05	µg/L		----	----	**1.73**	**3.04**	----
Chromium	7440-47-3	0.2	µg/L		----	----	**5.6**	**3.2**	----
Cobalt	7440-48-4	0.1	µg/L		----	----	**1030**	**240**	----
Copper	7440-50-8	0.5	µg/L		----	----	**6.6**	**1.6**	----
Lead	7439-92-1	0.1	µg/L		----	----	**25.6**	**0.1**	----
Manganese	7439-96-5	0.5	µg/L		----	----	**183**	**2300**	----
Molybdenum	7439-98-7	0.1	µg/L		----	----	<0.1	**0.3**	----
Nickel	7440-02-0	0.5	µg/L		----	----	**728**	**196**	----
Thallium	7440-28-0	0.02	µg/L		----	----	**0.40**	**0.23**	----
Vanadium	7440-62-2	0.2	µg/L		----	----	**5.7**	**1.8**	----
Zinc	7440-66-6	1	µg/L		----	----	**979**	**162**	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2-Methylphenol	95-48-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	----
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LA_MW01	LA_MW03	LE_MW02	LA_MW02	----
				Client sampling date / time	29-NOV-2013 08:30	29-NOV-2013 10:00	29-NOV-2013 13:30	29-NOV-2013 12:10	----
Compound	CAS Number	LOR	Unit		ES1326216-011	ES1326216-012	ES1326216-013	ES1326216-014	----
EP075(SIM)A: Phenolic Compounds - Continued									
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LA_MW01	LA_MW03	LE_MW02	LA_MW02	----
				Client sampling date / time	29-NOV-2013 08:30	29-NOV-2013 10:00	29-NOV-2013 13:30	29-NOV-2013 12:10	----
Compound	CAS Number	LOR	Unit		ES1326216-011	ES1326216-012	ES1326216-013	ES1326216-014	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued									
^ **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	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
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	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**23.7**	**32.7**	**26.8**	**34.6**	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**42.4**	**61.6**	**50.8**	**57.6**	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**61.3**	**65.2**	**58.5**	**58.5**	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**49.2**	**69.9**	**57.0**	**66.6**	----
Anthracene-d10	1719-06-8	0.1	%		**97.4**	**89.8**	**89.2**	**106**	----
4-Terphenyl-d14	1718-51-0	0.1	%		**97.9**	**96.4**	**76.3**	**88.3**	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**106**	**97.2**	**100**	**113**	----
Toluene-D8	2037-26-5	0.1	%		**115**	**93.6**	**95.0**	**103**	----
4-Bromofluorobenzene	460-00-4	0.1	%		**104**	**91.4**	**93.7**	**99.6**	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*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	: **ES1326216**	Page	: 1 of 22
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	: 29-NOV-2013
Sampler	: T.H	Issue Date	: 06-DEC-2013
Order number	: 0224198		
		No. of samples received	: 14
Quote number	: SY/794/13	No. of samples analysed	: 14

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*
Pabi Subba	Senior Organic Chemist	Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics

General Comments

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

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3195077)									
ES1326125-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	0.0	No Limit
ES1326125-011	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 3193202)									
ES1326176-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
ES1326176-012	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.004	0.003	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.008	0.013	38.9	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3193201)									
ES1326215-001	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: 3195078)									
ES1326126-004	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1326216-013	LE_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: 3191612)									

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 (%)*
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3191612) - continued									
ES1326077-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1326145-011	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: 3197929)									
ES1326215-001	Anonymous	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.31	0.32	3.8	0% - 50%
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.60	0.57	4.9	0% - 50%
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	17.9	17.8	0.9	0% - 20%
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	477	472	1.0	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	20.6	21.0	2.2	0% - 20%
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	0.2	0.2	0.0	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	6.0	5.9	0.0	0% - 20%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	7.9	7.9	0.0	0% - 20%
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	1.0	1.0	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	27.3	27.2	0.4	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	90.7	89.5	1.3	0% - 20%
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	632	630	0.4	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	1080	1080	0.8	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	2190	2130	2.6	0% - 20%
		EG094A-F: Boron	7440-42-8	5	µg/L	54	52	3.6	0% - 50%
ES1326216-004	LP_MW01	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.05	0.05	0.0	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.06	0.08	29.4	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	4.9	5.0	2.2	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	1.0	1.1	0.0	0% - 50%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.8	0.8	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.3	0.3	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	1.3	1.3	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	54.6	54.6	0.0	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	1000	942	6.4	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	7.5	7.7	2.6	0% - 50%
		EG094A-F: Zinc	7440-66-6	1	µg/L	18	18	0.0	0% - 50%
		EG094A-F: Boron	7440-42-8	5	µg/L	321	307	4.5	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3197930)									
ES1326215-001	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	9.2	9.3	0.0	0% - 20%
ES1326216-004	LP_MW01	EG094B-F: Selenium	7782-49-2	0.2	µg/L	0.7	0.6	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3193608)									
ES1326215-003	Anonymous	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3191996)									
ES1326126-003	Anonymous	EP074: Styrene	100-42-5	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 (%)*
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3191996) - continued									
ES1326126-003	Anonymous	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
ES1326215-001	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: 3191996)									
ES1326126-003	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
ES1326215-001	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: 3191996)									
ES1326126-003	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
ES1326215-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 3191996)									
ES1326126-003	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
ES1326215-001	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

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: 3191996)									
ES1326126-003	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
ES1326215-001	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: 3191996) - continued									
ES1326215-001	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: 3191996)									
ES1326126-003	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
ES1326215-001	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: 3191996)									
ES1326126-003	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

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 (%)*
EP074G: Trihalomethanes (QC Lot: 3191996) - continued									
ES1326215-001	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: 3191996)									
ES1326126-003	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
ES1326215-001	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3193610)									
ES1326215-003	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
ES1326216-005	LN_MW04	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: 3193610)									
ES1326215-003	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

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: 3193610) - continued									
ES1326215-003	Anonymous	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
ES1326216-005	LN_MW04	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: 3191997)									
ES1326126-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1326215-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3192002)									
ES1326111-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1326216-004	LP_MW01	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3193609)									
ES1326215-003	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
ES1326216-005	LN_MW04	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: 3191997)									
ES1326126-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3191997) - continued									
ES1326215-001	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: 3192002)									
ES1326111-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1326216-004	LP_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: 3193609)									
ES1326215-003	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
ES1326216-005	LN_MW04	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: 3191997)									
ES1326126-003	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES1326215-001	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
EP080: BTEXN (QC Lot: 3192002)									
ES1326111-001	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
ES1326216-004	LP_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

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: 3192002) - continued									
ES1326216-004	LP_MW01	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
EG020F: Dissolved Metals by ICP-MS (QCLot: 3195077)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	86.4	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	103	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	99.0	81	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.9	80	112
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.8	83	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	98.8	81	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	89.3	80	116
EG020T: Total Metals by ICP-MS (QCLot: 3193202)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.8	79	121
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	99.2	82	114
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	100	83	115
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	103	83	117
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.6	85	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.9	83	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	95.4	76	118
EG035F: Dissolved Mercury by FIMS (QCLot: 3193201)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	91.7	78	114
EG035F: Dissolved Mercury by FIMS (QCLot: 3195078)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	113	78	114
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3191612)								
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: 3197929)								
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	111	76	120
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	99.1	74	130
EG094A-F: Boron	7440-42-8	5	µg/L	<5	10 µg/L	95.5	79	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	105	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	105	71	123
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	103	79	121
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	103	77	125
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	114	74	118
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	108	79	119
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	94.3	69	127
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	104	72	128

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: 3197929) - continued								
EG094A-F: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	114	71	121
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	101	78	116
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	104	76	134
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3197930)								
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	92.4	75	125
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3193608)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	104	61.6	107
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3191996)								
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	102	74	118
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	105	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	104	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	103	71	121
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	105	70	122
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	107	67	123
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	106	62	126
EP074B: Oxygenated Compounds (QCLot: 3191996)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	98.6	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	97.8	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	94.2	61	139
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	102	65	137
EP074C: Sulfonated Compounds (QCLot: 3191996)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	85.3	72.8	127
EP074D: Fumigants (QCLot: 3191996)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	94.6	61	119
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	103	76	120
EP074: cis-1.3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	98.4	62	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	92.7	61	119
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	92.1	69	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 3191996)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	70.4	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	78.0	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	84.2	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	89.9	56	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	96.4	63	135
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	102	65	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	98.6	69	123

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: 3191996) - continued								
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	95.4	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	106	75	119
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	102	77	117
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	93.5	61	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	103	73	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	101	63	121
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	109	78	122
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	105	74	120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	99.8	74	118
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	104	75	123
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	102	79	121
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	104	72	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	88.2	66	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	102	60	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	100	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	95.0	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	99.3	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	90.0	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	106	58	132
EP074F: Halogenated Aromatic Compounds (QCLot: 3191996)								
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	101	76	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	105	71	121
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	106	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	106	72	120
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	105	77	117
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	104	60	126
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	105	67	125
EP074G: Trihalomethanes (QCLot: 3191996)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	99.8	76	118
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	102	64	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	94.4	65	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	92.3	73.5	126
EP074H: Naphthalene (QCLot: 3191996)								
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	103	61	125

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: 3193610)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	50.6	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	77.0	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	100	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	72.8	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	69.9	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	74.3	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	67.1	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	84.4	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	64.9	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	68.8	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	75.1	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	23.4	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193610)								
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	77.3	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	83.5	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	91.1	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	89.1	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	91.2	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	94.7	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: 3193610) - continued								
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	85.0	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	68.8	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	88.6	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	97.8	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	83.1	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	88.6	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	67.3	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	70.9	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	78.8	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: 3191997)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	106	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192002)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	118	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3193609)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	105	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	92.0	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	91.9	62	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3191997)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	107	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192002)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	120	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3193609)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	102	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	96.0	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	106	67	127
EP080: BTEXN (QCLot: 3191997)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	112	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	104	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: 3191997) - continued								
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	104	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	109	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	110	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	111	70	124
EP080: BTEXN (QCLot: 3192002)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	96.9	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	100	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	115	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	98.4	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	106	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	106	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
EG020F: Dissolved Metals by ICP-MS (QCLot: 3195077)							
ES1326125-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	109	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	99.2	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	103	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	111	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	102	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	86.7	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	102	70	130
EG020T: Total Metals by ICP-MS (QCLot: 3193202)							
ES1326176-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	106	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	103	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	108	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	111	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	105	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	106	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	107	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3193201)							

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: 3193201) - continued							
ES1326215-001	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	# 24.4	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3195078)							
ES1326126-004	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	98.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3191612)							
ES1326077-002	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	101	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3197929)							
ES1326215-002	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	94.6	70	130
		EG094A-F: Barium	7440-39-3	50 µg/L	76.4	70	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	72.6	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	70.7	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	82.4	70	130
		EG094A-F: Cobalt	7440-48-4	50 µg/L	# Not Determined	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	76.5	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	73.3	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	82.4	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	# Not Determined	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3193608)							
ES1326215-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	10 µg/L	106	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3191996)							
ES1326126-003	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	118	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	111	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3191996)							
ES1326126-003	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	121	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3193610)							
ES1326215-001	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	50.9	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	84.1	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	74.2	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	86.8	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	88.7	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193610)							
ES1326215-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	90.8	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: 3193610) - continued							
ES1326215-001	Anonymous	EP075(SIM): Pyrene	129-00-0	20 µg/L	105	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3191997)							
ES1326126-003	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	114	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192002)							
ES1326111-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	119	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3193609)							
ES1326215-001	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	109	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	100	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	103	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3191997)							
ES1326126-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	113	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192002)							
ES1326111-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3193609)							
ES1326215-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	102	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	91.6	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	106	67	153
EP080: BTEXN (QCLot: 3191997)							
ES1326126-003	Anonymous	EP080: Benzene	71-43-2	25 µg/L	100	70	130
		EP080: Toluene	108-88-3	25 µg/L	96.8	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	102	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	104	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	106	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	108	70	130
EP080: BTEXN (QCLot: 3192002)							
ES1326111-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	88.0	70	130
		EP080: Toluene	108-88-3	25 µg/L	98.0	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	101	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	89.7	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	95.5	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	103	70	130

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

Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3191612)										
ES1326077-002	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	101	----	70	130	----	----
EP074E: Halogenated Aliphatic Compounds (QCLot: 3191996)										
ES1326126-003	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	118	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	25 µg/L	111	----	70	130	----	----
EP074F: Halogenated Aromatic Compounds (QCLot: 3191996)										
ES1326126-003	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	121	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3191997)										
ES1326126-003	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	114	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3191997)										
ES1326126-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	113	----	70	130	----	----
EP080: BTEXN (QCLot: 3191997)										
ES1326126-003	Anonymous	EP080: Benzene	71-43-2	25 µg/L	100	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	96.8	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	102	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	104	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	106	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	108	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3192002)										
ES1326111-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	119	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3192002)										
ES1326111-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	----	70	130	----	----
EP080: BTEXN (QCLot: 3192002)										
ES1326111-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	88.0	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	98.0	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	101	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	89.7	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	95.5	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	103	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3193201)										
ES1326215-001	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	# 24.4	----	70	130	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3193202)										
ES1326176-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	106	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	103	----	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
EG020T: Total Metals by ICP-MS (QCLot: 3193202) - continued										
ES1326176-002	Anonymous	EG020A-T: Chromium	7440-47-3	1 mg/L	108	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1 mg/L	111	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1 mg/L	105	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1 mg/L	106	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1 mg/L	107	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3193608)										
ES1326215-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	10 µg/L	106	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3193609)										
ES1326215-001	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	109	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	100	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	103	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3193609)										
ES1326215-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	102	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	91.6	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	106	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3193610)										
ES1326215-001	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	50.9	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	84.1	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	74.2	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	86.8	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	88.7	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3193610)										
ES1326215-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	90.8	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	105	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3195077)										
ES1326125-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	109	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	99.2	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	103	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	0.2 mg/L	111	----	70	130	----	----
		EG020A-F: Lead	7439-92-1	0.2 mg/L	102	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	86.7	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	102	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3195078)										
ES1326126-004	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	98.7	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3197929)										
ES1326215-002	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	94.6	----	70	130	----	----
		EG094A-F: Barium	7440-39-3	50 µg/L	76.4	----	70	130	----	----
		EG094A-F: Beryllium	7440-41-7	50 µg/L	72.6	----	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: 3197929) - continued										
ES1326215-002	Anonymous	EG094A-F: Cadmium	7440-43-9	12.5 µg/L	70.7	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	82.4	----	70	130	----	----
		EG094A-F: Cobalt	7440-48-4	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	76.5	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	73.3	----	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	82.4	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	# Not Determined	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1326216**	Page	: 1 of 9
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 29-NOV-2013
Sampler	: T.H	Issue Date	: 06-DEC-2013
Order number	: 0224198		
		No. of samples received	: 14
Quote number	: SY/794/13	No. of samples analysed	: 14

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 - Nitric Acid; Filtered (EG020A-F)							
LA_MW01, LA_MW03	**29-NOV-2013**	**---**	28-MAY-2014	----	**06-DEC-2013**	28-MAY-2014	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)							
R01_281113_TH, R01_271113_TH	**28-NOV-2013**	**04-DEC-2013**	27-MAY-2014	✓	**04-DEC-2013**	27-MAY-2014	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
LP_MW05, LP_MW03, LP_MW04, LP_MW01, LN_MW04, LP_MW02	**28-NOV-2013**	**---**	26-DEC-2013	----	**05-DEC-2013**	26-DEC-2013	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
LA_MW01, LA_MW03, LE_MW02, LA_MW02	**29-NOV-2013**	**---**	27-DEC-2013	----	**05-DEC-2013**	27-DEC-2013	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
R01_281113_TH, R01_271113_TH	**28-NOV-2013**	**----**	----	----	**04-DEC-2013**	26-DEC-2013	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LN_MW04		**---**	---	----	**06-DEC-2013**	----	----
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LP_MW05, LP_MW03, LP_MW04, LP_MW01, LP_MW02, LE_MW02, LA_MW02	**28-NOV-2013**	**---**	27-MAY-2014	----	**06-DEC-2013**	27-MAY-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F)							
LN_MW04		**---**	---	----	**06-DEC-2013**	----	----
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F)							
LP_MW05, LP_MW03, LP_MW04, LP_MW01, LP_MW02, LE_MW02, LA_MW02	**28-NOV-2013**	**---**	27-MAY-2014	----	**06-DEC-2013**	27-MAY-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)							
LN_MW04	**28-NOV-2013**	**05-DEC-2013**	05-DEC-2013	✓	**05-DEC-2013**	14-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber Glass Bottle - Unpreserved (EP071)							
LP_MW05, LP_MW03, LP_MW04, LP_MW01, LN_MW04, LP_MW02, R01_281113_TH, R01_271113_TH	**28-NOV-2013**	**05-DEC-2013**	05-DEC-2013	✓	**05-DEC-2013**	14-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP071)							
LA_MW01, LA_MW03, LE_MW02, LA_MW02	**29-NOV-2013**	**05-DEC-2013**	06-DEC-2013	✓	**05-DEC-2013**	14-JAN-2014	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW04	**28-NOV-2013**	**04-DEC-2013**	12-DEC-2013	✓	**04-DEC-2013**	12-DEC-2013	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW04	**28-NOV-2013**	**04-DEC-2013**	12-DEC-2013	✓	**04-DEC-2013**	12-DEC-2013	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW04	**28-NOV-2013**	**04-DEC-2013**	12-DEC-2013	✓	**04-DEC-2013**	12-DEC-2013	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW04	**28-NOV-2013**	**04-DEC-2013**	12-DEC-2013	✓	**04-DEC-2013**	12-DEC-2013	✓
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW04	**28-NOV-2013**	**04-DEC-2013**	12-DEC-2013	✓	**04-DEC-2013**	12-DEC-2013	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW04	**28-NOV-2013**	**04-DEC-2013**	12-DEC-2013	✓	**04-DEC-2013**	12-DEC-2013	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW04	**28-NOV-2013**	**04-DEC-2013**	12-DEC-2013	✓	**04-DEC-2013**	12-DEC-2013	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074)							
LN_MW04	**28-NOV-2013**	**04-DEC-2013**	12-DEC-2013	✓	**04-DEC-2013**	12-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))								
LP_MW05,	LP_MW03,	**28-NOV-2013**	**05-DEC-2013**	05-DEC-2013	✓	**05-DEC-2013**	14-JAN-2014	✓
LP_MW04,	LP_MW01,							
LN_MW04,	LP_MW02,							
R01_281113_TH,	R01_271113_TH							
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LA_MW01,	LA_MW03,	**29-NOV-2013**	**05-DEC-2013**	06-DEC-2013	✓	**05-DEC-2013**	14-JAN-2014	✓
LE_MW02,	LA_MW02							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LP_MW05,	LP_MW03,	**28-NOV-2013**	**05-DEC-2013**	05-DEC-2013	✓	**05-DEC-2013**	14-JAN-2014	✓
LP_MW04,	LP_MW01,							
LN_MW04,	LP_MW02,							
R01_281113_TH,	R01_271113_TH							
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LA_MW01,	LA_MW03,	**29-NOV-2013**	**05-DEC-2013**	06-DEC-2013	✓	**05-DEC-2013**	14-JAN-2014	✓
LE_MW02,	LA_MW02							
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
LP_MW05,	LP_MW03,	**28-NOV-2013**	**04-DEC-2013**	12-DEC-2013	✓	**04-DEC-2013**	12-DEC-2013	✓
LP_MW04,	LP_MW01,							
LN_MW04,	LP_MW02,							
R01_281113_TH,	TRIP_BLANK,							
TRIP_SPIKE,	R01_271113_TH							
Amber VOC Vial - Sulfuric Acid (EP080)								
LA_MW01,	LA_MW03,	**29-NOV-2013**	**04-DEC-2013**	13-DEC-2013	✓	**04-DEC-2013**	13-DEC-2013	✓
LE_MW02,	LA_MW02							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Amber VOC Vial - Sulfuric Acid (EP080)								
LP_MW05,	LP_MW03,	**28-NOV-2013**	**04-DEC-2013**	12-DEC-2013	✓	**04-DEC-2013**	12-DEC-2013	✓
LP_MW04,	LP_MW01,							
LN_MW04,	LP_MW02,							
R01_281113_TH,	TRIP_BLANK,							
R01_271113_TH								
Amber VOC Vial - Sulfuric Acid (EP080)								
LA_MW01,	LA_MW03,	**29-NOV-2013**	**04-DEC-2013**	13-DEC-2013	✓	**04-DEC-2013**	13-DEC-2013	✓
LE_MW02,	LA_MW02							

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	3	15	**20.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	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	15	**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	15	**13.3**	**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
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	16	**12.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	19	**10.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	40	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	19	**10.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	2	15	**13.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	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	15	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	15	**6.7**	**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
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	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	2	15	**13.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	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	15	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	15	**6.7**	**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
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	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	19	**5.3**	**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	15	**13.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	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	15	**6.7**	**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
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	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
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.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
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)
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)

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)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
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
Matrix Spike (MS) Recoveries							
EG035F: Dissolved Mercury by FIMS	ES1326215-001	Anonymous	**Mercury**	7439-97-6	24.4 %	70-130%	**Recovery less than lower data quality objective**
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1326215-002	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	ES1326215-002	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	ES1326215-002	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	ES1326215-002	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.**
- **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	ES1326216-007	R01_281113_TH	**Phenol-d6**	13127-88-3	45.1 %	10.0-44 %	**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 Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☑SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT:	ERM
OFFICE:	Sydney
PROJECT:	Project Symphony
ORDER NUMBER:	0224198
PROJECT MANAGER:	Joe Ferring
CONTACT PH:	
SAMPLER:	Nathan Hegerty
SAMPLER MOBILE:	0488 627876
COC emailed to ALS? (YES / NO)	NO (circled)
EDD FORMAT (or default):	
Email Reports to (will default to PM if no other addresses are listed):	symphony.macgen@erm.com
Email Invoice to (will default to PM if no other addresses are listed):	

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):

ALS QUOTE NO.: SY/794/13

SITE: ~~BAYSWATER~~ / LIDDELL (circled)

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:
Nathan Hegerty	Frank ALS		
DATE/TIME: 30/11/13 15:50	DATE/TIME: 4.12.13 1900	DATE/TIME:	DATE/TIME:

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:			

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, Tl)	Selenium (Freshwater ORC)	VOC Target Scan	PCB	PFOS/PFOA	W-24 TRH(C6-C40)/BTEXN, PAH, Phenols	ORC ultratrace Metals	Comments on likely contaminant levels, dilutions, or samples requiring specific QC
1	LI_MW02	30/11/13 / 14:15	W	1N, 1xORC, 3xVS, 2xAG	7	X						X	X	
2	LI_MW03	/ 12:55				X						X	X	
3	LI_MW04	/ 11:45				X						X	X	
4	LI_MW05	/ 10:58				X						X	X	
5	LI_MW06	/ 09:40				X						X	X	
6	LI_MW07	/ 09:50				X						X	X	
7	Rinsate_301113_NH			1xN, 1xORC, 2xVS, 2xAG	6	X						X	X	
8	Trip Spike			1xVS	1									QA/QC check
9	Trip Blank.			1xVS	1									QA/QC check
10	D01_301113_NH	30/11/13		1xN, 1xORC, 3xVS, 2xAG	7	X						X	X	
*	T01_301113_NH	30/11/13			7	X						X	X	Inter lab duplicate. Please send to Envirolab.
				TOTAL										

Subcon / Forward Lab / Split WO
Lab / Analysis: Envirolab - T01_301113
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attach By PO / Internal Sheet:

