Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1039233)							
ES0910121-001	PC20_0.0-0.17	EG035T: Mercury	7439-97-6	0.010 mg/L	84.1	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1045381)							
ES0910526-001	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	108	70	130
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1042810)							
ES0910121-001	PC20_0.0-0.17	EG093A-T: Arsenic	7440-38-2	50 µg/L	103	70	130
		EG093A-T: Cadmium	7440-43-9	12.5 µg/L	86.3	70	130
		EG093A-T: Chromium	7440-47-3	50 µg/L	93.3	70	130
		EG093A-T: Cobalt	7440-48-4	50 µg/L	101	70	130
		EG093A-T: Copper	7440-50-8	50 µg/L	97.9	70	130
		EG093A-T: Lead	7439-92-1	50 µg/L	89.4	70	130
		EG093A-T: Nickel	7440-02-0	50 µg/L	92.9	70	130
		EG093A-T: Vanadium	7440-62-2	50 µg/L	87.7	70	130
		EG093A-T: Zinc	7440-66-6	50 µg/L	93.2	70	130
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1044449)							
ES0910121-017	PC42_0.0-0.5	EG093A-T: Arsenic	7440-38-2	50 µg/L	102	70	130
		EG093A-T: Cadmium	7440-43-9	12.5 µg/L	86.6	70	130
		EG093A-T: Chromium	7440-47-3	50 µg/L	102	70	130
		EG093A-T: Cobalt	7440-48-4	50 µg/L	109	70	130
		EG093A-T: Copper	7440-50-8	50 µg/L	109	70	130
		EG093A-T: Lead	7439-92-1	50 µg/L	95.9	70	130
		EG093A-T: Nickel	7440-02-0	50 µg/L	106	70	130
		EG093A-T: Vanadium	7440-62-2	50 µg/L	90.0	70	130
		EG093A-T: Zinc	7440-66-6	50 µg/L	99.0	70	130
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1038053)							
ES0910121-007	PC9_0.8-1.12	EP132: 3-Methylcholanthrene	56-49-5	2 µg/L	101	59	115
		EP132: 2-Methylnaphthalene	91-57-6	2 µg/L	# 133	46	120
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	2 µg/L	102	21	135
		EP132: Acenaphthene	83-32-9	2 µg/L	101	62	114
		EP132: Acenaphthylene	208-96-8	2 µg/L	105	61	119
		EP132: Anthracene	120-12-7	2 µg/L	102	68	116
		EP132: Benz(a)anthracene	56-55-3	2 µg/L	106	67	122
		EP132: Benzo(a)pyrene	50-32-8	2 µg/L	105	72	114
		EP132: Benzo(b)fluoranthene	205-99-2	2 µg/L	109	69	119
		EP132: Benzo(e)pyrene	192-97-2	2 µg/L	103	71	119

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: Spike Recovery (%) MS	Matrix Spike (MS) Report: Recovery Limits (%) Low	Matrix Spike (MS) Report: Recovery Limits (%) High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1038053) - continued							
ES0910121-007	PC9_0.8-1.12	EP132: Benzo(g.h.i)perylene	191-24-2	2 µg/L	77.1	49	133
		EP132: Benzo(k)fluoranthene	207-08-9	2 µg/L	104	71	124
		EP132: Chrysene	218-01-9	2 µg/L	103	70	118
		EP132: Coronene	191-07-1	2 µg/L	59.1	29	138
		EP132: Dibenz(a.h)anthracene	53-70-3	2 µg/L	87.8	60	122
		EP132: Fluoranthene	206-44-0	2 µg/L	103	65	121
		EP132: Fluorene	86-73-7	2 µg/L	102	63	118
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	2 µg/L	85.6	57	123
		EP132: N-2-Fluorenyl Acetamide	53-96-3	20 µg/L	104	29	212
		EP132: Naphthalene	91-20-3	2 µg/L	100	53	115
		EP132: Perylene	198-55-0	2 µg/L	103	71	118
		EP132: Phenanthrene	85-01-8	2 µg/L	102	67	120
		EP132: Pyrene	129-00-0	2 µg/L	102	70	117
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1044114)							
ES0910206-002	Anonymous	EP132: 3-Methylcholanthrene	56-49-5	4 µg/L	80.6	59	115
		EP132: 2-Methylnaphthalene	91-57-6	4 µg/L	83.8	46	120
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	4 µg/L	72.4	21	135
		EP132: Acenaphthene	83-32-9	4 µg/L	81.5	62	114
		EP132: Acenaphthylene	208-96-8	4 µg/L	82.0	61	119
		EP132: Anthracene	120-12-7	4 µg/L	82.9	68	116
		EP132: Benz(a)anthracene	56-55-3	4 µg/L	85.0	67	122
		EP132: Benzo(a)pyrene	50-32-8	4 µg/L	83.4	72	114
		EP132: Benzo(b)fluoranthene	205-99-2	4 µg/L	84.5	69	119
		EP132: Benzo(e)pyrene	192-97-2	4 µg/L	83.6	71	119
		EP132: Benzo(g.h.i)perylene	191-24-2	4 µg/L	83.3	49	133
		EP132: Benzo(k)fluoranthene	207-08-9	4 µg/L	81.4	71	124
		EP132: Chrysene	218-01-9	4 µg/L	84.5	70	118
		EP132: Coronene	191-07-1	4 µg/L	80.1	29	138
		EP132: Dibenz(a.h)anthracene	53-70-3	4 µg/L	85.2	60	122
		EP132: Fluoranthene	206-44-0	4 µg/L	83.1	65	121
		EP132: Fluorene	86-73-7	4 µg/L	82.2	63	118
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	4 µg/L	84.3	57	123
		EP132: N-2-Fluorenyl Acetamide	53-96-3	40 µg/L	91.1	29	212
		EP132: Naphthalene	91-20-3	4 µg/L	78.6	53	115
		EP132: Perylene	198-55-0	4 µg/L	82.8	71	118
		EP132: Phenanthrene	85-01-8	4 µg/L	83.8	67	120
		EP132: Pyrene	129-00-0	4 µg/L	83.3	70	117

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0910121**	Page	: 1 of 8
Client	: ENSR AUSTRALIA PTY LIMITED	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 10-JUL-2009
Sampler	: RC	Issue Date	: 23-JUL-2009
Order number	: ----		
		No. of samples received	: 21
Quote number	: SY/330/09 V3	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

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

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								
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered								
PC20_0.0-0.17,	PC29_0.0-0.45,	**13-JUL-2009**	**----**	----	----	**16-JUL-2009**	10-AUG-2009	✓
PC28_0.9-1.4,	PC27_0.5-0.9,							
PC26_0.0-0.5,	PC8_0.35-0.7,							
PC9_0.8-1.12,	PC11_0.0-0.2,							
PC15_0.5-1.0,	PC12_0.4-0.76,							
ELUTRIATE WATER								
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered								
PC36_0.16-0.5,	PC38_0.0-0.4,	**14-JUL-2009**	**----**	----	----	**16-JUL-2009**	11-AUG-2009	✓
PC40_1.0-1.47,	PC41_0.0-0.5,							
PC55_0.3-0.63,	PC45_0.5-1.03,							
PC43_0.7-1.05,	PC14_0.0-0.36,							
PC35_0.0-0.35								
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered								
PC42_0.0-0.5		**17-JUL-2009**	**----**	----	----	**21-JUL-2009**	14-AUG-2009	✓

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
EG093T: Total Metals in Saline Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered							
PC20_0.0-0.17, PC29_0.0-0.45, PC28_0.9-1.4, PC27_0.5-0.9, PC26_0.0-0.5, PC8_0.35-0.7, PC9_0.8-1.12, PC11_0.0-0.2, PC15_0.5-1.0, PC12_0.4-0.76, ELUTRIATE WATER	**13-JUL-2009**	**18-JUL-2009**	09-JAN-2010	✓	**18-JUL-2009**	09-JAN-2010	✓
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered							
PC36_0.16-0.5, PC38_0.0-0.4, PC40_1.0-1.47, PC41_0.0-0.5, PC55_0.3-0.63, PC45_0.5-1.03, PC43_0.7-1.05, PC14_0.0-0.36, PC35_0.0-0.35	**14-JUL-2009**	**18-JUL-2009**	10-JAN-2010	✓	**18-JUL-2009**	10-JAN-2010	✓
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered							
PC42_0.0-0.5	**17-JUL-2009**	**20-JUL-2009**	13-JAN-2010	✓	**20-JUL-2009**	13-JAN-2010	✓
EN68: Seawater Elutriate Testing Procedure							
LabSplit: Leach for organics and other tests							
PC20_0.0-0.17, PC29_0.0-0.45, PC28_0.9-1.4, PC27_0.5-0.9, PC26_0.0-0.5, PC8_0.35-0.7, PC9_0.8-1.12, PC11_0.0-0.2, PC15_0.5-1.0, ELUTRIATE WATER	**08-JUL-2009**	**---**	---	----	**13-JUL-2009**	22-JUL-2009	✓
LabSplit: Leach for organics and other tests							
PC14_0.0-0.36, PC35_0.0-0.35	**08-JUL-2009**	**---**	---	----	**14-JUL-2009**	22-JUL-2009	✓
LabSplit: Leach for organics and other tests							
PC12_0.4-0.76	**09-JUL-2009**	**---**	---	----	**13-JUL-2009**	23-JUL-2009	✓
LabSplit: Leach for organics and other tests							
PC36_0.16-0.5, PC38_0.0-0.4, PC40_1.0-1.47, PC41_0.0-0.5, PC55_0.3-0.63, PC45_0.5-1.03, PC43_0.7-1.05	**09-JUL-2009**	**---**	---	----	**14-JUL-2009**	23-JUL-2009	✓
LabSplit: Leach for organics and other tests							
PC42_0.0-0.5	**09-JUL-2009**	**---**	---	----	**17-JUL-2009**	23-JUL-2009	✓

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
EP132B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved								
PC20_0.0-0.17,	PC29_0.0-0.45,	**13-JUL-2009**	**13-JUL-2009**	20-JUL-2009	✓	**14-JUL-2009**	22-AUG-2009	✓
PC28_0.9-1.4,	PC27_0.5-0.9,							
PC26_0.0-0.5,	PC8_0.35-0.7,							
PC9_0.8-1.12,	PC11_0.0-0.2,							
PC15_0.5-1.0,	PC12_0.4-0.76,							
ELUTRIATE WATER								
Amber Glass Bottle - Unpreserved								
PC36_0.16-0.5,	PC38_0.0-0.4,	**14-JUL-2009**	**15-JUL-2009**	21-JUL-2009	✓	**15-JUL-2009**	24-AUG-2009	✓
PC40_1.0-1.47,	PC41_0.0-0.5,							
PC55_0.3-0.63,	PC45_0.5-1.03,							
PC43_0.7-1.05,	PC14_0.0-0.36,							
PC35_0.0-0.35								
Amber Glass Bottle - Unpreserved								
PC42_0.0-0.5		**17-JUL-2009**	**20-JUL-2009**	24-JUL-2009	✓	**20-JUL-2009**	29-AUG-2009	✓

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)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	2	25	**8.0**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	26	**11.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	3	23	**13.0**	**9.5**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	3	23	**13.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	3	34	**8.8**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	26	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	2	23	**8.7**	**4.8**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	2	23	**8.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	3	34	**8.8**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	26	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	2	23	**8.7**	**4.8**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	2	23	**8.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	2	25	**8.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	26	**7.7**	**5.0**	✓	ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	2	23	**8.7**	**4.8**	✓	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 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. 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 (1999) Schedule B(3) (Appdx. 2)
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	SOIL	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 (1999) Schedule B(3) (Appdx. 2)
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	SOIL	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 (1999) Schedule B(3) (Appdx. 2)
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	SOIL	USEPA 3640 (GPC Cleanup), 8270 GCMS Capiliary column, SIM mode. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals - ORC	EN25-ORC	SOIL	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 (1999) Schedule B(3) (Appdx. 2)
Seawater Elutriate Testing Procedure	* EN68a	SOIL	USEPA Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Guide, 1991, EPA-503/8-91/001, USEPA and US Army Corps of Engineers. ANZECC Interim Ocean Disposal Guidelines, December, 1998 This Procedure outlines the preparation of leachate designed to simulate release of contaminants from sediment during the disposal of dredged material. Release can occur by physical processes or a variety of chemical changes such as oxidation of metal sulphides and release of contaminants adsorbed to particles or organic matter.
Sep. Funnel Extraction /Acetylation of Phenolic Compounds	ORG14-AC	SOIL	USEPA 3510 (Extraction)/ In-house (Acetylation): A 1L sample is extracted into dichloromethane and concentrated to 1 mL with echange into cyclohexane. Phenolic compounds are reacted with acetic anhydride to yield phenyl acetates suitable for ultra-trace analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG093T: Total Metals in Saline Water by ORC-ICPMS	1200170-003	----	**Arsenic**	7440-38-2	85.8 %	89-125%	**Recovery less than lower control limit**
EG093T: Total Metals in Saline Water by ORC-ICPMS	1200170-003	----	**Cadmium**	7440-43-9	78.0 %	78-112%	**Recovery less than lower control limit**
EG093T: Total Metals in Saline Water by ORC-ICPMS	1200170-003	----	**Cobalt**	7440-48-4	89.5 %	90-126%	**Recovery less than lower control limit**
EG093T: Total Metals in Saline Water by ORC-ICPMS	1200170-003	----	**Lead**	7439-92-1	87.3 %	89-121%	**Recovery less than lower control limit**
EG093T: Total Metals in Saline Water by ORC-ICPMS	1198054-003	----	**Zinc**	7440-66-6	79.8 %	82-128%	**Recovery less than lower control limit**
EP132B: Polynuclear Aromatic Hydrocarbons	1192258-002	----	**2-Methylnaphthalene**	91-57-6	119 %	67.7-112%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910121-007	PC9_0.8-1.12	**2-Methylnaphthalene**	91-57-6	133 %	46-120%	**Recovery greater than upper data quality objective**

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

Regular Sample Surrogates

Sub-Matrix: **ELUTRIATE**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP132T: Base/Neutral Extractable Surrogates	ES0910121-011	PC36_0.16-0.5	**2-Fluorobiphenyl**	321-60-8	122 %	43-116 %	**Recovery greater than upper data quality objective**
EP132T: Base/Neutral Extractable Surrogates	ES0910121-015	PC55_0.3-0.63	**2-Fluorobiphenyl**	321-60-8	119 %	43-116 %	**Recovery greater than upper data quality objective**
EP132T: Base/Neutral Extractable Surrogates	ES0910121-017	PC42_0.0-0.5	**2-Fluorobiphenyl**	321-60-8	124 %	43-116 %	**Recovery greater than upper data quality objective**
EP132T: Base/Neutral Extractable Surrogates	ES0910121-019	PC14_0.0-0.36	**2-Fluorobiphenyl**	321-60-8	120 %	43-116 %	**Recovery greater than upper data quality objective**
EP132T: Base/Neutral Extractable Surrogates	ES0910121-014	PC41_0.0-0.5	**2-Fluorobiphenyl**	321-60-8	126 %	43-116 %	**Recovery greater than upper data quality objective**
EP132T: Base/Neutral Extractable Surrogates	ES0910121-016	PC45_0.5-1.03	**2-Fluorobiphenyl**	321-60-8	119 %	43-116 %	**Recovery greater than upper data quality objective**
EP132T: Base/Neutral Extractable Surrogates	ES0910121-018	PC43_0.7-1.05	**2-Fluorobiphenyl**	321-60-8	124 %	43-116 %	**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)					
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	2	25	8.0	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Elutriates only

Chain of Custody

1 of 6

AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Laboratory Details
Lab. Name:
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY330809 v2

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Harbour
PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email: richard.cole@aecom.com, chrshaan.donnelli@aecom.com	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Metals M13 (sea quote)	TOC	PAH (alkyl base)	BTEX/TPH	SPOCAS	Elutriate Metals	Elutriate PAH	Cyanide	VFRT	Phenols	OCP (5T)	Total PCBs (5T)	Other
1	PC20_0.0-0.17	8.7.09	X							1 x small 3 x large 1 x Bag	✓	✓			✓	✓	✓		✓				CONTRACT WORK
2	PC29_0.0-0.45		X							3 x large 1 x small 1 x Bag	✓	✓	✓	✓	✓	✓	✓		✓				WO: ES0910121
	PC29_0.45-0.83		X							1 x large	✓												LAB:
	PC28_0.0-0.4		X							2 x soil jars	✓	✓							✓				DATE: 10/07/09.
	PC28_0.4-0.9		X							2 x soil jars	✓	✓	✓	✓									SPLIT: SYD WO: ES0910119
3	PC28_0.9-1.4		X							4x soil jars 1 bag	✓	✓			✓	✓	✓						~~SPLIT~~ MEL WO: ES0910122
	PC27_0.0-0.5		X							2 x soil jars	✓	✓	✓	✓					✓				SPLIT: ES0910124
4	PC27_0.5-0.9		X							4x soil jars 1 bag	✓	✓			✓	✓	✓			✓	✓	✓	
	DUP06		X								✓	✓	✓	✓					✓				
5	PC26_0.0-0.5		X							4x soil jars 1 bag	✓	✓			✓	✓	✓		✓				
	PC26_0.5-0.87		X							2 x soil jars	✓	✓	✓	✓									
	PC8_0.0-0.35	↓	X							2 x soil jars	✓								✓				

Environmental Division
Sydney
Work Order
ES0910121
Telephone : +61-2-8784 8555

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Relinquished by:	Richard Cole	Signed:		Date: 10/7/09	
Recieved by:	Frank	Signed:		Date: 10/7/9 11am	

			Lab Report No.	Esky ID
Relinquished by:	Signed:	Date:		
Recieved by:	Signed:	Date:		

Chain of Custody

2 of 6

AECOM

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Level 5, 828 Pacific Highway
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E-mail:

Laboratory Details
Lab. Name: ALS - Sydney
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY330 09 v2

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Harbour PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email: christiaan.donnetti@aecom.com richard.cole@aecom.com	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Metals M13 (see guide)	TOC	PAH (Ultra trace)	BTEX/TPH	SPOCAS	Elutriate Metals	Elutriate PAH	Cyanide	VTRT	Phenols	OCP (5F)	Total PCBs (5F)	Other
6	PC8_0.35-0.7	8.7.09	X					X		4x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓						
	PC8_0.7-1.2		X					X		1x soil jar	✓									✓	✓	✓	
	PC9_0.0-0.4		X					X		3x soil jars	✓	✓	✓	✓				✓	✓				
	PC9_0.4-0.8		X					X		2x soil jars	✓												
7	PC9_0.8-1.12		X					X		4x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓						
	~~PC9~~ QC E2		X					X		1x soil jar	QC FOR ELUTRIATE TEST PC9_0.8-1.12												
	PC10_0.0-0.25		X					X		2x soil jars	✓	✓							✓				
8	PC11_0.0-0.2		X					X		4x soil jars	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
	PC19_0.0-0.53		X					X		2x soil jars	✓	✓	✓	✓					✓				
	PC19_0.53-1.03		X					X		1x soil jars	✓												
	PC15_0.0-0.5		X					X		1x large 1x small	✓	✓	✓	✓					✓				
9	PC15_0.5-1.0	↓	X					X		8x large 1x small 1 bag	✓	✓			✓	✓	✓						

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No.
Esky ID

Relinquished by: Richard Cole — Signed: — Date: 10/7/09
Recieved by: Frank — Signed: — Date: 11/7/09 16:00

Relinquished by: — Signed: — Date:
Recieved by: — Signed: — Date:

Chain of Custody

3 of 6

AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Laboratory Details
Lab. Name: ALS - Sydney
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY330 009 V2

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Harbour PO No. V

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership: christiaan.dennett@aecom.com	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email: richard.cole@aecom.com	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	Ice	other	Container (No. & type)	Analysis Request: Metals	TOC	PAH (ultra trace)	BTEX/TPH	SPOC AS	Elutriate Metals	Elutriate PAH	Cyanide	TBT	Phenols	OCP (5)	Total PCBs (5)	Other
	PC13_0.0-0.06	9.7.09	X					X		2x soil jars	✓	✓	✓	✓					✓				
	PC12-0.0-0.4		X					X		2x soil jars	✓								✓				
10	PC12_0.4-0.76		X					X		4x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓						
	DUP09		X					X		2x soil jars	✓							✓					
	PC36_0.0-0.16		X					X		1x soil jar	✓								✓				
11	PC36_0.16-0.5		X					X		4x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓						
	PC37_0.0-0.37		X					X			✓	✓	✓	✓				✓	✓				
12	PC38_0.0-0.4		X					X		4x soil jars 1 bag	✓	✓			✓	✓	✓		✓				
	PC38_0.4-0.8		X					X		2x soil jars	✓	✓	✓	✓									
	PC38_0.8-1.23		X					X		4x soil jars 1 bag	✓												
	DUP16		X					X			✓									✓	✓	✓	
	PC40_0.0-0.5	↓	X					X			✓								✓	✓	✓	✓	

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments: *Elutriate Metals (Dredging guideline LOR)

Lab Report No.
Esky ID

Relinquished by: Richard Cole Signed: Date: 10/7/09
Recieved by: Frank Signed: Date: 10/7/09 11am

Relinquished by: Signed: Date:
Recieved by: Signed: Date:

Chain of Custody

4 of 6

AECOM

AECOM - Sydney	
Level 5, 828 Pacific Highway	Tel: 61 2 8484 8999
	Fax: 61 2 8484 8989
Pymble NSW 2073 Australia	E-mail:

Laboratory Details

Lab. Name: ALS - Sydney
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY33009 v2

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Harbour
PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email : christiaan.donnetti@aecom.com; richard.cole@aecom.com	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	Analysis Request: Metals M13 (200/400)	TOC	PAH (ultra trace)	BTEX / TPH	SPOCAS	Elutriate Metals	Elutriate PAH	Cyanide	TBT	Phenols	OCP (5)	Total PCBs (5)	Other
	PC40_0.5-1.0	9.7.09	X					X		3 x soil jars	✓	✓	✓	✓				✓					
13	PC40_1.0-1.47		X					X			✓	✓			✓	✓	✓						
14	PC41_0.0-0.5		X					X		4x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓		✓				
	PC41_0.5-1.0		X					X		2 x soil jars	✓												
	PC41_1.0-1.55		X					X		2 x soil jars	✓	✓	✓	✓									
	DUP17		X					X			✓												
	PC25_0.0-0.35		X					X		2x soil jars	✓	✓	✓	✓				✓	✓				
	DUP08		X					X			✓	✓	✓	✓				✓	✓				
	PC24_0.0-0.23		X					X		2 x soil jars	✓								✓				
	PC55_0.0-0.3		X					X		2 x soil jars	✓	✓	✓	✓				✓	✓	✓	✓	✓	
15	PC55_0.3-0.63		X					X		4 x soil jars 1 bag	✓	✓			✓	✓	✓	✓					
	PC45_0.0-0.5	↓	X					X		2 x soil jars	✓	✓	✓	✓					✓				

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No.

