Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES0909946**	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
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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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 20-JUL-2009
Site	: ----		
		No. of samples received	: 18
Quote number	: SY/330/09 V3	No. of samples analysed	: 18

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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*
Matt Frost	Organic Instrument Chemist	Organics
Stephen Hislop	Senior Inorganic Chemist	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Stafford Minerals - AY

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: Sample PC32_0.0-0.23 required dilution due to the presence of high level contaminants. Surrogate recovery not determined.**
- **TBT: Samples PC2_0.0-0.3, PC3_0.0-0.3, PC4_0.0-0.33, PC7_0.0-0.2, PC17_0.0-0.7, PC30_0.0-0.3 and PC32_0.0-0.23 show poor surrogate recovery due to matrix interference. Confirmed by re-extraction and re-analysis.**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC1_0.0-0.3	PC2_0.0-0.3	PC2_0.3-0.85	PC3_0.0-0.3	PC4_0.0-0.33
				Client sampling date / time	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0909946-001	ES0909946-002	ES0909946-003	ES0909946-004	ES0909946-005
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		52.1	54.1	----	52.4	52.2
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		6.47	----	6.33	6.40	5.67
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		2.7	13.7	----	2.1	1.1
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		34.0	30.2	----	31.0	27.4

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC6_0.0-0.27	PC7_0.0-0.2	DUP 05	PC21_0.0-0.35	PC32_0.0-0.23
				Client sampling date / time	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0909946-006	ES0909946-007	ES0909946-008	ES0909946-009	ES0909946-010
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		47.9	42.1	46.5	52.4	49.1
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		----	4.82	----	5.26	5.40
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		2.1	0.5	<0.5	545	<0.5
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		43.7	21.8	66.3	Not Determined	23.8

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC31_0.0-0.26	PC18_0.26-0.52	PC30_0.3-0.68	PC17_0.0-0.7	PC18_0.0-0.26
				Client sampling date / time	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0909946-011	ES0909946-012	ES0909946-013	ES0909946-014	ES0909946-015
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		53.8	----	----	46.9	46.0
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		5.11	5.83	5.86	3.46	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		7.9	----	----	1.3	1.5
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		69.5	----	----	25.1	43.3

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC30_0.0-0.3	PC16_0.0-0.3	PC16_0.3-0.76	----	----
			Client sampling date / time	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	----	----
Compound	CAS Number	LOR	Unit	ES0909946-016	ES0909946-017	ES0909946-018	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	51.0	45.4	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	----	----	4.95	----	----
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	26.4	0.6	----	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	27.0	62.8	----	----	----

Surrogate Control Limits

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

QUALITY CONTROL REPORT

Work Order	: **ES0909946**	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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 20-JUL-2009
Order number	: ----		
		No. of samples received	: 18
Quote number	: SY/330/09 V3	No. of samples analysed	: 18

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

This Quality Control Report contains the following information:

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

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Signatories	*Position*	*Accreditation Category*
Matt Frost	Organic Instrument Chemist	Organics
Stephen Hislop	Senior Inorganic Chemist	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Stafford Minerals - AY

General Comments

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

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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: 1037210)									
EB0910824-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	85.2	85.4	0.3	0% - 20%
EB0910914-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	42.6	42.3	0.7	0% - 20%
EA055: Moisture Content (QC Lot: 1037211)									
ES0909946-011	PC31_0.0-0.26	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	53.8	52.5	2.5	0% - 20%
EP005: Total Organic Carbon (TOC) (QC Lot: 1038072)									
ES0909946-001	PC1_0.0-0.3	EP005: Total Organic Carbon	---	0.02	%	6.47	6.36	1.8	0% - 20%
ES0909946-014	PC17_0.0-0.7	EP005: Total Organic Carbon	---	0.02	%	3.46	3.45	0.4	0% - 20%
EP090: Organotin Compounds (QC Lot: 1036329)									
ES0909946-001	SG2	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	2.7	1.9	34.8	No Limit
ES0909946-008	DUP 05	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 1036330)									
ES0909946-015	PC18_0.0-0.26	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	1.5	1.2	18.6	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: 1038072)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	98.9	70	130
EP090: Organotin Compounds (QCLot: 1036329)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	44.1	28	129
EP090: Organotin Compounds (QCLot: 1036330)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	79.4	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: 1036329)							
ES0909940-004	Anonymous	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	36.2	20	130
EP090: Organotin Compounds (QCLot: 1036330)							
ES0909947-003	Anonymous	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	52.6	20	130

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0909946**	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
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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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 20-JUL-2009
Order number	: ----		
		No. of samples received	: 18
Quote number	: SY/330/09 V3	No. of samples analysed	: 18