Environmental Division
Sydney
Work Order
ES1326637

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	: **ES1326637**		
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	Page	: 1 of 3
Order number	: 0224198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: LIDDELL		
Sampler	: NH	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 04-DEC-2013	Issue Date	: 06-DEC-2013 17:51
Client Requested Due Date	: 12-DEC-2013	Scheduled Reporting Date	: **12-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 2.1'C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 10
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
- **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).**
- **Sample T01_301113_NH to be forwarded to Envirolab.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
EG093B-F : Dissolved Metals in Saline Water -Suite B by ORC-ICPMS		
LI_MW05	- Clear HDPE (U-T ORC) - Unspecified; Lab-acidified	- Clear HDPE (U-T ORC) - UHP Nitric Acid; Filtered
D01_301113_NH	- Clear HDPE (U-T ORC) - Unspecified; Lab-acidified	- Clear HDPE (U-T ORC) - UHP Nitric Acid; Filtered

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 - EG093A-F Dissolved metals in saline water by ORC-ICPMS	WATER - EG093A-T Total metals in Saline Water Suite A by ORC-ICPMS	WATER - EG093B-F Dissolved Metals in Saline Water Suite B by	WATER - EG093B-T Total Metals in Saline Water -Suite B by	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1326637-001	30-NOV-2013 14:15	LI_MW02		✓		✓		✓
ES1326637-002	30-NOV-2013 12:55	LI_MW03		✓		✓		✓
ES1326637-003	30-NOV-2013 11:45	LI_MW04		✓		✓		✓
ES1326637-004	30-NOV-2013 10:58	LI_MW05						✓
	30-NOV-2013 15:00	LI_MW05		✓		✓		
ES1326637-005	30-NOV-2013 08:40	LI_MW06		✓		✓		✓
ES1326637-006	30-NOV-2013 09:50	LI_MW07		✓		✓		✓
ES1326637-007	30-NOV-2013 15:00	RINSATE_301113_NH			✓		✓	✓
ES1326637-008	30-NOV-2013 15:00	TRIP SPIKE	✓					
ES1326637-009	30-NOV-2013 15:00	TRIP BLANK	✓					
ES1326637-010	30-NOV-2013 15:00	D01_301113_NH		✓		✓		✓

Proactive Holding Time Report

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

Requested Deliverables

MR JOSEPH FERRING

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

SYMPHONY ERARING

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

THE ACCOUNTS PAYABLE

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

CERTIFICATE OF ANALYSIS

Work Order	: **ES1326637**	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	: 0224198		
C-O-C number	: ----	Date Samples Received	: 04-DEC-2013
Sampler	: NH	Issue Date	: 16-DEC-2013
Site	: LIDDELL		
		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*
Alex Rossi	Organic Chemist	Sydney Organics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LI_MW02	LI_MW03	LI_MW04	LI_MW05	LI_MW06
				Client sampling date / time	30-NOV-2013 14:15	30-NOV-2013 12:55	30-NOV-2013 11:45	30-NOV-2013 15:00	30-NOV-2013 08:40
					ES1326637-001	ES1326637-002	ES1326637-003	ES1326637-004	ES1326637-005
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		**1.1**	**2.0**	**3.1**	**0.5**	**1.0**
Arsenic	7440-38-2	0.2	µg/L		**1.8**	**1.3**	**1.9**	**0.8**	**1.9**
Barium	7440-39-3	0.5	µg/L		**45.6**	**32.0**	**19.7**	**54.6**	**42.2**
Beryllium	7440-41-7	0.1	µg/L		**0.4**	**3.4**	**4.0**	**0.3**	**0.8**
Boron	7440-42-8	5	µg/L		**208**	**92**	**470**	**140**	**282**
Cadmium	7440-43-9	0.05	µg/L		**0.78**	**0.37**	**0.67**	**0.09**	**0.47**
Chromium	7440-47-3	0.2	µg/L		<0.2	**0.6**	**0.4**	**0.2**	**0.8**
Cobalt	7440-48-4	0.1	µg/L		**179**	**134**	**175**	**29.4**	**199**
Copper	7440-50-8	0.5	µg/L		**1.0**	**3.4**	**7.6**	**1.8**	**1.1**
Lead	7439-92-1	0.1	µg/L		**0.3**	**0.9**	**0.7**	<0.1	**0.3**
Manganese	7439-96-5	0.5	µg/L		**3060**	**548**	**1160**	**484**	**5350**
Molybdenum	7439-98-7	0.1	µg/L		**0.7**	<0.1	<0.1	**0.1**	**0.1**
Nickel	7440-02-0	0.5	µg/L		**116**	**142**	**259**	**32.9**	**194**
Thallium	7440-28-0	0.02	µg/L		**0.09**	**0.23**	**0.07**	**0.06**	**0.09**
Vanadium	7440-62-2	0.2	µg/L		**1.1**	**0.8**	**0.2**	**2.0**	**0.6**
Zinc	7440-66-6	1	µg/L		**106**	**368**	**477**	**72**	**299**
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LI_MW02	LI_MW03	LI_MW04	LI_MW05	LI_MW06
				Client sampling date / time	30-NOV-2013 14:15	30-NOV-2013 12:55	30-NOV-2013 11:45	30-NOV-2013 15:00	30-NOV-2013 08:40
Compound	CAS Number	LOR	Unit		ES1326637-001	ES1326637-002	ES1326637-003	ES1326637-004	ES1326637-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LI_MW02	LI_MW03	LI_MW04	LI_MW05	LI_MW06
				Client sampling date / time	30-NOV-2013 14:15	30-NOV-2013 12:55	30-NOV-2013 11:45	30-NOV-2013 15:00	30-NOV-2013 08:40
Compound	CAS Number	LOR	Unit		ES1326637-001	ES1326637-002	ES1326637-003	ES1326637-004	ES1326637-005
EP080: BTEXN - Continued									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**24.1**	**23.7**	**23.5**	**20.8**	**21.7**
2-Chlorophenol-D4	93951-73-6	0.1	%		**51.5**	**52.2**	**53.8**	**47.7**	**48.1**
2.4.6-Tribromophenol	118-79-6	0.1	%		**78.5**	**82.6**	**75.7**	**69.8**	**70.5**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**71.7**	**73.0**	**72.8**	**64.8**	**53.3**
Anthracene-d10	1719-06-8	0.1	%		**74.5**	**82.5**	**76.5**	**69.0**	**73.0**
4-Terphenyl-d14	1718-51-0	0.1	%		**79.4**	**84.9**	**75.3**	**70.0**	**69.9**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**100**	**108**	**109**	**107**	**105**
Toluene-D8	2037-26-5	0.1	%		**95.1**	**104**	**105**	**99.2**	**97.4**
4-Bromofluorobenzene	460-00-4	0.1	%		**88.9**	**97.2**	**97.2**	**94.6**	**92.0**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LI_MW07	RINSATE_301113_NH	TRIP SPIKE	TRIP BLANK	D01_301113_NH
				Client sampling date / time	30-NOV-2013 09:50	30-NOV-2013 15:00	30-NOV-2013 15:00	30-NOV-2013 15:00	30-NOV-2013 15:00
					ES1326637-006	ES1326637-007	ES1326637-008	ES1326637-009	ES1326637-010
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		**1.9**	----	----	----	**1.2**
Arsenic	7440-38-2	0.2	µg/L		**6.6**	----	----	----	**2.0**
Barium	7440-39-3	0.5	µg/L		**153**	----	----	----	**44.0**
Beryllium	7440-41-7	0.1	µg/L		<0.1	----	----	----	**0.8**
Boron	7440-42-8	5	µg/L		**85**	----	----	----	**287**
Cadmium	7440-43-9	0.05	µg/L		**0.07**	----	----	----	**0.45**
Chromium	7440-47-3	0.2	µg/L		**0.4**	----	----	----	**0.8**
Cobalt	7440-48-4	0.1	µg/L		**31.3**	----	----	----	**178**
Copper	7440-50-8	0.5	µg/L		**0.8**	----	----	----	**1.2**
Lead	7439-92-1	0.1	µg/L		<0.1	----	----	----	**0.3**
Manganese	7439-96-5	0.5	µg/L		**6080**	----	----	----	**5610**
Molybdenum	7439-98-7	0.1	µg/L		**4.1**	----	----	----	**0.1**
Nickel	7440-02-0	0.5	µg/L		**16.9**	----	----	----	**202**
Thallium	7440-28-0	0.02	µg/L		**0.08**	----	----	----	**0.09**
Vanadium	7440-62-2	0.2	µg/L		**0.8**	----	----	----	**0.6**
Zinc	7440-66-6	1	µg/L		**37**	----	----	----	**308**
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_MW07	RINSATE_301113_NH	TRIP SPIKE	TRIP BLANK	D01_301113_NH
				Client sampling date / time	30-NOV-2013 09:50	30-NOV-2013 15:00	30-NOV-2013 15:00	30-NOV-2013 15:00	30-NOV-2013 15:00
					ES1326637-006	ES1326637-007	ES1326637-008	ES1326637-009	ES1326637-010
EG094T: Total metals in Fresh water by ORC-ICPMS - Continued									
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	<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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LI_MW07	RINSATE_301113_NH	TRIP SPIKE	TRIP BLANK	D01_301113_NH
				Client sampling date / time	30-NOV-2013 09:50	30-NOV-2013 15:00	30-NOV-2013 15:00	30-NOV-2013 15:00	30-NOV-2013 15:00
Compound	CAS Number	LOR	Unit		ES1326637-006	ES1326637-007	ES1326637-008	ES1326637-009	ES1326637-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ 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	**18**	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	**18**	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	**18**	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	**17**	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	**18**	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	**35**	<2	<2
^ Sum of BTEX	----	1	µg/L		<1	<1	**89**	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	**20**	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**24.4**	**22.1**	----	----	**24.1**
2-Chlorophenol-D4	93951-73-6	0.1	%		**55.2**	**48.3**	----	----	**55.2**
2.4.6-Tribromophenol	118-79-6	0.1	%		**89.0**	**69.4**	----	----	**82.6**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**74.4**	**63.2**	----	----	**62.4**
Anthracene-d10	1719-06-8	0.1	%		**82.8**	**78.0**	----	----	**83.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LI_MW07	RINSATE_301113_NH	TRIP SPIKE	TRIP BLANK	D01_301113_NH
				Client sampling date / time	30-NOV-2013 09:50	30-NOV-2013 15:00	30-NOV-2013 15:00	30-NOV-2013 15:00	30-NOV-2013 15:00
Compound	CAS Number	LOR	Unit		ES1326637-006	ES1326637-007	ES1326637-008	ES1326637-009	ES1326637-010
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.1	%		78.7	78.4	----	----	81.8
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		107	105	102	106	106
Toluene-D8	2037-26-5	0.1	%		108	91.7	112	99.2	99.0
4-Bromofluorobenzene	460-00-4	0.1	%		96.4	88.3	102	92.5	93.0

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	: **ES1326637**	Page	: 1 of 13
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 04-DEC-2013
Sampler	: NH	Issue Date	: 16-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*
Alex Rossi	Organic Chemist	Sydney Organics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics

General Comments

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

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 3212881)									
ES1326637-001	LI_MW02	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1326994-005	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: 3213212)									
ES1326820-002	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: 3208218)									
ES1326637-001	LI_MW02	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.09	0.08	17.8	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.78	0.80	1.8	0% - 50%
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	0.4	0.4	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	179	172	3.9	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.3	0.3	0.0	No Limit
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	0.7	0.6	0.0	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	1.8	1.8	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	1.1	1.1	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	45.6	44.9	1.4	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	1.0	1.0	0.0	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	3060	3160	3.2	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	116	120	3.8	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	106	110	4.2	0% - 20%
		EG094A-F: Boron	7440-42-8	5	µg/L	208	204	2.1	0% - 20%
ES1326711-004	Anonymous	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.50	0.54	8.1	0% - 20%
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.68	0.72	5.6	0% - 50%
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	3.9	4.4	10.5	0% - 20%
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	194	200	3.4	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	38.6	41.3	6.8	0% - 20%
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	0.2	0.2	0.0	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	2.0	2.1	0.0	0% - 50%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	1.9	2.1	6.2	0% - 50%
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	2.2	2.4	7.2	0% - 50%
		EG094A-F: Barium	7440-39-3	0.5	µg/L	100	107	6.4	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	6.9	7.2	4.2	0% - 50%
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	756	810	6.9	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	119	124	4.2	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	314	328	4.2	0% - 20%
		EG094A-F: Boron	7440-42-8	5	µg/L	38	42	10.9	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3208219)									

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: 3208219) - continued									
ES1326637-001	LI_MW02	EG094B-F: Selenium	7782-49-2	0.2	µg/L	1.1	1.1	0.0	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3208220)									
ES1326637-007	RINSATE_301113_NH	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: 3208221)									
ES1326637-007	RINSATE_301113_NH	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3200593)									
ES1326711-006	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
ES1326637-005	LI_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

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: 3200593) - continued									
ES1326637-005	LI_MW06	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: 3200593)									
ES1326711-006	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
ES1326637-005	LI_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	<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: 3200592)									
ES1326711-006	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: 3200592) - continued									
ES1326711-006	Anonymous	EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
ES1326637-005	LI_MW06	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: 3204652)									
ES1326637-001	LI_MW02	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1326711-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	700	720	3.4	0% - 20%
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3200592)									
ES1326711-006	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
ES1326637-005	LI_MW06	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3204652)									
ES1326637-001	LI_MW02	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1326711-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	790	820	3.5	0% - 20%
EP080: BTEXN (QC Lot: 3204652)									
ES1326637-001	LI_MW02	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
ES1326711-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	49	51	3.4	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	110	113	2.7	0% - 20%
		EP080: Ethylbenzene	100-41-4	2	µg/L	14	15	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	70	72	2.7	0% - 20%
		EP080: ortho-Xylene	95-47-6	2	µg/L	50	52	4.5	0% - 20%
		EP080: Naphthalene	91-20-3	5	µg/L	15	16	10.1	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: 3212881)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	102	78	114
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3213212)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	79.4	77	115
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3208218)								
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	111	74	130
EG094A-F: Boron	7440-42-8	5	µg/L	<5	10 µg/L	110	79	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	101	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	106	71	123
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	112	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	110	74	118
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	108	79	119
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	100	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	106	71	121
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	112	78	116
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	113	76	134
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3208219)								
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	110	75	125
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3208220)								
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	110	81	125
EG094A-T: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	99.6	81	117
EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	94.0	71	127
EG094A-T: Boron	7440-42-8	5	µg/L	<5	10 µg/L	87.5	70	130
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	90.1	77	111
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	102	78	126
EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	115	78	126
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	99.5	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	96.2	81	121
EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	108	77	127
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	112	82	124

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: 3208220) - continued								
EG094A-T: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	97.7	71	125
EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	108	82	118
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	89.8	75	129
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3208221)								
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	97.3	78	124
EP075(SIM)A: Phenolic Compounds (QCLot: 3200593)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	56.8	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	93.3	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	66.9	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	68.1	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	84.8	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	79.7	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	79.1	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	90.6	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	81.1	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	70.3	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	97.8	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	78.2	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3200593)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	79.2	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	78.9	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	80.7	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	95.1	63.9	115
		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: 3200593) - continued								
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	92.1	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	98.6	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	102	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	99.2	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	86.3	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	90.6	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	79.6	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	98.8	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	98.1	63.3	117
		0.5	µg/L	<0.5	----	----	----	----
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	5 µg/L	92.9	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	94.6	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	90.5	59.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3200592)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	90.8	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	99.5	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	96.6	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3204652)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	85.6	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3212000)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	119	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3200592)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	91.9	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	98.6	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	97.2	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3204652)								

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: 3204652) - continued								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	83.3	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3212000)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	121	75	127
EP080: BTEXN (QCLot: 3204652)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	82.9	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	86.4	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	82.5	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	82.3	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	85.7	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	84.2	70	124
EP080: BTEXN (QCLot: 3212000)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	118	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	116	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	111	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	113	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	115	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: 3212881)							
ES1326637-001	LI_MW02	EG035F: Mercury	7439-97-6	0.0100 mg/L	83.3	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3213212)							
ES1326637-007	RINSATE_301113_NH	EG035T: Mercury	7439-97-6	0.010 mg/L	77.6	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3208218)							
ES1326637-002	LI_MW03	EG094A-F: Arsenic	7440-38-2	50 µg/L	124	70	130
		EG094A-F: Barium	7440-39-3	50 µg/L	104	70	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	80.7	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	94.0	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.6	70	130
		EG094A-F: Cobalt	7440-48-4	50 µg/L	96.7	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: 3208218) - continued							
ES1326637-002	LI_MW03	EG094A-F: Copper	7440-50-8	50 µg/L	99.8	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	99.6	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	86.5	70	130
		EG094A-F: Vanadium	7440-62-2	50 µg/L	104	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	# Not Determined	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3200593)							
ES1326711-007	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	40.5	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	88.6	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	71.4	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	73.9	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	76.6	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3200593)							
ES1326711-007	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	72.3	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	78.7	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3200592)							
ES1326711-007	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	107	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	103	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	87.1	67	153
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3204652)							
ES1326637-001	LI_MW02	EP080: C6 - C9 Fraction	----	325 µg/L	124	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3200592)							
ES1326711-007	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	93.1	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	96.7	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	78.9	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3204652)							
ES1326637-001	LI_MW02	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	121	70	130
EP080: BTEXN (QCLot: 3204652)							
ES1326637-001	LI_MW02	EP080: Benzene	71-43-2	25 µg/L	95.2	70	130
		EP080: Toluene	108-88-3	25 µg/L	105	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	103	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	103	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	105	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	82.0	70	130

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

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

Sub-Matrix: **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: 3200592)										
ES1326711-007	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	107	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	103	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	87.1	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3200592)										
ES1326711-007	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	93.1	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	96.7	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	78.9	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3200593)										
ES1326711-007	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	40.5	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	88.6	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	71.4	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	73.9	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	76.6	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3200593)										
ES1326711-007	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	72.3	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	78.7	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3204652)										
ES1326637-001	LI_MW02	EP080: C6 - C9 Fraction	----	325 µg/L	124	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3204652)										
ES1326637-001	LI_MW02	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	121	----	70	130	----	----
EP080: BTEXN (QCLot: 3204652)										
ES1326637-001	LI_MW02	EP080: Benzene	71-43-2	25 µg/L	95.2	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	105	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	103	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	103	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	105	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	82.0	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3208218)										
ES1326637-002	LI_MW03	EG094A-F: Arsenic	7440-38-2	50 µg/L	124	----	70	130	----	----
		EG094A-F: Barium	7440-39-3	50 µg/L	104	----	70	130	----	----
		EG094A-F: Beryllium	7440-41-7	50 µg/L	80.7	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	94.0	----	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
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3208218) - continued										
ES1326637-002	LI_MW03	EG094A-F: Chromium	7440-47-3	50 µg/L	93.6	----	70	130	----	----
		EG094A-F: Cobalt	7440-48-4	50 µg/L	96.7	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	99.8	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	99.6	----	70	130	----	----
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	86.5	----	70	130	----	----
		EG094A-F: Vanadium	7440-62-2	50 µg/L	104	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	# Not Determined	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3212881)										
ES1326637-001	LI_MW02	EG035F: Mercury	7439-97-6	0.0100 mg/L	83.3	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3213212)										
ES1326637-007	RINSATE_301113_NH	EG035T: Mercury	7439-97-6	0.010 mg/L	77.6	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1326637**	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	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 04-DEC-2013
Sampler	: NH	Issue Date	: 16-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
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LI_MW04	**30-NOV-2013**	**---**	28-DEC-2013	----	**14-DEC-2013**	28-DEC-2013	✓
Clear HDPE (U-T ORC) - Unspecified; Lab-acidified (EG035F)							
LI_MW05, D01_301113_NH	**30-NOV-2013**	**---**	14-DEC-2013	----	**14-DEC-2013**	14-DEC-2013	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
LI_MW02, LI_MW03, LI_MW06, LI_MW07	**30-NOV-2013**	**---**	28-DEC-2013	----	**14-DEC-2013**	28-DEC-2013	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
RINSATE_301113_NH	**30-NOV-2013**	**----**	----	----	**15-DEC-2013**	28-DEC-2013	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LI_MW02, LI_MW03, LI_MW04, LI_MW06, LI_MW07	**30-NOV-2013**	**---**	29-MAY-2014	----	**12-DEC-2013**	29-MAY-2014	✓
Clear HDPE (U-T ORC) - Unspecified; Lab-acidified (EG094A-F)							
LI_MW05, D01_301113_NH	**30-NOV-2013**	**---**	29-MAY-2014	----	**12-DEC-2013**	29-MAY-2014	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T)							
RINSATE_301113_NH	**30-NOV-2013**	**12-DEC-2013**	29-MAY-2014	✓	**12-DEC-2013**	29-MAY-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F)							
LI_MW02, LI_MW03, LI_MW04, LI_MW06, LI_MW07	**30-NOV-2013**	**---**	29-MAY-2014	----	**12-DEC-2013**	29-MAY-2014	✓
Clear HDPE (U-T ORC) - Unspecified; Lab-acidified (EG094B-F)							
LI_MW05, D01_301113_NH	**30-NOV-2013**	**---**	29-MAY-2014	----	**12-DEC-2013**	29-MAY-2014	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T)							
RINSATE_301113_NH	**30-NOV-2013**	**12-DEC-2013**	29-MAY-2014	✓	**12-DEC-2013**	29-MAY-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)							
LI_MW02, LI_MW03, LI_MW04, LI_MW05, LI_MW06, LI_MW07, RINSATE_301113_NH, D01_301113_NH	**30-NOV-2013**	**07-DEC-2013**	07-DEC-2013	✓	**11-DEC-2013**	18-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LI_MW02, LI_MW03, LI_MW04, LI_MW05, LI_MW06, LI_MW07, RINSATE_301113_NH, D01_301113_NH	**30-NOV-2013**	**07-DEC-2013**	07-DEC-2013	✓	**11-DEC-2013**	18-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LI_MW02, LI_MW03, LI_MW04, LI_MW05, LI_MW06, LI_MW07, RINSATE_301113_NH, D01_301113_NH	**30-NOV-2013**	**07-DEC-2013**	07-DEC-2013	✓	**11-DEC-2013**	18-JAN-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
LI_MW02, LI_MW03, LI_MW04, LI_MW05, LI_MW06, LI_MW07, RINSATE_301113_NH, D01_301113_NH	**30-NOV-2013**	**11-DEC-2013**	14-DEC-2013	✓	**11-DEC-2013**	14-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
TRIP SPIKE, TRIP BLANK	**30-NOV-2013**	**15-DEC-2013**	14-DEC-2013	×	**15-DEC-2013**	14-DEC-2013	×
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber VOC Vial - Sulfuric Acid (EP080)							
LI_MW02, LI_MW03, LI_MW04, LI_MW05, LI_MW06, LI_MW07, RINSATE_301113_NH, D01_301113_NH	**30-NOV-2013**	**11-DEC-2013**	14-DEC-2013	✓	**11-DEC-2013**	14-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
TRIP BLANK	**30-NOV-2013**	**15-DEC-2013**	14-DEC-2013	×	**15-DEC-2013**	14-DEC-2013	×

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	17	**11.8**	**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	7	**14.3**	**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
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	1	**100.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	1	**100.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	17	**5.9**	**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	7	**14.3**	**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
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	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	22	**9.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	17	**5.9**	**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	7	**14.3**	**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
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	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	1	**100.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	22	**9.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	17	**5.9**	**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	19	**5.3**	**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
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
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)
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)

Analytical Methods	Method	Matrix	Method Descriptions
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.
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	ES1326637-002	LI_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	ES1326637-002	LI_MW03	**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.**
- **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.