Esky ID

Relinquished by: Richard Cole — Signed: — Date: 10/7/09

Recieved by: Frank — Signed: — Date: 10/7/09 11am

Relinquished by: — Signed: — Date:

Recieved by: — Signed: — Date:

Printed copies of this document are uncontrolled

Chain of Custody

5 of 6

AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Laboratory Details
Lab. Name: ALS - Sydney
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY330 09 V2

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Harbour PO No. V

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email: christiaan.donneth@aecom.com; richard.cole@aecom.com	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Analysis Request: Metals M13 (sed)	TOC	PAH (ultra trace)	BTEX TPH	SPOCAS	Elutriate Metals	Elutriate PAH	Cyanide	TBT	Phenols (5)	OCP (5)	TOTAL PCBs (3)	Other
16	PC45_0.5-1.03	9.7.09	X					X		4x soil jars 1 bag	✓	✓			✓	✓	✓	✓					
	PC42_0.0-0.5	↓	X					X		4x soil jars 1 bag	✓								✓				
17	PC42_0.5-0.88	↓	X					X		2x soil jars	✓	✓	✓	✓	✓	✓	✓	✓					
	PC43_0.0-0.35	↓	X					X		2 x soil jars	✓	✓	✓	✓					✓				
	PC43_0.35-0.7	↓	X					X		2 x soil jars	✓									✓	✓	✓	
18	PC43_0.7-1.05	↓	X					X		4 x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓						
	DUP 13	9.7.09	X					X		2 x soil jars	✓								✓	✓	✓	✓	

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No.

Esky ID

Relinquished by:	Richard Cole	Signed:	Date: 10/7/09	
Recieved by:	Frank	Signed:	Date: 10/7/09 11am	
Relinquished by:		Signed:	Date:	
Recieved by:		Signed:	Date:	

Chain of Custody

6 of 6

AECOM

AECOM - Sydney
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Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Laboratory Details
Lab. Name:
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY433009 v2.

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Harbour
PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email: richard.cole@aecom.com, chrshaan.donnelly@aecom.com	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Analysis Request: Metals M13 (98)	TOC	PAH (ultra low)	BTEX / TPH	SPOCAS	Elutriate Metals	Elutriate PAH	Cyanide	TBT	Phenols	OCP (5)	Total PCBs (5)	Other
19	PC14_0.0-0.36	8-7-09	X					X		4x soil jars 1 bag	✓	✓			✓	✓	✓		✓				
	PC34_0.0-0.27	1x soil jar	X					X		1x large 1x small	✓								✓	✓	✓	✓	
20	PC35_0.0-0.35	3x large 1x small 1x Bag	X					X		3x large 1x small (1x Bag)	✓	✓	✓	✓	✓	✓	✓		✓				
	PC35_0.35-0.59	1x soil Jar	X					X		1x large	✓												
21	Elutriate Water.																						

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No.

Esky ID

Relinquished by:	Richard Cole	Signed:		Date: 10/7/09	Relinquished by:	Signed:	Date:
Recieved by:	Frank	Signed:		Date: 10/7/9 11am	Recieved by:	Signed:	Date:

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES0910121**		
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2009HLAENV0352 (SY/330/09 V3)
Site	: ----		
Sampler	: RC	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 10-JUL-2009	Issue Date	: 13-JUL-2009 12:38
Client Requested Due Date	: 17-JUL-2009	Scheduled Reporting Date	: **17-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 2.2'C - Ice present
No. of coolers/boxes	: 4 HARD	No. of samples received	: 21
Sercurity 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
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **THIS BATCH ES0910121 FOR ELUTRIATE ONLY AND SPLIT INTO ES0910119 (ALS SYD BATCH ONLY), ES0910122 (TBT/TOC) & ES0910124 (SPOCAS)**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 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.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EG035T Total Mercury by FIMS	SOIL - EG093A-T Total metals in Saline Water Suite A by ORC-ICPMS	SOIL - EG093B-T Total Metals in Saline Water -Suite B by ORC-ICPMS	SOIL - EP132(PAH) Ultra Trace Polynuclear Aromatic Compounds
ES0910121-001	10-JUL-2009 10:00	PC20_0.0-0.17	✓	✓	✓	✓
ES0910121-002	10-JUL-2009 10:00	PC29_0.0-0.45	✓	✓	✓	✓
ES0910121-003	10-JUL-2009 10:00	PC28_0.9-1.4	✓	✓	✓	✓
ES0910121-004	10-JUL-2009 10:00	PC27_0.5-0.9	✓	✓	✓	✓
ES0910121-005	10-JUL-2009 10:00	PC26_0.0-0.5	✓	✓	✓	✓
ES0910121-006	10-JUL-2009 10:00	PC8_0.35-0.7	✓	✓	✓	✓
ES0910121-007	10-JUL-2009 10:00	PC9_0.8-1.12	✓	✓	✓	✓
ES0910121-008	10-JUL-2009 10:00	PC11_0.0-0.2	✓	✓	✓	✓
ES0910121-009	10-JUL-2009 10:00	PC15_0.5-1.0	✓	✓	✓	✓
ES0910121-010	10-JUL-2009 10:00	PC12_0.4-0.76	✓	✓	✓	✓
ES0910121-011	10-JUL-2009 10:00	PC36_0.16-0.5	✓	✓	✓	✓
ES0910121-012	10-JUL-2009 10:00	PC38_0.0-0.4	✓	✓	✓	✓
ES0910121-013	10-JUL-2009 10:00	PC40_1.0-1.47	✓	✓	✓	✓
ES0910121-014	10-JUL-2009 10:00	PC41_0.0-0.5	✓	✓	✓	✓
ES0910121-015	10-JUL-2009 10:00	PC55_0.3-0.63	✓	✓	✓	✓
ES0910121-016	10-JUL-2009 10:00	PC45_0.5-1.03	✓	✓	✓	✓
ES0910121-017	10-JUL-2009 10:00	PC42_0.0-0.5	✓	✓	✓	✓
ES0910121-018	10-JUL-2009 10:00	PC43_0.7-1.05	✓	✓	✓	✓
ES0910121-019	10-JUL-2009 10:00	PC14_0.0-0.36	✓	✓	✓	✓
ES0910121-020	10-JUL-2009 10:00	PC35_0.0-0.35	✓	✓	✓	✓
ES0910121-021	10-JUL-2009 10:00	ELUTRIATE WATER	✓	✓	✓	✓

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	accountsenv@aecom.com
MR CHRISTIANN DONNETTI		
- *AU Certificate of Analysis - NATA (COA)	Email	christiaan.donnetti@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	christiaan.donnetti@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	christiaan.donnetti@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	christiaan.donnetti@aecom.com
- A4 - AU Tax Invoice (INV)	Email	christiaan.donnetti@aecom.com
- Default - Chain of Custody (COC)	Email	christiaan.donnetti@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	christiaan.donnetti@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	christiaan.donnetti@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	christiaan.donnetti@aecom.com
- EDI Format - XTab (XTAB)	Email	christiaan.donnetti@aecom.com
MR RICHARD COLE		
- *AU Certificate of Analysis - NATA (COA)	Email	richard.cole@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	richard.cole@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	richard.cole@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	richard.cole@aecom.com
- A4 - AU Tax Invoice (INV)	Email	richard.cole@aecom.com
- Default - Chain of Custody (COC)	Email	richard.cole@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	richard.cole@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	richard.cole@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	richard.cole@aecom.com
- EDI Format - XTab (XTAB)	Email	richard.cole@aecom.com
THE RESULTS ADDRESS		
- *AU Certificate of Analysis - NATA (COA)	Email	sydney@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sydney@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sydney@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	sydney@aecom.com
- A4 - AU Tax Invoice (INV)	Email	sydney@aecom.com
- Default - Chain of Custody (COC)	Email	sydney@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	sydney@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	sydney@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	sydney@aecom.com
- EDI Format - XTab (XTAB)	Email	sydney@aecom.com

CERTIFICATE OF ANALYSIS

Work Order	: **ES0910122**	Page	: 1 of 13
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 10-JUL-2009
Sampler	: RC	Issue Date	: 27-JUL-2009
Site	: ----		
		No. of samples received	: 48
Quote number	: SY/330/09 V3	No. of samples analysed	: 48

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

This document is issued in accordance with NATA accreditation requirements.

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*
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	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 insuffient 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 date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

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

- **TBT: Poor matrix spike recovery due to matrix interference. Confirmed by re-extraction and re-analysis.**
- **TBT: Sample DUP06, DUP13 PC26_0.0-0.5, PC36_0.0-0.16 and PC29_0.0-0.45 shows poor surrogate recovery due to matrix interference. Confirmed by re-extraction and re-analysis.**
- **TBT: Sample PC 20-0.0-0.17 shows poor duplicate results due to sample heterogeneity. Confirmed by re-extraction and re-analysis.**
- **TBT: Sample PC8_0.0-0.35, PC9_0.0-0.4, PC37_0.0-0.37, PC38_0.0-0.4, PC40_0.0-0.5, PC25_0.0-0.35 and PC14_0.0-0.36 shows poor surrogate recovery due to matrix interference. Confirmed by re-extraction and re-analysis of other project samples (project has history of matrix affected samples).**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC20_0.0-0.17	PC29_0.0-0.45	PC28_0.0-0.4	PC28_0.4-0.9	PC28_0.9-1.4
				Client sampling date / time	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00
Compound	*CAS Number*	*LOR*	*Unit*		ES0910122-001	ES0910122-002	ES0910122-003	ES0910122-004	ES0910122-005
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		**53.0**	**51.3**	**44.7**	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		**3.13**	**2.77**	**1.94**	**2.61**	**5.77**
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		**2170**	**2.2**	<0.5	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		**102**	**25.1**	**56.0**	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC27_0.0-0.5	PC27_0.5-0.9	DUP06	PC26_0.0-0.5	PC26_0.5-0.9
				Client sampling date / time	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910122-006	ES0910122-007	ES0910122-008	ES0910122-009	ES0910122-010
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		31.7	----	42.6	41.1	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		3.47	2.19	2.51	2.18	4.24
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		1.1	----	1.3	<0.5	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		44.9	----	30.8	28.7	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC8_0.0-0.35	PC8_0.35-0.7	PC9_0.0-0.4	PC9_0.8-1.12	PC10_0.0-0.25
				Client sampling date / time	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910122-011	ES0910122-012	ES0910122-013	ES0910122-014	ES0910122-015
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		53.4	----	39.3	----	34.0
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		----	3.63	2.38	10.9	2.43
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		0.6	----	<0.5	----	<0.5
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		28.0	----	26.3	----	36.4

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC11_0.0-0.2	PC19_0.0-0.53	PC15_0.0-0.5	PC15_0.5-1.0	PC13_0.0-0.06
				Client sampling date / time	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	09-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910122-016	ES0910122-017	ES0910122-018	ES0910122-019	ES0910122-020
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		45.9	43.9	41.4	----	51.6
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		4.63	1.72	1.98	4.66	5.00
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		1.2	<0.5	0.6	----	1.7
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		35.8	55.2	44.0	----	39.5

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC12_0.0-0.4	PC12_0.4-0.76	PC36_0.0-0.16	PC36_0.16-0.5	PC37_0.0-0.37
				Client sampling date / time	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910122-021	ES0910122-022	ES0910122-023	ES0910122-024	ES0910122-025
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		47.2	----	45.2	----	41.0
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		----	4.86	----	5.75	2.62
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		1.7	----	3.3	----	0.7
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		45.2	----	29.0	----	19.1

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC38_0.0-0.4	PC38_0.4-0.8	PC40_0.0-0.5	PC40_0.5-1.0	PC40_1.0-1.47
				Client sampling date / time	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910122-026	ES0910122-027	ES0910122-028	ES0910122-029	ES0910122-030
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		48.1	----	40.1	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		6.63	4.82	----	3.29	7.49
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		6.0	----	3.3	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		33.5	----	29.9	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC41_0.0-0.5	PC41_1.0-1.55	PC25_0.0-0.35	DUP08	PC24_0.0-0.23
				Client sampling date / time	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910122-031	ES0910122-032	ES0910122-033	ES0910122-034	ES0910122-035
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		53.2	----	38.4	45.9	45.6
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		5.55	7.34	2.24	3.87	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		4.7	----	<0.5	2.9	1.0
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		37.1	----	33.4	37.2	28.3

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC55_0.0-0.3	PC55_0.3-0.63	PC45_0.0-0.5	PC45_0.5-1.03	PC42_0.5-0.88
				Client sampling date / time	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910122-036	ES0910122-037	ES0910122-038	ES0910122-039	ES0910122-041
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		**25.2**	----	**39.3**	----	**39.3**
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		**1.54**	**3.20**	**2.55**	**4.44**	**1.46**
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	----	**0.9**	----	<0.5
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		**22.3**	----	**23.0**	----	**62.1**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC43_0.0-0.35	PC43_0.7-1.05	DUP13	PC14_0.0-0.36	PC34_0.0-0.27
				Client sampling date / time	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910122-042	ES0910122-043	ES0910122-044	ES0910122-045	ES0910122-046
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		52.8	----	45.2	41.2	47.0
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		5.64	5.13	----	----	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		2.3	----	0.9	<0.5	13.2
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		17.4	----	16.2	14.9	39.2

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC35_0.0-0.35	PC39_0.0-0.4	PC42_0.0-0.5	----	----
			Client sampling date / time	08-JUL-2009 15:00	08-JUL-2009 15:00	09-JUL-2009 15:00	----	----
Compound	CAS Number	LOR	Unit	ES0910122-047	ES0910122-048	ES0910122-049	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	31.0	51.8	44.6	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	----	----	3.55	----	----
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	1.7	8.0	1.7	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	51.8	36.4	37.7	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP090S: Organotin Surrogate			
Tripropyltin	---	34	108

QUALITY CONTROL REPORT

Work Order	: **ES0910122**	Page	: 1 of 5
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 10-JUL-2009
Sampler	: RC	Issue Date	: 27-JUL-2009
Order number	: ----		
		No. of samples received	: 48
Quote number	: SY/330/09 V3	No. of samples analysed	: 48

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

This document is issued in accordance with NATA accreditation requirements.

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*
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	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 insuffient 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: 1040334)									
EB0911139-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	6.5	6.9	6.1	No Limit
EB0911143-005	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	13.9	14.9	7.3	0% - 50%
EA055: Moisture Content (QC Lot: 1040335)									
ES0910122-015	PC10_0.0-0.25	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	34.0	37.2	9.0	0% - 20%
ES0910122-048	PC39_0.0-0.4	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	51.8	52.1	0.7	0% - 20%
EA055: Moisture Content (QC Lot: 1040336)									
ES0910122-023	PC36_0.0-0.16	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	45.2	47.2	4.3	0% - 20%
ES0910122-035	PC24_0.0-0.23	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	45.6	44.7	2.1	0% - 20%
EP005: Total Organic Carbon (TOC) (QC Lot: 1043592)									
ES0910122-001	PC20_0.0-0.17	EP005: Total Organic Carbon	---	0.02	%	3.13	3.12	0.5	0% - 20%
ES0910122-012	PC8_0.35-0.7	EP005: Total Organic Carbon	---	0.02	%	3.63	3.71	2.2	0% - 20%
EP005: Total Organic Carbon (TOC) (QC Lot: 1043593)									
ES0910122-024	PC36_0.16-0.5	EP005: Total Organic Carbon	---	0.02	%	5.75	5.79	0.8	0% - 20%
ES0910122-036	PC55_0.0-0.3	EP005: Total Organic Carbon	---	0.02	%	1.54	1.55	0.0	0% - 20%
EP090: Organotin Compounds (QC Lot: 1040678)									
ES0910122-001	PC20_0.0-0.17	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	2170	594	# 114	0% - 20%
ES0910204-009	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	1.3	0.9	39.3	No Limit
EP090: Organotin Compounds (QC Lot: 1040679)									
ES0910122-008	DUP06	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	1.3	1.2	10.2	No Limit
ES0910122-023	PC36_0.0-0.16	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	3.3	2.8	13.9	No Limit
EP090: Organotin Compounds (QC Lot: 1040680)									
EB0910914-001	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit
ES0910122-044	DUP13	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	0.9	0.9	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
EP005: Total Organic Carbon (TOC) (QCLot: 1043592)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	103	70	130
EP005: Total Organic Carbon (TOC) (QCLot: 1043593)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	103	70	130
EP090: Organotin Compounds (QCLot: 1040678)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	75.4	28	129
EP090: Organotin Compounds (QCLot: 1040679)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	75.8	28	129
EP090: Organotin Compounds (QCLot: 1040680)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	70.6	28	129

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	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP090: Organotin Compounds (QCLot: 1040678)							
ES0910122-002	PC29_0.0-0.45	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	44.8	20	130
EP090: Organotin Compounds (QCLot: 1040679)							
ES0910122-009	PC26_0.0-0.5	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	29.0	20	130
EP090: Organotin Compounds (QCLot: 1040680)							
ES0910122-034	DUP08	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	29.5	20	130

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0910122**	Page	: 1 of 7
Client	: ENSR AUSTRALIA PTY LIMITED	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 10-JUL-2009
Sampler	: RC	Issue Date	: 27-JUL-2009
Order number	: ----		
		No. of samples received	: 48
Quote number	: SY/330/09 V3	No. of samples analysed	: 48

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

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

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								
PC20_0.0-0.17,	PC29_0.0-0.45,	**08-JUL-2009**	**----**	----	----	**15-JUL-2009**	15-JUL-2009	✓
PC28_0.0-0.4,	PC27_0.0-0.5,							
DUP06,	PC26_0.0-0.5,							
PC8_0.0-0.35,	PC9_0.0-0.4,							
PC10_0.0-0.25,	PC11_0.0-0.2,							
PC19_0.0-0.53,	PC15_0.0-0.5,							
PC14_0.0-0.36,	PC34_0.0-0.27,							
PC35_0.0-0.35,	PC39_0.0-0.4							
Soil Glass Jar - Unpreserved								
PC13_0.0-0.06,	PC12_0.0-0.4,	**09-JUL-2009**	**----**	----	----	**15-JUL-2009**	16-JUL-2009	✓
PC36_0.0-0.16,	PC37_0.0-0.37,							
PC38_0.0-0.4,	PC40_0.0-0.5,							
PC41_0.0-0.5,	PC25_0.0-0.35,							
DUP08,	PC24_0.0-0.23,							
PC55_0.0-0.3,	PC45_0.0-0.5,							
PC42_0.5-0.88,	PC43_0.0-0.35,							
DUP13,	PC42_0.0-0.5							

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
EP005: Total Organic Carbon (TOC)								
Soil Glass Jar - Unpreserved								
PC20_0.0-0.17,	PC29_0.0-0.45,	**08-JUL-2009**	**17-JUL-2009**	05-AUG-2009	✓	**20-JUL-2009**	05-AUG-2009	✓
PC28_0.0-0.4,	PC28_0.4-0.9,							
PC28_0.9-1.4,	PC27_0.0-0.5,							
PC27_0.5-0.9,	DUP06,							
PC26_0.0-0.5,	PC26_0.5-0.9,							
PC8_0.35-0.7,	PC9_0.0-0.4,							
PC9_0.8-1.12,	PC10_0.0-0.25,							
PC11_0.0-0.2,	PC19_0.0-0.53,							
PC15_0.0-0.5,	PC15_0.5-1.0							
Soil Glass Jar - Unpreserved								
PC13_0.0-0.06,	PC12_0.4-0.76,	**09-JUL-2009**	**17-JUL-2009**	06-AUG-2009	✓	**20-JUL-2009**	06-AUG-2009	✓
PC36_0.16-0.5,	PC37_0.0-0.37,							
PC38_0.0-0.4,	PC38_0.4-0.8,							
PC40_0.5-1.0,	PC40_1.0-1.47,							
PC41_0.0-0.5,	PC41_1.0-1.55,							
PC25_0.0-0.35,	DUP08,							
PC55_0.0-0.3,	PC55_0.3-0.63,							
PC45_0.0-0.5,	PC45_0.5-1.03,							
PC42_0.5-0.88,	PC43_0.0-0.35,							
PC43_0.7-1.05,	PC42_0.0-0.5							

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
EP090: Organotin Compounds								
Soil Glass Jar - Unpreserved								
PC20_0.0-0.17,	PC29_0.0-0.45,	**08-JUL-2009**	**16-JUL-2009**	22-JUL-2009	✓	**17-JUL-2009**	25-AUG-2009	✓
PC28_0.0-0.4,	PC27_0.0-0.5							
Soil Glass Jar - Unpreserved								
DUP06,	PC26_0.0-0.5,	**08-JUL-2009**	**17-JUL-2009**	22-JUL-2009	✓	**22-JUL-2009**	26-AUG-2009	✓
PC8_0.0-0.35,	PC9_0.0-0.4,							
PC10_0.0-0.25,	PC11_0.0-0.2,							
PC19_0.0-0.53,	PC15_0.0-0.5,							
PC14_0.0-0.36,	PC34_0.0-0.27,							
PC35_0.0-0.35,	PC39_0.0-0.4							
Soil Glass Jar - Unpreserved								
DUP08,	PC24_0.0-0.23,	**09-JUL-2009**	**16-JUL-2009**	23-JUL-2009	✓	**17-JUL-2009**	25-AUG-2009	✓
PC55_0.0-0.3,	PC45_0.0-0.5,							
PC42_0.5-0.88,	PC43_0.0-0.35,							
DUP13,	PC42_0.0-0.5							
Soil Glass Jar - Unpreserved								
PC13_0.0-0.06,	PC12_0.0-0.4,	**09-JUL-2009**	**17-JUL-2009**	23-JUL-2009	✓	**22-JUL-2009**	26-AUG-2009	✓
PC36_0.0-0.16,	PC37_0.0-0.37,							
PC38_0.0-0.4,	PC40_0.0-0.5,							
PC41_0.0-0.5,	PC25_0.0-0.35							

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	6	48	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	6	42	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	4	38	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	3	42	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organotin Analysis	EP090	3	42	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	3	42	**7.1**	**5.0**	✓	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 (1999) Schedule B(3) (Method 102)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.