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP080/071: Total Petroleum Hydrocarbons						
Amber VOC Vial - Sulfuric Acid						
TRIP BLANK	15-DEC-2013	14-DEC-2013	**1**	15-DEC-2013	14-DEC-2013	**1**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013						
Amber VOC Vial - Sulfuric Acid						
TRIP BLANK	15-DEC-2013	14-DEC-2013	**1**	15-DEC-2013	14-DEC-2013	**1**
EP080: BTEXN						
Amber VOC Vial - Sulfuric Acid						
TRIP SPIKE, TRIP BLANK	15-DEC-2013	14-DEC-2013	**1**	15-DEC-2013	14-DEC-2013	**1**

Outliers : Frequency of Quality Control Samples

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

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

12/12 6680

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph 08 8359 0890 E adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph 07 3243 7222 E samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph 07 7471 5600 E gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph 07 4944 0177 E mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph 03 8549 9600 E samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph 02 6372 6735 E mudgee.mail@alsglobal.com
☐NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph 02 4968 9433 E samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph 024423 2063 E nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph 08 9209 7655 E samples.perth@alsglobal.com
☑SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph 02 8784 8555 E samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph 07 4796 0600 E townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph 02 4225 3125 E portkembla@alsglobal.com

CLIENT: EDM
OFFICE: SYDNEY
PROJECT: Project Symphony
ORDER NUMBER: D2241918
PROJECT MANAGER: JOE FERRING   CONTACT PH:
SAMPLER: Tim Haddon.   SAMPLER MOBILE: 0401 008181.
COC emailed to ALS? ~~YES~~ / (NO)   EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): symphony.mager@edm.com.
Email Invoice to (will default to PM if no other addresses are listed):

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):
ALS QUOTE NO.: SY/794/13
SITE: ~~BAYSWATER~~ / (LIDDELL)

COC SEQUENCE NUMBER (Circle)
COC: (1) 2 3 4 5 6 7
OF: (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: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
TIM HADDON	Frank ALS		
DATE/TIME: 30/11/13 6pm	DATE/TIME: 4.12.13 1900	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE: LAB ID	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W): SAMPLE ID	DATE / TIME	MATRIX	CONTAINER INFORMATION: 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, Tl)	Selenium (Freshwater ORC)	VOC Target Scan	PCB	PFOS/PFOA	W-24 TRH(C6-C40)/BTEXN, PAH, Phenols	ULTRA TRACE ORC.	Additional Information: Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	Trip Blank	25/11/13	W											
2	Trip spike	25/11/13	W											
3	LE_MW01	29/11/13 3:45pm	W	2xAG 3xVOA 1xN 1xAP.	7	X						X	X	
4	D01_291113_TH	29/11/13 3:45pm	W	" "	7	X						X	X	
5.	RINSATE_291113-TH	29/11/13 3:45pm	W	" "	7.	X						X	X	
6	LB_EW_MW01	30/11/13 9AM	W	2xAG 3xVOA 2xN 1xAP	8		X					X	X	
7	LD_MW02_	30/11/13 4:30pm	W	2xAG 3xVOA 1xN 1xAP.	7	X						X	X	
8	LD_MW04	30/11/13 3pm	W	" "	7	X						X	X	
9	LE_MW06	30/11/13 11:45am	W	2xAG 3xVOA 1xN 1xAP.	7	X						X	X	
10	LE_MW03.	30/11/13 10:30am	W	2xAG 3xVOA 1xN 1xAP.	7	X						X	X	
11	RINSATE_301113_TH	30/11/13 4:30pm	W	2xAG 3xVOA 1xN 1xAP.	7	X						X	X	
	TOTAL													

Environmental Division
Sydney
Work Order
ES1326680
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 ... astic
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.

Wanida Roberts

From: Barbara Hanna
Sent: Monday, 9 December 2013 3:50 PM
To: Wanida Roberts
Cc: Wael Saleh
Subject: FW: Project Symphony - Batch ES1326680. Please amend analysis and re-issue SRN
Attachments: ES1326680_0_SRN_131206173124.pdf; ES1326680_COC.pdf

Importance: High

Hi Wanida,

Could you please arrange this additional analysis.

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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Reduction in Sample Volumes – Improving quality, safety, efficiency and sustainability in environmental practices

From: Clea Henderson [mailto:Clea.Henderson@erm.com]
Sent: Monday, 9 December 2013 2:31 PM
To: Barbara Hanna
Cc: John Ewing; Joseph Ferring; ERM Australia Project Symphony MacGen
Subject: Project Symphony - Batch ES1326680. Please amend analysis and re-issue SRN
Importance: High

Hi Barbara,

I'm really sorry, our field guys have forgotten to request analysis for samples 001 and 002.

Please analyse sample 001 for BTEX.
Please analyse sample 002 for TRH and BTEX.

Results for this batch are due in tomorrow, actually. I know this additional analysis will likely make that impossible. Are we able to have the full results by Friday this week?

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	: **ES1326680**		
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	Page	: 1 of 3
Order number	: 0224198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: LIDDELL		
Sampler	: NH	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 04-DEC-2013	Issue Date	: 09-DEC-2013 15:54
Client Requested Due Date	: 13-DEC-2013	Scheduled Reporting Date	: **13-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 3.1'C SYD - Ice present
No. of coolers/boxes	: 2 HARD	No. of samples received	: 11
Security Seal	: Intact.	No. of samples analysed	: 11

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **TRIP BLANK and TRIP SPIKE analysis added and committed as per Clea Henderson on 09/12/13**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 - EP080 BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN
ES1326680-001	25-NOV-2013 15:00	TRIP SPIKE							✓	
ES1326680-002	25-NOV-2013 15:00	TRIP BLANK								✓
ES1326680-003	29-NOV-2013 15:45	LE_MW01	✓		✓		✓			
ES1326680-004	29-NOV-2013 15:45	D01_291113_TH	✓		✓		✓			
ES1326680-005	29-NOV-2013 15:45	RINSATE_291113_TH		✓		✓		✓		
ES1326680-006	30-NOV-2013 15:00	LB_EW_MW01	✓		✓		✓			
ES1326680-007	30-NOV-2013 09:00	LD_MW02	✓		✓		✓			
ES1326680-008	30-NOV-2013 15:00	LD_MW04	✓		✓		✓			
ES1326680-009	30-NOV-2013 11:45	LE_MW06	✓		✓		✓			
ES1326680-010	30-NOV-2013 10:30	LE_MW03	✓		✓		✓			
ES1326680-011	30-NOV-2013 16:30	RINSATE_301113_TH		✓		✓		✓		

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1326680-003	29-NOV-2013 15:45	LE_MW01	✓
ES1326680-004	29-NOV-2013 15:45	D01_291113_TH	✓
ES1326680-005	29-NOV-2013 15:45	RINSATE_291113_TH	✓
ES1326680-006	30-NOV-2013 15:00	LB_EW_MW01	✓
ES1326680-007	30-NOV-2013 09:00	LD_MW02	✓
ES1326680-008	30-NOV-2013 15:00	LD_MW04	✓
ES1326680-009	30-NOV-2013 11:45	LE_MW06	✓
ES1326680-010	30-NOV-2013 10:30	LE_MW03	✓
ES1326680-011	30-NOV-2013 16:30	RINSATE_301113_TH	✓

Proactive Holding Time Report

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

Requested Deliverables

MR JOSEPH FERRING

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

SYMPHONY ERARING

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

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	: **ES1326680**	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	: 04-DEC-2013
Sampler	: NH	Issue Date	: 13-DEC-2013
Site	: LIDDELL		
		No. of samples received	: 11
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
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

- **EG035: Poor matrix spike recovery was obtained for Mercury on sample ES1326680#4 due to matrix interference. Confirmed by reanalysis.**
- **EG094: Positive Zinc result for sample ES1326680 #005 has been confirmed by redigestion and reanalysis.**
- **EP080:Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	TRIP SPIKE	TRIP BLANK	LE_MW01	D01_291113_TH	RINSATE_291113_TH
				Client sampling date / time	25-NOV-2013 15:00	25-NOV-2013 15:00	29-NOV-2013 15:45	29-NOV-2013 15:45	29-NOV-2013 15:45
					ES1326680-001	ES1326680-002	ES1326680-003	ES1326680-004	ES1326680-005
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		----	----	**3.8**	**5.1**	----
Arsenic	7440-38-2	0.2	µg/L		----	----	**4.3**	**5.3**	----
Barium	7440-39-3	0.5	µg/L		----	----	**56.0**	**53.8**	----
Beryllium	7440-41-7	0.1	µg/L		----	----	**4.9**	**5.6**	----
Boron	7440-42-8	5	µg/L		----	----	**291**	**298**	----
Cadmium	7440-43-9	0.05	µg/L		----	----	**0.65**	**0.50**	----
Chromium	7440-47-3	0.2	µg/L		----	----	**2.4**	**2.8**	----
Cobalt	7440-48-4	0.1	µg/L		----	----	**432**	**526**	----
Copper	7440-50-8	0.5	µg/L		----	----	**6.2**	**2.8**	----
Lead	7439-92-1	0.1	µg/L		----	----	**3.6**	**4.2**	----
Manganese	7439-96-5	0.5	µg/L		----	----	**1040**	**1030**	----
Molybdenum	7439-98-7	0.1	µg/L		----	----	**0.5**	**0.1**	----
Nickel	7440-02-0	0.5	µg/L		----	----	**308**	**374**	----
Thallium	7440-28-0	0.02	µg/L		----	----	**0.20**	**0.20**	----
Vanadium	7440-62-2	0.2	µg/L		----	----	**1.0**	**1.4**	----
Zinc	7440-66-6	1	µg/L		----	----	**285**	**298**	----
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	TRIP SPIKE	TRIP BLANK	LE_MW01	D01_291113_TH	RINSATE_291113_TH
				Client sampling date / time	25-NOV-2013 15:00	25-NOV-2013 15:00	29-NOV-2013 15:45	29-NOV-2013 15:45	29-NOV-2013 15:45
					ES1326680-001	ES1326680-002	ES1326680-003	ES1326680-004	ES1326680-005
EG094T: Total metals in Fresh water by ORC-ICPMS - Continued									
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	<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

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID: TRIP SPIKE	TRIP BLANK	LE_MW01	D01_291113_TH	RINSATE_291113_TH
				Client sampling date / time: 25-NOV-2013 15:00	25-NOV-2013 15:00	29-NOV-2013 15:45	29-NOV-2013 15:45	29-NOV-2013 15:45
				ES1326680-001	ES1326680-002	ES1326680-003	ES1326680-004	ES1326680-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ **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	**15**	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	**16**	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	**16**	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	**16**	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	**17**	<2	<2	<2	<2
^ **Total Xylenes**	1330-20-7	2	µg/L	**33**	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L	**80**	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	**20**	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	----	**29.7**	**24.8**	**22.2**
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	**57.8**	**49.8**	**46.4**
2.4.6-Tribromophenol	118-79-6	0.1	%	----	----	**74.0**	**70.7**	**58.3**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	**76.3**	**65.5**	**55.3**
Anthracene-d10	1719-06-8	0.1	%	----	----	**71.6**	**57.5**	**63.5**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TRIP SPIKE	TRIP BLANK	LE_MW01	D01_291113_TH	RINSATE_291113_TH
				Client sampling date / time	25-NOV-2013 15:00	25-NOV-2013 15:00	29-NOV-2013 15:45	29-NOV-2013 15:45	29-NOV-2013 15:45
Compound	CAS Number	LOR	Unit		ES1326680-001	ES1326680-002	ES1326680-003	ES1326680-004	ES1326680-005
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.1	%		----	----	75.0	63.5	61.6
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		78.3	90.4	102	126	113
Toluene-D8	2037-26-5	0.1	%		86.8	93.2	109	101	101
4-Bromofluorobenzene	460-00-4	0.1	%		84.6	89.1	101	105	96.5

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LB_EW_MW01	LD_MW02	LD_MW04	LE_MW06	LE_MW03
				Client sampling date / time	30-NOV-2013 15:00	30-NOV-2013 09:00	30-NOV-2013 15:00	30-NOV-2013 11:45	30-NOV-2013 10:30
					ES1326680-006	ES1326680-007	ES1326680-008	ES1326680-009	ES1326680-010
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**	**2.3**	**2.4**	**3.3**	**2.0**
Arsenic	7440-38-2	0.2	µg/L		**0.2**	**1.3**	**3.7**	**2.4**	**5.1**
Barium	7440-39-3	0.5	µg/L		**22.6**	**61.2**	**65.4**	**90.6**	**47.3**
Beryllium	7440-41-7	0.1	µg/L		<0.1	<0.1	<0.1	**2.0**	<0.1
Boron	7440-42-8	5	µg/L		**1770**	**227**	**224**	**182**	**38**
Cadmium	7440-43-9	0.05	µg/L		<0.05	**0.26**	**0.22**	**0.35**	<0.05
Chromium	7440-47-3	0.2	µg/L		<0.2	**0.4**	<0.2	**5.4**	**0.3**
Cobalt	7440-48-4	0.1	µg/L		**0.2**	**34.6**	**34.0**	**233**	**104**
Copper	7440-50-8	0.5	µg/L		**0.7**	**3.4**	**2.0**	**4.9**	**0.8**
Lead	7439-92-1	0.1	µg/L		<0.1	**0.2**	<0.1	**2.0**	<0.1
Manganese	7439-96-5	0.5	µg/L		**8.1**	**1760**	**1710**	**1180**	**4440**
Molybdenum	7439-98-7	0.1	µg/L		**18.0**	**1.4**	**11.6**	**0.3**	**1.0**
Nickel	7440-02-0	0.5	µg/L		**1.3**	**27.4**	**35.6**	**123**	**55.8**
Thallium	7440-28-0	0.02	µg/L		<0.02	**0.07**	**0.12**	**0.25**	**0.03**
Vanadium	7440-62-2	0.2	µg/L		**0.6**	**1.8**	**2.0**	**1.8**	**1.0**
Zinc	7440-66-6	1	µg/L		**9**	**59**	**40**	**354**	**17**
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LB_EW_MW01	LD_MW02	LD_MW04	LE_MW06	LE_MW03
				Client sampling date / time	30-NOV-2013 15:00	30-NOV-2013 09:00	30-NOV-2013 15:00	30-NOV-2013 11:45	30-NOV-2013 10:30
					ES1326680-006	ES1326680-007	ES1326680-008	ES1326680-009	ES1326680-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	**110**
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	**960**
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	**1070**
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	**370**
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	**770**
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	**1140**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	**370**
EP080: BTEXN									

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LB_EW_MW01	LD_MW02	LD_MW04	LE_MW06	LE_MW03
				Client sampling date / time	30-NOV-2013 15:00	30-NOV-2013 09:00	30-NOV-2013 15:00	30-NOV-2013 11:45	30-NOV-2013 10:30
					ES1326680-006	ES1326680-007	ES1326680-008	ES1326680-009	ES1326680-010
EP080: BTEXN - Continued									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**24.9**	**24.4**	**21.0**	**22.6**	**27.9**
2-Chlorophenol-D4	93951-73-6	0.1	%		**52.3**	**47.9**	**43.3**	**43.0**	**59.8**
2.4.6-Tribromophenol	118-79-6	0.1	%		**75.7**	**70.8**	**59.9**	**63.6**	**83.8**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**53.4**	**53.2**	**40.2**	**39.2**	**56.9**
Anthracene-d10	1719-06-8	0.1	%		**72.2**	**64.9**	**60.0**	**50.9**	**74.1**
4-Terphenyl-d14	1718-51-0	0.1	%		**81.6**	**64.8**	**60.4**	**59.7**	**80.0**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**112**	**114**	**114**	**113**	**104**
Toluene-D8	2037-26-5	0.1	%		**116**	**103**	**108**	**107**	**121**
4-Bromofluorobenzene	460-00-4	0.1	%		**98.3**	**99.3**	**99.1**	**90.0**	**99.2**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RINSATE_301113_TH	----	----	----	----
				Client sampling date / time	30-NOV-2013 16:30	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1326680-011	----	----	----	----
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)				Client sample ID	RINSATE_301113_TH	----	----	----	----
				Client sampling date / time	30-NOV-2013 16:30	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1326680-011	----	----	----	----
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	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RINSATE_301113_TH	----	----	----	----
				Client sampling date / time	30-NOV-2013 16:30	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1326680-011	----	----	----	----
EP080: BTEXN - Continued									
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									
Phenol-d6	13127-88-3	0.1	%		**23.8**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**53.8**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**68.9**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**61.4**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**69.1**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**66.2**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**114**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**106**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**100**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	Recovery Limits (%) 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	: **ES1326680**	Page	: 1 of 14
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 04-DEC-2013
Sampler	: NH	Issue Date	: 13-DEC-2013
Order number	: 0224198		
		No. of samples received	: 11
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
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: 3199952)									
ES1326680-003	LE_MW01	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: 3200838)									
ES1326639-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1326680-011	RINSATE_301113_TH	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: 3201608)									
ES1326680-003	LE_MW01	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.20	0.20	0.0	0% - 50%
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.65	0.66	1.5	0% - 50%
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	4.9	4.6	4.6	0% - 20%
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	432	444	2.7	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	3.6	3.6	0.0	0% - 20%
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	0.5	0.3	32.5	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	4.3	4.5	3.8	0% - 20%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	2.4	2.4	0.0	0% - 50%
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	1.0	1.0	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	56.0	56.5	0.8	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	6.2	5.9	4.7	0% - 50%
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	1040	1090	4.5	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	308	320	3.7	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	285	293	2.7	0% - 20%
		EG094A-F: Boron	7440-42-8	5	µg/L	291	288	1.0	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3201609)									
ES1326680-003	LE_MW01	EG094B-F: Selenium	7782-49-2	0.2	µg/L	3.8	4.2	10.6	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3201593)									
ES1326680-005	RINSATE_291113_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

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: 3201593) - continued									
ES1326680-005	RINSATE_291113_TH	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	2	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: 3201594)									
ES1326680-005	RINSATE_291113_TH	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3198924)									
ES1326696-001	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
ES1326680-010	LE_MW03	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: 3198924)									
ES1326696-001	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

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: 3198924) - continued									
ES1326696-001	Anonymous	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
ES1326680-010	LE_MW03	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: 3198925)									
ES1326696-001	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
ES1326680-010	LE_MW03	EP071: C15 - C28 Fraction	----	100	µg/L	960	900	5.8	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	110	120	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3200528)									
ES1326639-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1326680-003	LE_MW01	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3203579)									
ES1326538-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1326646-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	170	170	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3198925)									
ES1326696-001	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: 3198925) - continued									
ES1326680-010	LE_MW03	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	370	370	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	770	780	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3200528)									
ES1326639-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1326680-003	LE_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: 3203579)									
ES1326538-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1326646-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	200	200	0.0	0% - 50%
EP080: BTEXN (QC Lot: 3200528)									
ES1326639-001	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
ES1326680-003	LE_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
EP080: BTEXN (QC Lot: 3203579)									
ES1326538-001	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
ES1326646-001	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

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: 3199952)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	82.9	78	114
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3200838)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	88.1	77	115
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3201608)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	107	75	129
EG094A-F: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	109	76	120
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	102	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	103	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	107	71	123
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	103	79	121
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	104	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	107	79	119
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	99.8	69	127
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	111	72	128
EG094A-F: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	104	71	121
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	108	78	116
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	110	76	134
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3201609)								
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	118	75	125
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3201593)								
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	101	81	125
EG094A-T: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	103	81	117
EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	95.9	71	127
EG094A-T: Boron	7440-42-8	5	µg/L	<5	10 µg/L	107	70	130
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	92.5	77	111
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	99.6	78	126
EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	96.4	78	126
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	96.1	78	126
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	105	75	123
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	97.8	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	103	82	124

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: 3201593) - continued								
EG094A-T: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	96.9	71	125
EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	98.3	82	118
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	95.8	75	129
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3201594)								
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	94.3	78	124
EP075(SIM)A: Phenolic Compounds (QCLot: 3198924)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	# 66.2	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	# 63.5	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	71.0	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	69.6	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	67.0	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	70.2	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	69.5	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	70.8	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	71.3	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	69.8	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	71.2	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	70.2	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3198924)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	67.5	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	72.0	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	70.6	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	71.1	63.9	115
		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: 3198924) - continued								
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	75.3	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	75.9	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	77.0	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	77.3	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	79.7	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	78.2	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	81.4	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	82.7	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	76.7	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	73.3	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	73.7	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	74.2	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: 3198925)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	94.6	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	91.3	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	93.5	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3200528)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	99.1	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3203579)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	121	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3198925)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	98.2	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	94.1	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	97.5	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3200528)								

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: 3200528) - continued								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	102	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3203579)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	121	75	127
EP080: BTEXN (QCLot: 3200528)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	102	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	106	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	118	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	118	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	120	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	119	70	124
EP080: BTEXN (QCLot: 3203579)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	98.2	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	98.2	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	98.2	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	99.5	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	96.9	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	83.4	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: 3199952)							
ES1326680-004	D01_291113_TH	EG035F: Mercury	7439-97-6	0.0100 mg/L	# 10.8	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3200838)							
ES1326639-002	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	82.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3201608)							
ES1326680-004	D01_291113_TH	EG094A-F: Arsenic	7440-38-2	50 µg/L	127	70	130
		EG094A-F: Barium	7440-39-3	50 µg/L	126	70	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	72.6	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	108	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.1	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: 3201608) - continued							
ES1326680-004	D01_291113_TH	EG094A-F: Cobalt	7440-48-4	50 µg/L	# Not Determined	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	115	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	130	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	98.9	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	# Not Determined	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3198924)							
ES1326696-002	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	39.5	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	78.5	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	74.9	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	76.7	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	75.0	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3198924)							
ES1326696-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	74.5	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	76.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3198925)							
ES1326696-002	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	111	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	104	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	103	67	153
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3200528)							
ES1326639-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	120	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3203579)							
ES1326538-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	112	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3198925)							
ES1326696-002	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	112	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	107	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	102	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3200528)							
ES1326639-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3203579)							
ES1326538-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	112	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
EP080: BTEXN (QCLot: 3200528)							
ES1326639-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	79.3	70	130
		EP080: Toluene	108-88-3	25 µg/L	98.5	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	110	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	109	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	111	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	124	70	130
EP080: BTEXN (QCLot: 3203579)							
ES1326538-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	82.9	70	130
		EP080: Toluene	108-88-3	25 µg/L	94.1	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	94.1	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	94.3	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	99.0	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	109	70	130

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

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

Sub-Matrix: **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
EP075(SIM)A: Phenolic Compounds (QCLot: 3198924)										
ES1326696-002	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	39.5	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	78.5	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	74.9	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	76.7	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	75.0	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3198924)										
ES1326696-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	74.5	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	76.0	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3198925)										
ES1326696-002	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	111	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	104	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	103	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3198925)										
ES1326696-002	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	112	----	74	150	----	----

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: 3198925) - continued										
ES1326696-002	Anonymous	EP071: >C16 - C34 Fraction	----	350 µg/L	107	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	102	----	67	153	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3199952)										
ES1326680-004	D01_291113_TH	EG035F: Mercury	7439-97-6	0.0100 mg/L	# 10.8	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3200528)										
ES1326639-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	120	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3200528)										
ES1326639-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	----	70	130	----	----
EP080: BTEXN (QCLot: 3200528)										
ES1326639-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	79.3	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	98.5	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	110	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	109	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	111	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	124	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3200838)										
ES1326639-002	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	82.0	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3201608)										
ES1326680-004	D01_291113_TH	EG094A-F: Arsenic	7440-38-2	50 µg/L	127	----	70	130	----	----
		EG094A-F: Barium	7440-39-3	50 µg/L	126	----	70	130	----	----
		EG094A-F: Beryllium	7440-41-7	50 µg/L	72.6	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	108	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.1	----	70	130	----	----
		EG094A-F: Cobalt	7440-48-4	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	115	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	130	----	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	98.9	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	# Not Determined	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3203579)										
ES1326538-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	112	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3203579)										