Preparation Methods	Method	Matrix	Method Descriptions
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP090: Organotin Compounds	ES0910122-001	PC20_0.0-0.17	**Tributyltin**	56573-85-4	114 %	0-20%	**RPD exceeds LOR based limits**

- **For all matrices, no Method Blank value 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.**

TBT & TOC ONLY

1 of 6

Chain of Custody

AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Laboratory Details
Lab. Name:
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY330909 v2

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Harbour
PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email: richard.cole@aecom.com, chosthaan.dannetti@aecom.com	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Metals M13 (sea quote)	TOC	PAH (ultra low)	BTEX TPH	SPOCAS	Elutriate Metals	Elutriate PAH	Cyanide	VFRT	Phenols	OCP (5T)	Total PCBs (5T)	Other
1	PC20_0.0-0.17	8.7.09	X							1x small 3x large 1x bag	✓	✓			✓	✓	✓		✓				
2	PC29_0.0-0.45		X							3x large 1x small 1x bag	✓	✓	✓	✓	✓	✓	✓		✓				
	PC29_0.45-0.83		X							1x large	✓												
3	PC28_0.0-0.4		X							2x soil jars	✓	✓							✓				
4	PC28_0.4-0.9		X							2x soil jars	✓	✓	✓	✓									
5	PC28_0.9-1.4		X							4x soil jars 1 bag	✓	✓			✓	✓	✓						
6	PC27_0.0-0.5		X							2x soil jars	✓	✓	✓	✓					✓				
7	PC27_0.5-0.9		X							4x soil jars 1 bag	✓	✓			✓	✓	✓			✓	✓	✓	
8	DUP06		X								✓	✓	✓	✓					✓				
9	PC26_0.0-0.5		X							4x soil jars 1 bag	✓	✓			✓	✓	✓		✓				
10	PC26_0.5-0.87		X							2 x soil jars	✓	✓	✓	✓									
11	PC8_0.0-0.35	↓	X							2 x soil jars	✓								✓				

CONTRACT WORK
WO: ES09 0122
LAB: ALS Brisbane
DATE: 10/07/09
SPLIT: SYD WO: ES0910119
Elutriate: ES0910121
SPOAS ES0910124

Environmental Division
Sydney
Work Order
ES0910122
Telephone : +61-2-8784 8555

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No.
Esky ID

Relinquished by:	Richard Cole	Signed:	Date: 10/7/09	
Recieved by:	Frank	Signed:	Date: 10/7/9 11am	
Relinquished by:		Signed:	Date:	
Recieved by:		Signed:	Date:	

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2 of 6

AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Laboratory Details
Lab. Name: ALS - Sydney
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: S4330 09 v2

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Harbour PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____ days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email: christiaan.donnelli@aecom.com richard.cole@aecom.com	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Metals M13 (see over)	TOC	PAH (Ultra trace)	BTEX / TPH	SPOCAS	Elutriate Metals	Elutriate PAH	Cyanide	TRT	Phenols	OCP (5)	Total PCBs (5)	Other
12	PC8_0.35-0.7	8.7.09	X					X		4x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓						
	PC8_0.7-1.2		X					X		1x soil jar	✓									✓	✓	✓	
13	PC9_0.0-0.4		X					X		3x soil jars	✓	✓	✓	✓				✓	✓				
	PC9_0.4-0.8		X					X		2x soil jars	✓												
14	PC9_0.8-1.12		X					X		4x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓						
	~~PC9~~ E2		X					X		1x soil jar	QC FOR ELUTRIATE TEST PC9_0.8-1.12												
15	PC10_0.0-0.25		X					X		2x soil jars	✓	✓						✓					
16	PC11_0.0-0.2		X					X		4x soil jars	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
17	PC19_0.0-0.53		X					X		2x soil jars	✓	✓	✓	✓					✓				
	PC19_0.53-1.03		X					X		1x soil jars	✓												
18	PC15_0.0-0.5		X					X		1x large 1x small	✓	✓	✓	✓					✓				
19	PC15_0.5-1.0	↓	X					X		8x large 1x small 1 bag	✓	✓			✓	✓	✓						

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No.
Esky ID

Relinquished by: Richard Cole — Signed: — Date: 10/4/09
Recieved by: Frank — Signed: — Date: 11/7/9 16:20

Relinquished by: — Signed: — Date:
Recieved by: — Signed: — Date:

Chain of Custody

3 of 6

AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Sampled By: Richard Cole
AECOM Project No: 53017805

Laboratory Details
Lab. Name: ALS - Sydney
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY330 009 V2

Project Name: Port Kembla Outer Harbour PO No. V

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email : christiaan.donnethi@aecom.com, richard.cole@aecom.com	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Analysis Request: Metals M13 (soil grade)	TOC	PAH (ultra trace)	BTEX/TPH	SPOCAS	Elutriate Metals	Elutriate PAH	Cyanide	TBT	Phenols (SIM)	OCP (SIM)	Total PCBs (SIM)	Other
20	PC13_0.0-0.06	9.7.09	X					X		2x soil jars	✓	✓	✓	✓					✓				
21	PC12_0.0-0.4		X					X		2x soil jars	✓								✓				
22	PC12_0.4-0.76		X					X		4x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓						
	DUP09		X					X		2x soil jars	✓							✓					
23	PC36_0.0-0.16		X					X		1x soil jar	✓								✓				
24	PC36_0.16-0.5		X					X		4x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓						
25	PC37_0.0-0.37		X					X			✓	✓	✓	✓				✓	✓				
26	PC38_0.0-0.4		X					X		4x soil jars 1 bag	✓	✓			✓	✓	✓		✓				
27	PC38_0.4-0.8		X					X		2x soil jars	✓	✓	✓	✓									
	PC38_0.8-1.23		X					X		4x soil jars 1 bag	✓												
	DUP16		X					X			✓									✓	✓	✓	
28	PC40_0.0-0.5	↓	X					X			✓								✓	✓	✓	✓	

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments: *Elutriate Metals (Dredging guideline LOR)

Relinquished by: Richard Cole Signed: Date: 10/7/09
Recieved by: Frank Signed: Date: 10/7/09 11am

Lab Report No. | Esky ID

Relinquished by: Signed: Date:
Recieved by: Signed: Date:

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Revision: Jun 08

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AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Laboratory Details
Lab. Name: ALS - Sydney
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY33009 v2

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Harbour
PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email : christiaan.donnetti@aecom.com; richard.cole@aecom.com	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Metals M13 (298)	TOC	PAH (ultra trace)	BTEX/TPH	SPOCAS	Elutriate Metals	Elutriate PAH	Cyanide	TRT	Phenols	OCP (5)	Total PCBs (51)	Other
29	PC40_0.5-1.0	9.7.09	X					X		3 x soil jars	✓	✓	✓	✓				✓					
30	PC40_1.0-1.47		X					X			✓	✓			✓	✓	✓						
31	PC41_0.0-0.5		X					X		4x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓		✓				
	PC41_0.5-1.0		X					X		2 x soil jars	✓												
32	PC41_1.0-1.55		X					X		2 x soil jars	✓	✓	✓	✓									
	DUP17		X					X			✓												
33	PC25_0.0-0.35		X					X		2 x soil jars	✓	✓	✓	✓				✓	✓				
34	DUP08		X					X			✓	✓	✓	✓				✓	✓				
35	PC24_0.0-0.23		X					X		2 x soil jars	✓								✓				
36	PC55_0.0-0.3		X					X		2 x soil jars	✓	✓	✓	✓				✓	✓	✓	✓	✓	
37	PC55_0.3-0.63		X					X		4 x soil jars 1 bag	✓	✓			✓	✓	✓	✓					
38	PC45_0.0-0.5	↓	X					X		2 x soil jars	✓	✓	✓	✓					✓				

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No.
Esky ID

Relinquished by: Richard Cole — Signed: — Date: 10/7/09
Recieved by: Frank — Signed: — Date: 10/7/09 Noon

Relinquished by: — Signed: — Date:
Recieved by: — Signed: — Date:

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Chain of Custody

5 of 6

AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Laboratory Details
Lab. Name: ALS - Sydney
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY330 09 R2

Sampled By: Richard Cole
AECOM Project No: 53017805
Project Name: Port Kembla Outer Harbour PO No. √

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email : christiaan.donneth@aecom.com; richard.cole@aecom.com	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Metals M13 (300g)	TOC	PAH (ultra trace)	BTEX TPH	SPOCAS	Elutriate Metals	Elutriate PAH	Cadmium	TBT	Phenols (5)	OCP (5)	Total PCBs (3)	Other
39	PC45_0.5-1.03	9.7.09	X					X		4x soil jars 1 bag	✓	✓			✓	✓	✓	✓					
40	PC42_0.0-0.5		X					X		4x soil jars 1 bag	✓								✓				
41	PC42_0.5-0.88		X					X		2x soil jars	✓	✓	✓	✓	✓	✓	✓	✓					
42	PC43_0.0-0.35		X					X		2x soil jars	✓	✓	✓	✓					✓				
	PC43_0.35-0.7		X					X		2x soil jars	✓									✓	✓	✓	
43	PC43_0.7-1.05	↓	X					X		4x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓						
44	DUP 13	9.7.09	X					X		2x soil jars	✓								✓	✓	✓	✓	

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No.

Esky ID

Relinquished by:	Richard Cole	Signed:		Date: 10/7/09	Relinquished by:	Signed:	Date:
Recieved by:	Frank	Signed:		Date: 10/7/09 11am	Recieved by:	Signed:	Date:

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Chain of Custody

6 of 6

AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia

Tel: 61 2 8484 8999
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Laboratory Details
Lab. Name:
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Preliminary Report by:
Final Report by:
Lab Quote No: SY33009 v2.

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Harbour
PO No.

Specifications:

Specification	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _______days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: ______________________)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email: richard.cole@aecom.com, christiaan.donnelli@aecom.com	✓

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	Metals M13 (see note)	TOC	PAH (ultra trace)	BTEX / TPH	SPOCAS	Elutriate Metals	Elutriate PAH	Cyanide	TBT	Phenols	OCP (5)	Total PCBs (5)				Other
45	PC14_0.0-0.36	8-7-09	X					X		4x soil jars 1 bag	✓	✓			✓	✓	✓		✓							
46	PC34_0.0-0.27	1x soil Jar	X					X		1x large 1x small	✓								✓	✓	✓	✓				
47	PC35_0.0-0.35	3x large 1x small 1x Bag	X					X		3x large 1x small 1x bag	✓	✓	✓	✓	✓	✓	✓		✓							
	PC35_0.35-0.59	1x soil Jar	X					X		1x large	✓															

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No.
Esky ID

Relinquished by: Richard Cole	Signed: [signature]	Date: 10/7/09	Relinquished by:	Signed:	Date:
Recieved by: Frank	Signed: [signature]	Date: 10/7/9 11am	Recieved by:	Signed:	Date:

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BMS-PM-DV-F046

Revision: Jun 08

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES0910122**		
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	Page	: 1 of 4
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2009HLAENV0352 (SY/330/09 V3)
Site	: ----		
Sampler	: RC	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 10-JUL-2009	Issue Date	: 15-JUL-2009 12:48
Client Requested Due Date	: 23-JUL-2009	Scheduled Reporting Date	: **23-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 2.2'C - Ice present
No. of coolers/boxes	: 4 HARD	No. of samples received	: 48
Sercurity Seal	: Intact.	No. of samples analysed	: 48

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- TOC & TBT analysis to be conducted by ALS Brisbane.
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **THIS BATCH ES0910122 FOR TBT& TOC ONLY AND SPLIT INTO ES0910119 (ALS SYD BATCH), ES0910121 (ELUTRIATE) & ES0910124 (SPOCAS)**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 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.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA055-103 Moisture Content	SOIL - EP090 (solids) Organotins
ES0910122-001	08-JUL-2009 15:00	PC20_0.0-0.17	✓	✓	✓
ES0910122-002	08-JUL-2009 15:00	PC29_0.0-0.45	✓	✓	✓
ES0910122-003	08-JUL-2009 15:00	PC28_0.0-0.4	✓	✓	✓
ES0910122-004	08-JUL-2009 15:00	PC28_0.4-0.9	✓		
ES0910122-005	08-JUL-2009 15:00	PC28_0.9-1.4	✓		
ES0910122-006	08-JUL-2009 15:00	PC27_0.0-0.5	✓	✓	✓
ES0910122-007	08-JUL-2009 15:00	PC27_0.5-0.9	✓		
ES0910122-008	08-JUL-2009 15:00	DUP06	✓	✓	✓
ES0910122-009	08-JUL-2009 15:00	PC26_0.0-0.5	✓	✓	✓
ES0910122-010	08-JUL-2009 15:00	PC26_0.5-0.9	✓		
ES0910122-011	08-JUL-2009 15:00	PC8_0.0-0.35		✓	✓
ES0910122-012	08-JUL-2009 15:00	PC8_0.35-0.7	✓		
ES0910122-013	08-JUL-2009 15:00	PC9_0.0-0.4	✓	✓	✓
ES0910122-014	08-JUL-2009 15:00	PC9_0.8-1.12	✓		
ES0910122-015	08-JUL-2009 15:00	PC10_0.0-0.25	✓	✓	✓
ES0910122-016	08-JUL-2009 15:00	PC11_0.0-0.2	✓	✓	✓
ES0910122-017	08-JUL-2009 15:00	PC19_0.0-0.53	✓	✓	✓
ES0910122-018	08-JUL-2009 15:00	PC15_0.0-0.5	✓	✓	✓
ES0910122-019	08-JUL-2009 15:00	PC15_0.5-1.0	✓		
ES0910122-020	09-JUL-2009 15:00	PC13_0.0-0.06	✓	✓	✓
ES0910122-021	09-JUL-2009 15:00	PC12_0.0-0.4		✓	✓
ES0910122-022	09-JUL-2009 15:00	PC12_0.4-0.76	✓		
ES0910122-023	09-JUL-2009 15:00	PC36_0.0-0.16		✓	✓
ES0910122-024	09-JUL-2009 15:00	PC36_0.16-0.5	✓		
ES0910122-025	09-JUL-2009 15:00	PC37_0.0-0.37	✓	✓	✓
ES0910122-026	09-JUL-2009 15:00	PC38_0.0-0.4	✓	✓	✓
ES0910122-027	09-JUL-2009 15:00	PC38_0.4-0.8	✓		
ES0910122-028	09-JUL-2009 15:00	PC40_0.0-0.5		✓	✓
ES0910122-029	09-JUL-2009 15:00	PC40_0.5-1.0	✓		
ES0910122-030	09-JUL-2009 15:00	PC40_1.0-1.47	✓		
ES0910122-031	09-JUL-2009 15:00	PC41_0.0-0.5	✓	✓	✓
ES0910122-032	09-JUL-2009 15:00	PC41_1.0-1.55	✓		
ES0910122-033	09-JUL-2009 15:00	PC25_0.0-0.35	✓	✓	✓
ES0910122-034	09-JUL-2009 15:00	DUP08	✓	✓	✓
ES0910122-035	09-JUL-2009 15:00	PC24_0.0-0.23		✓	✓

			SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA055-103 Moisture Content	SOIL - EP090 (solids) Organotins
ES0910122-036	09-JUL-2009 15:00	PC55_0.0-0.3	✓	✓	✓
ES0910122-037	09-JUL-2009 15:00	PC55_0.3-0.63	✓		
ES0910122-038	09-JUL-2009 15:00	PC45_0.0-0.5	✓	✓	✓
ES0910122-039	09-JUL-2009 15:00	PC45_0.5-1.03	✓		
ES0910122-041	09-JUL-2009 15:00	PC42_0.5-0.88	✓	✓	✓
ES0910122-042	09-JUL-2009 15:00	PC43_0.0-0.35	✓	✓	✓
ES0910122-043	09-JUL-2009 15:00	PC43_0.7-1.05	✓		
ES0910122-044	09-JUL-2009 15:00	DUP13		✓	✓
ES0910122-045	08-JUL-2009 15:00	PC14_0.0-0.36		✓	✓
ES0910122-046	08-JUL-2009 15:00	PC34_0.0-0.27		✓	✓
ES0910122-047	08-JUL-2009 15:00	PC35_0.0-0.35		✓	✓
ES0910122-048	08-JUL-2009 15:00	PC39_0.0-0.4		✓	✓
ES0910122-049	09-JUL-2009 15:00	PC42_0.0-0.5	✓	✓	✓

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	accountsenv@aecom.com
MR CHRISTIANN DONNETTI		
- *AU Certificate of Analysis - NATA (COA)	Email	christiaan.donnetti@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	christiaan.donnetti@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	christiaan.donnetti@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	christiaan.donnetti@aecom.com
- A4 - AU Tax Invoice (INV)	Email	christiaan.donnetti@aecom.com
- Default - Chain of Custody (COC)	Email	christiaan.donnetti@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	christiaan.donnetti@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	christiaan.donnetti@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	christiaan.donnetti@aecom.com
- EDI Format - XTab (XTAB)	Email	christiaan.donnetti@aecom.com
MR RICHARD COLE		
- *AU Certificate of Analysis - NATA (COA)	Email	richard.cole@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	richard.cole@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	richard.cole@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	richard.cole@aecom.com
- A4 - AU Tax Invoice (INV)	Email	richard.cole@aecom.com
- Default - Chain of Custody (COC)	Email	richard.cole@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	richard.cole@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	richard.cole@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	richard.cole@aecom.com
- EDI Format - XTab (XTAB)	Email	richard.cole@aecom.com
THE RESULTS ADDRESS		
- *AU Certificate of Analysis - NATA (COA)	Email	sydney@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sydney@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sydney@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	sydney@aecom.com
- A4 - AU Tax Invoice (INV)	Email	sydney@aecom.com
- Default - Chain of Custody (COC)	Email	sydney@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	sydney@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	sydney@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	sydney@aecom.com
- EDI Format - XTab (XTAB)	Email	sydney@aecom.com

CERTIFICATE OF ANALYSIS

Work Order	: **ES0910124**	Page	: 1 of 10
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 10-JUL-2009
Sampler	: RC	Issue Date	: 21-JUL-2009
Site	: ----		
		No. of samples received	: 20
Quote number	: SY/330/09 V3	No. of samples analysed	: 20

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

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

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*
Kim McCabe	Senior Inorganic Chemist	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 insuffient 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 date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

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

- **Analysis conducted by ALS Brisbane, NATA Site No. 818.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC20_0.0-0.17	PC29_0.0-0.45	PC28_0.9-1.4	PC27_0.5-0.9	PC26_0.0-0.5
				Client sampling date / time	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910124-001	ES0910124-002	ES0910124-003	ES0910124-004	ES0910124-005
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		8.7	8.6	8.6	8.7	8.8
pH OX (23B)	----	0.1	pH Unit		7.8	7.9	7.9	8.3	8.4
EA029-B: Acidity Trail									
Titratable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	<2	<2
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t		<2	<2	<2	<2	<2
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t		<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.02	% S		0.31	0.17	0.17	0.10	0.09
Peroxide Sulfur (23De)	----	0.02	% S		1.28	0.77	1.16	0.56	0.34
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S		0.98	0.60	1.00	0.46	0.24
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		609	377	621	284	152
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.02	% Ca		0.44	0.39	0.42	0.35	0.29
Peroxide Calcium (23Wh)	----	0.02	% Ca		9.94	1.21	3.00	2.01	1.16
Acid Reacted Calcium (23X)	----	0.02	% Ca		9.49	0.81	2.57	1.66	0.87
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		4740	406	1280	828	436
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S		7.59	0.65	2.06	1.33	0.70
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg		0.23	0.19	0.18	0.15	0.14
Peroxide Magnesium (23Tm)	----	0.02	% Mg		0.71	0.36	0.54	0.30	0.29
Acid Reacted Magnesium (23U)	----	0.02	% Mg		0.48	0.17	0.35	0.15	0.15
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		398	139	291	126	126
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S		0.64	0.22	0.47	0.20	0.20
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3		22.5	1.28	5.81	3.98	8.61
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		4500	255	1160	795	1720
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S		7.21	0.41	1.86	1.27	2.75
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	1.5	1.5

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC20_0.0-0.17	PC29_0.0-0.45	PC28_0.9-1.4	PC27_0.5-0.9	PC26_0.0-0.5
			Client sampling date / time	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00
Compound	CAS Number	LOR	Unit	ES0910124-001	ES0910124-002	ES0910124-003	ES0910124-004	ES0910124-005
EA029-H: Acid Base Accounting - Continued								
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	PC8_0.35-0.7	PC9_0.8-1.12	PC15_0.5-1.0	PC12_0.4_0.76	PC36_0.16-0.5
				Client sampling date / time	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00
					ES0910124-006	ES0910124-007	ES0910124-009	ES0910124-010	ES0910124-011
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		8.6	9.4	8.6	9.0	8.5
pH OX (23B)	----	0.1	pH Unit		8.2	8.3	7.9	8.1	7.9
EA029-B: Acidity Trail									
Titratable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	<2	<2
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t		<2	<2	<2	<2	<2
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t		<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.02	% S		0.12	0.10	0.15	0.11	0.20
Peroxide Sulfur (23De)	----	0.02	% S		0.74	0.44	1.07	0.45	0.86
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S		0.62	0.34	0.92	0.34	0.66
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		384	215	573	214	413
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.02	% Ca		0.36	0.28	0.40	0.35	0.42
Peroxide Calcium (23Wh)	----	0.02	% Ca		1.84	19.2	2.00	4.71	1.80
Acid Reacted Calcium (23X)	----	0.02	% Ca		1.48	18.9	1.60	4.36	1.39
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		739	9420	801	2170	692
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S		1.18	15.1	1.28	3.48	1.11
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg		0.16	0.09	0.16	0.14	0.23
Peroxide Magnesium (23Tm)	----	0.02	% Mg		0.34	0.98	0.43	0.55	0.46
Acid Reacted Magnesium (23U)	----	0.02	% Mg		0.18	0.90	0.27	0.41	0.23
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		152	738	221	334	188
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S		0.24	1.18	0.35	0.54	0.30
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3		2.88	47.8	2.40	11.4	3.04
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		575	9550	480	2280	607
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S		0.92	15.3	0.77	3.65	0.97
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	1.5	1.5

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC8_0.35-0.7	PC9_0.8-1.12	PC15_0.5-1.0	PC12_0.4_0.76	PC36_0.16-0.5
			Client sampling date / time	08-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00
Compound	CAS Number	LOR	Unit	ES0910124-006	ES0910124-007	ES0910124-009	ES0910124-010	ES0910124-011
EA029-H: Acid Base Accounting - Continued								
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	PC38_0.0-0.4	PC40_1.0-1.47	PC41_0.0-0.5	PC55_0.3-0.63	PC45_0.5-1.03
				Client sampling date / time	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00
					ES0910124-012	ES0910124-013	ES0910124-014	ES0910124-015	ES0910124-016
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		8.6	8.6	8.6	9.2	8.6
pH OX (23B)	----	0.1	pH Unit		8.0	8.0	7.8	8.4	8.0
EA029-B: Acidity Trail									
Titratable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	<2	<2
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t		<2	<2	<2	<2	<2
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t		<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.02	% S		0.15	0.14	0.17	0.11	0.16
Peroxide Sulfur (23De)	----	0.02	% S		0.61	0.71	0.79	0.44	0.83
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S		0.46	0.57	0.62	0.33	0.67
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		287	355	385	207	416
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.02	% Ca		0.35	0.41	0.38	0.24	0.47
Peroxide Calcium (23Wh)	----	0.02	% Ca		1.53	3.43	2.06	1.90	3.82
Acid Reacted Calcium (23X)	----	0.02	% Ca		1.18	3.02	1.68	1.66	3.35
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		588	1510	839	829	1670
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S		0.94	2.42	1.34	1.33	2.68
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg		0.18	0.13	0.22	0.06	0.16
Peroxide Magnesium (23Tm)	----	0.02	% Mg		0.38	0.43	0.52	0.20	0.51
Acid Reacted Magnesium (23U)	----	0.02	% Mg		0.20	0.30	0.31	0.14	0.35
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		165	246	254	118	289
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S		0.26	0.40	0.41	0.19	0.46
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3		2.81	7.13	2.83	3.87	8.47
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		562	1420	565	774	1690
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S		0.90	2.28	0.90	1.24	2.71
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	1.5	1.5

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC38_0.0-0.4	PC40_1.0-1.47	PC41_0.0-0.5	PC55_0.3-0.63	PC45_0.5-1.03
			Client sampling date / time	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00
Compound	CAS Number	LOR	Unit	ES0910124-012	ES0910124-013	ES0910124-014	ES0910124-015	ES0910124-016
EA029-H: Acid Base Accounting - Continued								
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC43_0.7-1.05	PC14_0.0-0.36	PC35_0.0-0.35	PC42_0.0-0.5	PC39_0.4-0.87
				Client sampling date / time	09-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910124-018	ES0910124-019	ES0910124-020	ES0910124-021	ES0910124-022
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		8.7	8.9	9.5	8.7	8.7
pH OX (23B)	----	0.1	pH Unit		7.9	8.3	8.3	8.2	7.8
EA029-B: Acidity Trail									
Titratable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	<2	<2
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t		<2	<2	<2	<2	<2
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t		<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.02	% S		0.17	0.09	0.06	0.13	0.18
Peroxide Sulfur (23De)	----	0.02	% S		0.61	0.30	0.18	0.48	0.78
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S		0.44	0.20	0.12	0.34	0.60
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		276	128	77	214	374
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.02	% Ca		0.41	0.28	0.18	0.34	0.37
Peroxide Calcium (23Wh)	----	0.02	% Ca		1.79	2.69	0.78	1.28	1.58
Acid Reacted Calcium (23X)	----	0.02	% Ca		1.38	2.41	0.60	0.94	1.21
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		690	1200	300	469	606
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S		1.11	1.92	0.48	0.75	0.97
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg		0.18	0.11	0.06	0.15	0.21
Peroxide Magnesium (23Tm)	----	0.02	% Mg		0.41	0.30	0.18	0.27	0.43
Acid Reacted Magnesium (23U)	----	0.02	% Mg		0.22	0.19	0.12	0.12	0.22
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		184	157	97	96	181
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S		0.30	0.25	0.16	0.15	0.29
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3		3.54	6.63	1.77	2.38	2.52
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		706	1320	353	475	504
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S		1.13	2.12	0.56	0.76	0.81
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	1.5	1.5

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC43_0.7-1.05	PC14_0.0-0.36	PC35_0.0-0.35	PC42_0.0-0.5	PC39_0.4-0.87
			Client sampling date / time	09-JUL-2009 15:00	08-JUL-2009 15:00	08-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00
Compound	CAS Number	LOR	Unit	ES0910124-018	ES0910124-019	ES0910124-020	ES0910124-021	ES0910124-022
EA029-H: Acid Base Accounting - Continued								
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1

QUALITY CONTROL REPORT

Work Order	: **ES0910124**	Page	: 1 of 6
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 10-JUL-2009
Sampler	: RC	Issue Date	: 21-JUL-2009
Order number	: ----		
		No. of samples received	: 20
Quote number	: SY/330/09 V3	No. of samples analysed	: 20

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

This document is issued in accordance with NATA accreditation requirements.

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*
Kim McCabe	Senior Inorganic Chemist	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 insuffient 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 (%)*
EA029-A: pH Measurements (QC Lot: 1041943)									
ES0910124-001	PC20_0.0-0.17	EA029: pH KCl (23A)	---	0.1	pH Unit	8.7	8.7	0.0	0% - 20%
		EA029: pH OX (23B)	---	0.1	pH Unit	7.8	7.8	0.0	0% - 20%
ES0910124-012	PC38_0.0-0.4	EA029: pH KCl (23A)	---	0.1	pH Unit	8.6	8.6	0.0	0% - 20%
		EA029: pH OX (23B)	---	0.1	pH Unit	8.0	7.9	1.2	0% - 20%
EA029-B: Acidity Trail (QC Lot: 1041943)									
ES0910124-001	PC20_0.0-0.17	EA029: sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	---	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	---	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA029: Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	<2	0.0	No Limit
		EA029: Titratable Peroxide Acidity (23G)	---	2	mole H+ / t	<2	<2	0.0	No Limit
		EA029: Titratable Sulfidic Acidity (23H)	---	2	mole H+ / t	<2	<2	0.0	No Limit
ES0910124-012	PC38_0.0-0.4	EA029: sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	---	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	---	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA029: Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	<2	0.0	No Limit
		EA029: Titratable Peroxide Acidity (23G)	---	2	mole H+ / t	<2	<2	0.0	No Limit
		EA029: Titratable Sulfidic Acidity (23H)	---	2	mole H+ / t	<2	<2	0.0	No Limit
EA029-C: Sulfur Trail (QC Lot: 1041943)									
ES0910124-001	PC20_0.0-0.17	EA029: KCl Extractable Sulfur (23Ce)	---	0.02	% S	0.31	0.29	4.2	0% - 50%
		EA029: Peroxide Sulfur (23De)	---	0.02	% S	1.28	1.27	0.9	0% - 20%
		EA029: Peroxide Oxidisable Sulfur (23E)	---	0.02	% S	0.98	0.98	0.0	0% - 20%
		EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	---	10	mole H+ / t	609	610	0.0	0% - 20%
ES0910124-012	PC38_0.0-0.4	EA029: KCl Extractable Sulfur (23Ce)	---	0.02	% S	0.15	0.15	0.0	No Limit
		EA029: Peroxide Sulfur (23De)	---	0.02	% S	0.61	0.63	3.3	0% - 20%
		EA029: Peroxide Oxidisable Sulfur (23E)	---	0.02	% S	0.46	0.48	3.6	0% - 20%
		EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	---	10	mole H+ / t	287	298	3.6	0% - 20%
EA029-D: Calcium Values (QC Lot: 1041943)									
ES0910124-001	PC20_0.0-0.17	EA029: KCl Extractable Calcium (23Vh)	---	0.02	% Ca	0.44	0.44	0.0	0% - 20%
		EA029: Peroxide Calcium (23Wh)	---	0.02	% Ca	9.94	9.49	4.5	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 (%)*
EA029-D: Calcium Values (QC Lot: 1041943) - continued									
ES0910124-001	PC20_0.0-0.17	EA029: Acid Reacted Calcium (23X)	---	0.02	% Ca	9.49	9.06	4.7	0% - 20%
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	---	0.02	% S	7.59	7.25	4.7	0% - 20%
		EA029: acidity - Acid Reacted Calcium (a-23X)	---	10	mole H+ / t	4740	4520	4.7	0% - 20%
ES0910124-012	PC38_0.0-0.4	EA029: KCl Extractable Calcium (23Vh)	---	0.02	% Ca	0.35	0.35	0.0	0% - 50%
		EA029: Peroxide Calcium (23Wh)	---	0.02	% Ca	1.53	1.59	3.5	0% - 20%
		EA029: Acid Reacted Calcium (23X)	---	0.02	% Ca	1.18	1.23	4.7	0% - 20%
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	---	0.02	% S	0.94	0.99	4.7	0% - 20%
		EA029: acidity - Acid Reacted Calcium (a-23X)	---	10	mole H+ / t	588	616	4.7	0% - 20%
EA029-E: Magnesium Values (QC Lot: 1041943)									
ES0910124-001	PC20_0.0-0.17	EA029: KCl Extractable Magnesium (23Sm)	---	0.02	% Mg	0.23	0.22	0.0	0% - 50%
		EA029: Peroxide Magnesium (23Tm)	---	0.02	% Mg	0.71	0.71	0.0	0% - 20%
		EA029: Acid Reacted Magnesium (23U)	---	0.02	% Mg	0.48	0.49	0.0	0% - 20%
		EA029: sulfidic - Acid Reacted Magnesium (s-23U)	---	0.02	% S	0.64	0.64	0.0	0% - 20%
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	---	10	mole H+ / t	398	400	0.5	0% - 20%
ES0910124-012	PC38_0.0-0.4	EA029: KCl Extractable Magnesium (23Sm)	---	0.02	% Mg	0.18	0.18	0.0	No Limit
		EA029: Peroxide Magnesium (23Tm)	---	0.02	% Mg	0.38	0.40	3.3	0% - 20%
		EA029: Acid Reacted Magnesium (23U)	---	0.02	% Mg	0.20	0.21	6.6	0% - 50%
		EA029: sulfidic - Acid Reacted Magnesium (s-23U)	---	0.02	% S	0.26	0.28	6.6	0% - 50%
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	---	10	mole H+ / t	165	176	6.6	0% - 50%
EA029-F: Excess Acid Neutralising Capacity (QC Lot: 1041943)									
ES0910124-001	PC20_0.0-0.17	EA029: Excess Acid Neutralising Capacity (23Q)	---	0.02	% CaCO3	22.5	22.8	1.1	0% - 20%
		EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	---	0.02	% S	7.21	7.29	1.1	0% - 20%
		EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	---	10	mole H+ / t	4500	4550	1.1	0% - 20%
ES0910124-012	PC38_0.0-0.4	EA029: Excess Acid Neutralising Capacity (23Q)	---	0.02	% CaCO3	2.81	2.75	2.1	0% - 20%
		EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	---	0.02	% S	0.90	0.88	2.1	0% - 20%
		EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	---	10	mole H+ / t	562	550	2.1	0% - 20%

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
EA029-B: Acidity Trail (QCLot: 1041943)								
EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	----	----	----	----
EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	----	----	----	----
EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA029-C: Sulfur Trail (QCLot: 1041943)								
EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.02	----	----	----	----
EA029: Peroxide Sulfur (23De)	----	0.02	% S	<0.02	----	----	----	----
EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	<0.02	----	----	----	----
EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	<10	----	----	----	----
EA029-D: Calcium Values (QCLot: 1041943)								
EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	<0.02	----	----	----	----
EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	<0.02	----	----	----	----
EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	<0.02	----	----	----	----
EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	<0.02	----	----	----	----
EA029-E: Magnesium Values (QCLot: 1041943)								
EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	<0.02	----	----	----	----
EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	<0.02	----	----	----	----
EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	<0.02	----	----	----	----
EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	<0.02	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity (QCLot: 1041943)								
EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	<0.02	----	----	----	----
EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	<0.02	----	----	----	----

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.

- **No Matrix Spike (MS) Results are required to be reported.**

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0910124**	Page	: 1 of 7
Client	: ENSR AUSTRALIA PTY LIMITED	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 10-JUL-2009
Sampler	: RC	Issue Date	: 21-JUL-2009
Order number	: ----		
		No. of samples received	: 20
Quote number	: SY/330/09 V3	No. of samples analysed	: 20

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

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

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
EA029-A: pH Measurements								
Snap Lock Bag - frozen								
PC20_0.0-0.17,	PC29_0.0-0.45,	**08-JUL-2009**	**10-JUL-2009**	08-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC28_0.9-1.4,	PC27_0.5-0.9,							
PC26_0.0-0.5,	PC8_0.35-0.7,							
PC9_0.8-1.12,	PC15_0.5-1.0,							
PC14_0.0-0.36,	PC35_0.0-0.35							
Snap Lock Bag - frozen								
PC12_0.4_0.76,	PC36_0.16-0.5,	**09-JUL-2009**	**10-JUL-2009**	09-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC38_0.0-0.4,	PC40_1.0-1.47,							
PC41_0.0-0.5,	PC55_0.3-0.63,							
PC45_0.5-1.03,	PC43_0.7-1.05,							
PC42_0.0-0.5,	PC39_0.4-0.87							
EA029-B: Acidity Trail								
Snap Lock Bag - frozen								
PC20_0.0-0.17,	PC29_0.0-0.45,	**08-JUL-2009**	**10-JUL-2009**	08-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC28_0.9-1.4,	PC27_0.5-0.9,							
PC26_0.0-0.5,	PC8_0.35-0.7,							
PC9_0.8-1.12,	PC15_0.5-1.0,							
PC14_0.0-0.36,	PC35_0.0-0.35							
Snap Lock Bag - frozen								
PC12_0.4_0.76,	PC36_0.16-0.5,	**09-JUL-2009**	**10-JUL-2009**	09-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC38_0.0-0.4,	PC40_1.0-1.47,							
PC41_0.0-0.5,	PC55_0.3-0.63,							
PC45_0.5-1.03,	PC43_0.7-1.05,							
PC42_0.0-0.5,	PC39_0.4-0.87							

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
EA029-C: Sulfur Trail								
Snap Lock Bag - frozen								
PC20_0.0-0.17,	PC29_0.0-0.45,	**08-JUL-2009**	**10-JUL-2009**	08-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC28_0.9-1.4,	PC27_0.5-0.9,							
PC26_0.0-0.5,	PC8_0.35-0.7,							
PC9_0.8-1.12,	PC15_0.5-1.0,							
PC14_0.0-0.36,	PC35_0.0-0.35							
Snap Lock Bag - frozen								
PC12_0.4_0.76,	PC36_0.16-0.5,	**09-JUL-2009**	**10-JUL-2009**	09-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC38_0.0-0.4,	PC40_1.0-1.47,							
PC41_0.0-0.5,	PC55_0.3-0.63,							
PC45_0.5-1.03,	PC43_0.7-1.05,							
PC42_0.0-0.5,	PC39_0.4-0.87							
EA029-D: Calcium Values								
Snap Lock Bag - frozen								
PC20_0.0-0.17,	PC29_0.0-0.45,	**08-JUL-2009**	**10-JUL-2009**	08-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC28_0.9-1.4,	PC27_0.5-0.9,							
PC26_0.0-0.5,	PC8_0.35-0.7,							
PC9_0.8-1.12,	PC15_0.5-1.0,							
PC14_0.0-0.36,	PC35_0.0-0.35							
Snap Lock Bag - frozen								
PC12_0.4_0.76,	PC36_0.16-0.5,	**09-JUL-2009**	**10-JUL-2009**	09-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC38_0.0-0.4,	PC40_1.0-1.47,							
PC41_0.0-0.5,	PC55_0.3-0.63,							
PC45_0.5-1.03,	PC43_0.7-1.05,							
PC42_0.0-0.5,	PC39_0.4-0.87							
EA029-E: Magnesium Values								
Snap Lock Bag - frozen								
PC20_0.0-0.17,	PC29_0.0-0.45,	**08-JUL-2009**	**10-JUL-2009**	08-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC28_0.9-1.4,	PC27_0.5-0.9,							
PC26_0.0-0.5,	PC8_0.35-0.7,							
PC9_0.8-1.12,	PC15_0.5-1.0,							
PC14_0.0-0.36,	PC35_0.0-0.35							
Snap Lock Bag - frozen								
PC12_0.4_0.76,	PC36_0.16-0.5,	**09-JUL-2009**	**10-JUL-2009**	09-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC38_0.0-0.4,	PC40_1.0-1.47,							
PC41_0.0-0.5,	PC55_0.3-0.63,							
PC45_0.5-1.03,	PC43_0.7-1.05,							
PC42_0.0-0.5,	PC39_0.4-0.87							

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
EA029-F: Excess Acid Neutralising Capacity								
Snap Lock Bag - frozen								
PC20_0.0-0.17,	PC29_0.0-0.45,	**08-JUL-2009**	**10-JUL-2009**	08-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC28_0.9-1.4,	PC27_0.5-0.9,							
PC26_0.0-0.5,	PC8_0.35-0.7,							
PC9_0.8-1.12,	PC15_0.5-1.0,							
PC14_0.0-0.36,	PC35_0.0-0.35							
Snap Lock Bag - frozen								
PC12_0.4_0.76,	PC36_0.16-0.5,	**09-JUL-2009**	**10-JUL-2009**	09-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC38_0.0-0.4,	PC40_1.0-1.47,							
PC41_0.0-0.5,	PC55_0.3-0.63,							
PC45_0.5-1.03,	PC43_0.7-1.05,							
PC42_0.0-0.5,	PC39_0.4-0.87							
EA029-G: Retained Acidity								
Snap Lock Bag - frozen								
PC20_0.0-0.17,	PC29_0.0-0.45,	**08-JUL-2009**	**10-JUL-2009**	08-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC28_0.9-1.4,	PC27_0.5-0.9,							
PC26_0.0-0.5,	PC8_0.35-0.7,							
PC9_0.8-1.12,	PC15_0.5-1.0,							
PC14_0.0-0.36,	PC35_0.0-0.35							
Snap Lock Bag - frozen								
PC12_0.4_0.76,	PC36_0.16-0.5,	**09-JUL-2009**	**10-JUL-2009**	09-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC38_0.0-0.4,	PC40_1.0-1.47,							
PC41_0.0-0.5,	PC55_0.3-0.63,							
PC45_0.5-1.03,	PC43_0.7-1.05,							
PC42_0.0-0.5,	PC39_0.4-0.87							
EA029-H: Acid Base Accounting								
Snap Lock Bag - frozen								
PC20_0.0-0.17,	PC29_0.0-0.45,	**08-JUL-2009**	**10-JUL-2009**	08-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC28_0.9-1.4,	PC27_0.5-0.9,							
PC26_0.0-0.5,	PC8_0.35-0.7,							
PC9_0.8-1.12,	PC15_0.5-1.0,							
PC14_0.0-0.36,	PC35_0.0-0.35							
Snap Lock Bag - frozen								
PC12_0.4_0.76,	PC36_0.16-0.5,	**09-JUL-2009**	**10-JUL-2009**	09-JUL-2010	✓	**20-JUL-2009**	15-OCT-2009	✓
PC38_0.0-0.4,	PC40_1.0-1.47,							
PC41_0.0-0.5,	PC55_0.3-0.63,							
PC45_0.5-1.03,	PC43_0.7-1.05,							
PC42_0.0-0.5,	PC39_0.4-0.87							

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)							
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	20	**5.0**	**5.0**	✓	NEPM 1999 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
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	SOIL	Ahern et al 2004 - a suspension peroxide oxidation method following the 'sulfur trail' by determining the level of 1M KCL extractable sulfur and the sulfur level after oxidation of soil sulphides. The 'acidity trail' is followed by measurement of TAA, TPA and TSA. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

Summary of Outliers

Outliers : Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

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

Regular Sample Surrogates

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

Outliers : Analysis Holding Time Compliance

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

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

Outliers : Frequency of Quality Control Samples

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

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

TBT / TOC only 22/7/09

Chain of Custody

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Sampled By: Richard Cole AECOM Project No: S3017805

Laboratory Details
Lab. Name: ALS SYDNEY
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: S4330 09

Project Name: Port Kembla Outer Harbour PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email: christiaan.donneth@aecom.com richard.cole@aecom.com	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	TOC	PAH (ultra trace)	BTEX/TPH (StdLOR)	SPOCAS	Elutriate Metals	Elutriate PAH's	Cyanide	TBT	Phenols	OCP	Total PCBs	Metals MIS	Other
1	PC63_0.0-0.5	10.7.09	X					X		4x soil jars 1bag	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	CONTRACT W...
	PC63_0.5-1.05		X					X		2x soil jars												✓	WO: ES0910204
	~~PC63 HB 0.5~~ DUP15									2x soil jars									✓	✓	✓	✓	LAB: ALS Brisbane
2	PC49_0.0-0.5									2x soil jars	✓	✓	✓					✓				✓	DATE: 13/07/09
	PC49_0.5-0.97									2x soil jars									✓	✓	✓	✓	
3	PC50_0.0-0.4									2x soil jars								✓				✓	SPLIT: ALS SYD BATCH ONLY
4	PC50_0.4-0.84									2x soil jars	✓	✓	✓									✓	ES0910203 ELUTRIATE: ES0910206 SPOCAS: ES0910208
	E2									1x soil jar	QA/QC JAR FOR Elutriate for PC51_0.0-0.4												
5	PC51_0.0-0.4									3x soil jars 1bag	✓	✓	✓	✓	✓	✓		✓				✓	
6	PC51_0.4-0.53									1 x soil jar	✓											✓	
7	PC52_0.0-0.19		X					X		2 x soil jar							✓	✓				✓	
8	DUP11	↓	X					X		2 x soil jar							✓	✓				✓	

Environmental Division
Sydney
Work Order
ES0910204
Telephone : +61-2-8784 8555

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Relinquished by: Richard Cole Signed: Date: 13/7/09

Recieved by: Frank Signed: Date: 13/7/09 1:15pm

Lab Report No. Esky ID

Relinquished by: Signed: Date:

Recieved by: Signed: Date:

Chain of Custody

AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Laboratory Details
Lab. Name: ALS SYDNEY
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY350 09

Sampled By: Richard Cole
AECOM Project No: 53017805
Project Name: Port Kembla Outer Harbour PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email: richard.cole@aecom.com; christiaan.donnetti@aecom.com	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Analysis Request: TOC	PAH (ultra trace)	BTEX TPH	SPOCAS	Elutriate Metals	Elutriate PAHs	Cyanide WTRT	Phenols	OCP	Total PCBs	Metals M13	Other
9	PC53_0.0-0.42	10.7.09	X					X		2 x soil jars	✓	✓	✓				✓				✓	
10	PC54_0.0-0.3		X					X		4 x soil jars 1 bag	✓			✓	✓	✓	✓	✓	✓	✓	✓	
11	PC54_0.3-0.86		X					X		2 x soil jars	✓	✓	✓								✓	
12	PC56_0.0-0.42		X					X		2 x soil jars							✓				✓	
13	PC57_0.0-0.24		X					X		4 x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓				✓	
14	PC58_0.0-0.28		X					X		2 x soil jars							✓				✓	
15	PC62_0.0-0.59		X					X		2 x soil jars							✓				✓	
16	DUP12		X					X		2 x soil jars	✓	✓	✓				✓				✓	
17	PC64_0.0-0.25		X					X		2 x soil jars							✓	✓	✓	✓	✓	
18	PC64_0.25-0.65		X					X		5 x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓				✓	
19	PC65_0.0-0.25	↓	X					X		2 x soil jars	✓	✓	✓				✓				✓	
20	PC63-0.95-1.05										✓						✓					

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments: Analysis added as per client request

Lab Report No.
Esky ID

Relinquished by: Richard Cole	Signed:	Date: 13/7/09	
Recieved by: Frank	Signed:	Date: 13/7/9 1:15pm	
Relinquished by:	Signed:	Date:	
Recieved by:	Signed:	Date:	

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES0910124**		
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2009HLAENV0352 (SY/330/09 V3)
Site	: ----		
Sampler	: RC	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 10-JUL-2009	Issue Date	: 15-JUL-2009 12:50
Client Requested Due Date	: 24-JUL-2009	Scheduled Reporting Date	: **24-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 2.2'C - Ice present
No. of coolers/boxes	: 4 HARD	No. of samples received	: 20
Sercurity Seal	: Intact.	No. of samples analysed	: 20

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- Spocas Analysis to be conducted by ALS Brisbane
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample id PC11_0.0_0.2 was not received**
- **This batch for SPOCAS analysis only and split into ES0910119 (SYD BATCH), ES0910121 (ELUTRIATE) & ES0910122 (TBT/TOC)**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 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.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EA029 SPOCAS
ES0910124-001	08-JUL-2009 15:00	PC20_0.0-0.17	✓
ES0910124-002	08-JUL-2009 15:00	PC29_0.0-0.45	✓
ES0910124-003	08-JUL-2009 15:00	PC28_0.9-1.4	✓
ES0910124-004	08-JUL-2009 15:00	PC27_0.5-0.9	✓
ES0910124-005	08-JUL-2009 15:00	PC26_0.0-0.5	✓
ES0910124-006	08-JUL-2009 15:00	PC8_0.35-0.7	✓
ES0910124-007	08-JUL-2009 15:00	PC9_0.8-1.12	✓
ES0910124-009	08-JUL-2009 15:00	PC15_0.5-1.0	✓
ES0910124-010	09-JUL-2009 15:00	PC12_0.4_0.76	✓
ES0910124-011	09-JUL-2009 15:00	PC36_0.16-0.5	✓
ES0910124-012	09-JUL-2009 15:00	PC38_0.0-0.4	✓
ES0910124-013	09-JUL-2009 15:00	PC40_1.0-1.47	✓
ES0910124-014	09-JUL-2009 15:00	PC41_0.0-0.5	✓
ES0910124-015	09-JUL-2009 15:00	PC55_0.3-0.63	✓
ES0910124-016	09-JUL-2009 15:00	PC45_0.5-1.03	✓
ES0910124-018	09-JUL-2009 15:00	PC43_0.7-1.05	✓
ES0910124-019	08-JUL-2009 15:00	PC14_0.0-0.36	✓
ES0910124-020	08-JUL-2009 15:00	PC35_0.0-0.35	✓
ES0910124-021	09-JUL-2009 15:00	PC42_0.0-0.5	✓
ES0910124-022	09-JUL-2009 15:00	PC39_0.4-0.87	✓

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	accountsenv@aecom.com
MR CHRISTIANN DONNETTI		
- *AU Certificate of Analysis - NATA (COA)	Email	christiaan.donnetti@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	christiaan.donnetti@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	christiaan.donnetti@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	christiaan.donnetti@aecom.com
- A4 - AU Tax Invoice (INV)	Email	christiaan.donnetti@aecom.com
- Default - Chain of Custody (COC)	Email	christiaan.donnetti@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	christiaan.donnetti@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	christiaan.donnetti@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	christiaan.donnetti@aecom.com
- EDI Format - XTab (XTAB)	Email	christiaan.donnetti@aecom.com
MR RICHARD COLE		
- *AU Certificate of Analysis - NATA (COA)	Email	richard.cole@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	richard.cole@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	richard.cole@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	richard.cole@aecom.com
- A4 - AU Tax Invoice (INV)	Email	richard.cole@aecom.com
- Default - Chain of Custody (COC)	Email	richard.cole@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	richard.cole@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	richard.cole@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	richard.cole@aecom.com
- EDI Format - XTab (XTAB)	Email	richard.cole@aecom.com
THE RESULTS ADDRESS		
- *AU Certificate of Analysis - NATA (COA)	Email	sydney@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sydney@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sydney@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	sydney@aecom.com
- A4 - AU Tax Invoice (INV)	Email	sydney@aecom.com
- Default - Chain of Custody (COC)	Email	sydney@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	sydney@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	sydney@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	sydney@aecom.com
- EDI Format - XTab (XTAB)	Email	sydney@aecom.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES0910203**	Page	: 1 of 23
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 13-JUL-2009
Sampler	: RC	Issue Date	: 24-JUL-2009
Site	: ----		
		No. of samples received	: 24
Quote number	: SY/330/09 V3	No. of samples analysed	: 24

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

This document is issued in accordance with NATA accreditation requirements.