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: 3203579) - continued										
ES1326538-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	112	----	70	130	----	----
EP080: BTEXN (QCLot: 3203579)										
ES1326538-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	82.9	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	94.1	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	94.1	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	94.3	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	99.0	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	109	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1326680**	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	: 04-DEC-2013
Sampler	: NH	Issue Date	: 13-DEC-2013
Order number	: 0224198		
		No. of samples received	: 11
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 Plastic Bottle - Nitric Acid; Filtered (EG035F)							
LE_MW01, D01_291113_TH	**29-NOV-2013**	---	27-DEC-2013	----	**09-DEC-2013**	27-DEC-2013	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
LB_EW_MW01, LD_MW02, LD_MW04, LE_MW06, LE_MW03	**30-NOV-2013**	---	28-DEC-2013	----	**09-DEC-2013**	28-DEC-2013	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
RINSATE_291113_TH	**29-NOV-2013**	**----**	----	----	**09-DEC-2013**	27-DEC-2013	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
RINSATE_301113_TH	**30-NOV-2013**	**----**	----	----	**09-DEC-2013**	28-DEC-2013	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LE_MW01, D01_291113_TH	**29-NOV-2013**	---	28-MAY-2014	----	**09-DEC-2013**	28-MAY-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LB_EW_MW01, LD_MW02, LD_MW04, LE_MW06, LE_MW03	**30-NOV-2013**	---	29-MAY-2014	----	**09-DEC-2013**	29-MAY-2014	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T)							
RINSATE_291113_TH	**29-NOV-2013**	**09-DEC-2013**	28-MAY-2014	✓	**09-DEC-2013**	28-MAY-2014	✓
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T)							
RINSATE_301113_TH	**30-NOV-2013**	**09-DEC-2013**	29-MAY-2014	✓	**09-DEC-2013**	29-MAY-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F)							
LE_MW01, D01_291113_TH	**29-NOV-2013**	---	28-MAY-2014	----	**09-DEC-2013**	28-MAY-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F)							
LB_EW_MW01, LD_MW02, LD_MW04, LE_MW06, LE_MW03	**30-NOV-2013**	---	29-MAY-2014	----	**09-DEC-2013**	29-MAY-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
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T)							
RINSATE_291113_TH	**29-NOV-2013**	**09-DEC-2013**	28-MAY-2014	✓	**09-DEC-2013**	28-MAY-2014	✓
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T)							
RINSATE_301113_TH	**30-NOV-2013**	**09-DEC-2013**	29-MAY-2014	✓	**09-DEC-2013**	29-MAY-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
LE_MW01, D01_291113_TH, RINSATE_291113_TH	**29-NOV-2013**	**06-DEC-2013**	06-DEC-2013	✓	**09-DEC-2013**	18-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP071)							
LB_EW_MW01, LD_MW02, LD_MW04, LE_MW06, LE_MW03, RINSATE_301113_TH	**30-NOV-2013**	**06-DEC-2013**	07-DEC-2013	✓	**09-DEC-2013**	18-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LE_MW01, D01_291113_TH, RINSATE_291113_TH	**29-NOV-2013**	**06-DEC-2013**	06-DEC-2013	✓	**09-DEC-2013**	18-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LB_EW_MW01, LD_MW02, LD_MW04, LE_MW06, LE_MW03, RINSATE_301113_TH	**30-NOV-2013**	**06-DEC-2013**	07-DEC-2013	✓	**09-DEC-2013**	18-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LE_MW01, D01_291113_TH, RINSATE_291113_TH	**29-NOV-2013**	**06-DEC-2013**	06-DEC-2013	✓	**09-DEC-2013**	18-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LB_EW_MW01, LD_MW02, LD_MW04, LE_MW06, LE_MW03, RINSATE_301113_TH	**30-NOV-2013**	**06-DEC-2013**	07-DEC-2013	✓	**09-DEC-2013**	18-JAN-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
TRIP SPIKE, TRIP BLANK	**25-NOV-2013**	**09-DEC-2013**	09-DEC-2013	✓	**09-DEC-2013**	09-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
LE_MW01, D01_291113_TH, RINSATE_291113_TH	**29-NOV-2013**	**09-DEC-2013**	13-DEC-2013	✓	**09-DEC-2013**	13-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
LB_EW_MW01, LD_MW02, LD_MW04, LE_MW06, LE_MW03, RINSATE_301113_TH	**30-NOV-2013**	**09-DEC-2013**	14-DEC-2013	✓	**09-DEC-2013**	14-DEC-2013	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080)							
TRIP BLANK	**25-NOV-2013**	**09-DEC-2013**	09-DEC-2013	✓	**09-DEC-2013**	09-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
LE_MW01, D01_291113_TH, RINSATE_291113_TH	**29-NOV-2013**	**09-DEC-2013**	13-DEC-2013	✓	**09-DEC-2013**	13-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
LB_EW_MW01, LD_MW02, LD_MW04, LE_MW06, LE_MW03, RINSATE_301113_TH	**30-NOV-2013**	**09-DEC-2013**	14-DEC-2013	✓	**09-DEC-2013**	14-DEC-2013	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	9	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	9	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	17	**11.8**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	15	**13.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	2	**50.0**	**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	14	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	40	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	**5.9**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	15	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	2	**50.0**	**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	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	**5.9**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	15	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	2	**50.0**	**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	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	**5.9**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	15	**6.7**	**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	40	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
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)
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)

Analytical Methods	Method	Matrix	Method Descriptions
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.
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	3818388-002	----	**Phenol**	108-95-2	66.2 %	24.5-61.9%	**Recovery greater than upper control limit**
EP075(SIM)A: Phenolic Compounds	3818388-002	----	**2-Chlorophenol**	95-57-8	63.5 %	63.8-110%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EG035F: Dissolved Mercury by FIMS	ES1326680-004	D01_291113_TH	**Mercury**	7439-97-6	10.8 %	70-130%	**Recovery less than lower data quality objective**
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1326680-004	D01_291113_TH	**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	ES1326680-004	D01_291113_TH	**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	ES1326680-004	D01_291113_TH	**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	ES1326680-004	D01_291113_TH	**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

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

Outliers : Analysis Holding Time Compliance

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

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

Outliers : Frequency of Quality Control Samples

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

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

CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT: 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): 3 day TAT	FOR LABORATORY USE ONLY (Circle)
OFFICE:			Custody Seal Intact? Yes No N/A
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:	SITE: BAYSWATER / LIDDELL	COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Joseph Fenning	CONTACT PH:	OF: 1 2 3 4 5 6 7	Other comment:

SAMPLER: C. Henny	SAMPLER MOBILE: 0410367411	RELINQUISHED BY: [signature]	RECEIVED BY: [signature]	RELINQUISHED BY: KG	RECEIVED BY: Sep
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):	DATE/TIME: 6/12/13	DATE/TIME: 6/12/13 1705	DATE/TIME: 6/12/13 1705	DATE/TIME: 6/12/13 1900
Email Reports to (will default to PM if no other addresses are listed):					
Email Invoice to (will default to PM if no other addresses are listed):					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

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).

LAB ID (ALS USE)	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	W-2 ORC ~~8~~ 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-14~~ 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)	Additional Information
1	LE-MW04	6/12/13	W			X		X									
2	LE-MW07	↓	↓			↓		↓									
3	LE-MW08	↓	↓			↓		↓									
4	LE-MW09	↓	↓			↓		↓									
5	LE-MW05	↓	↓			↓		↓									
6	LL-MW06	↓	↓			↓		↓		X							
7	~~LL~~ MW07	↓	↓			↓		↓		X							
8	R01_061213_CH	↓	↓			↓		↓									~~TRH+BTEX~~
9	R01_061213_KF	↓	↓			↓		↓									TRH+BTEX
10	Trip blank																TRH+BTEX
11	Trip spike																TRH+BTEX

Environmental Division
Sydney
Work Order
ES1326711
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	: **ES1326711**		
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOE FERRING	Contact	: Barbara Hanna
Address	: GRND FLOOR, 33 SAUNDERS STREET PYRMONT NSW AUSTRALIA 2009	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 SYMPONY	Page	: 1 of 2
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: ----		
Sampler	: C.HENRY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 06-DEC-2013	Issue Date	: 09-DEC-2013 08:25
Client Requested Due Date	: 12-DEC-2013	Scheduled Reporting Date	: **12-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 3.6'C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 11
Security Seal	: Intact.	No. of samples analysed	: 11

General Comments

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

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 - EG093A-F Dissolved metals in saline water by	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP080 BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols	WATER - W-27 TRH/BTEXN/PAH/Phenols/8 Metals
ES1326711-001	06-DEC-2013 15:00	LE_MW04	✓	✓				✓	
ES1326711-002	06-DEC-2013 15:00	LE_MW07	✓	✓				✓	
ES1326711-003	06-DEC-2013 15:00	LE_MW08	✓	✓				✓	
ES1326711-004	06-DEC-2013 15:00	LE_MW09	✓	✓				✓	
ES1326711-005	06-DEC-2013 15:00	LE_MW05	✓	✓				✓	
ES1326711-006	06-DEC-2013 15:00	LL_MW06	✓	✓	✓			✓	
ES1326711-007	06-DEC-2013 15:00	LL_MW07	✓	✓	✓			✓	
ES1326711-008	06-DEC-2013 15:00	R01_061213_CH							✓
ES1326711-009	06-DEC-2013 15:00	R01_061213_KF							✓
ES1326711-010	06-DEC-2013 15:00	TRIP BLANK					✓		
ES1326711-011	06-DEC-2013 15:00	TRIP SPIKE				✓			

Proactive Holding Time Report

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

Requested Deliverables

MR JOE 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

THE ACCOUNTS PAYABLE

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1326711**	Page	: 1 of 10
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOE FERRING	Contact	: Barbara Hanna
Address	: GRND FLOOR, 33 SAUNDERS STREET PYRMONT NSW AUSTRALIA 2009	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 SYMPONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 06-DEC-2013
Sampler	: C.HENRY	Issue Date	: 13-DEC-2013
Site	: ----		
		No. of samples received	: 11
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
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

- **EG035: Poor matrix spike recovery was obtained for Mercury on sample ES1326503#2due to matrix interference. Confirmed by reanalysis**
- **EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LE_MW04	LE_MW07	LE_MW08	LE_MW09	LE_MW05
				Client sampling date / time	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1326711-001	ES1326711-002	ES1326711-003	ES1326711-004	ES1326711-005
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		**3.4**	**7.4**	**4.4**	**2.0**	**0.8**
Cadmium	7440-43-9	0.05	µg/L		**0.20**	**3.79**	**1.90**	**0.68**	**0.06**
Chromium	7440-47-3	0.2	µg/L		**4.9**	**14.0**	**13.8**	**1.9**	<0.2
Copper	7440-50-8	0.5	µg/L		**8.9**	**15.8**	**16.6**	**6.9**	**3.2**
Lead	7439-92-1	0.1	µg/L		**2.6**	**79.2**	**101**	**38.6**	**147**
Nickel	7440-02-0	0.5	µg/L		**63.7**	**645**	**341**	**119**	**4.4**
Zinc	7440-66-6	1	µg/L		**179**	**2310**	**852**	**314**	**32**
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	**4.0**	<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	**9.4**	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	**10.7**	<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	**48.1**	<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		**4.3**	**24.6**	<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		**2.1**	**1.6**	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L		**1.9**	**1.2**	<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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LE_MW04	LE_MW07	LE_MW08	LE_MW09	LE_MW05
				Client sampling date / time	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1326711-001	ES1326711-002	ES1326711-003	ES1326711-004	ES1326711-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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		8.3	27.4	<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		80	700	60	<20	<20
C10 - C14 Fraction	----	50	µg/L		310	670	300	70	<50
C15 - C28 Fraction	----	100	µg/L		770	320	290	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		1080	990	590	70	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		130	790	100	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		90	500	80	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L		490	670	340	100	<100
>C16 - C34 Fraction	----	100	µg/L		570	110	110	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		1060	780	450	100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		480	660	330	100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		4	49	2	<1	<1
Toluene	108-88-3	2	µg/L		15	110	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		4	14	5	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		8	70	12	<2	<2
ortho-Xylene	95-47-6	2	µg/L		7	50	4	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L		15	120	16	<2	<2
^ Sum of BTEX	----	1	µg/L		38	293	23	<1	<1
Naphthalene	91-20-3	5	µg/L		6	15	8	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LE_MW04	LE_MW07	LE_MW08	LE_MW09	LE_MW05
				Client sampling date / time	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1326711-001	ES1326711-002	ES1326711-003	ES1326711-004	ES1326711-005
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	0.1	%		20.0	24.1	21.7	24.3	23.1
2-Chlorophenol-D4	93951-73-6	0.1	%		46.8	59.4	45.6	49.5	52.8
2.4.6-Tribromophenol	118-79-6	0.1	%		101	80.5	74.3	81.8	76.7
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		70.1	68.8	63.9	65.9	66.4
Anthracene-d10	1719-06-8	0.1	%		53.5	70.6	58.8	70.6	78.3
4-Terphenyl-d14	1718-51-0	0.1	%		73.3	76.6	62.2	75.9	75.8
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		113	106	108	111	106
Toluene-D8	2037-26-5	0.1	%		114	104	110	105	110
4-Bromofluorobenzene	460-00-4	0.1	%		108	104	103	101	101

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LL_MW06	LL_MW07	R01_061213_CH	R01_061213_KF	TRIP BLANK
				Client sampling date / time	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00
					ES1326711-006	ES1326711-007	ES1326711-008	ES1326711-009	ES1326711-010
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		----	----	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L		----	----	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		----	----	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		----	----	**0.002**	<0.001	----
Lead	7439-92-1	0.001	mg/L		----	----	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L		----	----	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L		----	----	**0.008**	<0.005	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<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		**1.0**	**1.9**	----	----	----
Cadmium	7440-43-9	0.05	µg/L		**0.15**	**0.39**	----	----	----
Chromium	7440-47-3	0.2	µg/L		<0.2	<0.2	----	----	----
Copper	7440-50-8	0.5	µg/L		**3.2**	**2.8**	----	----	----
Lead	7439-92-1	0.1	µg/L		**0.2**	**0.2**	----	----	----
Nickel	7440-02-0	0.5	µg/L		**31.1**	**34.9**	----	----	----
Zinc	7440-66-6	1	µg/L		**53**	**52**	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2-Methylphenol	95-48-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	----
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LL_MW06	LL_MW07	R01_061213_CH	R01_061213_KF	TRIP BLANK
				Client sampling date / time	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1326711-006	ES1326711-007	ES1326711-008	ES1326711-009	ES1326711-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LL_MW06	LL_MW07	R01_061213_CH	R01_061213_KF	TRIP BLANK
				Client sampling date / time	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00	06-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1326711-006	ES1326711-007	ES1326711-008	ES1326711-009	ES1326711-010
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	%		67.0	73.0	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		29.0	27.7	20.1	24.2	----
2-Chlorophenol-D4	93951-73-6	0.1	%		39.4	62.6	43.4	56.0	----
2.4.6-Tribromophenol	118-79-6	0.1	%		69.7	85.0	61.4	71.8	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		47.4	81.8	61.3	75.0	----
Anthracene-d10	1719-06-8	0.1	%		71.3	86.3	67.0	78.0	----
4-Terphenyl-d14	1718-51-0	0.1	%		73.0	84.4	68.8	76.1	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		110	108	111	120	113
Toluene-D8	2037-26-5	0.1	%		94.0	103	104	108	98.5
4-Bromofluorobenzene	460-00-4	0.1	%		88.2	96.0	102	105	96.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TRIP SPIKE	----	----	----	----
				Client sampling date / time	06-DEC-2013 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1326711-011	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		**16**	----	----	----	----
Toluene	108-88-3	2	µg/L		**16**	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		**15**	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		**16**	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		**16**	----	----	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L		**32**	----	----	----	----
^ **Sum of BTEX**	----	1	µg/L		**79**	----	----	----	----
Naphthalene	91-20-3	5	µg/L		**18**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**110**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**98.4**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**99.8**	----	----	----	----

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	: **ES1326711**	Page	: 1 of 12
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOE FERRING	Contact	: Barbara Hanna
Address	: GRND FLOOR, 33 SAUNDERS STREET PYRMONT NSW AUSTRALIA 2009	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 SYMPONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 06-DEC-2013
Sampler	: C.HENRY	Issue Date	: 13-DEC-2013
Order number	: ----		
		No. of samples received	: 11
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
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 (%)*
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3205429)									
ES1326711-008	R01_061213_CH	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	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.008	0.007	17.9	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3205428)									
ES1326503-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1326711-001	LE_MW04	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: 3208218)									
ES1326637-001	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.78	0.80	1.8	0% - 50%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.3	0.3	0.0	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	1.8	1.8	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	1.0	1.0	0.0	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	116	120	3.8	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	106	110	4.2	0% - 20%
ES1326711-004	LE_MW09	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.68	0.72	5.6	0% - 50%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	38.6	41.3	6.8	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	2.0	2.1	0.0	0% - 50%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	1.9	2.1	6.2	0% - 50%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	6.9	7.2	4.2	0% - 50%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	119	124	4.2	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	314	328	4.2	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3200594)									
ES1326711-006	LL_MW06	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3200593)									
ES1326711-006	LL_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

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: 3200593) - continued									
ES1326711-006	LL_MW06	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
ES1326637-005	Anonymous	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3200593)									
ES1326711-006	LL_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	<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
ES1326637-005	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<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

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: 3200593) - continued									
ES1326637-005	Anonymous	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: 3200592)									
ES1326711-006	LL_MW06	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
ES1326637-005	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: 3204652)									
ES1326637-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1326711-002	LE_MW07	EP080: C6 - C9 Fraction	----	20	µg/L	700	720	3.4	0% - 20%
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3200592)									
ES1326711-006	LL_MW06	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
ES1326637-005	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3204652)									
ES1326637-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1326711-002	LE_MW07	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	790	820	3.5	0% - 20%
EP080: BTEXN (QC Lot: 3204652)									
ES1326637-001	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
ES1326711-002	LE_MW07	EP080: Benzene	71-43-2	1	µg/L	49	51	3.4	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	110	113	2.7	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 (%)*
EP080: BTEXN (QC Lot: 3204652) - continued									
ES1326711-002	LE_MW07	EP080: Ethylbenzene	100-41-4	2	µg/L	14	15	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	70	72	2.7	0% - 20%
		EP080: ortho-Xylene	95-47-6	2	µg/L	50	52	4.5	0% - 20%
		EP080: Naphthalene	91-20-3	5	µg/L	15	16	10.1	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: 3205429)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.2	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.0	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.1	81	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	90.6	80	112
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.3	83	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.3	81	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	89.4	80	116
EG035F: Dissolved Mercury by FIMS (QCLot: 3205428)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	85.4	78	114
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3208218)								
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	101	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	106	71	123
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	110	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	113	76	134
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3200594)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	93.0	61.6	107
EP075(SIM)A: Phenolic Compounds (QCLot: 3200593)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	56.8	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	93.3	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	66.9	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	68.1	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	84.8	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	79.7	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	79.1	59.3	122
		1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 3200593) - continued								
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	90.6	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	81.1	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	70.3	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	97.8	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	78.2	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3200593)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	79.2	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	78.9	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	80.7	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	95.1	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	92.1	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	98.6	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	102	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	99.2	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	86.3	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	90.6	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	79.6	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	98.8	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	98.1	63.3	117
		0.5	µg/L	<0.5	----	----	----	----
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	5 µg/L	92.9	59.9	118
		1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3200593) - continued								
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	94.6	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	90.5	59.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3200592)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	90.8	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	99.5	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	96.6	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3204652)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	85.6	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3200592)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	91.9	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	98.6	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	97.2	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3204652)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	83.3	75	127
EP080: BTEXN (QCLot: 3204652)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	82.9	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	86.4	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	82.5	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	82.3	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	85.7	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	84.2	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
EG020F: Dissolved Metals by ICP-MS (QCLot: 3205429)							
ES1326711-009	R01_061213_KF	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	103	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	103	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	101	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3205429) - continued							
ES1326711-009	R01_061213_KF	EG020A-F: Copper	7440-50-8	0.2 mg/L	98.7	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	101	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	105	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	110	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3205428)							
ES1326503-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	# 31.4	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3208218)							
ES1326637-002	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	124	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	94.0	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.6	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	99.8	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	99.6	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	86.5	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	# Not Determined	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3200594)							
ES1326711-007	LL_MW07	EP066: Total Polychlorinated biphenyls	----	10 µg/L	101	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3200593)							
ES1326711-007	LL_MW07	EP075(SIM): Phenol	108-95-2	20 µg/L	40.5	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	88.6	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	71.4	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	73.9	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	76.6	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3200593)							
ES1326711-007	LL_MW07	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	72.3	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	78.7	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3200592)							
ES1326711-007	LL_MW07	EP071: C10 - C14 Fraction	----	200 µg/L	107	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	103	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	87.1	67	153
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3204652)							
ES1326637-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	124	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3200592)							
ES1326711-007	LL_MW07	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	93.1	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	96.7	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	78.9	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 Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3204652)							
ES1326637-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	121	70	130
EP080: BTEXN (QCLot: 3204652)							
ES1326637-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	95.2	70	130
		EP080: Toluene	108-88-3	25 µg/L	105	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	103	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	103	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	105	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	82.0	70	130

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

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

Sub-Matrix: **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
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3200592)										
ES1326711-007	LL_MW07	EP071: C10 - C14 Fraction	----	200 µg/L	107	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	103	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	87.1	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3200592)										
ES1326711-007	LL_MW07	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	93.1	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	96.7	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	78.9	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3200593)										
ES1326711-007	LL_MW07	EP075(SIM): Phenol	108-95-2	20 µg/L	40.5	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	88.6	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	71.4	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	73.9	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	76.6	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3200593)										
ES1326711-007	LL_MW07	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	72.3	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	78.7	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3200594)										
ES1326711-007	LL_MW07	EP066: Total Polychlorinated biphenyls	----	10 µg/L	101	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3204652)										
ES1326637-001	Anonymous	EP080: C6 - C9 Fraction	----	325 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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3204652)										
ES1326637-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	121	----	70	130	----	----
EP080: BTEXN (QCLot: 3204652)										
ES1326637-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	95.2	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	105	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	103	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	103	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	105	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	82.0	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3205428)										
ES1326503-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	# 31.4	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3205429)										
ES1326711-009	R01_061213_KF	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	103	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	103	----	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	98.7	----	70	130	----	----
		EG020A-F: Lead	7439-92-1	0.2 mg/L	101	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	105	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	110	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3208218)										
ES1326637-002	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	124	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	94.0	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.6	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	99.8	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	99.6	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	86.5	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	# Not Determined	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1326711**	Page	: 1 of 6
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOE FERRING	Contact	: Barbara Hanna
Address	: GRND FLOOR, 33 SAUNDERS STREET PYRMONT NSW AUSTRALIA 2009	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 SYMPONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 06-DEC-2013
Sampler	: C.HENRY	Issue Date	: 13-DEC-2013
Order number	: ----		
		No. of samples received	: 11
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
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
R01_061213_CH, R01_061213_KF	**06-DEC-2013**	**---**	04-JUN-2014	----	**11-DEC-2013**	04-JUN-2014	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LE_MW04, LE_MW07, LE_MW08, LE_MW09, LE_MW05, LL_MW06, LL_MW07	**06-DEC-2013**	**---**	03-JAN-2014	----	**11-DEC-2013**	03-JAN-2014	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
R01_061213_CH, R01_061213_KF	**06-DEC-2013**	**---**	03-JAN-2014	----	**11-DEC-2013**	03-JAN-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LE_MW04, LE_MW07, LE_MW08, LE_MW09, LE_MW05, LL_MW06, LL_MW07	**06-DEC-2013**	**---**	04-JUN-2014	----	**12-DEC-2013**	04-JUN-2014	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
LL_MW06, LL_MW07	**06-DEC-2013**	**09-DEC-2013**	13-DEC-2013	✓	**11-DEC-2013**	18-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber Glass Bottle - Unpreserved (EP071)							
LE_MW04, LE_MW07, LE_MW08, LE_MW09, LE_MW05, LL_MW06, LL_MW07, R01_061213_CH, R01_061213_KF	**06-DEC-2013**	**09-DEC-2013**	13-DEC-2013	✓	**11-DEC-2013**	18-JAN-2014	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LE_MW04, LE_MW07, LE_MW08, LE_MW09, LE_MW05, LL_MW06, LL_MW07, R01_061213_CH, R01_061213_KF	**06-DEC-2013**	**09-DEC-2013**	13-DEC-2013	✓	**11-DEC-2013**	18-JAN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LE_MW04, LE_MW07, LE_MW08, LE_MW09, LE_MW05, LL_MW06, LL_MW07, R01_061213_CH, R01_061213_KF	**06-DEC-2013**	**09-DEC-2013**	13-DEC-2013	✓	**11-DEC-2013**	18-JAN-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
LE_MW04, LE_MW07, LE_MW08, LE_MW09, LE_MW05, LL_MW06, LL_MW07, R01_061213_CH, R01_061213_KF, TRIP BLANK, TRIP SPIKE	**06-DEC-2013**	**11-DEC-2013**	20-DEC-2013	✓	**11-DEC-2013**	20-DEC-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber VOC Vial - Sulfuric Acid (EP080)							
LE_MW04, LE_MW07, LE_MW08, LE_MW09, LE_MW05, LL_MW06, LL_MW07, R01_061213_CH, R01_061213_KF, TRIP BLANK	**06-DEC-2013**	**11-DEC-2013**	20-DEC-2013	✓	**11-DEC-2013**	20-DEC-2013	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		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 by ICP-MS - Suite A	EG020A-F	1	2	**50.0**	**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
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	19	**10.5**	**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
TPH - Semivolatile Fraction	EP071	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	2	**50.0**	**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	19	**5.3**	**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
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	2	**50.0**	**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	19	**5.3**	**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
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	2	**50.0**	**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	19	**5.3**	**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
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
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)
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)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
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							
EG035F: Dissolved Mercury by FIMS	ES1326503-002	Anonymous	**Mercury**	7439-97-6	31.4 %	70-130%	**Recovery less than lower data quality objective**
EG094F: Dissolved Metals in Fresh Water by ORC-ICPI	ES1326637-002	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.**
- **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.