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	Organics
Celine Conceicao	Spectroscopist	Inorganics
Hoa Nguyen	Inorganic Chemist	Inorganics
Pabi Subba	Senior Organic Chemist (Semi-Volatile)	Organics
Sanjeshni Jyoti Mala	Senior Chemist Volatile	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 insuffient 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 date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

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-SD: Poor precision was obtained for some elements on sample ES0910203#11 due to sample heterogeneity.**
- **EP132: Poor duplicate precision due to sample heterogeneity. Confirmed by re-extraction and re-analysis.**
- **EP132: Poor matrix spike recovery due to sample heterogeneity. Confirmed by re-extraction and re-analysis.**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC63_0.0-0.5	PC63_0.5-1.05	DUP 15	PC49_0.0-0.5	PC49_0.5-0.97
				Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910203-001	ES0910203-002	ES0910203-003	ES0910203-004	ES0910203-005
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		42.3	52.6	50.6	32.0	43.2
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		1.57	3.43	6.44	<0.50	<0.50
Arsenic	7440-38-2	1.00	mg/kg		69.4	208	188	10.3	29.5
Cadmium	7440-43-9	0.1	mg/kg		2.0	2.5	3.7	1.1	2.3
Chromium	7440-47-3	1.0	mg/kg		148	114	95.2	64.6	152
Copper	7440-50-8	1.0	mg/kg		511	844	787	106	351
Cobalt	7440-48-4	0.5	mg/kg		9.2	15.1	13.9	9.3	12.0
Lead	7439-92-1	1.0	mg/kg		742	1950	2200	82.1	273
Nickel	7440-02-0	1.0	mg/kg		22.5	34.6	30.5	18.3	27.2
Selenium	7782-49-2	0.1	mg/kg		5.0	9.2	7.9	0.8	2.8
Silver	7440-22-4	0.1	mg/kg		3.2	3.0	2.8	0.5	1.4
Vanadium	7440-62-2	2.0	mg/kg		80.8	128	114	62.6	85.8
Zinc	7440-66-6	1.0	mg/kg		1880	2570	2290	377	1080
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		1.2	2.0	1.8	0.3	0.6
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	<0.8	----	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	<0.8	----	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	<0.8	----	<0.5
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg		<1.0	----	<1.6	----	<1.0
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	<0.8	----	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	<0.8	----	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	<0.8	----	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	<0.8	----	<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg		<0.5	----	<0.8	----	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	<0.8	----	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	<0.8	----	<0.5
Pentachlorophenol	87-86-5	2.0	mg/kg		<2.0	----	<2.0	----	<2.0
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg		520	----	----	260	----
C29 - C36 Fraction	----	100	mg/kg		400	----	----	180	----
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	<0.5	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: PC63_0.0-0.5	PC63_0.5-1.05	DUP 15	PC49_0.0-0.5	PC49_0.5-0.97
				Client sampling date / time: 10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
				ES0910203-001	ES0910203-002	ES0910203-003	ES0910203-004	ES0910203-005
EP080: BTEX - Continued								
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	<0.5	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
beta-BHC	319-85-7	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
delta-BHC	319-86-8	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
4.4`-DDD	72-54-8	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
4.4`-DDE	72-55-9	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
4.4`-DDT	50-29-3	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
^ DDT (total)	----	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
Dieldrin	60-57-1	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
Endrin	72-20-8	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
Heptachlor	76-44-8	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
gamma-BHC	58-89-9	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
Methoxychlor	72-43-5	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
cis-Chlordane	5103-71-9	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
trans-Chlordane	5103-74-2	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
^ Total Chlordane (sum)	----	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
Oxychlordane	27304-13-8	0.50	µg/kg	<0.50	----	<0.50	----	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	----	<5.0	----	<5.0
Aroclor 1016	12974-11-2	5.0	µg/kg	<5.0	----	<5.0	----	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	----	<5.0	----	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	----	<5.0	----	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	----	<5.0	----	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	----	<5.0	----	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	----	<5.0	----	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	----	<5.0	----	<5.0

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: PC63_0.0-0.5	PC63_0.5-1.05	DUP 15	PC49_0.0-0.5	PC49_0.5-0.97
				Client sampling date / time: 10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
				ES0910203-001	ES0910203-002	ES0910203-003	ES0910203-004	ES0910203-005
EP132B: Polynuclear Aromatic Hydrocarbons								
3-Methylcholanthrene	56-49-5	10	µg/kg	<10	----	----	<10	----
2-Methylnaphthalene	91-57-6	10	µg/kg	1080	----	----	490	----
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	----	----	<10	----
Acenaphthene	83-32-9	10	µg/kg	150	----	----	130	----
Acenaphthylene	208-96-8	10	µg/kg	950	----	----	460	----
Anthracene	120-12-7	10	µg/kg	660	----	----	600	----
Benz(a)anthracene	56-55-3	10	µg/kg	1050	----	----	1300	----
Benzo(a)pyrene	50-32-8	10	µg/kg	1220	----	----	1800	----
Benzo(b)fluoranthene	205-99-2	10	µg/kg	1450	----	----	2240	----
Benzo(e)pyrene	192-97-2	10	µg/kg	730	----	----	1120	----
Benzo(g.h.i)perylene	191-24-2	10	µg/kg	840	----	----	1180	----
Benzo(k)fluoranthene	207-08-9	10	µg/kg	520	----	----	690	----
Chrysene	218-01-9	10	µg/kg	1000	----	----	1350	----
Coronene	191-07-1	10	µg/kg	430	----	----	530	----
Dibenz(a.h)anthracene	53-70-3	10	µg/kg	200	----	----	330	----
Fluoranthene	206-44-0	10	µg/kg	2250	----	----	2260	----
Fluorene	86-73-7	10	µg/kg	690	----	----	510	----
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	720	----	----	1130	----
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	----	----	<100	----
Naphthalene	91-20-3	10	µg/kg	9960	----	----	4320	----
Perylene	198-55-0	10	µg/kg	330	----	----	540	----
Phenanthrene	85-01-8	10	µg/kg	2250	----	----	1630	----
Pyrene	129-00-0	10	µg/kg	2060	----	----	2280	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	89.2	----	89.4	----	101
2-Chlorophenol-D4	93951-73-6	0.1	%	102	----	104	----	91.0
2.4.6-Tribromophenol	118-79-6	0.1	%	81.7	----	77.2	----	88.2
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	96.2	----	91.2	----	93.0
Anthracene-d10	1719-06-8	0.1	%	96.3	----	93.6	----	94.4
4-Terphenyl-d14	1718-51-0	0.1	%	101	----	92.0	----	93.0
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	89.1	----	----	93.9	----
Toluene-D8	2037-26-5	0.1	%	98.0	----	----	80.7	----
4-Bromofluorobenzene	460-00-4	0.1	%	91.1	----	----	83.4	----
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	101	----	48.7	----	39.4

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC63_0.0-0.5	PC63_0.5-1.05	DUP 15	PC49_0.0-0.5	PC49_0.5-0.97
				Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910203-001	ES0910203-002	ES0910203-003	ES0910203-004	ES0910203-005
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**112**	----	**38.5**	----	**42.3**
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**35.5**	----	----	**58.5**	----
Anthracene-d10	1719-06-8	0.1	%		**39.6**	----	----	**66.6**	----
4-Terphenyl-d14	1718-51-0	0.1	%		**41.0**	----	----	**53.1**	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC50_0.0-0.4	PC50_0.4-0.84	PC51_0.0-0.4	PC51_0.4-0.53	PC52_0.0-0.19
				Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910203-006	ES0910203-007	ES0910203-008	ES0910203-009	ES0910203-010
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		42.6	35.8	55.8	52.5	31.4
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		0.62	3.30	1.97	1.34	<0.50
Arsenic	7440-38-2	1.00	mg/kg		50.4	122	56.2	81.3	17.8
Cadmium	7440-43-9	0.1	mg/kg		0.8	1.9	2.5	4.7	<0.1
Chromium	7440-47-3	1.0	mg/kg		107	121	154	240	19.2
Copper	7440-50-8	1.0	mg/kg		629	869	1230	1040	35.4
Cobalt	7440-48-4	0.5	mg/kg		12.0	8.2	11.7	15.5	8.1
Lead	7439-92-1	1.0	mg/kg		382	1130	614	652	20.3
Nickel	7440-02-0	1.0	mg/kg		24.4	23.6	37.2	27.9	11.5
Selenium	7782-49-2	0.1	mg/kg		3.9	8.5	10.3	9.5	0.8
Silver	7440-22-4	0.1	mg/kg		2.1	3.0	5.8	5.5	0.2
Vanadium	7440-62-2	2.0	mg/kg		97.8	75.8	89.7	116	57.1
Zinc	7440-66-6	1.0	mg/kg		941	1750	1440	1840	54.6
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.8	1.7	1.7	1.7	0.1
EK026G: Total Cyanide By Discrete Analyser									
Total Cyanide	57-12-5	1	mg/kg		----	----	----	----	<1
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		----	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		----	710	440	----	----
C29 - C36 Fraction	----	100	mg/kg		----	450	390	----	----
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		----	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	<0.5	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	10	µg/kg		----	<10	<10	----	----
2-Methylnaphthalene	91-57-6	10	µg/kg		----	500	810	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg		----	<10	<10	----	----
Acenaphthene	83-32-9	10	µg/kg		----	100	290	----	----
Acenaphthylene	208-96-8	10	µg/kg		----	410	550	----	----
Anthracene	120-12-7	10	µg/kg		----	310	690	----	----
Benz(a)anthracene	56-55-3	10	µg/kg		----	450	1470	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC50_0.0-0.4	PC50_0.4-0.84	PC51_0.0-0.4	PC51_0.4-0.53	PC52_0.0-0.19
				Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910203-006	ES0910203-007	ES0910203-008	ES0910203-009	ES0910203-010
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	10	µg/kg		---	560	1860	----	----
Benzo(b)fluoranthene	205-99-2	10	µg/kg		---	680	2420	----	----
Benzo(e)pyrene	192-97-2	10	µg/kg		---	330	1120	----	----
Benzo(g.h.i)perylene	191-24-2	10	µg/kg		---	400	1390	----	----
Benzo(k)fluoranthene	207-08-9	10	µg/kg		---	220	780	----	----
Chrysene	218-01-9	10	µg/kg		---	430	1560	----	----
Coronene	191-07-1	10	µg/kg		---	190	610	----	----
Dibenz(a.h)anthracene	53-70-3	10	µg/kg		---	80	310	----	----
Fluoranthene	206-44-0	10	µg/kg		---	980	3180	----	----
Fluorene	86-73-7	10	µg/kg		---	330	630	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg		---	280	1210	----	----
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg		---	<100	<100	----	----
Naphthalene	91-20-3	10	µg/kg		---	4330	5860	----	----
Perylene	198-55-0	10	µg/kg		---	150	540	----	----
Phenanthrene	85-01-8	10	µg/kg		---	1040	2780	----	----
Pyrene	129-00-0	10	µg/kg		---	900	2760	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		---	97.8	84.6	----	----
Toluene-D8	2037-26-5	0.1	%		---	94.6	84.6	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		---	91.2	74.3	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		---	50.7	71.9	----	----
Anthracene-d10	1719-06-8	0.1	%		---	59.0	75.5	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		---	51.7	61.8	----	----

Analytical Results

Sub-Matrix: SOIL			Client sample ID	DUP 11	PC53_0.0-0.42	PC54_0.0-0.3	PC54_0.3-0.86	PC56_0.0-0.42
			Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
Compound	CAS Number	LOR	Unit	ES0910203-011	ES0910203-012	ES0910203-013	ES0910203-014	ES0910203-015
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	25.0	27.9	53.9	56.9	56.7
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	5.40	5.98	11.5
Arsenic	7440-38-2	1.00	mg/kg	8.32	4.94	156	123	193
Cadmium	7440-43-9	0.1	mg/kg	0.2	0.3	5.4	15.5	15.4
Chromium	7440-47-3	1.0	mg/kg	20.9	24.5	120	217	186
Copper	7440-50-8	1.0	mg/kg	74.2	40.7	4940	4070	5940
Cobalt	7440-48-4	0.5	mg/kg	3.2	3.2	14.3	15.9	16.0
Lead	7439-92-1	1.0	mg/kg	57.9	37.5	1560	1670	2360
Nickel	7440-02-0	1.0	mg/kg	5.0	5.1	129	44.6	140
Selenium	7782-49-2	0.1	mg/kg	0.9	1.1	45.9	92.1	70.3
Silver	7440-22-4	0.1	mg/kg	0.2	<0.1	20.5	26.1	33.0
Vanadium	7440-62-2	2.0	mg/kg	82.3	96.1	109	127	107
Zinc	7440-66-6	1.0	mg/kg	162	158	2270	3010	3610
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	2.8	4.2	6.6
EK026G: Total Cyanide By Discrete Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	----	<0.8	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	<0.8	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	<0.8	----	----
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	----	----	<1.6	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	<0.8	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	<0.8	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	<0.8	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	<0.8	----	----
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	----	----	<0.8	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	<0.8	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	<0.8	----	----
Pentachlorophenol	87-86-5	2.0	mg/kg	----	----	<2.0	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	1050	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	810	----
EP080: BTEX								

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: DUP 11	PC53_0.0-0.42	PC54_0.0-0.3	PC54_0.3-0.86	PC56_0.0-0.42
				Client sampling date / time: 10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
				ES0910203-011	ES0910203-012	ES0910203-013	ES0910203-014	ES0910203-015
EP080: BTEX - Continued								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	<0.5	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	----	----	<0.50	----	----
alpha-BHC	319-84-6	0.50	µg/kg	----	----	<0.50	----	----
beta-BHC	319-85-7	0.50	µg/kg	----	----	<0.50	----	----
delta-BHC	319-86-8	0.50	µg/kg	----	----	<0.50	----	----
4.4`-DDD	72-54-8	0.50	µg/kg	----	----	<0.50	----	----
4.4`-DDE	72-55-9	0.50	µg/kg	----	----	<0.50	----	----
4.4`-DDT	50-29-3	0.50	µg/kg	----	----	<0.50	----	----
^ DDT (total)	----	0.50	µg/kg	----	----	<0.50	----	----
Dieldrin	60-57-1	0.50	µg/kg	----	----	<0.50	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	----	----	<0.50	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	----	----	<0.50	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	----	----	<0.50	----	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	----	----	<0.50	----	----
Endrin	72-20-8	0.50	µg/kg	----	----	<0.50	----	----
Endrin aldehyde	7421-93-4	0.50	µg/kg	----	----	<0.50	----	----
Endrin ketone	53494-70-5	0.50	µg/kg	----	----	<0.50	----	----
Heptachlor	76-44-8	0.50	µg/kg	----	----	<0.50	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg	----	----	<0.50	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	----	----	**10.6**	----	----
gamma-BHC	58-89-9	0.50	µg/kg	----	----	<0.50	----	----
Methoxychlor	72-43-5	0.50	µg/kg	----	----	<0.50	----	----
cis-Chlordane	5103-71-9	0.50	µg/kg	----	----	<0.50	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg	----	----	<0.50	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg	----	----	<0.50	----	----
Oxychlordane	27304-13-8	0.50	µg/kg	----	----	<0.50	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	----	----	<5.0	----	----
Aroclor 1016	12974-11-2	5.0	µg/kg	----	----	<5.0	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg	----	----	<5.0	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg	----	----	<5.0	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg	----	----	<5.0	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg	----	----	<5.0	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: DUP 11	PC53_0.0-0.42	PC54_0.0-0.3	PC54_0.3-0.86	PC56_0.0-0.42
				Client sampling date / time: 10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
				ES0910203-011	ES0910203-012	ES0910203-013	ES0910203-014	ES0910203-015
EP131B: Polychlorinated Biphenyls (as Aroclors) - Continued								
Aroclor 1254	11097-69-1	5.0	µg/kg	----	----	<5.0	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg	----	----	<5.0	----	----
EP132B: Polynuclear Aromatic Hydrocarbons								
3-Methylcholanthrene	56-49-5	10	µg/kg	----	<10	----	<10	----
2-Methylnaphthalene	91-57-6	10	µg/kg	----	**230**	----	**1030**	----
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	----	<10	----	<10	----
Acenaphthene	83-32-9	10	µg/kg	----	**80**	----	**170**	----
Acenaphthylene	208-96-8	10	µg/kg	----	**220**	----	**720**	----
Anthracene	120-12-7	10	µg/kg	----	**190**	----	**620**	----
Benz(a)anthracene	56-55-3	10	µg/kg	----	**360**	----	**1160**	----
Benzo(a)pyrene	50-32-8	10	µg/kg	----	**400**	----	**1470**	----
Benzo(b)fluoranthene	205-99-2	10	µg/kg	----	**530**	----	**1910**	----
Benzo(e)pyrene	192-97-2	10	µg/kg	----	**320**	----	**990**	----
Benzo(g.h.i)perylene	191-24-2	10	µg/kg	----	**250**	----	**1220**	----
Benzo(k)fluoranthene	207-08-9	10	µg/kg	----	**210**	----	**640**	----
Chrysene	218-01-9	10	µg/kg	----	**350**	----	**1160**	----
Coronene	191-07-1	10	µg/kg	----	**30**	----	**500**	----
Dibenz(a.h)anthracene	53-70-3	10	µg/kg	----	**70**	----	**180**	----
Fluoranthene	206-44-0	10	µg/kg	----	**910**	----	**2550**	----
Fluorene	86-73-7	10	µg/kg	----	**180**	----	**590**	----
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	----	**250**	----	**1010**	----
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	----	<100	----	<100	----
Naphthalene	91-20-3	10	µg/kg	----	**2480**	----	**9010**	----
Perylene	198-55-0	10	µg/kg	----	**140**	----	**390**	----
Phenanthrene	85-01-8	10	µg/kg	----	**670**	----	**2460**	----
Pyrene	129-00-0	10	µg/kg	----	**820**	----	**2270**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	----	**109**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	**87.8**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	----	**92.5**	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	**96.6**	----	----
Anthracene-d10	1719-06-8	0.1	%	----	----	**96.7**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	**95.0**	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	----	**87.2**	----	**76.1**	----
Toluene-D8	2037-26-5	0.1	%	----	**78.0**	----	**81.1**	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	**74.7**	----	**75.9**	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	DUP 11	PC53_0.0-0.42	PC54_0.0-0.3	PC54_0.3-0.86	PC56_0.0-0.42
				Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910203-011	ES0910203-012	ES0910203-013	ES0910203-014	ES0910203-015
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		----	----	**54.4**	----	----
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	**77.7**	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		----	**61.6**	----	**70.3**	----
Anthracene-d10	1719-06-8	0.1	%		----	**73.4**	----	**79.9**	----
4-Terphenyl-d14	1718-51-0	0.1	%		----	**65.5**	----	**62.6**	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: PC57_0.0-0.24	PC58_0.0-0.28	PC62_0.0-0.59	DUP 12	PC64_0.0-0.25
				Client sampling date / time: 10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
				ES0910203-016	ES0910203-017	ES0910203-018	ES0910203-019	ES0910203-020
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	---	1.0	%	34.5	29.1	40.8	40.3	36.3
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	1.55	1.58	1.54
Arsenic	7440-38-2	1.00	mg/kg	18.9	5.60	67.9	67.8	50.2
Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.6	1.8	1.7	1.4
Chromium	7440-47-3	1.0	mg/kg	21.6	28.3	171	195	65.8
Copper	7440-50-8	1.0	mg/kg	27.4	29.1	546	603	1030
Cobalt	7440-48-4	0.5	mg/kg	11.6	5.2	9.8	9.4	7.6
Lead	7439-92-1	1.0	mg/kg	14.9	41.8	761	835	435
Nickel	7440-02-0	1.0	mg/kg	18.8	8.5	24.1	26.1	35.0
Selenium	7782-49-2	0.1	mg/kg	0.9	0.6	6.8	10.0	6.8
Silver	7440-22-4	0.1	mg/kg	0.4	<0.1	3.1	4.3	2.8
Vanadium	7440-62-2	2.0	mg/kg	66.0	47.6	94.5	86.5	66.9
Zinc	7440-66-6	1.0	mg/kg	51.4	231	2030	2300	912
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.3	<0.1	1.2	1.6	1.0
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	---	---	---	---	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	---	---	---	---	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	---	---	---	---	<0.5
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	---	---	---	---	<1.0
2-Nitrophenol	88-75-5	0.5	mg/kg	---	---	---	---	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	---	---	---	---	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	---	---	---	---	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	---	---	---	---	<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	---	---	---	---	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	---	---	---	---	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	---	---	---	---	<0.5
Pentachlorophenol	87-86-5	2.0	mg/kg	---	---	---	---	<2.0
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	---	10	mg/kg	<10	---	---	<10	---
C10 - C14 Fraction	---	50	mg/kg	<50	---	---	<50	---
C15 - C28 Fraction	---	100	mg/kg	<100	---	---	940	---
C29 - C36 Fraction	---	100	mg/kg	<100	---	---	610	---
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	---	---	<0.2	---
Toluene	108-88-3	0.5	mg/kg	<0.5	---	---	<0.5	---