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

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 02 8359 0890 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

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MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

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TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: ERM	TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)	
OFFICE: SYDNEY	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☑ Non Standard or urgent TAT (List due date): 48hr TAT	Custody Seal Intact?	Yes No N/A
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13	Free ice / frozen ice bricks present upon receipt?	Yes No N/A
ORDER NUMBER: 224193	SITE: BAYSWATER LIDDELL	Random Sample Temperature on Receipt:	°C
PROJECT MANAGER: Joe Fenny	CONTACT PH: 0422497068	Other comment:	
SAMPLER: Kate Fox	SAMPLER MOBILE: 0452446815		
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.erm.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:
DATE/TIME: 13/12/13	DATE/TIME: 13/12/13 1645	DATE/TIME: 13/12/13 1700	DATE/TIME: 13/12/13 19:50

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, Tl) Hg-LR	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	LO_MWΦ3	13/12/13	W	(4xVS, 3xAG, 1xPFOS, 1xORC unpreserved)	9	X			X	X	X	X		
2	LO_MW16				9									
3	LO_MW15				9									
4	RΦ1_131213_KF			(4xVS, 3xAG, 1xPFOS, 1xN)	9									
5	TS10_131213			2xVS	2									BTEXN
6	TB4_131213			2xVS	2									BTEXN+TRH
					TOTAL									

TAT

Environmental Division
Sydney
Work Order
ES1327431

Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plast V = VOA Vial HCl Preserved; VB = VOA Vial Sodi Z = Zinc Acetate Preserved Bottle; E = EDTA Pre

; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = 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; Sulphate Soils; B = Unpreserved Bag.

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES1327431**		
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	Page	: 1 of 3
Order number	: 224198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: LIDDELL		
Sampler	: KF	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 14-DEC-2013	Issue Date	: 14-DEC-2013 13:09
Client Requested Due Date	: 18-DEC-2013	Scheduled Reporting Date	: **18-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 1.5'C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 6
Security Seal	: Intact.	No. of samples analysed	: 6

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
- 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
EG035F : Dissolved Mercury by FIMS		
LO_MW16	- ORC Filtered - REQUIRES ACIDIFICATION	- Clear Plastic Bottle - Nitric Acid; Filtered
LO_MW15	- ORC Filtered - REQUIRES ACIDIFICATION	- Clear Plastic Bottle - Nitric Acid; Filtered
EG093A-F : Dissolved Metals in Saline Water -Suite A by ORC-ICPMS		
LO_MW16	- ORC Filtered - REQUIRES ACIDIFICATION	- Clear HDPE (U-T ORC) - UHP Nitric Acid; Filtered
LO_MW15	- ORC Filtered - REQUIRES ACIDIFICATION	- Clear HDPE (U-T ORC) - UHP Nitric Acid; Filtered

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 - EG093A-F Dissolved metals in saline water by ORC-ICPMS	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-02T 8 metals (Total)	WATER - W-18 TRH(C6 - C9)/BTEXN
ES1327431-001	13-DEC-2013 15:00	LO_MW03			✓	✓		✓		
	14-DEC-2013 15:00	LO_MW03	✓	✓						
ES1327431-002	13-DEC-2013 15:00	LO_MW16	✓	✓	✓	✓		✓		
ES1327431-003	13-DEC-2013 15:00	LO_MW15	✓	✓	✓	✓		✓		
ES1327431-004	13-DEC-2013 15:00	R01_131213_KF			✓	✓		✓	✓	
ES1327431-005	13-DEC-2013 15:00	TS10_131213					✓			
ES1327431-006	13-DEC-2013 15:00	TB04_131213								✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1327431-001	13-DEC-2013 15:00	LO_MW03	✓
ES1327431-002	13-DEC-2013 15:00	LO_MW16	✓
ES1327431-003	13-DEC-2013 15:00	LO_MW15	✓
ES1327431-004	13-DEC-2013 15:00	R01_131213_KF	✓

Proactive Holding Time Report

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

Requested Deliverables

MR JOSEPH FERRING

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

SYMPHONY ERARING

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

THE ACCOUNTS PAYABLE

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1327431**	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	: 224198		
C-O-C number	: ----	Date Samples Received	: 14-DEC-2013
Sampler	: KF	Issue Date	: 18-DEC-2013
Site	: LIDDELL		
		No. of samples received	: 6
Quote number	: SY/794/13	No. of samples analysed	: 6

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

- **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_MW03	LO_MW16	LO_MW15	R01_131213_KF	TS10_131213
				Client sampling date / time	14-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00
					ES1327431-001	ES1327431-002	ES1327431-003	ES1327431-004	ES1327431-005
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		----	----	----	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L		----	----	----	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		----	----	----	<0.001	----
Copper	7440-50-8	0.001	mg/L		----	----	----	<0.001	----
Nickel	7440-02-0	0.001	mg/L		----	----	----	<0.001	----
Lead	7439-92-1	0.001	mg/L		----	----	----	<0.001	----
Zinc	7440-66-6	0.005	mg/L		----	----	----	<0.005	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<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									
Arsenic	7440-38-2	0.2	µg/L		**0.3**	**0.6**	**0.8**	----	----
Cadmium	7440-43-9	0.05	µg/L		**0.18**	**1.08**	**0.18**	----	----
Chromium	7440-47-3	0.2	µg/L		**0.3**	**0.8**	**3.4**	----	----
Copper	7440-50-8	0.5	µg/L		**1.2**	**4.1**	**4.6**	----	----
Lead	7439-92-1	0.1	µg/L		**1.6**	**37.2**	**0.4**	----	----
Nickel	7440-02-0	0.5	µg/L		**19.7**	**80.3**	**42.1**	----	----
Zinc	7440-66-6	1	µg/L		**9**	**140**	**164**	----	----
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	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LO_MW03	LO_MW16	LO_MW15	R01_131213_KF	TS10_131213
				Client sampling date / time	14-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00
					ES1327431-001	ES1327431-002	ES1327431-003	ES1327431-004	ES1327431-005
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
tert-Butylbenzene	98-06-6	5	µg/L		<5	<5	<5	<5	----
p-Isopropyltoluene	99-87-6	5	µg/L		<5	<5	<5	<5	----
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		**49**	<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		**78**	<5	<5	<5	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW03	LO_MW16	LO_MW15	R01_131213_KF	TS10_131213
				Client sampling date / time	14-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327431-001	ES1327431-002	ES1327431-003	ES1327431-004	ES1327431-005
EP074E: Halogenated Aliphatic Compounds - Continued									
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	----
1.3-Dichloropropane	142-28-9	5	µg/L		<5	<5	<5	<5	----
Tetrachloroethene	127-18-4	5	µg/L		**343**	<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	----
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2-Methylphenol	95-48-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LO_MW03	LO_MW16	LO_MW15	R01_131213_KF	TS10_131213
				Client sampling date / time	14-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00
					ES1327431-001	ES1327431-002	ES1327431-003	ES1327431-004	ES1327431-005
EP075(SIM)A: Phenolic Compounds - Continued									
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	----
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		**600**	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW03	LO_MW16	LO_MW15	R01_131213_KF	TS10_131213
				Client sampling date / time	14-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327431-001	ES1327431-002	ES1327431-003	ES1327431-004	ES1327431-005
EP080/071: Total Petroleum Hydrocarbons - Continued									
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		**620**	<20	<20	<20	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		**620**	<20	<20	<20	----
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<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	**17**
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	**17**
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	**17**
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	**18**
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	**35**
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	**86**
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	**17**
EP231: Perfluorinated Compounds									
PFOS	1763-23-1	0.02	µg/L		**0.09**	<0.02	<0.02	<0.02	----
PFOA	335-67-1	0.02	µg/L		**0.05**	<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	%		**73.0**	**68.0**	**70.8**	**74.0**	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**123**	**132**	**131**	**129**	----
Toluene-D8	2037-26-5	0.1	%		**106**	**101**	**111**	**108**	----
4-Bromofluorobenzene	460-00-4	0.1	%		**102**	**101**	**116**	**108**	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**23.4**	**31.2**	**22.4**	**25.9**	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**50.8**	**60.5**	**48.0**	**58.0**	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**74.2**	**65.0**	**68.9**	**67.1**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LO_MW03	LO_MW16	LO_MW15	R01_131213_KF	TS10_131213
				Client sampling date / time	14-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00	13-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327431-001	ES1327431-002	ES1327431-003	ES1327431-004	ES1327431-005
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		63.7	69.4	57.1	68.7	----
Anthracene-d10	1719-06-8	0.1	%		87.9	97.8	73.2	76.8	----
4-Terphenyl-d14	1718-51-0	0.1	%		99.4	81.8	81.8	79.1	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		109	117	121	114	71.6
Toluene-D8	2037-26-5	0.1	%		98.1	93.1	103	99.7	91.8
4-Bromofluorobenzene	460-00-4	0.1	%		96.3	94.6	108	101	70.9

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB04_131213	----	----	----	----
				Client sampling date / time	13-DEC-2013 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1327431-006	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
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	----	----	----	----
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	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**118**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**113**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**108**	----	----	----	----

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	: **ES1327431**	Page	: 1 of 20
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	: 14-DEC-2013
Sampler	: KF	Issue Date	: 18-DEC-2013
Order number	: 224198		
		No. of samples received	: 6
Quote number	: SY/794/13	No. of samples analysed	: 6

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 (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 3215707)									
ES1326945-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.065	0.065	0.0	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.013	0.013	0.0	No Limit
ES1327207-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.073	0.070	5.0	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.003	0.002	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.052	0.046	10.2	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3215703)									
ES1327421-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1327436-003	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: 3218696)									
ES1327011-003	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: 3213226)									
ES1326945-003	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1326996-007	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: 3218295)									
ES1327421-001	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	1.2	1.1	0.0	0% - 50%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.6	0.6	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	2.1	2.4	15.2	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	4.9	5.1	4.3	0% - 50%
		EG094A-F: Zinc	7440-66-6	1	µg/L	18	21	16.0	0% - 20%
ES1327436-001	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.19	0.17	9.6	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	159	148	7.6	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	1.3	1.3	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	1.2	1.1	0.0	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	6.3	5.8	8.8	0% - 50%

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: 3218295) - continued									
ES1327436-001	Anonymous	EG094A-F: Nickel	7440-02-0	0.5	µg/L	10.0	9.0	9.8	0% - 50%
		EG094A-F: Zinc	7440-66-6	1	µg/L	25	23	8.0	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3213905)									
ES1327431-001	LO_MW03	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
ES1327435-006	Anonymous	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3213673)									
ES1327431-001	LO_MW03	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
ES1327435-006	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
		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: 3213673)									
ES1327431-001	LO_MW03	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

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: 3213673) - continued									
ES1327431-001	LO_MW03	EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
ES1327435-006	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: 3213673)									
ES1327431-001	LO_MW03	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
ES1327435-006	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 3213673)									
ES1327431-001	LO_MW03	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
ES1327435-006	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: 3213673)									
ES1327431-001	LO_MW03	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	49	50	0.0	0% - 50%
		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	78	80	2.4	0% - 50%
		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	343	333	3.0	0% - 20%
		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 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: 3213673) - continued									
ES1327431-001	LO_MW03	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
ES1327435-006	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
EP074F: Halogenated Aromatic Compounds (QC Lot: 3213673)									
ES1327431-001	LO_MW03	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

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: 3213673) - continued									
ES1327431-001	LO_MW03	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
ES1327435-006	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: 3213673)									
ES1327431-001	LO_MW03	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
ES1327435-006	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: 3213673)									
ES1327431-001	LO_MW03	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
ES1327435-006	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3213904)									
ES1327431-001	LO_MW03	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

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: 3213904) - continued									
ES1327435-006	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: 3213904)									
ES1327431-001	LO_MW03	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
ES1327435-006	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

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: 3213904) - continued									
ES1327435-006	Anonymous	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: 3213674)									
ES1327431-001	LO_MW03	EP080: C6 - C9 Fraction	----	20	µg/L	600	620	3.8	0% - 20%
ES1327435-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3213675)									
ES1327129-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1327129-007	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	41400	40800	1.5	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3213903)									
ES1327431-001	LO_MW03	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
ES1327435-006	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3213674)									
ES1327431-001	LO_MW03	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	620	640	3.4	0% - 20%
ES1327435-006	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: 3213675)									
ES1327129-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1327129-007	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	42000	41400	1.4	0% - 20%
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3213903)									
ES1327431-001	LO_MW03	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
ES1327435-006	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: 3213674)									
ES1327431-001	LO_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

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: 3213674) - continued									
ES1327435-006	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: 3213675)									
ES1327129-005	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
ES1327129-007	Anonymous	EP080: Benzene	71-43-2	1	µg/L	3190	3470	8.6	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	9720	8880	9.0	0% - 20%
		EP080: Ethylbenzene	100-41-4	2	µg/L	1660	1670	0.6	0% - 20%
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	7090	7150	0.8	0% - 20%
		EP080: ortho-Xylene	95-47-6	2	µg/L	2210	2190	0.9	0% - 20%
		EP080: Naphthalene	91-20-3	5	µg/L	287	285	0.8	No Limit
EP231: Perfluorinated Compounds (QC Lot: 3213505)									
ES1327431-001	LO_MW03	EP231: PFOS	1763-23-1	0.02	µg/L	0.09	0.10	0.0	No Limit
		EP231: PFOA	335-67-1	0.02	µg/L	0.05	0.05	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
ES1327435-005	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
EG020T: Total Metals by ICP-MS (QCLot: 3215707)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	79	121
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	106	82	114
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	108	83	115
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	111	83	117
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	102	85	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	115	83	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	110	76	118
EG035F: Dissolved Mercury by FIMS (QCLot: 3215703)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	97.7	78	114
EG035F: Dissolved Mercury by FIMS (QCLot: 3218696)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	99.3	78	114
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3213226)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	106	77	115
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3218295)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	91.0	75	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	89.0	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	88.7	71	123
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	93.1	77	125
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	87.5	74	118
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	93.2	72	128
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	88.0	76	134
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3219120)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	91.0	75	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	89.0	78	112
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	88.7	71	123
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	93.1	77	125
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	87.5	74	118
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	93.2	72	128
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	88.0	76	134
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3213905)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	91.0	61.6	107
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3213673)								
EP074: Benzene	71-43-2	1	µg/L	<1	10 µg/L	107	78	116
EP074: Toluene	108-88-3	2	µg/L	<2	10 µg/L	115	68	128

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
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3213673) - continued								
EP074: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	108	74	118
EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	20 µg/L	108	74	122
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	94.1	74	118
EP074: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	106	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	107	67	123
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	103	70	122
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	110	69	123
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	101	71	121
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	105	70	122
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	106	67	123
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	110	62	126
EP074B: Oxygenated Compounds (QCLot: 3213673)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	91.3	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	90.8	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	95.7	61	139
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	86.7	65	137
EP074C: Sulfonated Compounds (QCLot: 3213673)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	88.5	72.8	127
EP074D: Fumigants (QCLot: 3213673)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	104	61	119
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	98.1	76	120
EP074: cis-1.3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	86.9	62	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	80.8	61	119
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	88.1	69	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 3213673)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	70.0	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	75.4	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	82.1	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	82.8	56	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	88.2	63	135
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	90.6	65	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	97.8	69	123
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	77.3	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	104	71	119
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	101	75	119
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	100	77	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
EP074E: Halogenated Aliphatic Compounds (QCLot: 3213673) - continued								
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	101	61	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	109	73	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	100	63	121
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	95.0	78	122
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	104	74	120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	88.5	74	118
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	97.2	75	123
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	97.6	79	121
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	102	72	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	86.2	66	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	93.2	60	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	93.7	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	90.5	70	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	91.9	74	128
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	93.0	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	78.8	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	114	58	132
EP074F: Halogenated Aromatic Compounds (QCLot: 3213673)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	106	80	118
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	97.3	76	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	105	71	121
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	104	71	121
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	104	74	120
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	102	72	120
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	100	77	117
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	99.3	60	126
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	100	67	125
EP074G: Trihalomethanes (QCLot: 3213673)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	101	76	118
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	87.6	64	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	84.8	65	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	86.5	73.5	126
EP074H: Naphthalene (QCLot: 3213673)								
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	102	61	125
EP075(SIM)A: Phenolic Compounds (QCLot: 3213904)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	39.8	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	66.4	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: 3213904) - continued								
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	70.7	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	59.7	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	84.8	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	86.0	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	89.5	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	85.9	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	73.8	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	79.6	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	76.8	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213904)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	88.2	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	76.9	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	72.5	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	82.7	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	84.6	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	88.8	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	94.4	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	90.3	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	74.1	64.1	117
		1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213904) - continued								
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	80.1	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	73.5	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	84.5	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	75.1	63.3	117
		0.5	µg/L	<0.5	----	----	----	----
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	5 µg/L	77.5	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	75.8	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	79.7	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: 3213674)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	90.0	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213675)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	98.9	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213903)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	88.3	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	98.6	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	102	62	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213674)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	92.7	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213675)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	102	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213903)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	91.4	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	101	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	104	67	127
EP080: BTEXN (QCLot: 3213674)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	89.9	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	89.6	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	88.1	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	87.3	69	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
EP080: BTEXN (QCLot: 3213674) - continued								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	91.7	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	91.2	70	124
EP080: BTEXN (QCLot: 3213675)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	99.5	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	92.3	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	90.0	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	91.4	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	86.8	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	97.6	70	124
EP231: Perfluorinated Compounds (QCLot: 3213505)								
EP231: PFOS	1763-23-1	0.02	µg/L	<0.02	0.25 µg/L	117	70	136
EP231: PFOA	335-67-1	0.02	µg/L	<0.02	0.25 µg/L	101	72	134
EP231: 6:2 Fluorotelomer Sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	1.25 µg/L	92.2	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
EG020T: Total Metals by ICP-MS (QCLot: 3215707)							
ES1326945-003	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	114	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	110	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	110	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	114	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	109	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	110	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	110	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3215703)							
ES1327421-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	79.6	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3218696)							
ES1327431-001	LO_MW03	EG035F: Mercury	7439-97-6	0.0100 mg/L	78.4	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3213226)							
ES1326945-004	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	87.2	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3218295)							

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: 3218295) - continued							
ES1327421-002	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	125	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	104	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	102	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	117	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	102	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	116	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	111	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3213905)							
ES1327431-002	LO_MW16	EP066: Total Polychlorinated biphenyls	----	10 µg/L	86.0	70	130
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3213673)							
ES1327431-001	LO_MW03	EP074: Benzene	71-43-2	25 µg/L	108	70	130
		EP074: Toluene	108-88-3	25 µg/L	110	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3213673)							
ES1327431-001	LO_MW03	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	95.9	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	87.1	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3213673)							
ES1327431-001	LO_MW03	EP074: Chlorobenzene	108-90-7	25 µg/L	113	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3213904)							
ES1327431-002	LO_MW16	EP075(SIM): Phenol	108-95-2	20 µg/L	39.4	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	76.3	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	75.2	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	81.3	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	85.4	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213904)							
ES1327431-002	LO_MW16	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	79.5	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	83.8	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213674)							
ES1327431-001	LO_MW03	EP080: C6 - C9 Fraction	----	325 µg/L	104	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213675)							
ES1327129-005	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	120	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213903)							
ES1327431-002	LO_MW16	EP071: C10 - C14 Fraction	----	200 µg/L	102	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	95.0	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	106	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213674)							
ES1327431-001	LO_MW03	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	112	70	130

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 Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213675)							
ES1327129-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	119	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213903)							
ES1327431-002	LO_MW16	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	99.2	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	95.2	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	95.6	67	153
EP080: BTEXN (QCLot: 3213674)							
ES1327431-001	LO_MW03	EP080: Benzene	71-43-2	25 µg/L	96.4	70	130
		EP080: Toluene	108-88-3	25 µg/L	95.8	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	97.1	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	97.8	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	102	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	96.2	70	130
EP080: BTEXN (QCLot: 3213675)							
ES1327129-005	Anonymous	EP080: Benzene	71-43-2	25 µg/L	107	70	130
		EP080: Toluene	108-88-3	25 µg/L	95.8	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	94.8	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	95.0	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	93.6	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	104	70	130
EP231: Perfluorinated Compounds (QCLot: 3213505)							
ES1327431-001	LO_MW03	EP231: PFOS	1763-23-1	0.25 µg/L	114	70	136
		EP231: PFOA	335-67-1	0.25 µg/L	108	72	134
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	96.8	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
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3213226)										
ES1326945-004	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	87.2	----	70	130	----	----
EP231: Perfluorinated Compounds (QCLot: 3213505)										
ES1327431-001	LO_MW03	EP231: PFOS	1763-23-1	0.25 µg/L	114	----	70	136	----	----
		EP231: PFOA	335-67-1	0.25 µg/L	108	----	72	134	----	----