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: PC57_0.0-0.24	PC58_0.0-0.28	PC62_0.0-0.59	DUP 12	PC64_0.0-0.25
				Client sampling date / time: 10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
				ES0910203-016	ES0910203-017	ES0910203-018	ES0910203-019	ES0910203-020
EP080: BTEX - Continued								
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	<0.5	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	----	----	----	----	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	----	----	----	----	<0.50
beta-BHC	319-85-7	0.50	µg/kg	----	----	----	----	<0.50
delta-BHC	319-86-8	0.50	µg/kg	----	----	----	----	<0.50
4.4`-DDD	72-54-8	0.50	µg/kg	----	----	----	----	<0.50
4.4`-DDE	72-55-9	0.50	µg/kg	----	----	----	----	<0.50
4.4`-DDT	50-29-3	0.50	µg/kg	----	----	----	----	<0.50
^ DDT (total)	----	0.50	µg/kg	----	----	----	----	<0.50
Dieldrin	60-57-1	0.50	µg/kg	----	----	----	----	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	----	----	----	----	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	----	----	----	----	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	----	----	----	----	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	----	----	----	----	<0.50
Endrin	72-20-8	0.50	µg/kg	----	----	----	----	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg	----	----	----	----	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg	----	----	----	----	<0.50
Heptachlor	76-44-8	0.50	µg/kg	----	----	----	----	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg	----	----	----	----	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	----	----	----	----	<0.50
gamma-BHC	58-89-9	0.50	µg/kg	----	----	----	----	<0.50
Methoxychlor	72-43-5	0.50	µg/kg	----	----	----	----	<0.50
cis-Chlordane	5103-71-9	0.50	µg/kg	----	----	----	----	<0.50
trans-Chlordane	5103-74-2	0.50	µg/kg	----	----	----	----	<0.50
^ Total Chlordane (sum)	----	0.50	µg/kg	----	----	----	----	<0.50
Oxychlordane	27304-13-8	0.50	µg/kg	----	----	----	----	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	----	----	----	----	<5.0
Aroclor 1016	12974-11-2	5.0	µg/kg	----	----	----	----	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	----	----	----	----	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	----	----	----	----	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	----	----	----	----	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	----	----	----	----	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	----	----	----	----	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	----	----	----	----	<5.0

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: PC57_0.0-0.24	PC58_0.0-0.28	PC62_0.0-0.59	DUP 12	PC64_0.0-0.25
				Client sampling date / time: 10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
				ES0910203-016	ES0910203-017	ES0910203-018	ES0910203-019	ES0910203-020
EP132B: Polynuclear Aromatic Hydrocarbons								
3-Methylcholanthrene	56-49-5	10	µg/kg	<10	----	----	<10	----
2-Methylnaphthalene	91-57-6	10	µg/kg	<10	----	----	1780	----
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	----	----	<10	----
Acenaphthene	83-32-9	10	µg/kg	<10	----	----	310	----
Acenaphthylene	208-96-8	10	µg/kg	<10	----	----	1410	----
Anthracene	120-12-7	10	µg/kg	<10	----	----	950	----
Benz(a)anthracene	56-55-3	10	µg/kg	<10	----	----	1160	----
Benzo(a)pyrene	50-32-8	10	µg/kg	<10	----	----	1280	----
Benzo(b)fluoranthene	205-99-2	10	µg/kg	10	----	----	1550	----
Benzo(e)pyrene	192-97-2	10	µg/kg	<10	----	----	840	----
Benzo(g.h.i)perylene	191-24-2	10	µg/kg	<10	----	----	950	----
Benzo(k)fluoranthene	207-08-9	10	µg/kg	<10	----	----	460	----
Chrysene	218-01-9	10	µg/kg	<10	----	----	1120	----
Coronene	191-07-1	10	µg/kg	<10	----	----	430	----
Dibenz(a.h)anthracene	53-70-3	10	µg/kg	<10	----	----	140	----
Fluoranthene	206-44-0	10	µg/kg	10	----	----	2680	----
Fluorene	86-73-7	10	µg/kg	<10	----	----	1040	----
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	<10	----	----	770	----
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	----	----	<100	----
Naphthalene	91-20-3	10	µg/kg	80	----	----	16400	----
Perylene	198-55-0	10	µg/kg	10	----	----	360	----
Phenanthrene	85-01-8	10	µg/kg	20	----	----	3460	----
Pyrene	129-00-0	10	µg/kg	20	----	----	2480	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	----	----	----	87.7
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	----	----	92.2
2.4.6-Tribromophenol	118-79-6	0.1	%	----	----	----	----	83.2
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	----	----	97.3
Anthracene-d10	1719-06-8	0.1	%	----	----	----	----	97.0
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	----	----	102
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	99.9	----	----	96.7	----
Toluene-D8	2037-26-5	0.1	%	85.0	----	----	103	----
4-Bromofluorobenzene	460-00-4	0.1	%	83.2	----	----	102	----
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	----	----	95.4

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC57_0.0-0.24	PC58_0.0-0.28	PC62_0.0-0.59	DUP 12	PC64_0.0-0.25
				Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910203-016	ES0910203-017	ES0910203-018	ES0910203-019	ES0910203-020
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		---	---	---	---	**110**
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**53.4**	---	---	**66.6**	---
Anthracene-d10	1719-06-8	0.1	%		**57.8**	---	---	**71.2**	---
4-Terphenyl-d14	1718-51-0	0.1	%		**55.8**	---	---	**71.7**	---

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC64_0.25-0.65	PC65_0.0-0.25	PC63_0.95-1.05	----	----
			Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	----	----
Compound	CAS Number	LOR	Unit	ES0910203-021	ES0910203-022	ES0910203-024	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	46.2	17.7	50.0	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	4.19	<0.50	2.25	----	----
Arsenic	7440-38-2	1.00	mg/kg	104	4.12	108	----	----
Cadmium	7440-43-9	0.1	mg/kg	11.8	0.1	1.4	----	----
Chromium	7440-47-3	1.0	mg/kg	160	13.4	29.1	----	----
Copper	7440-50-8	1.0	mg/kg	2240	53.5	334	----	----
Cobalt	7440-48-4	0.5	mg/kg	11.0	1.8	8.3	----	----
Lead	7439-92-1	1.0	mg/kg	1170	31.2	612	----	----
Nickel	7440-02-0	1.0	mg/kg	37.4	3.3	18.1	----	----
Selenium	7782-49-2	0.1	mg/kg	35.7	0.6	2.6	----	----
Silver	7440-22-4	0.1	mg/kg	11.6	0.4	0.6	----	----
Vanadium	7440-62-2	2.0	mg/kg	85.1	47.8	52.8	----	----
Zinc	7440-66-6	1.0	mg/kg	2550	75.7	1050	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	2.6	<0.1	0.4	----	----
EK026G: Total Cyanide By Discrete Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	----	<0.8	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	<0.8	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	<0.8	----	----
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	----	----	<1.6	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	<0.8	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	<0.8	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	<0.8	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	<0.8	----	----
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	----	----	<0.8	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	<0.8	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	<0.8	----	----
Pentachlorophenol	87-86-5	2.0	mg/kg	----	----	<2.0	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	1080	<100	1480	----	----
C29 - C36 Fraction	----	100	mg/kg	700	<100	600	----	----
EP080: BTEX								

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC64_0.25-0.65	PC65_0.0-0.25	PC63_0.95-1.05	----	----
			Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	----	----
Compound	CAS Number	LOR	Unit	ES0910203-021	ES0910203-022	ES0910203-024	----	----
EP080: BTEX - Continued								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<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	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	----	----	<0.50	----	----
alpha-BHC	319-84-6	0.50	µg/kg	----	----	<0.50	----	----
beta-BHC	319-85-7	0.50	µg/kg	----	----	<0.50	----	----
delta-BHC	319-86-8	0.50	µg/kg	----	----	<0.50	----	----
4.4`-DDD	72-54-8	0.50	µg/kg	----	----	<0.50	----	----
4.4`-DDE	72-55-9	0.50	µg/kg	----	----	<0.50	----	----
4.4`-DDT	50-29-3	0.50	µg/kg	----	----	<0.50	----	----
^ DDT (total)	----	0.50	µg/kg	----	----	<0.50	----	----
Dieldrin	60-57-1	0.50	µg/kg	----	----	<0.50	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	----	----	<0.50	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	----	----	<0.50	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	----	----	<0.50	----	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	----	----	<0.50	----	----
Endrin	72-20-8	0.50	µg/kg	----	----	<0.50	----	----
Endrin aldehyde	7421-93-4	0.50	µg/kg	----	----	<0.50	----	----
Endrin ketone	53494-70-5	0.50	µg/kg	----	----	<0.50	----	----
Heptachlor	76-44-8	0.50	µg/kg	----	----	<0.50	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg	----	----	<0.50	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	----	----	<0.50	----	----
gamma-BHC	58-89-9	0.50	µg/kg	----	----	<0.50	----	----
Methoxychlor	72-43-5	0.50	µg/kg	----	----	<0.50	----	----
cis-Chlordane	5103-71-9	0.50	µg/kg	----	----	<0.50	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg	----	----	<0.50	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg	----	----	<0.50	----	----
Oxychlordane	27304-13-8	0.50	µg/kg	----	----	<0.50	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	----	----	<5.0	----	----
Aroclor 1016	12974-11-2	5.0	µg/kg	----	----	<5.0	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg	----	----	<5.0	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg	----	----	<5.0	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg	----	----	<5.0	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg	----	----	<5.0	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC64_0.25-0.65	PC65_0.0-0.25	PC63_0.95-1.05	----	----
				Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	----	----
Compound	CAS Number	LOR	Unit		ES0910203-021	ES0910203-022	ES0910203-024	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) - Continued									
Aroclor 1254	11097-69-1	5.0	µg/kg		---	---	<5.0	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg		---	---	<5.0	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	10	µg/kg		<10	<10	<10	----	----
2-Methylnaphthalene	91-57-6	10	µg/kg		860	50	510	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg		<10	<10	<10	----	----
Acenaphthene	83-32-9	10	µg/kg		220	140	230	----	----
Acenaphthylene	208-96-8	10	µg/kg		560	40	460	----	----
Anthracene	120-12-7	10	µg/kg		710	310	810	----	----
Benz(a)anthracene	56-55-3	10	µg/kg		1640	520	1760	----	----
Benzo(a)pyrene	50-32-8	10	µg/kg		2020	440	1490	----	----
Benzo(b)fluoranthene	205-99-2	10	µg/kg		2560	550	1980	----	----
Benzo(e)pyrene	192-97-2	10	µg/kg		1350	320	1040	----	----
Benzo(g.h.i)perylene	191-24-2	10	µg/kg		1490	200	920	----	----
Benzo(k)fluoranthene	207-08-9	10	µg/kg		850	240	590	----	----
Chrysene	218-01-9	10	µg/kg		1770	470	1880	----	----
Coronene	191-07-1	10	µg/kg		530	30	270	----	----
Dibenz(a.h)anthracene	53-70-3	10	µg/kg		370	60	130	----	----
Fluoranthene	206-44-0	10	µg/kg		3360	1520	3980	----	----
Fluorene	86-73-7	10	µg/kg		580	150	630	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg		1280	210	780	----	----
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg		<100	<100	<100	----	----
Naphthalene	91-20-3	10	µg/kg		6280	440	2400	----	----
Perylene	198-55-0	10	µg/kg		540	150	440	----	----
Phenanthrene	85-01-8	10	µg/kg		2990	1060	3140	----	----
Pyrene	129-00-0	10	µg/kg		3390	1240	3540	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		---	---	97.0	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		---	---	100	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		---	---	87.0	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		---	---	102	----	----
Anthracene-d10	1719-06-8	0.1	%		---	---	106	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		---	---	107	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		95.2	97.5	103	----	----
Toluene-D8	2037-26-5	0.1	%		99.1	82.5	104	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		95.5	79.6	103	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC64_0.25-0.65	PC65_0.0-0.25	PC63_0.95-1.05	----	----
				Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	----	----
Compound	CAS Number	LOR	Unit		ES0910203-021	ES0910203-022	ES0910203-024	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		----	----	**74.4**	----	----
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	**82.7**	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**76.7**	**68.8**	**62.9**	----	----
Anthracene-d10	1719-06-8	0.1	%		**83.9**	**79.0**	**65.7**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**65.7**	**74.9**	**60.7**	----	----

Analytical Results

Sub-Matrix: WATER				Client sample ID	RB05	----	----	----	----
				Client sampling date / time	10-JUL-2009 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES0910203-023	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	0.1	µg/L		<0.1	----	----	----	----
2-Methylnaphthalene	91-57-6	0.1	µg/L		<0.1	----	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L		<0.1	----	----	----	----
Acenaphthene	83-32-9	0.1	µg/L		<0.1	----	----	----	----
Acenaphthylene	208-96-8	0.1	µg/L		<0.1	----	----	----	----
Anthracene	120-12-7	0.1	µg/L		<0.1	----	----	----	----
Benz(a)anthracene	56-55-3	0.1	µg/L		<0.1	----	----	----	----
Benzo(a)pyrene	50-32-8	0.05	µg/L		<0.05	----	----	----	----
Benzo(b)fluoranthene	205-99-2	0.1	µg/L		<0.1	----	----	----	----
Benzo(e)pyrene	192-97-2	0.1	µg/L		<0.1	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.1	µg/L		<0.1	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.1	µg/L		<0.1	----	----	----	----
Chrysene	218-01-9	0.1	µg/L		<0.1	----	----	----	----
Coronene	191-07-1	0.1	µg/L		<0.1	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.1	µg/L		<0.1	----	----	----	----
Fluoranthene	206-44-0	0.1	µg/L		<0.1	----	----	----	----
Fluorene	86-73-7	0.1	µg/L		<0.1	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L		<0.1	----	----	----	----
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L		<0.1	----	----	----	----
Naphthalene	91-20-3	0.1	µg/L		<0.1	----	----	----	----
Perylene	198-55-0	0.1	µg/L		<0.1	----	----	----	----
Phenanthrene	85-01-8	0.1	µg/L		<0.1	----	----	----	----
Pyrene	129-00-0	0.1	µg/L		<0.1	----	----	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**95.9**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**106**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**104**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

QUALITY CONTROL REPORT

Work Order	: **ES0910203**	Page	: 1 of 19
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 13-JUL-2009
Sampler	: RC	Issue Date	: 24-JUL-2009
Order number	: ----		
		No. of samples received	: 24
Quote number	: SY/330/09 V3	No. of samples analysed	: 24

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

This document is issued in accordance with NATA accreditation requirements.

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	Organics
Celine Conceicao	Spectroscopist	Inorganics
Hoa Nguyen	Inorganic Chemist	Inorganics
Pabi Subba	Senior Organic Chemist (Semi-Volatile)	Organics
Sanjeshni Jyoti Mala	Senior Chemist Volatile	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 insuffient 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: 1039946)									
EB0910824-003	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	84.2	84.2	0.0	0% - 20%
ES0910170-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	2.5	2.2	13.2	No Limit
EA055: Moisture Content (QC Lot: 1039947)									
ES0910203-004	PC49_0.0-0.5	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	32.0	31.5	1.7	0% - 20%
ES0910203-013	PC54_0.0-0.3	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	53.9	53.2	1.2	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1042815)									
ES0910203-001	PC63_0.0-0.5	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	2.0	2.1	0.0	0% - 20%
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	5.0	5.5	10.2	0% - 20%
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	3.2	2.7	17.4	0% - 20%
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	9.2	9.8	6.1	0% - 50%
		EG020-SD: Antimony	7440-36-0	0.50	mg/kg	1.57	1.87	17.6	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	148	157	5.8	0% - 20%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	511	552	7.6	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	742	868	15.7	0% - 20%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	22.5	23.5	4.3	0% - 20%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	1880	2020	7.0	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	69.4	76.8	10.1	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	80.8	82.4	1.9	0% - 20%
ES0910203-011	DUP 11	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	0.9	0.9	0.0	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	3.2	4.0	22.3	No Limit
		EG020-SD: Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	0.0	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	20.9	27.7	# 27.6	0% - 20%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	74.2	77.7	4.6	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	57.9	62.3	7.3	0% - 20%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	5.0	10.6	# 71.0	0% - 50%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	162	175	8.1	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	8.32	9.20	10.0	No Limit
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	82.3	161	# 64.6	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1042817)									
ES0910203-021	PC64_0.25-0.65	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	11.8	10.5	11.6	0% - 20%
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	35.7	30.6	15.4	0% - 20%
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	11.6	12.8	9.8	0% - 20%
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	11.0	9.8	12.1	0% - 50%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1042817) - continued									
ES0910203-021	PC64_0.25-0.65	EG020-SD: Antimony	7440-36-0	0.50	mg/kg	4.19	4.54	7.9	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	160	145	9.9	0% - 20%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	2240	2170	3.0	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	1170	1230	4.7	0% - 20%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	37.4	41.5	10.4	0% - 20%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	2550	2310	10.0	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	104	102	1.9	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	85.1	74.0	13.9	0% - 20%
ES0910405-008	Anonymous	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	3.7	3.8	5.0	0% - 20%
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	37.6	34.6	8.4	0% - 20%
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	14.7	13.5	8.7	0% - 20%
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	15.0	13.4	10.6	0% - 20%
		EG020-SD: Antimony	7440-36-0	0.50	mg/kg	3.46	3.46	0.0	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	92.9	90.0	3.2	0% - 20%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	3940	3740	5.3	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	1170	1150	1.8	0% - 20%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	68.4	64.6	5.8	0% - 20%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	1650	1590	3.5	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	126	124	1.1	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	99.6	99.1	0.6	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1042814)									
ES0910203-001	PC63_0.0-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	1.2	1.3	0.0	0% - 50%
ES0910203-011	DUP 11	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1042816)									
ES0910203-021	PC64_0.25-0.65	EG035T: Mercury	7439-97-6	0.1	mg/kg	2.6	3.0	11.5	0% - 20%
ES0910405-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	2.5	2.6	0.0	0% - 20%
EK026G: Total Cyanide By Discrete Analyser (QC Lot: 1039614)									
ES0910112-001	Anonymous	EK026G: Total Cyanide	57-12-5	1	mg/kg	17	16	0.0	0% - 50%
ES0910119-046	Anonymous	EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 1038800)									
ES0910200-024	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)A: Phenolic Compounds (QC Lot: 1038800) - continued									
ES0910200-024	Anonymous	EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 1039119)									
ES0910112-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 1039195)									
ES0910203-024	PC63_0.95-1.05	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.8	<0.8	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.6	<1.6	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	0.0	No Limit
ES0910227-061	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)A: Phenolic Compounds (QC Lot: 1039195) - continued									
ES0910227-061	Anonymous	EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1038168)									
ES0910119-043	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
ES0910119-061	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1038583)									
ES0910203-012	PC53_0.0-0.42	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1038799)									
ES0910200-024	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
ES0910200-030	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1039118)									
ES0910112-001	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	570	560	1.8	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	170	170	0.0	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
ES0910112-003	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	620	640	2.5	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	180	150	16.9	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1039194)									
ES0910203-024	PC63_0.95-1.05	EP071: C15 - C28 Fraction	---	100	mg/kg	1480	1290	13.9	0% - 50%
		EP071: C29 - C36 Fraction	---	100	mg/kg	600	560	6.8	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
ES0910227-061	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEX (QC Lot: 1038168)									
ES0910119-043	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES0910119-061	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEX (QC Lot: 1038168) - continued									
ES0910119-061	Anonymous	EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080: BTEX (QC Lot: 1038583)									
ES0910203-012	PC53_0.0-0.42	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
EP131A: Organochlorine Pesticides (QC Lot: 1038649)									
ES0910119-008	Anonymous	EP131A: Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: 4.4`-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: 4.4`-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: 4.4`-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: DDT (total)	---	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: gamma-BHC	58-89-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Methoxychlor	72-43-5	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Total Chlordane (sum)	---	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
ES0910203-003	DUP 15	EP131A: Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP131A: Organochlorine Pesticides (QC Lot: 1038649) - continued									
ES0910203-003	DUP 15	EP131A: 4.4`-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: 4.4`-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: 4.4`-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: DDT (total)	---	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: gamma-BHC	58-89-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Methoxychlor	72-43-5	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Total Chlordane (sum)	---	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1038650)									
ES0910119-008	Anonymous	EP131B: Total Polychlorinated biphenyls	---	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1016	12974-11-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
ES0910203-003	DUP 15	EP131B: Total Polychlorinated biphenyls	---	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1016	12974-11-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1038648)									
ES0910203-001	PC63_0.0-0.5	EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	<10	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1038648) - continued									
ES0910203-001	PC63_0.0-0.5	EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	1080	680	# 45.1	0% - 20%
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Acenaphthene	83-32-9	10	µg/kg	150	160	0.0	0% - 50%
		EP132: Acenaphthylene	208-96-8	10	µg/kg	950	730	# 26.8	0% - 20%
		EP132: Anthracene	120-12-7	10	µg/kg	660	580	12.6	0% - 20%
		EP132: Benz(a)anthracene	56-55-3	10	µg/kg	1050	1380	# 27.1	0% - 20%
		EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	1220	1540	# 23.2	0% - 20%
		EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	1450	1770	19.9	0% - 20%
		EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	730	870	17.4	0% - 20%
		EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	840	900	7.0	0% - 20%
		EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	520	640	# 20.9	0% - 20%
		EP132: Chrysene	218-01-9	10	µg/kg	1000	1260	# 23.1	0% - 20%
		EP132: Coronene	191-07-1	10	µg/kg	430	330	# 27.3	0% - 20%
		EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	200	220	12.2	0% - 20%
		EP132: Fluoranthene	206-44-0	10	µg/kg	2250	2550	12.3	0% - 20%
		EP132: Fluorene	86-73-7	10	µg/kg	690	490	# 33.6	0% - 20%
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	720	800	11.4	0% - 20%
		EP132: Naphthalene	91-20-3	10	µg/kg	9960	6640	# 40.0	0% - 20%
		EP132: Perylene	198-55-0	10	µg/kg	330	380	14.6	0% - 20%
		EP132: Phenanthrene	85-01-8	10	µg/kg	2250	1950	14.4	0% - 20%
		EP132: Pyrene	129-00-0	10	µg/kg	2060	2370	14.1	0% - 20%
		EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	<100	0.0	No Limit
ES0910203-024	PC63_0.95-1.05	EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	<10	0.0	No Limit
		EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	510	530	3.8	0% - 20%
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Acenaphthene	83-32-9	10	µg/kg	230	210	11.5	0% - 20%
		EP132: Acenaphthylene	208-96-8	10	µg/kg	460	520	10.5	0% - 20%
		EP132: Anthracene	120-12-7	10	µg/kg	810	830	2.4	0% - 20%
		EP132: Benz(a)anthracene	56-55-3	10	µg/kg	1760	2080	16.7	0% - 20%
		EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	1490	1750	16.0	0% - 20%
		EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	1980	2300	15.0	0% - 20%
		EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	1040	1210	15.1	0% - 20%
		EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	920	1050	13.2	0% - 20%
		EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	590	740	# 22.6	0% - 20%
		EP132: Chrysene	218-01-9	10	µg/kg	1880	2230	17.0	0% - 20%
		EP132: Coronene	191-07-1	10	µg/kg	270	280	3.6	0% - 20%
		EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	130	170	22.2	0% - 50%
		EP132: Fluoranthene	206-44-0	10	µg/kg	3980	4410	10.2	0% - 20%
		EP132: Fluorene	86-73-7	10	µg/kg	630	640	1.6	0% - 20%
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	780	920	16.5	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 (%)*
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1038648) - continued									
ES0910203-024	PC63_0.95-1.05	EP132: Naphthalene	91-20-3	10	µg/kg	2400	3170	# 27.6	0% - 20%
		EP132: Perylene	198-55-0	10	µg/kg	440	560	# 23.7	0% - 20%
		EP132: Phenanthrene	85-01-8	10	µg/kg	3140	3060	2.6	0% - 20%
		EP132: Pyrene	129-00-0	10	µg/kg	3540	3890	9.4	0% - 20%
		EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	<100	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
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1042815)								
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----
EG020-SD: Arsenic	7440-38-2	1.0	mg/kg	<1.00	13.1 mg/kg	107	70	130
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	2.76 mg/kg	103	70	130
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	60.9 mg/kg	104	70	130
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	54.7 mg/kg	96.3	70	130
EG020-SD: Cobalt	7440-48-4	10	mg/kg	<10.0	24.5 mg/kg	98.3	70	130
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	54.8 mg/kg	95.4	70	130
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55.2 mg/kg	103	70	130
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	5.6 mg/kg	128	70	130
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	34 mg/kg	98.6	70	130
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	104 mg/kg	97.4	70	130
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1042817)								
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----
EG020-SD: Arsenic	7440-38-2	1.0	mg/kg	<1.00	13.1 mg/kg	106	70	130
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	2.76 mg/kg	95.7	70	130
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	60.9 mg/kg	104	70	130
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	54.7 mg/kg	92.2	70	130
EG020-SD: Cobalt	7440-48-4	10	mg/kg	<10.0	24.5 mg/kg	99.0	70	130
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	54.8 mg/kg	92.0	70	130
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55.2 mg/kg	101	70	130
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	5.6 mg/kg	123	70	130
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	34 mg/kg	102	70	130
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	104 mg/kg	94.0	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1042814)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.4 mg/kg	95.0	67	118
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1042816)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.4 mg/kg	85.1	67	118
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1039614)								
EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	50 mg/kg	85.8	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 1038800)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	85.5	73.9	115
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	103	80.2	115