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: 3213505) - continued										
ES1327431-001	LO_MW03	EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	96.8	----	61	145	----	----
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3213673)										
ES1327431-001	LO_MW03	EP074: Benzene	71-43-2	25 µg/L	108	----	70	130	----	----
		EP074: Toluene	108-88-3	25 µg/L	110	----	70	130	----	----
EP074E: Halogenated Aliphatic Compounds (QCLot: 3213673)										
ES1327431-001	LO_MW03	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	95.9	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	25 µg/L	87.1	----	70	130	----	----
EP074F: Halogenated Aromatic Compounds (QCLot: 3213673)										
ES1327431-001	LO_MW03	EP074: Chlorobenzene	108-90-7	25 µg/L	113	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213674)										
ES1327431-001	LO_MW03	EP080: C6 - C9 Fraction	----	325 µg/L	104	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213674)										
ES1327431-001	LO_MW03	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	112	----	70	130	----	----
EP080: BTEXN (QCLot: 3213674)										
ES1327431-001	LO_MW03	EP080: Benzene	71-43-2	25 µg/L	96.4	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	95.8	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	97.1	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	97.8	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	102	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	96.2	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213675)										
ES1327129-005	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	120	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213675)										
ES1327129-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	119	----	70	130	----	----
EP080: BTEXN (QCLot: 3213675)										
ES1327129-005	Anonymous	EP080: Benzene	71-43-2	25 µg/L	107	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	95.8	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	94.8	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	95.0	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	93.6	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	104	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213903)										
ES1327431-002	LO_MW16	EP071: C10 - C14 Fraction	----	200 µg/L	102	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	95.0	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	106	----	67	153	----	----

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: 3213903)										
ES1327431-002	LO_MW16	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	99.2	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	95.2	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	95.6	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3213904)										
ES1327431-002	LO_MW16	EP075(SIM): Phenol	108-95-2	20 µg/L	39.4	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	76.3	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	75.2	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	81.3	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	85.4	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213904)										
ES1327431-002	LO_MW16	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	79.5	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	83.8	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3213905)										
ES1327431-002	LO_MW16	EP066: Total Polychlorinated biphenyls	----	10 µg/L	86.0	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3215703)										
ES1327421-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	79.6	----	70	130	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3215707)										
ES1326945-003	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	114	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	110	----	70	130	----	----
		EG020A-T: Chromium	7440-47-3	1 mg/L	110	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1 mg/L	114	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1 mg/L	109	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1 mg/L	110	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1 mg/L	110	----	70	130	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3218295)										
ES1327421-002	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	125	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	104	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	102	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	117	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	102	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	116	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	111	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3218696)										
ES1327431-001	LO_MW03	EG035F: Mercury	7439-97-6	0.0100 mg/L	78.4	----	70	130	----	----

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1327431**	Page	: 1 of 9
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 14-DEC-2013
Sampler	: KF	Issue Date	: 18-DEC-2013
Order number	: 224198		
		No. of samples received	: 6
Quote number	: SY/794/13	No. of samples analysed	: 6

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

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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

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

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

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)							
R01_131213_KF	**13-DEC-2013**	**17-DEC-2013**	11-JUN-2014	✓	**17-DEC-2013**	11-JUN-2014	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LO_MW16	**13-DEC-2013**	**---**	27-DEC-2013	----	**17-DEC-2013**	27-DEC-2013	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LO_MW03	**14-DEC-2013**	**---**	11-JAN-2014	----	**18-DEC-2013**	11-JAN-2014	✓
ORC Filtered - REQUIRES ACIDIFICATION (EG035F)							
LO_MW15	**13-DEC-2013**	**---**	27-DEC-2013	----	**17-DEC-2013**	27-DEC-2013	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
R01_131213_KF	**13-DEC-2013**	**----**	----	----	**16-DEC-2013**	10-JAN-2014	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LO_MW16, LO_MW15	**13-DEC-2013**	**---**	11-JUN-2014	----	**18-DEC-2013**	11-JUN-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F)							
LO_MW03	**14-DEC-2013**	**---**	12-JUN-2014	----	**18-DEC-2013**	12-JUN-2014	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
LO_MW03, LO_MW16, LO_MW15, R01_131213_KF	**13-DEC-2013**	**16-DEC-2013**	20-DEC-2013	✓	**17-DEC-2013**	25-JAN-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
LO_MW03, LO_MW16, LO_MW15, R01_131213_KF	**13-DEC-2013**	**16-DEC-2013**	20-DEC-2013	✓	**17-DEC-2013**	25-JAN-2014	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
LO_MW03, LO_MW16, LO_MW15, R01_131213_KF	**13-DEC-2013**	**17-DEC-2013**	27-DEC-2013	✓	**17-DEC-2013**	27-DEC-2013	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW03,	LO_MW16,	**13-DEC-2013**	**17-DEC-2013**	27-DEC-2013	✓	**17-DEC-2013**	27-DEC-2013	✓
LO_MW15,	R01_131213_KF							
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW03,	LO_MW16,	**13-DEC-2013**	**17-DEC-2013**	27-DEC-2013	✓	**17-DEC-2013**	27-DEC-2013	✓
LO_MW15,	R01_131213_KF							
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW03,	LO_MW16,	**13-DEC-2013**	**17-DEC-2013**	27-DEC-2013	✓	**17-DEC-2013**	27-DEC-2013	✓
LO_MW15,	R01_131213_KF							
EP074H: Naphthalene								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW03,	LO_MW16,	**13-DEC-2013**	**17-DEC-2013**	27-DEC-2013	✓	**17-DEC-2013**	27-DEC-2013	✓
LO_MW15,	R01_131213_KF							
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW03,	LO_MW16,	**13-DEC-2013**	**17-DEC-2013**	27-DEC-2013	✓	**17-DEC-2013**	27-DEC-2013	✓
LO_MW15,	R01_131213_KF							
EP074C: Sulfonated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW03,	LO_MW16,	**13-DEC-2013**	**17-DEC-2013**	27-DEC-2013	✓	**17-DEC-2013**	27-DEC-2013	✓
LO_MW15,	R01_131213_KF							
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)								
LO_MW03,	LO_MW16,	**13-DEC-2013**	**17-DEC-2013**	27-DEC-2013	✓	**17-DEC-2013**	27-DEC-2013	✓
LO_MW15,	R01_131213_KF							
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LO_MW03,	LO_MW16,	**13-DEC-2013**	**16-DEC-2013**	20-DEC-2013	✓	**17-DEC-2013**	25-JAN-2014	✓
LO_MW15,	R01_131213_KF							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LO_MW03,	LO_MW16,	**13-DEC-2013**	**16-DEC-2013**	20-DEC-2013	✓	**17-DEC-2013**	25-JAN-2014	✓
LO_MW15,	R01_131213_KF							
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
TS10_131213,	TB04_131213	**13-DEC-2013**	**16-DEC-2013**	27-DEC-2013	✓	**16-DEC-2013**	27-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
LO_MW03,	LO_MW16,	**13-DEC-2013**	**17-DEC-2013**	27-DEC-2013	✓	**17-DEC-2013**	27-DEC-2013	✓
LO_MW15,	R01_131213_KF							

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080)							
TB04_131213	**13-DEC-2013**	**16-DEC-2013**	27-DEC-2013	✓	**16-DEC-2013**	27-DEC-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
LO_MW03, LO_MW16, LO_MW15, R01_131213_KF	**13-DEC-2013**	**17-DEC-2013**	27-DEC-2013	✓	**17-DEC-2013**	27-DEC-2013	✓
EP231: Perfluorinated Compounds							
HDPE (no PTFE) (EP231)							
LO_MW03, LO_MW16, LO_MW15, R01_131213_KF	**13-DEC-2013**	**---**	11-JUN-2014	----	**16-DEC-2013**	11-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	3	28	**10.7**	**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
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	2	11	**18.2**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	40	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	2	28	**7.1**	**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	11	**9.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	2	28	**7.1**	**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	11	**9.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	2	28	**7.1**	**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

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							
PFOS and PFOA	EP231	1	12	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	11	**9.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
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)
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	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
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

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

Regular Sample Surrogates

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

Outliers : Analysis Holding Time Compliance

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

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

Outliers : Frequency of Quality Control Samples

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

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

Environmental Division
Sydney
Work Order
ES1327437
Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

ALS Laboratory: please tick ->

CLIENT:	ERM
OFFICE:	Sydney
PROJECT:	Project Symphony
ORDER NUMBER:	0224198
PROJECT MANAGER:	Joe Ferring
CONTACT PH:	0402614304
SAMPLER:	Sean Renza
SAMPLER MOBILE:	→
COC emailed to ALS? (YES / NO)	
EDD FORMAT (or default):	
Email Reports to (will default to PM if no other addresses are listed):	symphony.mcagen@erm.com
Email Invoice to (will default to PM if no other addresses are listed):	john.ewing@erm.com
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): 3 Day

ALS QUOTE NO.: SY/794/13
SITE: BAYSWATER / LIDDELL (LIDDELL circled)

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

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact?
Free ice / frozen ice bricks present upon receipt?
Random Sample Temperature on Receipt:
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tim Hayden	[signature]	[signature]	Rawlings
DATE/TIME: 13/12/13 4:30	DATE/TIME: 13/12/13 1645	DATE/TIME: 13/12/13 1700	DATE/TIME: 13/12/13 19:00

Subcon / Forward Lab / Split WO: ENVIROLAB
Analysis:
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
Attach By PO / Internal Sheet:

TAT

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 Matter plus (Total Organic Carbon) (EP0..)	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LL_MW01	11/12/13 0834	water		6	X		X		X							
2	LL_MW09	" 1022	↓		6	X		X		X							
3	LD_MW01	" 1140			6	X		X									
4	LD_MW05	" 1236			6	X		X									
5	LR_MW03	" 1409			6	X		X		X							
6	LR_MW04	" 1516			6	X		X		X							
7	LP_MW06	" 1641			6	X		X									
8	D01_111213_SP	" –			6	X		X		X							Please forward to Envirolab
A	T01_111213_SP	" –			6	X		X		X							TPH/BTEX/Metals only
9	R01_111213_SP	" –			6	X		X									
10	TB 3_111213 [illegible]	" –		Trip Blank	1			X									TPH/BTEX only
11	TS 13_111213 [illegible]	" –	↓	Trip Spike	1			X									TPH/BTEX only

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	: **ES1327437**		
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	Page	: 1 of 3
Order number	: 0224198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: LIDDELL		
Sampler	: SP	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 13-DEC-2013	Issue Date	: 14-DEC-2013 13:43
Client Requested Due Date	: 18-DEC-2013	Scheduled Reporting Date	: **18-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.4'C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 11
Security Seal	: Intact.	No. of samples analysed	: 11

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **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 T01 send to Envirolab**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP080 BTEXN	WATER - W-02 8 Metals	WATER - W-05 TRH/BTEXN/8 Metals	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1327437-001	11-DEC-2013 08:34	LL_MW01	✓					✓
	11-DEC-2013 15:00	LL_MW01			✓			
ES1327437-002	11-DEC-2013 10:22	LL_MW09	✓					✓
	11-DEC-2013 15:00	LL_MW09			✓			
ES1327437-003	11-DEC-2013 11:40	LD_MW01						✓
	11-DEC-2013 15:00	LD_MW01			✓			
ES1327437-004	11-DEC-2013 12:36	LD_MW05						✓
	11-DEC-2013 15:00	LD_MW05			✓			
ES1327437-005	11-DEC-2013 14:09	LR_MW03	✓					✓
	11-DEC-2013 15:00	LR_MW03			✓			
ES1327437-006	11-DEC-2013 15:00	LR_MW04			✓			
	11-DEC-2013 15:16	LR_MW04	✓					✓
ES1327437-007	11-DEC-2013 15:00	LP_MW06			✓			
	11-DEC-2013 16:41	LP_MW06						✓
ES1327437-008	11-DEC-2013 15:00	D01_111213_SP	✓		✓			✓
ES1327437-009		R01_111213_SP				✓		
	11-DEC-2013 15:00	R01_111213_SP				✓		
ES1327437-010	11-DEC-2013 15:00	TB					✓	
ES1327437-011	11-DEC-2013 15:00	TS		✓				

Proactive Holding Time Report

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

Requested Deliverables

MR JOSEPH FERRING

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

SYMPHONY ERARING

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

THE ACCOUNTS PAYABLE

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1327437**	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	: 0224198		
C-O-C number	: ----	Date Samples Received	: 13-DEC-2013
Sampler	: SP	Issue Date	: 18-DEC-2013
Site	: LIDDELL		
		No. of samples received	: 11
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
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	LL_MW01	LL_MW09	LD_MW01	LD_MW05	LR_MW03
				Client sampling date / time	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00
					ES1327437-001	ES1327437-002	ES1327437-003	ES1327437-004	ES1327437-005
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		**0.004**	**0.013**	**0.002**	**0.001**	**0.033**
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	**0.0014**	**0.0003**	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	**0.004**	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.002**	**0.002**	**0.005**	**0.003**	<0.001
Nickel	7440-02-0	0.001	mg/L		**0.038**	**0.012**	**0.036**	**0.010**	**0.027**
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L		**0.044**	**0.041**	**0.083**	**0.025**	**0.009**
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	<1	----	----	<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
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LL_MW01	LL_MW09	LD_MW01	LD_MW05	LR_MW03
				Client sampling date / time	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327437-001	ES1327437-002	ES1327437-003	ES1327437-004	ES1327437-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LL_MW01	LL_MW09	LD_MW01	LD_MW05	LR_MW03
				Client sampling date / time	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327437-001	ES1327437-002	ES1327437-003	ES1327437-004	ES1327437-005
EP080: BTEXN - Continued									
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**60.6**	**75.3**	----	----	**88.9**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**22.5**	**25.3**	**26.7**	**26.3**	**18.2**
2-Chlorophenol-D4	93951-73-6	0.1	%		**52.0**	**60.6**	**56.2**	**67.0**	**44.7**
2.4.6-Tribromophenol	118-79-6	0.1	%		**76.9**	**81.1**	**73.5**	**82.2**	**61.2**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**56.6**	**67.7**	**61.6**	**67.0**	**52.4**
Anthracene-d10	1719-06-8	0.1	%		**62.6**	**68.8**	**67.5**	**69.0**	**52.4**
4-Terphenyl-d14	1718-51-0	0.1	%		**74.1**	**72.1**	**74.9**	**75.4**	**55.9**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**122**	**93.3**	**77.0**	**78.1**	**103**
Toluene-D8	2037-26-5	0.1	%		**127**	**98.2**	**95.5**	**83.2**	**84.0**
4-Bromofluorobenzene	460-00-4	0.1	%		**121**	**84.0**	**76.7**	**77.7**	**79.6**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID: LR_MW04	LP_MW06	D01_111213_SP	R01_111213_SP	TB
				Client sampling date / time: 11-DEC-2013 15:16	11-DEC-2013 16:41	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00
				ES1327437-006	ES1327437-007	ES1327437-008	ES1327437-009	ES1327437-010
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.031**	**0.001**	**0.003**	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0002**	**0.0002**	**0.0001**	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	**0.010**	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	**0.004**	**0.004**	**0.001**	<0.001	----
Nickel	7440-02-0	0.001	mg/L	**0.046**	**0.005**	**0.035**	<0.001	----
Lead	7439-92-1	0.001	mg/L	<0.001	**0.081**	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L	**0.090**	**0.024**	**0.026**	<0.005	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	----	<1	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<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	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LR_MW04	LP_MW06	D01_111213_SP	R01_111213_SP	TB
				Client sampling date / time	11-DEC-2013 15:16	11-DEC-2013 16:41	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00
					ES1327437-006	ES1327437-007	ES1327437-008	ES1327437-009	ES1327437-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L		<0.5	<0.5	<0.5	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L		<0.5	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LR_MW04	LP_MW06	D01_111213_SP	R01_111213_SP	TB
				Client sampling date / time	11-DEC-2013 15:16	11-DEC-2013 16:41	11-DEC-2013 15:00	11-DEC-2013 15:00	11-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327437-006	ES1327437-007	ES1327437-008	ES1327437-009	ES1327437-010
EP080: BTEXN - Continued									
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		65.1	----	63.8	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		21.7	15.4	26.0	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		50.5	13.7	63.0	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		72.6	65.4	80.2	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		63.4	43.2	70.2	----	----
Anthracene-d10	1719-06-8	0.1	%		66.7	46.7	68.7	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		71.7	70.0	70.5	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		101	99.4	116	80.0	72.8
Toluene-D8	2037-26-5	0.1	%		83.2	82.4	92.6	96.1	93.4
4-Bromofluorobenzene	460-00-4	0.1	%		76.2	74.0	90.9	87.2	81.9

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TS	----	----	----	----
				Client sampling date / time	11-DEC-2013 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1327437-011	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		**16**	----	----	----	----
Toluene	108-88-3	2	µg/L		**16**	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		**17**	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		**16**	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		**16**	----	----	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L		**32**	----	----	----	----
^ **Sum of BTEX**	----	1	µg/L		**81**	----	----	----	----
Naphthalene	91-20-3	5	µg/L		**17**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**118**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**115**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**100**	----	----	----	----

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	: **ES1327437**	Page	: 1 of 13
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 13-DEC-2013
Sampler	: SP	Issue Date	: 18-DEC-2013
Order number	: 0224198	No. of samples received	: 11
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
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: 3215704)									
ES1327437-001	LL_MW01	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.004	0.004	25.9	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	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.038	0.036	3.2	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.044	0.045	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3217999)									
ES1327443-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0002	0.0002	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.019	0.020	0.0	0% - 50%
		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	0.004	0.004	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.036	0.033	7.5	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.037	0.036	4.0	No Limit
ES1327457-004	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	0.018	0.018	0.0	0% - 50%
		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	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.002	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.076	0.065	15.2	0% - 50%
EG035F: Dissolved Mercury by FIMS (QC Lot: 3215703)									
ES1327421-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1327436-003	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: 3215705)									
ES1327437-006	LR_MW04	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3217998)									
ES1327437-009	R01_111213_SP	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1327457-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3213892)									
ES1327437-001	LL_MW01	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3213891)									
ES1327437-001	LL_MW01	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

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: 3213891) - continued									
ES1327437-001	LL_MW01	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
ES1327437-005	LR_MW03	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: 3213891)									
ES1327437-001	LL_MW01	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
ES1327437-005	LR_MW03	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	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 (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3213891) - continued									
ES1327437-005	LR_MW03	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: 3213680)									
ES1327421-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1327437-004	LD_MW05	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3213890)									
ES1327437-001	LL_MW01	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
ES1327437-005	LR_MW03	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: 3213680)									
ES1327421-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1327437-004	LD_MW05	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3213890)									
ES1327437-001	LL_MW01	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
ES1327437-005	LR_MW03	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: 3213680)									
ES1327421-001	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

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: 3213680) - continued									
ES1327421-001	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
ES1327437-004	LD_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

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: 3215704)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.9	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.1	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	93.8	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	89.2	83	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.0	81	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	99.5	80	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 3217999)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	105	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	99.0	81	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	99.4	80	112
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	110	83	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	94.4	81	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	104	80	116
EG035F: Dissolved Mercury by FIMS (QCLot: 3215703)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	97.7	78	114
EG035F: Dissolved Mercury by FIMS (QCLot: 3215705)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	109	78	114
EG035F: Dissolved Mercury by FIMS (QCLot: 3217998)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	97.8	78	114
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3213892)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	71.0	61.6	107
EP075(SIM)A: Phenolic Compounds (QCLot: 3213891)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	36.9	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	79.4	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	66.2	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	69.3	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	73.2	62.7	117
		1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 3213891) - continued								
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	73.2	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	70.7	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	69.1	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	76.4	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	73.8	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	72.3	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213891)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	66.0	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	71.5	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	65.1	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	72.8	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	72.4	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	74.3	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	84.4	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	79.6	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	74.6	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	72.4	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	74.6	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	82.6	61.7	117
		1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213891) - continued								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	79.3	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	73.9	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	74.3	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	74.6	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: 3213680)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	81.7	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213890)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	97.4	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	97.7	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	101	62	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213680)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	82.4	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213890)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	89.0	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	90.9	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	98.8	67	127
EP080: BTEXN (QCLot: 3213680)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	89.4	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	99.7	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	85.0	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	85.4	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	85.8	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	84.7	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

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: 3215704)							
ES1327437-002	LL_MW09	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	112	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	89.2	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	98.0	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	97.8	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	81.2	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	86.0	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	94.3	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 3217999)							
ES1327443-003	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	115	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	119	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	100	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	108	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	120	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.4	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	111	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3215703)							
ES1327421-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	79.6	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3215705)							
ES1327437-007	LP_MW06	EG035F: Mercury	7439-97-6	0.0100 mg/L	72.8	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3217998)							
ES1327443-001	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	83.2	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3213892)							
ES1327437-002	LL_MW09	EP066: Total Polychlorinated biphenyls	----	10 µg/L	72.0	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3213891)							
ES1327437-002	LL_MW09	EP075(SIM): Phenol	108-95-2	20 µg/L	60.1	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	73.0	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	70.0	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	77.9	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	77.1	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213891)							
ES1327437-002	LL_MW09	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	79.8	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	76.6	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213680)							
ES1327421-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	119	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213890)							
ES1327437-002	LL_MW09	EP071: C10 - C14 Fraction	----	200 µg/L	96.9	74	150

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: 3213890) - continued							
ES1327437-002	LL_MW09	EP071: C15 - C28 Fraction	----	300 µg/L	100	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	108	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213680)							
ES1327421-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	118	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213890)							
ES1327437-002	LL_MW09	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	99.8	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	107	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	106	67	153
EP080: BTEXN (QCLot: 3213680)							
ES1327421-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	113	70	130
		EP080: Toluene	108-88-3	25 µg/L	112	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	102	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	102	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	99.8	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	99.3	70	130

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

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

Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213680)										
ES1327421-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	119	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213680)										
ES1327421-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	118	----	70	130	----	----
EP080: BTEXN (QCLot: 3213680)										
ES1327421-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	113	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	112	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	102	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	102	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	99.8	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	99.3	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213890)										

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: 3213890) - continued										
ES1327437-002	LL_MW09	EP071: C10 - C14 Fraction	----	200 µg/L	96.9	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	100	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	108	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213890)										
ES1327437-002	LL_MW09	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	99.8	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	107	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	106	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3213891)										
ES1327437-002	LL_MW09	EP075(SIM): Phenol	108-95-2	20 µg/L	60.1	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	73.0	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	70.0	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	77.9	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	77.1	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213891)										
ES1327437-002	LL_MW09	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	79.8	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	76.6	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3213892)										
ES1327437-002	LL_MW09	EP066: Total Polychlorinated biphenyls	----	10 µg/L	72.0	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3215703)										
ES1327421-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	79.6	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3215704)										
ES1327437-002	LL_MW09	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	112	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	89.2	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	98.0	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	0.2 mg/L	97.8	----	70	130	----	----
		EG020A-F: Lead	7439-92-1	0.2 mg/L	81.2	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	86.0	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	94.3	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3215705)										
ES1327437-007	LP_MW06	EG035F: Mercury	7439-97-6	0.0100 mg/L	72.8	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3217998)										
ES1327443-001	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	83.2	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3217999)										
ES1327443-003	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	115	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	119	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	100	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	0.2 mg/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
EG020F: Dissolved Metals by ICP-MS (QCLot: 3217999) - continued										
ES1327443-003	Anonymous	EG020A-F: Lead	7439-92-1	0.2 mg/L	120	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.4	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	111	----	70	130	----	----