Sub-Matrix: **SOIL**

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: 1038800) - continued								
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	111	76.8	114
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	8 mg/kg	86.6	72	119
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	85.4	60.3	117
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	101	74.5	119
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	89.5	71.6	113
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	90.6	74.8	115
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	98.1	76.4	114
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	84.7	62.2	115
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	80.7	68.9	112
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1.0	8 mg/kg	64.4	1.23	91.6
EP075(SIM)A: Phenolic Compounds (QCLot: 1039119)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	109	73.9	115
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	107	80.2	115
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	109	76.8	114
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	8 mg/kg	95.0	72	119
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	87.5	60.3	117
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	104	74.5	119
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	89.0	71.6	113
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	99.6	74.8	115
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	96.3	76.4	114
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	92.0	62.2	115
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	<1.0	8 mg/kg	72.4	1.23	91.6
EP075(SIM)A: Phenolic Compounds (QCLot: 1039195)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	99.0	73.9	115
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	96.0	80.2	115
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	94.3	76.8	114
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	8 mg/kg	96.4	72	119
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	87.8	60.3	117
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	93.1	74.5	119
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	88.4	71.6	113
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	90.3	74.8	115
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	90.9	76.4	114
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	82.4	62.2	115
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	82.0	68.9	112
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1.0	8 mg/kg	28.5	1.23	91.6
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1038168)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	80.6	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1038583)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1038583) - continued								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	91.1	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1038799)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	102	75.2	116
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	200 mg/kg	88.0	75.3	113
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	90.0	72.6	117
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1039118)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	86.0	75.2	116
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	200 mg/kg	103	75.3	113
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	115	72.6	117
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1039194)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	107	75.2	116
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	200 mg/kg	102	75.3	113
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	104	72.6	117
EP080: BTEX (QCLot: 1038168)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	84.7	67.5	125
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	103	69	122
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	83.4	65.3	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	80.2	66.5	124
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	83.8	66.7	123
EP080: BTEX (QCLot: 1038583)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	106	67.5	125
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	95.9	69	122
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	108	65.3	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	105	66.5	124
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	108	66.7	123
EP131A: Organochlorine Pesticides (QCLot: 1038649)								
EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	5 µg/kg	87.8	31.7	140
EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	5 µg/kg	55.0	24.5	150
EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	5 µg/kg	70.2	36.9	139
EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	5 µg/kg	92.5	38.2	137
EP131A: 4.4`-DDD	72-54-8	0.5	µg/kg	<0.50	5 µg/kg	91.0	42.5	141
EP131A: 4.4`-DDE	72-55-9	0.5	µg/kg	<0.50	5 µg/kg	88.6	34.8	140
EP131A: 4.4`-DDT	50-29-3	0.5	µg/kg	<0.50	5 µg/kg	126	38	143
EP131A: DDT (total)	----	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	5 µg/kg	98.0	43.2	134
EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	5 µg/kg	70.2	23.7	139

Sub-Matrix: **SOIL**

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
EP131A: Organochlorine Pesticides (QCLot: 1038649) - continued								
EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	5 µg/kg	92.6	35.8	138
EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	5 µg/kg	130	7.45	158
EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	5 µg/kg	138	21.6	162
EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	5 µg/kg	83.8	19.3	131
EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	5 µg/kg	111	17.9	141
EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	5 µg/kg	102	31	153
EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	5 µg/kg	94.8	34.3	138
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	5 µg/kg	53.0	18.6	146
EP131A: gamma-BHC	58-89-9	0.5	µg/kg	<0.50	5 µg/kg	75.4	30.7	145
EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	5 µg/kg	132	15	157
EP131A: cis-Chlordane	5103-71-9	0.5	µg/kg	<0.50	5 µg/kg	86.7	22.3	145
EP131A: trans-Chlordane	5103-74-2	0.5	µg/kg	<0.50	5 µg/kg	81.0	42.4	139
EP131A: Total Chlordane (sum)	----	0.5	µg/kg	<0.50	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1038650)								
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1016	12974-11-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	87.6	61.3	121
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1038648)								
EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	100 µg/kg	102	34.8	123
EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	<10	100 µg/kg	109	66.6	122
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	100 µg/kg	116	6.88	147
EP132: Acenaphthene	83-32-9	10	µg/kg	<10	100 µg/kg	112	62.9	124
EP132: Acenaphthylene	208-96-8	10	µg/kg	<10	100 µg/kg	104	58.2	117
EP132: Anthracene	120-12-7	10	µg/kg	<10	100 µg/kg	106	61.4	117
EP132: Benz(a)anthracene	56-55-3	10	µg/kg	<10	100 µg/kg	112	65.7	125
EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	<10	100 µg/kg	106	60.7	119
EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	<10	100 µg/kg	112	68.6	126
EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	<10	100 µg/kg	111	70	129
EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	<10	100 µg/kg	109	52.4	135
EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	<10	100 µg/kg	111	70.4	126
EP132: Chrysene	218-01-9	10	µg/kg	<10	100 µg/kg	112	67.5	126
EP132: Coronene	191-07-1	10	µg/kg	<10	100 µg/kg	109	34.7	141
EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	<10	100 µg/kg	111	61.7	129

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
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1038648) - continued								
EP132: Fluoranthene	206-44-0	10	µg/kg	<10	100 µg/kg	115	68.7	126
EP132: Fluorene	86-73-7	10	µg/kg	<10	100 µg/kg	115	66.7	123
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	<10	100 µg/kg	110	56.6	131
EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	1000 µg/kg	# 47.5	50	138
EP132: Naphthalene	91-20-3	10	µg/kg	<10	100 µg/kg	106	63.2	120
EP132: Perylene	198-55-0	10	µg/kg	<10	100 µg/kg	104	58.6	119
EP132: Phenanthrene	85-01-8	10	µg/kg	<10	100 µg/kg	113	65.4	124
EP132: Pyrene	129-00-0	10	µg/kg	<10	100 µg/kg	115	67.9	127

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
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1038744)								
EP132: 3-Methylcholanthrene	56-49-5	0.10	µg/L	<0.1	2 µg/L	96.3	65.8	121
EP132: 2-Methylnaphthalene	91-57-6	0.10	µg/L	<0.1	2 µg/L	90.7	67.7	112
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.10	µg/L	<0.1	2 µg/L	87.2	11.6	146
EP132: Acenaphthene	83-32-9	0.10	µg/L	<0.1	2 µg/L	91.6	73.2	111
EP132: Acenaphthylene	208-96-8	0.10	µg/L	<0.1	2 µg/L	92.7	72.4	112
EP132: Anthracene	120-12-7	0.10	µg/L	<0.1	2 µg/L	95.1	73.4	113
EP132: Benz(a)anthracene	56-55-3	0.10	µg/L	<0.1	2 µg/L	97.8	73.6	114
EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	2 µg/L	106	75.2	117
EP132: Benzo(b)fluoranthene	205-99-2	0.10	µg/L	<0.1	2 µg/L	93.4	71.4	119
EP132: Benzo(e)pyrene	192-97-2	0.10	µg/L	<0.1	2 µg/L	104	75.3	118
EP132: Benzo(g.h.i)perylene	191-24-2	0.10	µg/L	<0.1	2 µg/L	101	66.6	121
EP132: Benzo(k)fluoranthene	207-08-9	0.10	µg/L	<0.1	2 µg/L	104	74.8	118
EP132: Chrysene	218-01-9	0.10	µg/L	<0.1	2 µg/L	95.7	69.6	120
EP132: Coronene	191-07-1	0.10	µg/L	<0.1	2 µg/L	102	47.4	131
EP132: Dibenz(a.h)anthracene	53-70-3	0.10	µg/L	<0.1	2 µg/L	101	71.5	117
EP132: Fluoranthene	206-44-0	0.10	µg/L	<0.1	2 µg/L	97.4	74.8	117
EP132: Fluorene	86-73-7	0.10	µg/L	<0.1	2 µg/L	94.2	72.9	114
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	0.10	µg/L	<0.1	2 µg/L	102	67.8	119
EP132: N-2-Fluorenyl Acetamide	53-96-3	0.10	µg/L	<0.1	20 µg/L	78.0	53.6	131
EP132: Naphthalene	91-20-3	0.10	µg/L	<0.1	2 µg/L	89.6	68.3	116
EP132: Perylene	198-55-0	0.10	µg/L	<0.1	2 µg/L	102	68	122
EP132: Phenanthrene	85-01-8	0.10	µg/L	<0.1	2 µg/L	94.7	74.8	112
EP132: Pyrene	129-00-0	0.10	µg/L	<0.1	2 µg/L	97.4	75.1	117

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	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1042815)							
ES0910203-001	PC63_0.0-0.5	EG020-SD: Arsenic	7440-38-2	50 mg/kg	89.5	70	130
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	93.6	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	86.5	70	130
		EG020-SD: Copper	7440-50-8	250 mg/kg	93.7	70	130
		EG020-SD: Lead	7439-92-1	250 mg/kg	119	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	88.6	70	130
		EG020-SD: Zinc	7440-66-6	250 mg/kg	# Not Determined	70	130
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1042817)							
ES0910203-021	PC64_0.25-0.65	EG020-SD: Arsenic	7440-38-2	50 mg/kg	87.9	70	130
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	89.3	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	87.2	70	130
		EG020-SD: Copper	7440-50-8	250 mg/kg	# Not Determined	70	130
		EG020-SD: Lead	7439-92-1	250 mg/kg	84.6	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	92.7	70	130
		EG020-SD: Zinc	7440-66-6	250 mg/kg	# Not Determined	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1042814)							
ES0910203-001	PC63_0.0-0.5	EG035T: Mercury	7439-97-6	5 mg/kg	91.2	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1042816)							
ES0910203-021	PC64_0.25-0.65	EG035T: Mercury	7439-97-6	5 mg/kg	91.6	70	130
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1039614)							
ES0910112-001	Anonymous	EK026G: Total Cyanide	57-12-5	50 mg/kg	112	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 1038800)							
ES0910200-024	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	89.2	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	104	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	97.6	60	130
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	90.8	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	50.4	20	130
EP075(SIM)A: Phenolic Compounds (QCLot: 1039119)							
ES0910110-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	# Not Determined	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	# 5.3	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	# Not Determined	60	130
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	# 34.9	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	# Not Determined	20	130
EP075(SIM)A: Phenolic Compounds (QCLot: 1039195)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 1039195) - continued							
ES0910203-024	PC63_0.95-1.05	EP075(SIM): Phenol	108-95-2	10 mg/kg	99.4	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	98.5	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	88.7	60	130
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	92.3	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	41.1	20	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1038168)							
ES0910119-043	Anonymous	EP080: C6 - C9 Fraction	----	26 mg/kg	93.8	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1038583)							
ES0910203-012	PC53_0.0-0.42	EP080: C6 - C9 Fraction	----	26 mg/kg	82.6	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1038799)							
ES0910200-024	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	98.1	70	130
		EP071: C15 - C28 Fraction	----	3140 mg/kg	85.3	70	130
		EP071: C29 - C36 Fraction	----	2860 mg/kg	76.1	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1039118)							
ES0910112-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	100	70	130
		EP071: C15 - C28 Fraction	----	3140 mg/kg	76.2	70	130
		EP071: C29 - C36 Fraction	----	2860 mg/kg	83.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1039194)							
ES0910203-024	PC63_0.95-1.05	EP071: C10 - C14 Fraction	----	640 mg/kg	96.2	70	130
		EP071: C15 - C28 Fraction	----	3140 mg/kg	91.9	70	130
		EP071: C29 - C36 Fraction	----	2860 mg/kg	82.6	70	130
EP080: BTEX (QCLot: 1038168)							
ES0910119-043	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	74.4	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	72.8	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	74.7	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	78.2	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	76.1	70	130
EP080: BTEX (QCLot: 1038583)							
ES0910203-012	PC53_0.0-0.42	EP080: Benzene	71-43-2	2.5 mg/kg	90.8	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	99.6	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	96.3	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	94.7	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	98.4	70	130
EP131A: Organochlorine Pesticides (QCLot: 1038649)							
ES0910119-008	Anonymous	EP131A: Aldrin	309-00-2	5 µg/kg	58.5	31.7	140

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: Spike Recovery (%) MS	Matrix Spike (MS) Report: Recovery Limits (%) Low	Matrix Spike (MS) Report: Recovery Limits (%) High
EP131A: Organochlorine Pesticides (QCLot: 1038649) - continued							
ES0910119-008	Anonymous	EP131A: alpha-BHC	319-84-6	5 µg/kg	64.3	24.5	150
		EP131A: beta-BHC	319-85-7	5 µg/kg	70.8	36.9	139
		EP131A: delta-BHC	319-86-8	5 µg/kg	92.4	38.2	137
		EP131A: 4.4`-DDD	72-54-8	5 µg/kg	72.0	42.5	141
		EP131A: 4.4`-DDE	72-55-9	5 µg/kg	72.9	34.8	140
		EP131A: 4.4`-DDT	50-29-3	5 µg/kg	85.5	38	143
		EP131A: Dieldrin	60-57-1	5 µg/kg	60.2	43.2	134
		EP131A: alpha-Endosulfan	959-98-8	5 µg/kg	39.3	23.7	139
		EP131A: beta-Endosulfan	33213-65-9	5 µg/kg	63.4	35.8	138
		EP131A: Endosulfan sulfate	1031-07-8	5 µg/kg	66.2	7.45	158
		EP131A: Endrin	72-20-8	5 µg/kg	138	21.6	162
		EP131A: Endrin aldehyde	7421-93-4	5 µg/kg	56.2	19.3	131
		EP131A: Endrin ketone	53494-70-5	5 µg/kg	61.4	17.9	141
		EP131A: Heptachlor	76-44-8	5 µg/kg	122	31	153
		EP131A: Heptachlor epoxide	1024-57-3	5 µg/kg	67.7	34.3	138
		EP131A: Hexachlorobenzene (HCB)	118-74-1	5 µg/kg	62.5	18.6	146
		EP131A: gamma-BHC	58-89-9	5 µg/kg	66.8	30.7	145
		EP131A: Methoxychlor	72-43-5	5 µg/kg	91.3	15	157
		EP131A: cis-Chlordane	5103-71-9	5 µg/kg	62.6	22.3	145
		EP131A: trans-Chlordane	5103-74-2	5 µg/kg	50.2	42.4	139
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1038650)							
ES0910119-008	Anonymous	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	77.9	61.3	121
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1038648)							
ES0910203-001	PC63_0.0-0.5	EP132: 3-Methylcholanthrene	56-49-5	100 µg/kg	56.1	21	129
		EP132: 2-Methylnaphthalene	91-57-6	100 µg/kg	# Not Determined	40	130
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	100 µg/kg	92.7	8	158
		EP132: Acenaphthene	83-32-9	100 µg/kg	120	38	127
		EP132: Acenaphthylene	208-96-8	100 µg/kg	# Not Determined	35	122
		EP132: Anthracene	120-12-7	100 µg/kg	# 146	44	124
		EP132: Benz(a)anthracene	56-55-3	100 µg/kg	# Not Determined	48	124
		EP132: Benzo(a)pyrene	50-32-8	100 µg/kg	# Not Determined	44	123
		EP132: Benzo(b)fluoranthene	205-99-2	100 µg/kg	# Not Determined	43	129
		EP132: Benzo(e)pyrene	192-97-2	100 µg/kg	# Not Determined	46	130
		EP132: Benzo(g.h.i)perylene	191-24-2	100 µg/kg	# Not Determined	43	129
		EP132: Benzo(k)fluoranthene	207-08-9	100 µg/kg	# 36.7	54	123
		EP132: Chrysene	218-01-9	100 µg/kg	# Not Determined	55	122
		EP132: Coronene	191-07-1	100 µg/kg	# Not Determined	33	134
		EP132: Dibenz(a.h)anthracene	53-70-3	100 µg/kg	# 30.4	46	129

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1038648) - continued							
ES0910203-001	PC63_0.0-0.5	EP132: Fluoranthene	206-44-0	100 µg/kg	# Not Determined	52	125
		EP132: Fluorene	86-73-7	100 µg/kg	# Not Determined	45	121
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	100 µg/kg	# Not Determined	41	132
		EP132: N-2-Fluorenyl Acetamide	53-96-3	1000 µg/kg	70.7	28	152
		EP132: Naphthalene	91-20-3	100 µg/kg	# Not Determined	34	130
		EP132: Perylene	198-55-0	100 µg/kg	86.5	38	124
		EP132: Phenanthrene	85-01-8	100 µg/kg	# Not Determined	45	124
		EP132: Pyrene	129-00-0	100 µg/kg	# Not Determined	51	129

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0910203**	Page	: 1 of 11
Client	: ENSR AUSTRALIA PTY LIMITED	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 13-JUL-2009
Sampler	: RC	Issue Date	: 24-JUL-2009
Order number	: ----		
		No. of samples received	: 24
Quote number	: SY/330/09 V3	No. of samples analysed	: 24

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

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

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								
PC63_0.0-0.5,	PC63_0.5-1.05,	**10-JUL-2009**	**----**	----	----	**15-JUL-2009**	17-JUL-2009	✓
DUP 15,	PC49_0.0-0.5,							
PC49_0.5-0.97,	PC50_0.0-0.4,							
PC50_0.4-0.84,	PC51_0.0-0.4,							
PC51_0.4-0.53,	PC52_0.0-0.19,							
DUP 11,	PC53_0.0-0.42,							
PC54_0.0-0.3,	PC54_0.3-0.86,							
PC56_0.0-0.42,	PC57_0.0-0.24,							
PC58_0.0-0.28,	PC62_0.0-0.59,							
DUP 12,	PC64_0.0-0.25,							
PC64_0.25-0.65,	PC65_0.0-0.25,							
PC63_0.95-1.05								
EG020-SD: Total Metals in Sediments by ICPMS								
Soil Glass Jar - Unpreserved								
PC63_0.0-0.5,	PC63_0.5-1.05,	**10-JUL-2009**	**17-JUL-2009**	07-AUG-2009	✓	**17-JUL-2009**	06-JAN-2010	✓
DUP 15,	PC49_0.0-0.5,							
PC49_0.5-0.97,	PC50_0.0-0.4,							
PC50_0.4-0.84,	PC51_0.0-0.4,							
PC51_0.4-0.53,	PC52_0.0-0.19,							
DUP 11,	PC53_0.0-0.42,							
PC54_0.0-0.3,	PC54_0.3-0.86,							
PC56_0.0-0.42,	PC57_0.0-0.24,							
PC58_0.0-0.28,	PC62_0.0-0.59,							
DUP 12,	PC64_0.0-0.25,							
PC64_0.25-0.65,	PC65_0.0-0.25,							
PC63_0.95-1.05								

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								
PC63_0.0-0.5,	PC63_0.5-1.05,	**10-JUL-2009**	**17-JUL-2009**	07-AUG-2009	✓	**17-JUL-2009**	07-AUG-2009	✓
DUP 15,	PC49_0.0-0.5,							
PC49_0.5-0.97,	PC50_0.0-0.4,							
PC50_0.4-0.84,	PC51_0.0-0.4,							
PC51_0.4-0.53,	PC52_0.0-0.19,							
DUP 11,	PC53_0.0-0.42,							
PC54_0.0-0.3,	PC54_0.3-0.86,							
PC56_0.0-0.42,	PC57_0.0-0.24,							
PC58_0.0-0.28,	PC62_0.0-0.59,							
DUP 12,	PC64_0.0-0.25,							
PC64_0.25-0.65,	PC65_0.0-0.25,							
PC63_0.95-1.05								
EK026G: Total Cyanide By Discrete Analyser								
Soil Glass Jar - Unpreserved								
PC52_0.0-0.19,	DUP 11,	**10-JUL-2009**	**14-JUL-2009**	17-JUL-2009	✓	**16-JUL-2009**	28-JUL-2009	✓
PC64_0.25-0.65								
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved								
PC63_0.0-0.5,	DUP 15	**10-JUL-2009**	**14-JUL-2009**	24-JUL-2009	✓	**14-JUL-2009**	23-AUG-2009	✓
Soil Glass Jar - Unpreserved								
PC49_0.5-0.97,	PC54_0.0-0.3	**10-JUL-2009**	**15-JUL-2009**	24-JUL-2009	✓	**15-JUL-2009**	24-AUG-2009	✓
Soil Glass Jar - Unpreserved								
PC64_0.0-0.25,	PC63_0.95-1.05	**10-JUL-2009**	**15-JUL-2009**	24-JUL-2009	✓	**16-JUL-2009**	24-AUG-2009	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved								
PC63_0.0-0.5,	PC49_0.0-0.5,	**10-JUL-2009**	**13-JUL-2009**	24-JUL-2009	✓	**14-JUL-2009**	24-JUL-2009	✓
PC50_0.4-0.84,	PC51_0.0-0.4							
Soil Glass Jar - Unpreserved								
PC63_0.0-0.5,	PC53_0.0-0.42,	**10-JUL-2009**	**14-JUL-2009**	24-JUL-2009	✓	**14-JUL-2009**	24-JUL-2009	✓
PC54_0.3-0.86,	PC57_0.0-0.24,							
DUP 12,	PC64_0.25-0.65,							
PC65_0.0-0.25,	PC63_0.95-1.05							
Soil Glass Jar - Unpreserved								
PC49_0.0-0.5,	PC50_0.4-0.84,	**10-JUL-2009**	**15-JUL-2009**	24-JUL-2009	✓	**15-JUL-2009**	24-AUG-2009	✓
PC51_0.0-0.4,	PC53_0.0-0.42,							
PC54_0.3-0.86,	PC57_0.0-0.24							
Soil Glass Jar - Unpreserved								
DUP 12,	PC64_0.25-0.65,	**10-JUL-2009**	**15-JUL-2009**	24-JUL-2009	✓	**16-JUL-2009**	24-AUG-2009	✓
PC65_0.0-0.25,	PC63_0.95-1.05							

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEX							
Soil Glass Jar - Unpreserved							
PC63_0.0-0.5, PC49_0.0-0.5, PC50_0.4-0.84, PC51_0.0-0.4	**10-JUL-2009**	**13-JUL-2009**	24-JUL-2009	✓	**14-JUL-2009**	24-JUL-2009	✓
Soil Glass Jar - Unpreserved							
PC53_0.0-0.42, PC54_0.3-0.86, PC57_0.0-0.24, DUP 12, PC64_0.25-0.65, PC65_0.0-0.25, PC63_0.95-1.05	**10-JUL-2009**	**14-JUL-2009**	24-JUL-2009	✓	**14-JUL-2009**	24-JUL-2009	✓
EP131A: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved							
PC63_0.0-0.5, DUP 15, PC49_0.5-0.97, PC54_0.0-0.3, PC64_0.0-0.25, PC63_0.95-1.05	**10-JUL-2009**	**14-JUL-2009**	24-JUL-2009	✓	**21-JUL-2009**	23-AUG-2009	✓
EP131B: Polychlorinated Biphenyls (as Aroclors)							
Soil Glass Jar - Unpreserved							
PC63_0.0-0.5, DUP 15, PC49_0.5-0.97, PC54_0.0-0.3, PC64_0.0-0.25, PC63_0.95-1.05	**10-JUL-2009**	**14-JUL-2009**	24-JUL-2009	✓	**21-JUL-2009**	23-AUG-2009	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
PC63_0.0-0.5, PC49_0.0-0.5, PC50_0.4-0.84, PC51_0.0-0.4, PC53_0.0-0.42, PC54_0.3-0.86, PC57_0.0-0.24, DUP 12, PC64_0.25-0.65, PC65_0.0-0.25, PC63_0.95-1.05	**10-JUL-2009**	**15-JUL-2009**	24-JUL-2009	✓	**17-JUL-2009**	24-AUG-2009	✓

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
EP132B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
RB05	**10-JUL-2009**	**15-JUL-2009**	17-JUL-2009	✓	**17-JUL-2009**	24-AUG-2009	✓

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	4	40	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organochlorine Pesticides (Ultra-trace)	EP131A	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	4	29	**13.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	2	16	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	40	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	4	40	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	6	53	**11.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	3	28	**10.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organochlorine Pesticides (Ultra-trace)	EP131A	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	3	29	**10.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	2	40	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	3	53	**5.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	28	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organochlorine Pesticides (Ultra-trace)	EP131A	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	3	29	**10.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	2	40	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	3	53	**5.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	28	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organochlorine Pesticides (Ultra-trace)	EP131A	1	15	**6.7**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	3	29	**10.3**	**5.0**	✓	ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	15	**6.7**	**5.0**	✓	ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	11	**9.1**	**5.0**	✓	ALS QCS3 requirement

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*	
Matrix Spikes (MS) - Continued							
Total Cyanide By Discrete Analyser	EK026G	1	16	**6.3**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	2	40	**5.0**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	3	53	**5.7**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	28	**7.1**	**5.0**	✓	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)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	13	**7.7**	**5.0**	✓	NEPM 1999 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 (1999) Schedule B(3) (Method 102)
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Mercury by FIMS	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 (1999) Schedule B(3)
Total Cyanide By Discrete Analyser	EK026G	SOIL	APHA 21st 4500 CN - C & N. Caustic leach extracts of the sample are distilled with sulphuric acid, converting all CN species to HCN. The distillates are analyzed for CN by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Method 403)
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 (1999) 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 (1999) 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 (1999) Schedule B(3) (Method 501)
Organochlorine Pesticides (Ultra-trace)	EP131A	SOIL	USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/uECD/uECD) This technique is compliant with NEPM (1999) Schedule B(3) (Method 504)
PCB's (Ultra-trace)	EP131B	SOIL	USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/uECD/uECD) This technique is compliant with NEPM (1999) Schedule B(3) (Method 504)
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	SOIL	8270 GCMS Capiliary column, SIM mode.
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	WATER	USEPA 3640 (GPC Cleanup), 8270 GCMS Capiliary column, SIM mode. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for TCN in Soils	EK026PR	SOIL	APHA 21st ed., 4500 CN- C & N. Samples are extracted by end-over-end tumbling with NaOH.
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 (1999) Schedule B(3) (Method 202)

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/ Acetylation	ORG17A-AC	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to 1 mL with exchange into cyclohexane. Phenolic compounds are reacted with acetic anhydride to yield phenyl acetates suitable for ultra-trace analysis.
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, 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.
Sep. Funnel Extraction /Acetylation of Phenolic Compounds	ORG14-AC	WATER	USEPA 3510 (Extraction)/ In-house (Acetylation): A 1L sample is extracted into dichloromethane and concentrated to 1 mL with echange into cyclohexane. Phenolic compounds are reacted with acetic anhydride to yield phenyl acetates suitable for ultra-trace analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG020-SD: Total Metals in Sediments by ICPMS	ES0910203-011	DUP 11	**Chromium**	7440-47-3	27.6 %	0-20%	**RPD exceeds LOR based limits**
EG020-SD: Total Metals in Sediments by ICPMS	ES0910203-011	DUP 11	**Nickel**	7440-02-0	71.0 %	0-50%	**RPD exceeds LOR based limits**
EG020-SD: Total Metals in Sediments by ICPMS	ES0910203-011	DUP 11	**Vanadium**	7440-62-2	64.6 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**2-Methylnaphthalene**	91-57-6	45.1 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Acenaphthylene**	208-96-8	26.8 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Benz(a)anthracene**	56-55-3	27.1 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Benzo(a)pyrene**	50-32-8	23.2 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Benzo(k)fluoranthene**	207-08-9	20.9 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-024	PC63_0.95-1.05	**Benzo(k)fluoranthene**	207-08-9	22.6 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Chrysene**	218-01-9	23.1 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Coronene**	191-07-1	27.3 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Fluorene**	86-73-7	33.6 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Naphthalene**	91-20-3	40.0 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-024	PC63_0.95-1.05	**Naphthalene**	91-20-3	27.6 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-024	PC63_0.95-1.05	**Perylene**	198-55-0	23.7 %	0-20%	**RPD exceeds LOR based limits**
Laboratory Control Spike (LCS) Recoveries							
EP132B: Polynuclear Aromatic Hydrocarbons	1193014-002	----	**N-2-Fluorenyl Acetamide**	53-96-3	47.5 %	50-138%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EG020-SD: Total Metals in Sediments by ICPMS	ES0910203-021	PC64_0.25-0.65	**Copper**	7440-50-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG020-SD: Total Metals in Sediments by ICPMS	ES0910203-021	PC64_0.25-0.65	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG020-SD: Total Metals in Sediments by ICPMS	ES0910203-001	PC63_0.0-0.5	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP075(SIM)A: Phenolic Compounds	ES0910110-001	Anonymous	**Phenol**	108-95-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries - Continued							
EP075(SIM)A: Phenolic Compounds	ES0910110-001	Anonymous	**2-Chlorophenol**	95-57-8	5.3 %	70-130%	**Recovery less than lower data quality objective**
EP075(SIM)A: Phenolic Compounds	ES0910110-001	Anonymous	**2-Nitrophenol**	88-75-5	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP075(SIM)A: Phenolic Compounds	ES0910110-001	Anonymous	**4-Chloro-3-Methylphenol**	59-50-7	34.9 %	70-130%	**Recovery less than lower data quality objective**
EP075(SIM)A: Phenolic Compounds	ES0910110-001	Anonymous	**Pentachlorophenol**	87-86-5	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**2-Methylnaphthalene**	91-57-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Acenaphthylene**	208-96-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Anthracene**	120-12-7	146 %	44-124%	**Recovery greater than upper data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Benz(a)anthracene**	56-55-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Benzo(a)pyrene**	50-32-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Benzo(b)fluoranthene**	205-99-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Benzo(e)pyrene**	192-97-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Benzo(g.h.i)perylene**	191-24-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Benzo(k)fluoranthene**	207-08-9	36.7 %	54-123%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Chrysene**	218-01-9	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Coronene**	191-07-1	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Dibenz(a.h)anthracene**	53-70-3	30.4 %	46-129%	**Recovery less than lower data quality objective**

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries - Continued							
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Fluoranthene**	206-44-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Fluorene**	86-73-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Indeno(1.2.3.cd)pyrene**	193-39-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Naphthalene**	91-20-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Phenanthrene**	85-01-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910203-001	PC63_0.0-0.5	**Pyrene**	129-00-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

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

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP080S: TPH(V)/BTEX Surrogates	ES0910203-014	PC54_0.3-0.86	**1.2-Dichloroethane-D4**	17060-07-0	76.1 %	80-120 %	**Recovery less than lower data quality objective**
EP080S: TPH(V)/BTEX Surrogates	ES0910203-004	PC49_0.0-0.5	**Toluene-D8**	2037-26-5	80.7 %	81-117 %	**Recovery less than lower data quality objective**
EP080S: TPH(V)/BTEX Surrogates	ES0910203-012	PC53_0.0-0.42	**Toluene-D8**	2037-26-5	78.0 %	81-117 %	**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

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Laboratory Details
Lab. Name: ALS SYDNEY
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY330 09

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Harbour PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email : christiaan.donneth@aecom.com richard.cole@aecom.com	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	TOC	PAH (ultra trace)	BTEX/TPH (std LOR)	SPOCAS	Elutriate Metals	Elutriate PAH's	Cyanide	TBT	Phenols	OCP	Total PCBs	Metals MI3	Other
1	PC63_0.0-0.5	10.7.09	X					X		4x soil jars 1bag	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	CONTRACT WORK
2	PC63_0.5-1.05		X					X		2x soil jars												✓	NO: ES0910203
3	~~PC63 dup~~ DUP15		✓					✓		2x soil jars									✓	✓	✓	✓	LAB: ALS Brisbane
4	PC49_0.0-0.5									2x soil jars	✓	✓	✓					✓				✓	DATE: 13/1/09
5	PC49_0.5-0.97									2x soil jars									✓	✓	✓	✓	SPLIT: TBT/TOC: ES0910204
6	PC50_0.0-0.4									2x soil jars								✓				✓	Elutriates: ES0910206
7	PC50_0.4-0.84									2x soil jars	✓	✓	✓									✓	Blanks: ES0910208
8	E2									1 x soil jar	QA/QC JAR FOR Elutriate for PC51_0.0-0.4												
8	PC51_0.0-0.4									3 x soil jars 1 bag	✓	✓	✓	✓	✓	✓		✓				✓	
9	PC51_0.4-0.53									1 x soil jar	✓											✓	
10	PC52_0.0-0.19		^					^		2 x soil jar								✓	✓			✓	
11	DUP11	↓	X					X		2 x soil jars								✓	✓			✓	

Environmental Division Sydney
Work Order
ES0910203
Telephone : +61-2-8784 8555

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No. | Esky ID

Relinquished by: Richard Cole Signed: Date: 13/1/09
Recieved by: Frank Signed: Date: 13/1/09 1:15pm

Relinquished by: Signed: Date:
Recieved by: Signed: Date:

Chain of Custody

AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Laboratory Details
Lab. Name: ALS SYDNEY
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY330 09

Sampled By: Richard Cole
AECOM Project No: 53017805
Project Name: Port Kembla Outer Harbour PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email : christiaan.donnetti@aecom.com richard.cole@aecom.com	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Analysis Request: TOC	PAH (ultra trace)	BTEX TPH	SOCAS	Elutriate Metals	Elutriate PAHs	Cyanide	TBT	Phenols	OCP	Total PCBs	Metals M13	Other
12	PC53_0.0-0.42	10.7.09	X					X		2 x soil jars	✓	✓	✓					✓				✓	
13	PC54_0.0-0.3		X					X		4 x soil jars 1 bag	✓			✓	✓	✓		✓	✓	✓	✓	✓	
14	PC54_0.3-0.86		X					X		2 x soil jars	✓	✓	✓									✓	
15	PC56_0.0-0.42		X					X		2 x soil jars								✓				✓	
16	PC57_0.0-0.24		X					X		4 x soil jars 1 bag	✓	✓	✓	✓	✓	✓		✓				✓	
17	PC58_0.0-0.28		X					X		2 x soil jars								✓				✓	
18	PC62_0.0-0.59		X					X		2 x soil jars								✓				✓	
19	DUP12		X					X		2 x soil jars	✓	✓	✓					✓				✓	
20	PC64_0.0-0.25		X					X		2 x soil jars								✓	✓	✓	✓	✓	
21	PC64_0.25-0.65		X					X		5 x soil jars 1 bag	✓	✓	✓	✓	✓	✓	✓					✓	
22	PC65_0.0-0.25	↓	X					X		2 x soil jars	✓	✓	✓					✓				✓	
Extra sample 23	RB05			X																			

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No.

Esky ID

Relinquished by: Richard Cole Signed: Date: 13/7/09
Recieved by: Frank Signed: Date: 13/7/09 1:15pm

Relinquished by: Signed: Date:
Recieved by: Signed: Date:

Printed copies of this document are uncontrolled

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES0910203**		
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2009HLAENV0352 (SY/330/09 V3)
Site	: ----		
Sampler	: RC	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 13-JUL-2009	Issue Date	: 13-JUL-2009 16:30
Client Requested Due Date	: 23-JUL-2009	Scheduled Reporting Date	: **23-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 1.8'C - Ice present
No. of coolers/boxes	: 2 HARD	No. of samples received	: 24
Sercurity Seal	: Not intact.	No. of samples analysed	: 24

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Received extra sample PC63_0.95-1.05 to be analysed for TPH,BTEX, PHENOL,METALS, UTPAH and UT OC/PCB as per client.**
- **Received extra sample RB05 to be analysed for UT PAH as per client.**
- **This batch is split into ES0910204 for TBT/TOC, ES0910206 for Elutriates and ES0910208 for SPOCAS.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 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.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EA055-103 Moisture Content	SOIL - EG020-SD Total Metals in Sediments by ICPMS (NODG)	SOIL - EG035T (solids) Total Mercury by FIMS	SOIL - EK026G (Solids) Total Cyanide By Discrete Analyser	SOIL - EP075 SIM Phenols only SIM - Phenols only	SOIL - EP132B Ultratrace PAH's	SOIL - S-04 TPH/BTEX	SOIL - UTO-2S Ultratrace OC PCB Pesticides
ES0910203-001	10-JUL-2009 15:00	PC63_0.0-0.5	✓	✓	✓		✓	✓	✓	✓
ES0910203-002	10-JUL-2009 15:00	PC63_0.5-1.05	✓	✓	✓					
ES0910203-003	10-JUL-2009 15:00	DUP 15	✓	✓	✓		✓			✓
ES0910203-004	10-JUL-2009 15:00	PC49_0.0-0.5	✓	✓	✓			✓	✓	
ES0910203-005	10-JUL-2009 15:00	PC49_0.5-0.97	✓	✓	✓		✓			✓
ES0910203-006	10-JUL-2009 15:00	PC50_0.0-0.4	✓	✓	✓					
ES0910203-007	10-JUL-2009 15:00	PC50_0.4-0.84	✓	✓	✓			✓	✓	
ES0910203-008	10-JUL-2009 15:00	PC51_0.0-0.4	✓	✓	✓			✓	✓	
ES0910203-009	10-JUL-2009 15:00	PC51_0.4-0.53	✓	✓	✓					
ES0910203-010	10-JUL-2009 15:00	PC52_0.0-0.19	✓	✓	✓	✓				
ES0910203-011	10-JUL-2009 15:00	DUP 11	✓	✓	✓	✓				
ES0910203-012	10-JUL-2009 15:00	PC53_0.0-0.42	✓	✓	✓			✓	✓	
ES0910203-013	10-JUL-2009 15:00	PC54_0.0-0.3	✓	✓	✓		✓			✓
ES0910203-014	10-JUL-2009 15:00	PC54_0.3-0.86	✓	✓	✓			✓	✓	
ES0910203-015	10-JUL-2009 15:00	PC56_0.0-0.42	✓	✓	✓					
ES0910203-016	10-JUL-2009 15:00	PC57_0.0-0.24	✓	✓	✓			✓	✓	
ES0910203-017	10-JUL-2009 15:00	PC58_0.0-0.28	✓	✓	✓					
ES0910203-018	10-JUL-2009 15:00	PC62_0.0-0.59	✓	✓	✓					
ES0910203-019	10-JUL-2009 15:00	DUP 12	✓	✓	✓			✓	✓	
ES0910203-020	10-JUL-2009 15:00	PC64_0.0-0.25	✓	✓	✓		✓			✓
ES0910203-021	10-JUL-2009 15:00	PC64_0.25-0.65	✓	✓	✓	✓		✓	✓	
ES0910203-022	10-JUL-2009 15:00	PC65_0.0-0.25	✓	✓	✓			✓	✓	
ES0910203-024	10-JUL-2009 15:00	PC63_0.95-1.05	✓	✓	✓		✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EP132(PAH) Ultra Trace Polynuclear Aromatic Compounds
ES0910203-023	10-JUL-2009 15:00	RB05	✓

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	accountsenv@aecom.com

MR CHRISTIANN DONNETTI

- *AU Certificate of Analysis - NATA (COA)	Email	christiaan.donnetti@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	christiaan.donnetti@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	christiaan.donnetti@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	christiaan.donnetti@aecom.com
- A4 - AU Tax Invoice (INV)	Email	christiaan.donnetti@aecom.com
- Default - Chain of Custody (COC)	Email	christiaan.donnetti@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	christiaan.donnetti@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	christiaan.donnetti@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	christiaan.donnetti@aecom.com
- EDI Format - XTab (XTAB)	Email	christiaan.donnetti@aecom.com

MR RICHARD COLE

- *AU Certificate of Analysis - NATA (COA)	Email	richard.cole@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	richard.cole@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	richard.cole@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	richard.cole@aecom.com
- A4 - AU Tax Invoice (INV)	Email	richard.cole@aecom.com
- Default - Chain of Custody (COC)	Email	richard.cole@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	richard.cole@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	richard.cole@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	richard.cole@aecom.com
- EDI Format - XTab (XTAB)	Email	richard.cole@aecom.com

THE RESULTS ADDRESS

- *AU Certificate of Analysis - NATA (COA)	Email	sydney@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sydney@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sydney@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	sydney@aecom.com
- Default - Chain of Custody (COC)	Email	sydney@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	sydney@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	sydney@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	sydney@aecom.com
- EDI Format - XTab (XTAB)	Email	sydney@aecom.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES0910204**	Page	: 1 of 8
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 13-JUL-2009
Sampler	: RC	Issue Date	: 24-JUL-2009
Site	: ----		
		No. of samples received	: 20
Quote number	: SY/330/09 V3	No. of samples analysed	: 20

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

This document is issued in accordance with NATA accreditation requirements.

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*
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	Organics
Stephen Hislop	Senior Inorganic Chemist	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 insuffient 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 date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

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

- **TBT: Poor duplicate results due to sample heterogeneity. Confirmed by re-extraction and re-analysis.**
- **TBT: Sample PC63_0.0-0.5, PC54_0.0-0.3, PC56_0.0-0.42, PC62_0.0-0.59, DUP12 and PC64_0.0-0.25 shows poor surrogate recovery due to matrix interference. Confirmed by re-extraction and re-analysis.**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC63_0.0-0.5	PC49_0.0-0.5	PC50_0.0-0.4	PC50_0.4-0.84	PC51_0.0-0.4
				Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910204-001	ES0910204-002	ES0910204-003	ES0910204-004	ES0910204-005
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		44.0	36.8	43.2	----	54.9
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		3.97	2.08	----	3.86	4.87
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	5.6	6.3	----	4.6
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		33.6	72.5	60.1	----	52.4

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC51_0.4-0.53	PC52_0.0-0.19	DUP II	PC53_0.0-0.42	PC54_0.0-0.3
				Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910204-006	ES0910204-007	ES0910204-008	ES0910204-009	ES0910204-010
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		---	30.2	26.4	22.5	63.8
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		4.85	----	----	0.86	7.37
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		---	<0.5	1.5	1.3	15.2
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		---	60.2	70.6	65.7	12.6

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC54_0.3-0.86	PC56_0.0-0.42	PC57_0.0-0.24	PC58_0.0-0.28	PC62_0.0-0.59
				Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910204-011	ES0910204-012	ES0910204-013	ES0910204-014	ES0910204-015
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		---	62.4	32.8	27.2	41.3
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		5.32	----	1.57	----	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		---	7.7	<0.5	2.1	<0.5
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		---	26.7	113	66.4	23.8

Analytical Results

Sub-Matrix: SOIL			Client sample ID	DUP 12	PC64_0.0-0.25	PC64_0.25-0.65	PC65_0.0-0.25	PC63_0.95-1.05
			Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	[13-JUL-2009]
Compound	CAS Number	LOR	Unit	ES0910204-016	ES0910204-017	ES0910204-018	ES0910204-019	ES0910204-020
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	45.0	34.2	----	22.1	47.2
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	10.3	----	14.1	0.75	40.1
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	3.2	----	1.4	<0.5
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	10.4	25.6	----	73.7	68.1

Surrogate Control Limits

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP090S: Organotin Surrogate			
Tripropyltin	---	34	108

QUALITY CONTROL REPORT

Work Order	: **ES0910204**	Page	: 1 of 5
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
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Project	: S3017805 - Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 13-JUL-2009
Sampler	: RC	Issue Date	: 24-JUL-2009
Order number	: ----		
		No. of samples received	: 20
Quote number	: SY/330/09 V3	No. of samples analysed	: 20

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

This document is issued in accordance with NATA accreditation requirements.

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*
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	Organics
Stephen Hislop	Senior Inorganic Chemist	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 insuffient 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