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1327437**	Page	: 1 of 6
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
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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	: 13-DEC-2013
Sampler	: SP	Issue Date	: 18-DEC-2013
Order number	: 0224198		
		No. of samples received	: 11
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
EG020F: Dissolved Metals by ICP-MS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F)							
R01_111213_SP		---	---	----	**18-DEC-2013**	----	----
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F)							
LL_MW01, LL_MW09, LD_MW01, LD_MW05, LR_MW03, LR_MW04, LP_MW06, D01_111213_SP	**11-DEC-2013**	---	09-JUN-2014	----	**17-DEC-2013**	09-JUN-2014	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
R01_111213_SP		---	---	----	**18-DEC-2013**	----	----
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LL_MW01, LL_MW09, LD_MW01, LD_MW05, LR_MW03, LR_MW04, LP_MW06, D01_111213_SP	**11-DEC-2013**	---	08-JAN-2014	----	**17-DEC-2013**	08-JAN-2014	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
LL_MW01, LL_MW09, LR_MW03, LR_MW04, D01_111213_SP	**11-DEC-2013**	**16-DEC-2013**	18-DEC-2013	✓	**17-DEC-2013**	25-JAN-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
LL_MW01, LL_MW09, LD_MW01, LD_MW05, LR_MW03, LR_MW04, LP_MW06, D01_111213_SP, R01_111213_SP	**11-DEC-2013**	**16-DEC-2013**	18-DEC-2013	✓	**16-DEC-2013**	25-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LL_MW01, LL_MW09, LD_MW01, LD_MW05, LR_MW03, LR_MW04, LP_MW06, D01_111213_SP	**11-DEC-2013**	**16-DEC-2013**	18-DEC-2013	✓	**17-DEC-2013**	25-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))							
LL_MW01, LL_MW09, LD_MW01, LD_MW05, LR_MW03, LR_MW04, LP_MW06, D01_111213_SP	**11-DEC-2013**	**16-DEC-2013**	18-DEC-2013	✓	**17-DEC-2013**	25-JAN-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
LL_MW01, LL_MW09, LD_MW01, LD_MW05, LR_MW03, LR_MW04, LP_MW06, D01_111213_SP, R01_111213_SP, TB, TS	**11-DEC-2013**	**17-DEC-2013**	25-DEC-2013	✓	**17-DEC-2013**	25-DEC-2013	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080)							
LL_MW01, LL_MW09, LD_MW01, LD_MW05, LR_MW03, LR_MW04, LP_MW06, D01_111213_SP, R01_111213_SP, TB	**11-DEC-2013**	**17-DEC-2013**	25-DEC-2013	✓	**17-DEC-2013**	25-DEC-2013	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **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	5	39	**12.8**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	26	**11.5**	**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	5	**20.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	18	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	3	39	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	26	**7.7**	**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	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	3	39	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	26	**7.7**	**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	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	3	39	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	26	**7.7**	**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	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	18	**5.6**	**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)
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.
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

- **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)S: Phenolic Compound Surrogates	ES1327437-007	LP_MW06	**2-Chlorophenol-D4**	93951-73-6	13.7 %	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.**

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):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Sydney			Custody Seal Intact? (Yes) No N/A
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13	COC SEQUENCE NUMBER (Circle)	(Free ice) / frozen ice bricks present upon receipt? (Yes) No N/A
ORDER NUMBER: 0724198	SITE: BAYSWATER / (LIDDELL)	COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: 5.8 °C
PROJECT MANAGER: Joe Terring	CONTACT PH:	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Sean Penza	SAMPLER MOBILE: 0402614304		
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@erm.com			
Email Invoice to (will default to PM if no other addresses are listed): john.ewing@erm.com			
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Sean Penza	ka	ka	Sof Stephen 89
DATE/TIME: 11/12/13	DATE/TIME: 13/12/13 1645	DATE/TIME: 13/12/13 1700	DATE/TIME: 14/12/13 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 Matter plus Total Organic Carbon (EP004)	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LQ_MW04	10/12/13 0825	Water		8	X		X	X	X							
2	LQ_MW02	" 0931	↓		8	X		X	X	X							
3	LQ_MW07	" 1040	↓		7	X		X									
4	LQ_MW05	" 1140	↓		7												HOLD
5	LQ_MW03	" 1302	↓		7	X		X		X							
6	LQ_MW06	" 1400	↓		7	X		X		X							
7	LQ_MW01	" 1507	↓		7	X		X		X							
8	LU_MW03	" 1607	↓		6	X		X									
9	R01_101213_SP	" –	↓		6	X		X									TPH/BTEX/Metals only
10	TB01_101213_SP	" –	"		1			X									TPH/BTEX only
11	TS01_101213_SP	" –	"		1			X									TPH/BTEX only

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

Environmental Division
Sydney
Work Order
ES1327438

Telephone : +61-2-8784 8555

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES1327438**		
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	: 0224198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: ----		
Sampler	: SEAN FENZA	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 13-DEC-2013	Issue Date	: 16-DEC-2013 09:56
Client Requested Due Date	: 19-DEC-2013	Scheduled Reporting Date	: **19-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 5.8'C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 11
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.**
- 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 - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP074 (water) Volatile Organic Compounds	WATER - EP080 BTEXN	WATER - W-05 TRH/BTEXN/8 Metals	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-27 TRH/BTEXN/PAH/Phenols/8 Metals
ES1327438-001	10-DEC-2013 08:25	LJ_MW04		✓	✓				✓
ES1327438-002	10-DEC-2013 09:31	LJ_MW02		✓	✓				✓
ES1327438-003	10-DEC-2013 10:40	LQ_MW07							✓
ES1327438-004	10-DEC-2013 11:40	LQ_MW05	✓						
ES1327438-005	10-DEC-2013 13:02	LQ_MW03		✓					✓
ES1327438-006	10-DEC-2013 14:00	LQ_MW06		✓					✓
ES1327438-007	10-DEC-2013 15:07	LQ_MW01		✓					✓
ES1327438-008	10-DEC-2013 16:07	LV_MW03							✓
ES1327438-009	10-DEC-2013 15:00	R01_101213_SP					✓		
ES1327438-010	10-DEC-2013 15:00	TB01_101213_SP						✓	
ES1327438-011	10-DEC-2013 15:00	TS01_101213_SP				✓			

Proactive Holding Time Report

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

Requested Deliverables

JOHN EWING

- A4 - AU Tax Invoice (INV)	Email	john.ewing@erm.com

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
- A4 - AU Tax Invoice (INV)	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	: **ES1327438**	Page	: 1 of 11
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
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Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224198		
C-O-C number	: ----	Date Samples Received	: 13-DEC-2013
Sampler	: SEAN FENZA	Issue Date	: 20-DEC-2013
Site	: ----		
		No. of samples received	: 11
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
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

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LJ_MW04	LJ_MW02	LQ_MW07	LQ_MW03	LQ_MW06
				Client sampling date / time	10-DEC-2013 08:25	10-DEC-2013 09:31	10-DEC-2013 10:40	10-DEC-2013 13:02	10-DEC-2013 14:00
					ES1327438-001	ES1327438-002	ES1327438-003	ES1327438-005	ES1327438-006
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	**0.001**	**0.006**	**0.003**	**0.027**
Cadmium	7440-43-9	0.0001	mg/L		**0.0003**	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.008**
Copper	7440-50-8	0.001	mg/L		**0.003**	**0.002**	<0.001	<0.001	**0.007**
Lead	7439-92-1	0.001	mg/L		**0.038**	**0.140**	<0.001	<0.001	**0.006**
Nickel	7440-02-0	0.001	mg/L		**0.025**	**0.015**	**0.008**	**0.002**	**0.035**
Zinc	7440-66-6	0.005	mg/L		**0.032**	**0.019**	**0.010**	**0.014**	**0.062**
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	<1	----	<1	<1
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		<5	<5	----	----	----
Isopropylbenzene	98-82-8	5	µg/L		<5	<5	----	----	----
n-Propylbenzene	103-65-1	5	µg/L		<5	<5	----	----	----
1.3.5-Trimethylbenzene	108-67-8	5	µg/L		<5	<5	----	----	----
sec-Butylbenzene	135-98-8	5	µg/L		<5	<5	----	----	----
1.2.4-Trimethylbenzene	95-63-6	5	µg/L		<5	<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	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LJ_MW04	LJ_MW02	LQ_MW07	LQ_MW03	LQ_MW06
				Client sampling date / time	10-DEC-2013 08:25	10-DEC-2013 09:31	10-DEC-2013 10:40	10-DEC-2013 13:02	10-DEC-2013 14:00
Compound	CAS Number	LOR	Unit		ES1327438-001	ES1327438-002	ES1327438-003	ES1327438-005	ES1327438-006
EP074D: Fumigants - Continued									
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	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LJ_MW04	LJ_MW02	LQ_MW07	LQ_MW03	LQ_MW06
				Client sampling date / time	10-DEC-2013 08:25	10-DEC-2013 09:31	10-DEC-2013 10:40	10-DEC-2013 13:02	10-DEC-2013 14:00
Compound	CAS Number	LOR	Unit		ES1327438-001	ES1327438-002	ES1327438-003	ES1327438-005	ES1327438-006
EP074F: Halogenated Aromatic Compounds - Continued									
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		<5	<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		<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		<1.0	<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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LJ_MW04	LJ_MW02	LQ_MW07	LQ_MW03	LQ_MW06
				Client sampling date / time	10-DEC-2013 08:25	10-DEC-2013 09:31	10-DEC-2013 10:40	10-DEC-2013 13:02	10-DEC-2013 14:00
Compound	CAS Number	LOR	Unit		ES1327438-001	ES1327438-002	ES1327438-003	ES1327438-005	ES1327438-006
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		<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	**160**	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	**310**	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	**470**	<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	**290**	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	**180**	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	**470**	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	**290**	<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	LJ_MW04	LJ_MW02	LQ_MW07	LQ_MW03	LQ_MW06
				Client sampling date / time	10-DEC-2013 08:25	10-DEC-2013 09:31	10-DEC-2013 10:40	10-DEC-2013 13:02	10-DEC-2013 14:00
Compound	CAS Number	LOR	Unit		ES1327438-001	ES1327438-002	ES1327438-003	ES1327438-005	ES1327438-006
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
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**104**	**105**	----	**102**	**98.8**
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**129**	**126**	----	----	----
Toluene-D8	2037-26-5	0.1	%		**121**	**113**	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**110**	**102**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**33.8**	**30.3**	**36.9**	**19.4**	**33.2**
2-Chlorophenol-D4	93951-73-6	0.1	%		**63.3**	**56.2**	**61.6**	**21.9**	**61.5**
2.4.6-Tribromophenol	118-79-6	0.1	%		**61.4**	**110**	**80.6**	**74.1**	**78.7**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**71.6**	**84.3**	**73.7**	**41.8**	**74.0**
Anthracene-d10	1719-06-8	0.1	%		**94.5**	**104**	**85.6**	**89.2**	**87.3**
4-Terphenyl-d14	1718-51-0	0.1	%		**93.6**	**100**	**85.1**	**91.2**	**85.6**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**121**	**111**	**108**	**114**	**110**
Toluene-D8	2037-26-5	0.1	%		**112**	**104**	**107**	**113**	**110**
4-Bromofluorobenzene	460-00-4	0.1	%		**102**	**94.8**	**98.2**	**98.4**	**94.6**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LQ_MW01	LV_MW03	R01_101213_SP	TB01_101213_SP	TS01_101213_SP
				Client sampling date / time	10-DEC-2013 15:07	10-DEC-2013 16:07	10-DEC-2013 15:00	10-DEC-2013 15:00	10-DEC-2013 15:00
					ES1327438-007	ES1327438-008	ES1327438-009	ES1327438-010	ES1327438-011
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	**0.001**	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L		**0.002**	**0.003**	<0.001	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L		**0.005**	**0.016**	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L		**0.038**	**0.034**	<0.005	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
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	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LQ_MW01	LV_MW03	R01_101213_SP	TB01_101213_SP	TS01_101213_SP
				Client sampling date / time	10-DEC-2013 15:07	10-DEC-2013 16:07	10-DEC-2013 15:00	10-DEC-2013 15:00	10-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327438-007	ES1327438-008	ES1327438-009	ES1327438-010	ES1327438-011
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<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	18
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	15
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	16
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	16
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	32
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	81

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LQ_MW01	LV_MW03	R01_101213_SP	TB01_101213_SP	TS01_101213_SP
				Client sampling date / time	10-DEC-2013 15:07	10-DEC-2013 16:07	10-DEC-2013 15:00	10-DEC-2013 15:00	10-DEC-2013 15:00
Compound	CAS Number	LOR	Unit		ES1327438-007	ES1327438-008	ES1327438-009	ES1327438-010	ES1327438-011
EP080: BTEXN - Continued									
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	**18**
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**104**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**30.0**	**36.0**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**72.5**	**68.4**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**95.3**	**63.6**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**87.1**	**79.5**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**101**	**94.3**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**107**	**94.5**	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**119**	**116**	**108**	**114**	**76.2**
Toluene-D8	2037-26-5	0.1	%		**112**	**112**	**98.2**	**107**	**77.4**
4-Bromofluorobenzene	460-00-4	0.1	%		**95.5**	**97.2**	**82.9**	**92.8**	**71.8**

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*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	: **ES1327438**	Page	: 1 of 18
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	: 13-DEC-2013
Sampler	: SEAN FENZA	Issue Date	: 20-DEC-2013
Order number	: 0224198		
		No. of samples received	: 11
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
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: 3215711)									
ES1327289-001	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	0.004	0.003	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.006	0.006	0.0	No Limit
ES1327438-002	LJ_MW02	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	0.140	0.144	2.8	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.015	0.014	0.0	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.019	0.020	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3215710)									
ES1327205-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3214159)									
ES1327438-001	LJ_MW04	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3219117)									
ES1327126-001	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
ES1327170-011	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

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: 3219117) - continued									
ES1327170-011	Anonymous	EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 3219117)									
ES1327126-001	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
ES1327170-011	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: 3219117)									
ES1327126-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
ES1327170-011	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 3219117)									
ES1327126-001	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
ES1327170-011	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: 3219117)									
ES1327126-001	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
		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

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: 3219117) - continued									
ES1327126-001	Anonymous	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
ES1327170-011	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

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 (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 3219117)									
ES1327126-001	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
ES1327170-011	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: 3219117)									
ES1327126-001	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
ES1327170-011	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: 3219117)									
ES1327126-001	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
ES1327170-011	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3214158)									
ES1327438-001	LJ_MW04	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: 3214158) - continued									
ES1327438-001	LJ_MW04	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
ES1327438-006	LQ_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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3214158)									
ES1327438-001	LJ_MW04	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
ES1327438-006	LQ_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	<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

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: 3214158) - continued									
ES1327438-006	LQ_MW06	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: 3214157)									
ES1327438-001	LJ_MW04	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
ES1327438-006	LQ_MW06	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3216150)									
ES1327289-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1327438-003	LQ_MW07	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3219119)									
ES1327126-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1327170-011	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3214157)									
ES1327438-001	LJ_MW04	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
ES1327438-006	LQ_MW06	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3216150)									
ES1327289-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1327438-003	LQ_MW07	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3219119)									
ES1327126-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1327170-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 3216150)									
ES1327289-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit

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: 3216150) - continued									
ES1327289-002	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
ES1327438-003	LQ_MW07	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: 3219119)									
ES1327126-001	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
ES1327170-011	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

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: 3215711)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	93.4	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	92.4	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	90.1	81	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.4	80	112
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.5	83	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	92.6	81	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	91.6	80	116
EG035F: Dissolved Mercury by FIMS (QCLot: 3215710)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	98.6	78	114
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3214159)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	88.6	61.6	107
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3219117)								
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	107	74	118
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	108	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	106	70	122
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	107	69	123
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	106	71	121
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	107	70	122
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	104	67	123
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	104	62	126
EP074B: Oxygenated Compounds (QCLot: 3219117)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	105	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	111	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	118	61	139
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	121	65	137
EP074C: Sulfonated Compounds (QCLot: 3219117)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	77.0	72.8	127
EP074D: Fumigants (QCLot: 3219117)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	93.9	61	119
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	105	76	120
EP074: cis-1.3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	83.9	62	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	80.4	61	119
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	107	69	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
EP074E: Halogenated Aliphatic Compounds (QCLot: 3219117)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	65.0	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	77.9	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	104	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	81.5	56	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	87.5	63	135
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	95.2	65	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	91.7	69	123
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	82.7	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	96.3	71	119
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	102	75	119
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	101	77	117
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	97.0	61	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	101	73	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	95.6	63	121
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	110	78	122
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	102	74	120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	108	74	118
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	111	75	123
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	114	79	121
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	102	72	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	99.7	66	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	99.5	60	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	101	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	114	70	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	117	74	128
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	96.7	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	105	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	95.2	58	132
EP074F: Halogenated Aromatic Compounds (QCLot: 3219117)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	106	80	118
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	105	76	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	108	71	121
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	106	71	121
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	104	74	120
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	103	72	120
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	105	77	117
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	94.7	60	126
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	98.6	67	125
EP074G: Trihalomethanes (QCLot: 3219117)								

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
EP074G: Trihalomethanes (QCLot: 3219117) - continued								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	101	76	118
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	100	64	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	99.9	65	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	103	73.5	126
EP074H: Naphthalene (QCLot: 3219117)								
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	102	61	125
EP075(SIM)A: Phenolic Compounds (QCLot: 3214158)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	39.3	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	65.9	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	67.7	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	65.2	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	70.2	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	69.8	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	70.1	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	80.3	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	71.3	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	72.3	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	74.8	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	54.2	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3214158)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	66.7	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	71.8	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	68.7	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	71.4	63.9	115
		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: 3214158) - continued								
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	85.4	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	78.7	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	88.3	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	87.4	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	74.9	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	93.7	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	72.3	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	99.4	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 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	----	5 µg/L	78.2	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	76.4	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	77.9	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: 3214157)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	95.1	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	97.0	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	97.1	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216150)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	98.5	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3219119)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	102	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3214157)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	98.2	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	102	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	100	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216150)								

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: 3216150) - continued								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	99.9	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3219119)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	104	75	127
EP080: BTEXN (QCLot: 3216150)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	96.6	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	99.3	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	97.2	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	96.0	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	96.1	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	88.0	70	124
EP080: BTEXN (QCLot: 3219119)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	102	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	101	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	96.7	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	95.8	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	100	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	94.5	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
EG020F: Dissolved Metals by ICP-MS (QCLot: 3215711)							
ES1327289-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	100	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	96.6	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	98.3	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	103	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	102	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.6	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	99.0	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3215710)							
ES1327438-001	LJ_MW04	EG035F: Mercury	7439-97-6	0.0100 mg/L	82.3	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3214159)							

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
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3214159) - continued							
ES1327438-002	LJ_MW02	EP066: Total Polychlorinated biphenyls	----	10 µg/L	88.0	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3219117)							
ES1327126-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	85.6	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	113	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3219117)							
ES1327126-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	115	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3214158)							
ES1327438-002	LJ_MW02	EP075(SIM): Phenol	108-95-2	20 µg/L	39.5	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	78.4	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	87.0	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	83.4	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	104	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3214158)							
ES1327438-002	LJ_MW02	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	75.0	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	80.7	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3214157)							
ES1327438-002	LJ_MW02	EP071: C10 - C14 Fraction	----	200 µg/L	100	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	103	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	95.3	67	153
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216150)							
ES1327289-002	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	126	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3219119)							
ES1327126-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	127	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3214157)							
ES1327438-002	LJ_MW02	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	98.0	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	99.6	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	102	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216150)							
ES1327289-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	125	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3219119)							
ES1327126-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	127	70	130
EP080: BTEXN (QCLot: 3216150)							
ES1327289-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	105	70	130
		EP080: Toluene	108-88-3	25 µg/L	108	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	109	70	130

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: BTEXN (QCLot: 3216150) - continued							
ES1327289-002	Anonymous	EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	109	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	111	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	104	70	130
EP080: BTEXN (QCLot: 3219119)							
ES1327126-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	104	70	130
		EP080: Toluene	108-88-3	25 µg/L	104	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	108	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	107	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	109	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	96.2	70	130

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

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

Sub-Matrix: **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
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3214157)										
ES1327438-002	LJ_MW02	EP071: C10 - C14 Fraction	----	200 µg/L	100	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	103	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	95.3	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3214157)										
ES1327438-002	LJ_MW02	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	98.0	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	99.6	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	102	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3214158)										
ES1327438-002	LJ_MW02	EP075(SIM): Phenol	108-95-2	20 µg/L	39.5	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	78.4	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	87.0	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	83.4	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	104	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3214158)										
ES1327438-002	LJ_MW02	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	75.0	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	80.7	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3214159)										

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: 3214159) - continued										
ES1327438-002	LJ_MW02	EP066: Total Polychlorinated biphenyls	----	10 µg/L	88.0	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3215710)										
ES1327438-001	LJ_MW04	EG035F: Mercury	7439-97-6	0.0100 mg/L	82.3	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3215711)										
ES1327289-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	100	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	96.6	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	98.3	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	0.2 mg/L	103	----	70	130	----	----
		EG020A-F: Lead	7439-92-1	0.2 mg/L	102	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.6	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	99.0	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3216150)										
ES1327289-002	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	126	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3216150)										
ES1327289-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	125	----	70	130	----	----
EP080: BTEXN (QCLot: 3216150)										
ES1327289-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	105	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	108	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	109	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	109	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	111	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	104	----	70	130	----	----
EP074E: Halogenated Aliphatic Compounds (QCLot: 3219117)										
ES1327126-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	85.6	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	25 µg/L	113	----	70	130	----	----
EP074F: Halogenated Aromatic Compounds (QCLot: 3219117)										
ES1327126-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	115	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3219119)										
ES1327126-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	127	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3219119)										
ES1327126-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	127	----	70	130	----	----
EP080: BTEXN (QCLot: 3219119)										
ES1327126-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	104	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	104	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 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
EP080: BTEXN (QCLot: 3219119) - continued										
ES1327126-001	Anonymous	EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	107	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	109	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	96.2	----	70	130	----	----

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1327438**	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	: 13-DEC-2013
Sampler	: SEAN FENZA	Issue Date	: 20-DEC-2013
Order number	: 0224198		
		No. of samples received	: 11
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)							
LJ_MW04, LJ_MW02, LQ_MW07, LQ_MW03, LQ_MW06, LQ_MW01, LV_MW03, R01_101213_SP	**10-DEC-2013**	**---**	08-JUN-2014	----	**17-DEC-2013**	08-JUN-2014	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LJ_MW04, LJ_MW02, LQ_MW07, LQ_MW03, LQ_MW06, LQ_MW01, LV_MW03, R01_101213_SP	**10-DEC-2013**	**---**	07-JAN-2014	----	**17-DEC-2013**	07-JAN-2014	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
LJ_MW04, LJ_MW02	**10-DEC-2013**	**16-DEC-2013**	17-DEC-2013	✓	**19-DEC-2013**	27-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP066)							
LQ_MW03, LQ_MW06, LQ_MW01	**10-DEC-2013**	**17-DEC-2013**	17-DEC-2013	✓	**19-DEC-2013**	27-JAN-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber Glass Bottle - Unpreserved (EP071)							
LJ_MW04, LJ_MW02	**10-DEC-2013**	**16-DEC-2013**	17-DEC-2013	✓	**18-DEC-2013**	27-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP071)							
LQ_MW07, LQ_MW03, LQ_MW06, LQ_MW01, LV_MW03, R01_101213_SP	**10-DEC-2013**	**17-DEC-2013**	17-DEC-2013	✓	**18-DEC-2013**	27-JAN-2014	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
LJ_MW04, LJ_MW02	**10-DEC-2013**	**18-DEC-2013**	24-DEC-2013	✓	**18-DEC-2013**	24-DEC-2013	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
LJ_MW04, LJ_MW02	**10-DEC-2013**	**18-DEC-2013**	24-DEC-2013	✓	**18-DEC-2013**	24-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)								
LJ_MW04,	LJ_MW02	**10-DEC-2013**	**18-DEC-2013**	24-DEC-2013	✓	**18-DEC-2013**	24-DEC-2013	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)								
LJ_MW04,	LJ_MW02	**10-DEC-2013**	**18-DEC-2013**	24-DEC-2013	✓	**18-DEC-2013**	24-DEC-2013	✓
EP074H: Naphthalene								
Amber VOC Vial - Sulfuric Acid (EP074)								
LJ_MW04,	LJ_MW02	**10-DEC-2013**	**18-DEC-2013**	24-DEC-2013	✓	**18-DEC-2013**	24-DEC-2013	✓
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
LJ_MW04,	LJ_MW02	**10-DEC-2013**	**18-DEC-2013**	24-DEC-2013	✓	**18-DEC-2013**	24-DEC-2013	✓
EP074C: Sulfonated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
LJ_MW04,	LJ_MW02	**10-DEC-2013**	**18-DEC-2013**	24-DEC-2013	✓	**18-DEC-2013**	24-DEC-2013	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)								
LJ_MW04,	LJ_MW02	**10-DEC-2013**	**18-DEC-2013**	24-DEC-2013	✓	**18-DEC-2013**	24-DEC-2013	✓
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LJ_MW04,	LJ_MW02	**10-DEC-2013**	**16-DEC-2013**	17-DEC-2013	✓	**18-DEC-2013**	27-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LQ_MW07,	LQ_MW03,	**10-DEC-2013**	**17-DEC-2013**	17-DEC-2013	✓	**18-DEC-2013**	27-JAN-2014	✓
LQ_MW06,	LQ_MW01,							
LV_MW03								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LJ_MW04,	LJ_MW02	**10-DEC-2013**	**16-DEC-2013**	17-DEC-2013	✓	**18-DEC-2013**	27-JAN-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
LQ_MW07,	LQ_MW03,	**10-DEC-2013**	**17-DEC-2013**	17-DEC-2013	✓	**18-DEC-2013**	27-JAN-2014	✓
LQ_MW06,	LQ_MW01,							
LV_MW03								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
LJ_MW04,	LJ_MW02,	**10-DEC-2013**	**18-DEC-2013**	24-DEC-2013	✓	**18-DEC-2013**	24-DEC-2013	✓
LQ_MW07,	LQ_MW03,							
LQ_MW06,	LQ_MW01,							
LV_MW03,	R01_101213_SP,							
TB01_101213_SP,	TS01_101213_SP							

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 VOC Vial - Sulfuric Acid (EP080)							
LJ_MW04, LJ_MW02, LQ_MW07, LQ_MW03, LQ_MW06, LQ_MW01, LV_MW03, R01_101213_SP, TB01_101213_SP	**10-DEC-2013**	**18-DEC-2013**	24-DEC-2013	✓	**18-DEC-2013**	24-DEC-2013	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	9	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	18	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	15	**13.3**	**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
TPH - Semivolatile Fraction	EP071	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	38	**10.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	16	**12.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	15	**6.7**	**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
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	38	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	15	**6.7**	**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
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	38	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	15	**6.7**	**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
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	38	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	16	**6.3**	**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)
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)

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

- **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							
EP080S: TPH(V)/BTEX Surrogates	ES1327438-011	TS01_101213_SP	**Toluene-D8**	2037-26-5	77.4 %	79-131 %	**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 ->

TAT

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): 2 day
OFFICE: Sydney	
PROJECT: Project Symphony	ALS QUOTE NO.: SY/794/13
ORDER NUMBER: 0224198	SITE: BAYSWATER / LIDDELL
PROJECT MANAGER: Joe Ferring	CONTACT PH:
SAMPLER: Sean Penza	SAMPLER MOBILE: 0402614204
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): John.ewing@erm.com	
Email Invoice to (will default to PM if no other addresses are listed): symphony.mailcopy@erm.com	
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:	

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]	[signature]	SG [signature]
DATE/TIME: 13/12/13 4:30pm	DATE/TIME: 13/12/13 1645	DATE/TIME: 13/12/13 1700	DATE/TIME: 13/12/13

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: 5.8 °C
Other comment:

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 Matter plus Total Organic Carbon (EP004)	Additional Information: Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LS_MW01	12/12/13 0914	Water		5	X		X									
2	LQ_MW05	" 1034			5	X		X		X							Please analysis this sample & discard the LQ_MW05 previously provided & put on hold.
3	LH_MW01	" 1136			5	X		X									
4	LH-MW02	" 1234			5	X		X									
5	LH-MW03	1408			5	X		X									
6	D01_121213_SP	" —			5	X		X									
~~7~~	T01_121213_SP	" —			5	X		X									Please forward to Envirolab
7 ~~8~~	R01_121213_SP	" —			5	X		X									TPH/BTEX/Metals only
8	TB2_121213 ~~_SP~~	" —		Trip Blank	1			X									TPH/BTEX only
9	TS9_121213 ~~_SP~~	" —	↓	Trip Spike	1			X									TPH/BTEX only

Subcon / Forward Lab / Split WO: Envirolab
Lab / Analysis: ----
Organised By / Date: ----
Relinquished By / Date:
Connote / Courier:
WO No: ES1327443
Attach By PO / Internal Sheet:

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; ... = Formaldehyde Preserved Glass;
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;
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
ES1327443

Telephone : +61-2-8784 8555

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES1327443**		
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	: 0224198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: LIDDELL		
Sampler	: SP	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 13-DEC-2013	Issue Date	: 16-DEC-2013 10:05
Client Requested Due Date	: 18-DEC-2013	Scheduled Reporting Date	: **18-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 6.8'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
- **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 T01 send to ENVIROLAB**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP080 BTEXN	WATER - W-02 8 Metals	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1327443-001	12-DEC-2013 09:17	LS_MW01			✓		✓
ES1327443-002	12-DEC-2013 10:34	LQ_MW05	✓		✓		✓
ES1327443-003	12-DEC-2013 11:36	LH_MW01			✓		✓
ES1327443-004	12-DEC-2013 12:34	LH_MW02			✓		✓
ES1327443-005	12-DEC-2013 14:08	LH_MW03			✓		✓
ES1327443-006	12-DEC-2013 15:00	D01_121313_SP			✓		✓
ES1327443-007	12-DEC-2013 15:00	R01_121213_SP			✓		✓
ES1327443-008	12-DEC-2013 15:00	TB2 121213				✓	
ES1327443-009	12-DEC-2013 15:00	TS9_121213		✓			

Proactive Holding Time Report

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

Requested Deliverables

JOHN EWING

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1327443**	Page	: 1 of 9
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224198		
C-O-C number	: ----	Date Samples Received	: 13-DEC-2013
Sampler	: SP	Issue Date	: 18-DEC-2013
Site	: LIDDELL		
		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
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	LS_MW01	LQ_MW05	LH_MW01	LH_MW02	LH_MW03
				Client sampling date / time	12-DEC-2013 09:17	12-DEC-2013 10:34	12-DEC-2013 11:36	12-DEC-2013 12:34	12-DEC-2013 14:08
					ES1327443-001	ES1327443-002	ES1327443-003	ES1327443-004	ES1327443-005
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		**0.005**	**0.019**	**0.001**	**0.001**	<0.001
Cadmium	7440-43-9	0.0001	mg/L		**0.0011**	**0.0002**	<0.0001	<0.0001	**0.0003**
Chromium	7440-47-3	0.001	mg/L		**0.002**	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.014**	**0.004**	<0.001	**0.002**	**0.004**
Nickel	7440-02-0	0.001	mg/L		**0.183**	**0.036**	**0.011**	**0.008**	**0.018**
Lead	7439-92-1	0.001	mg/L		**0.002**	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L		**0.484**	**0.037**	**0.006**	**0.020**	**0.036**
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	----	----	----
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		<1.0	<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

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LS_MW01	LQ_MW05	LH_MW01	LH_MW02	LH_MW03
				Client sampling date / time	12-DEC-2013 09:17	12-DEC-2013 10:34	12-DEC-2013 11:36	12-DEC-2013 12:34	12-DEC-2013 14:08
					ES1327443-001	ES1327443-002	ES1327443-003	ES1327443-004	ES1327443-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LS_MW01	LQ_MW05	LH_MW01	LH_MW02	LH_MW03
				Client sampling date / time	12-DEC-2013 09:17	12-DEC-2013 10:34	12-DEC-2013 11:36	12-DEC-2013 12:34	12-DEC-2013 14:08
Compound	CAS Number	LOR	Unit		ES1327443-001	ES1327443-002	ES1327443-003	ES1327443-004	ES1327443-005
EP080: BTEXN - Continued									
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	**70.0**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**38.5**	**35.1**	**31.1**	**34.8**	**37.1**
2-Chlorophenol-D4	93951-73-6	0.1	%		**84.8**	**78.9**	**74.5**	**83.2**	**81.4**
2.4.6-Tribromophenol	118-79-6	0.1	%		**92.4**	**84.6**	**81.8**	**90.2**	**93.3**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**93.4**	**87.8**	**87.1**	**91.0**	**86.0**
Anthracene-d10	1719-06-8	0.1	%		**77.8**	**73.4**	**73.3**	**76.5**	**77.5**
4-Terphenyl-d14	1718-51-0	0.1	%		**69.5**	**65.3**	**65.6**	**68.3**	**67.8**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**87.3**	**90.1**	**92.4**	**91.0**	**93.8**
Toluene-D8	2037-26-5	0.1	%		**109**	**102**	**91.1**	**90.7**	**96.6**
4-Bromofluorobenzene	460-00-4	0.1	%		**96.1**	**92.2**	**88.6**	**85.3**	**85.9**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	D01_121313_SP	R01_121213_SP	TB2 121213	TS9_121213	----
				Client sampling date / time	12-DEC-2013 15:00	12-DEC-2013 15:00	12-DEC-2013 15:00	12-DEC-2013 15:00	----
Compound	CAS Number	LOR	Unit		ES1327443-006	ES1327443-007	ES1327443-008	ES1327443-009	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.011**	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.010**	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	<1.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L		<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0	<1.0	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0	<1.0	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0	<1.0	----	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	<1.0	----	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	<1.0	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	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	D01_121313_SP	R01_121213_SP	TB2 121213	TS9_121213	----
			Client sampling date / time	12-DEC-2013 15:00	12-DEC-2013 15:00	12-DEC-2013 15:00	12-DEC-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1327443-006	ES1327443-007	ES1327443-008	ES1327443-009	----
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	<1	**15**	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	**14**	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	**14**	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	**14**	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	**14**	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	**28**	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	**71**	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	**15**	----
EP075(SIM)S: Phenolic Compound Surrogates								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	D01_121313_SP	R01_121213_SP	TB2 121213	TS9_121213	----
				Client sampling date / time	12-DEC-2013 15:00	12-DEC-2013 15:00	12-DEC-2013 15:00	12-DEC-2013 15:00	----
Compound	CAS Number	LOR	Unit		ES1327443-006	ES1327443-007	ES1327443-008	ES1327443-009	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	0.1	%		30.5	29.8	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		75.4	76.3	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		89.4	87.2	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		80.4	89.0	----	----	----
Anthracene-d10	1719-06-8	0.1	%		74.3	74.0	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		65.3	65.3	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		103	92.2	109	96.3	----
Toluene-D8	2037-26-5	0.1	%		101	88.7	93.2	88.7	----
4-Bromofluorobenzene	460-00-4	0.1	%		91.0	85.7	89.8	83.6	----

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	: **ES1327443**	Page	: 1 of 11
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL		
C-O-C number	: ----	Date Samples Received	: 13-DEC-2013
Sampler	: SP	Issue Date	: 18-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
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: 3217999)									
ES1327443-002	LQ_MW05	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0002	0.0002	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.019	0.020	0.0	0% - 50%
		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	0.004	0.004	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.036	0.033	7.5	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.037	0.036	4.0	No Limit
ES1327457-004	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	0.018	0.018	0.0	0% - 50%
		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	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.002	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.076	0.065	15.2	0% - 50%
EG035F: Dissolved Mercury by FIMS (QC Lot: 3217998)									
ES1327437-009	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1327457-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3213983)									
ES1327427-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3213981)									
ES1327427-001	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
ES1327284-001	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

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: 3213981) - continued									
ES1327284-001	Anonymous	EP075(SIM): 2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3213981)									
ES1327427-001	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
ES1327284-001	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3213981) - continued									
ES1327284-001	Anonymous	EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3213980)									
ES1327427-001	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
ES1327284-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3214603)									
ES1327008-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	120	140	12.6	No Limit
ES1327443-001	LS_MW01	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3213980)									
ES1327427-001	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
ES1327284-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3214603)									
ES1327008-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	120	140	13.3	No Limit
ES1327443-001	LS_MW01	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 3214603)									
ES1327008-006	Anonymous	EP080: Benzene	71-43-2	1	µg/L	2	2	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
ES1327443-001	LS_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

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: 3217999)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	105	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	99.0	81	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	99.4	80	112
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	110	83	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	94.4	81	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	104	80	116
EG035F: Dissolved Mercury by FIMS (QCLot: 3217998)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	97.8	78	114
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3213983)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	100 µg/L	90.0	61.6	107
EP075(SIM)A: Phenolic Compounds (QCLot: 3213981)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	20 µg/L	37.4	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	20 µg/L	83.7	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	20 µg/L	82.5	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	40 µg/L	73.0	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	20 µg/L	98.4	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L	----	20 µg/L	90.4	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L	----	20 µg/L	96.4	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L	----	20 µg/L	99.4	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	20 µg/L	90.8	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L	----	20 µg/L	96.3	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L	----	20 µg/L	87.4	50	108
		1	µg/L	<1.0	----	----	----	----

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: 3213981) - continued								
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	40 µg/L	40.3	8.7	95
		2	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213981)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	20 µg/L	92.9	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	20 µg/L	102	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	20 µg/L	100	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	20 µg/L	98.0	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	20 µg/L	94.1	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	20 µg/L	90.6	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	20 µg/L	95.9	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	20 µg/L	97.6	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	20 µg/L	89.8	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	20 µg/L	95.5	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	20 µg/L	90.8	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	20 µg/L	100	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	20 µg/L	91.0	63.3	117
		0.5	µg/L	<0.5	----	----	----	----
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	20 µg/L	96.4	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	20 µg/L	103	61.2	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.2	µg/L	----	20 µg/L	82.8	59.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213980)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	107	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	117	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	85.8	62	120

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: 3214603)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	93.8	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213980)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	115	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	109	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	79.2	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3214603)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	96.7	75	127
EP080: BTEXN (QCLot: 3214603)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	106	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	97.1	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	103	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	108	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	103	70	124

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3217999)							
ES1327443-003	LH_MW01	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	115	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	119	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	100	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	108	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	120	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.4	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	111	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3217998)							
ES1327443-001	LS_MW01	EG035F: Mercury	7439-97-6	0.0100 mg/L	83.2	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3213983)							
ES1327427-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	100 µg/L	78.0	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3213981)							
ES1327427-002	Anonymous						

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)A: Phenolic Compounds (QCLot: 3213981) - continued							
ES1327427-002	Anonymous	EP075(SIM): Phenol	108-95-2	200 µg/L	31.8	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	200 µg/L	79.1	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	200 µg/L	106	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	200 µg/L	95.5	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	200 µg/L	83.4	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213981)							
ES1327427-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	200 µg/L	87.6	70	130
		EP075(SIM): Pyrene	129-00-0	200 µg/L	79.7	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213980)							
ES1327427-002	Anonymous	EP071: C10 - C14 Fraction	----	2000 µg/L	109	74	150
		EP071: C15 - C28 Fraction	----	3000 µg/L	125	77	153
		EP071: C29 - C36 Fraction	----	2000 µg/L	96.0	67	153
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3214603)							
ES1327008-006	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	124	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213980)							
ES1327427-002	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	2500 µg/L	109	74	150
		EP071: >C16 - C34 Fraction	----	3500 µg/L	113	77	153
		EP071: >C34 - C40 Fraction	----	1500 µg/L	69.9	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3214603)							
ES1327008-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	118	70	130
EP080: BTEXN (QCLot: 3214603)							
ES1327008-006	Anonymous	EP080: Benzene	71-43-2	25 µg/L	115	70	130
		EP080: Toluene	108-88-3	25 µg/L	108	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	110	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	108	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	108	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	102	70	130

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

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

Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3213980)										

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: 3213980) - continued										
ES1327427-002	Anonymous	EP071: C10 - C14 Fraction	----	2000 µg/L	109	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	3000 µg/L	125	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	2000 µg/L	96.0	----	67	153	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3213980)										
ES1327427-002	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	2500 µg/L	109	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	3500 µg/L	113	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	1500 µg/L	69.9	----	67	153	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3213981)										
ES1327427-002	Anonymous	EP075(SIM): Phenol	108-95-2	200 µg/L	31.8	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	200 µg/L	79.1	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	200 µg/L	106	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	200 µg/L	95.5	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	200 µg/L	83.4	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3213981)										
ES1327427-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	200 µg/L	87.6	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	200 µg/L	79.7	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3213983)										
ES1327427-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	100 µg/L	78.0	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3214603)										
ES1327008-006	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	124	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3214603)										
ES1327008-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	118	----	70	130	----	----
EP080: BTEXN (QCLot: 3214603)										
ES1327008-006	Anonymous	EP080: Benzene	71-43-2	25 µg/L	115	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	108	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	110	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	108	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	108	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	102	----	70	130	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 3217998)										
ES1327443-001	LS_MW01	EG035F: Mercury	7439-97-6	0.0100 mg/L	83.2	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3217999)										
ES1327443-003	LH_MW01	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	115	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	119	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	100	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	0.2 mg/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
EG020F: Dissolved Metals by ICP-MS (QCLot: 3217999) - continued										
ES1327443-003	LH_MW01	EG020A-F: Lead	7439-92-1	0.2 mg/L	120	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.4	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	111	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1327443**	Page	: 1 of 6
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	: 13-DEC-2013
Sampler	: SP	Issue Date	: 18-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
EG020F: Dissolved Metals by ICP-MS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F)							
LS_MW01, LQ_MW05, LH_MW02, LH_MW03, R01_121213_SP	**12-DEC-2013**	**---**	10-JUN-2014	----	**18-DEC-2013**	10-JUN-2014	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)							
LH_MW01, D01_121313_SP	**12-DEC-2013**	**---**	10-JUN-2014	----	**18-DEC-2013**	10-JUN-2014	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
LS_MW01, LQ_MW05, LH_MW02, LH_MW03, R01_121213_SP	**12-DEC-2013**	**---**	09-JAN-2014	----	**18-DEC-2013**	09-JAN-2014	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F)							
LH_MW01, D01_121313_SP	**12-DEC-2013**	**---**	09-JAN-2014	----	**18-DEC-2013**	09-JAN-2014	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
LQ_MW05	**12-DEC-2013**	**17-DEC-2013**	19-DEC-2013	✓	**17-DEC-2013**	26-JAN-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
LS_MW01, LQ_MW05, LH_MW01, LH_MW02, LH_MW03, D01_121313_SP, R01_121213_SP	**12-DEC-2013**	**17-DEC-2013**	19-DEC-2013	✓	**17-DEC-2013**	26-JAN-2014	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
LS_MW01, LQ_MW05, LH_MW01, LH_MW02, LH_MW03, D01_121313_SP, R01_121213_SP	**12-DEC-2013**	**17-DEC-2013**	19-DEC-2013	✓	**17-DEC-2013**	26-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))							
LS_MW01, LQ_MW05, LH_MW01, LH_MW02, LH_MW03, D01_121313_SP, R01_121213_SP	**12-DEC-2013**	**17-DEC-2013**	19-DEC-2013	✓	**17-DEC-2013**	26-JAN-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
LS_MW01, LQ_MW05, LH_MW01, LH_MW02, LH_MW03, D01_121313_SP, R01_121213_SP, TB2 121213, TS9_121213	**12-DEC-2013**	**17-DEC-2013**	26-DEC-2013	✓	**17-DEC-2013**	26-DEC-2013	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080)							
LS_MW01, LQ_MW05, LH_MW01, LH_MW02, LH_MW03, D01_121313_SP, R01_121213_SP, TB2 121213	**12-DEC-2013**	**17-DEC-2013**	26-DEC-2013	✓	**17-DEC-2013**	26-DEC-2013	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		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 by ICP-MS - Suite A	EG020A-F	2	18	**11.1**	**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
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	14	**14.3**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	**5.6**	**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
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	**5.6**	**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
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	16	**6.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	**5.6**	**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
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	14	**7.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
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)
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.
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

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

Regular Sample Surrogates

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

Outliers : Analysis Holding Time Compliance

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

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

Outliers : Frequency of Quality Control Samples

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

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

ES1327787

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT:	ERM	TURNAROUND REQUIREMENTS : ☐ Standard TAT (List due date):	
OFFICE:	Sydney	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☑ Non Standard or urgent TAT (List due date):	48hrs
PROJECT: Project Symphony		ALS QUOTE NO.: SY/794/13	
ORDER NUMBER:	0224198	SITE: BAYSWATER / LIDDELL	
PROJECT MANAGER:	Joe Ferreira	CONTACT PH: 0424 970 468	
SAMPLER:	Jack Grant	SAMPLER MOBILE: 0432 596 844	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):	
Email Reports to (will default to PM if no other addresses are listed):	Symphony_Mudgee@erm.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

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 comments:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME: 18/12/13 1545	DATE/TIME: 18/12/13 1700	DATE/TIME: 18/12 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	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, Tl)	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	LG-MW01	16.12.13	W		1	✓			✓			✓		
2	LG-MW02	16.12.13	W		1	✓			✓			✓		
3	LG-MW03	16.12.13	W		1	✓			✓			✓		
4	LG-MW02	16.12.13	W		1	✓			✓	✓	✓	✓		
5	LO-MW06	16.12.13	W		9	✓			✓	✓	✓	✓		
6	LO-MW05	16.12.13	W		9	✓			✓	✓	✓	✓		
7	RO1-~~MW01~~ 161213-JG	16.12.13	W		1	✓			✓			✓		
8	TB-8	16.12.13	W		2									BTEX & TRH
9	TS-2	16.12.13	W		1									BTEX } Combine
10	TS-3	16.12.13	W		1									} Sample
				TOTAL										

Environmental Division
Sydney
Work Order
ES1327787

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

eserved Plastic; F = Formaldehyde Preserved Glass;

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES1327787**		
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	: 0224198		
C-O-C number	: ----	Quote number	: ES2013ENVRES0369 (SY/794/13)
Site	: ----		
Sampler	: JG	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 18-DEC-2013	Issue Date	: 18-DEC-2013 21:34
Client Requested Due Date	: 20-DEC-2013	Scheduled Reporting Date	: **20-DEC-2013**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.1'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.**
- 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 - 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	WATER - W-27 TRH/BTEXN/PAH/Phenols/8 Metals
ES1327787-001	16-DEC-2013 15:00	LG_MW01		✓				✓
ES1327787-002	16-DEC-2013 15:00	LG_MW02		✓				✓
ES1327787-003	16-DEC-2013 15:00	LG_MW03		✓				✓
ES1327787-004	16-DEC-2013 15:00	LS_MW02		✓				✓
ES1327787-005	16-DEC-2013 15:00	LO_MW06	✓	✓		✓		✓
ES1327787-006	16-DEC-2013 15:00	LO_MW05	✓	✓		✓		✓
ES1327787-007	16-DEC-2013 15:00	R01_161213_JA		✓				✓
ES1327787-008	16-DEC-2013 15:00	TB_8					✓	
ES1327787-009	16-DEC-2013 15:00	TS_2			✓			
ES1327787-010	16-DEC-2013 15:00	TS_3			✓			

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