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

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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								
PC1_0.0-0.3,	PC2_0.0-0.3,	**07-JUL-2009**	**----**	----	----	**13-JUL-2009**	14-JUL-2009	✓
PC3_0.0-0.3,	PC4_0.0-0.33,							
PC6_0.0-0.27,	PC7_0.0-0.2,							
DUP 05,	PC21_0.0-0.35,							
PC32_0.0-0.23,	PC31_0.0-0.26,							
PC17_0.0-0.7,	PC18_0.0-0.26,							
PC30_0.0-0.3,	PC16_0.0-0.3							
EP005: Total Organic Carbon (TOC)								
Soil Glass Jar - Unpreserved								
PC1_0.0-0.3,	PC2_0.3-0.85,	**07-JUL-2009**	**13-JUL-2009**	04-AUG-2009	✓	**14-JUL-2009**	04-AUG-2009	✓
PC3_0.0-0.3,	PC4_0.0-0.33,							
PC7_0.0-0.2,	PC21_0.0-0.35,							
PC32_0.0-0.23,	PC31_0.0-0.26,							
PC18_0.26-0.52,	PC30_0.3-0.68,							
PC17_0.0-0.7,	PC16_0.3-0.76							
EP090: Organotin Compounds								
Soil Glass Jar - Unpreserved								
PC18_0.0-0.26,	PC30_0.0-0.3,	**07-JUL-2009**	**13-JUL-2009**	21-JUL-2009	✓	**14-JUL-2009**	22-AUG-2009	✓
PC16_0.0-0.3								
Soil Glass Jar - Unpreserved								
PC1_0.0-0.3,	PC2_0.0-0.3,	**07-JUL-2009**	**13-JUL-2009**	21-JUL-2009	✓	**15-JUL-2009**	22-AUG-2009	✓
PC3_0.0-0.3,	PC4_0.0-0.33,							
PC6_0.0-0.27,	PC7_0.0-0.2,							
DUP 05,	PC21_0.0-0.35,							
PC32_0.0-0.23,	PC31_0.0-0.26,							
PC17_0.0-0.7								

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	3	28	**10.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	3	11	**27.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	2	11	**18.2**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organotin Analysis	EP090	2	11	**18.2**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	2	11	**18.2**	**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

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

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	**Analyte**	CAS Number	Data	Limits	**Comment**
Samples Submitted							
EP090S: Organotin Surrogate	ES0909946-009	PC21_0.0-0.35	**Tripropyltin**	----	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**

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 2

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: ~~S40~~ S4330 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.donnethi@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 note)	TOC	PAH (ultra trace)	BTEX + TPH	SPOCAS	Grain Size	Elutriate Metals	Elutriate PAH	Cyanide	NFR	Phenols	OCP	Total PCB	Other
1	PC1_0.0-0.3	7.7.09	X					X		4 x soil jars 1 bags	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
	PC1_0.3-0.6		X							2x soil jars	✓								✓					
2	PC2_0.0-0.3									2 x soil jars	✓									✓				
3	PC2_0.3-0.85									4x soil jars 1 bags	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	
4	PC3_0.0-0.3									2 x soil jars	✓	✓	✓	✓						✓				
	PC3_0.3-0.75									1 x soil jars	✓													
5	PC4_0.0-0.33									4x soil jars 1 bag	✓	✓			✓	✓	✓	✓		✓				
6	PC6_0.0-0.27									2 x soil jars	✓	✓			✓					✓				
7	PC7_0.0-0.2									4x soil jars 1 bags	✓	✓	✓	✓	✓	✓	✓	✓		✓				
8	PC004 Dup05								X	1 x soil jars	✓									✓	✓	✓	✓	
	E1		X					X		1 x soil jars	QA / QC Jar for Elutriate for PC30_0.0-0.3													
	Dup07	↓	X					X		1 30ml Jar	✓													

Environmental Division
Sydney
Work Order
ES0909946
Telephone : +61-2-8784 8555

CONTRACT WORK
WO: ES0909946
LAB: ALS Brisbane
DATE: 08/07/09
SPLIT: ALS SYD BATCH ONLY
ES0909943
Elutriate: ES0909950
SPOCAS: ES0909943

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

Comments: E1 = QA/QC for PC30_0.3-0.69 Elutriates!!

Relinquished by:	Richard Cole	Signed:		Date: 8.7.09	
Recieved by:	Frank	Signed:		Date: 8/7/09 11am	

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

Lab Report No. | Esky ID

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BMS-PM-DV-F046

Revision: Jun 08

Grain size not required as per Richard Cole 8/7/09

Chain of Custody

2 of 2

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: SYB30 09

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Hbr
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.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 (see quote)	TOC	PAH (ultra trace)	BTEX/TPH	SPOCAS	Grain Size	Eluviate Metals	Eluviate PAH	Cyanide	TBT	Phenols	OCP	PCB Total	Other
9	PC21_0.0-0.35	7.7.09	X					X		4x soil jars 1 bag	✓	✓	✓	✓						✓	✓	✓	✓	
10	PC32_0.0-0.23		X					X		4x soil jar 1x bags	✓	✓			✓	✓	✓	✓		✓				
11	PC31_0.0-0.26		X					X		2x soil jars	✓	✓	✓	✓						✓	✓	✓	✓	
	PC31_0.26-0.52		X					X		1x soil jars	✓													
	PC18_0.0-0.26		X					X		1 x soil jar	✓									✓				
12	PC18_0.26-0.52		X					X		4x soil jars 1x bags	✓	✓	✓	✓	✓	✓	✓	✓						
	PC30_0.0-0.3		X					X		2x soil jars	✓									✓				
13 *	PC30_0.3-0.68		X					X		5x soil jars 1x bags	✓	✓	✓	✓	✓	✓	✓	✓	✓					
14	PC17_0.0-0.7		X					X		4x soil jars 1x bags	✓	✓	✓	✓	✓	✓	✓	✓		✓				
	PC17_0.7-1.0		X					X		1 x soil jar	✓													
	RB02	↓								2V, 2A			✓	✓										

* Extra volume supplied for lab dup/MS on elevated PAH

* 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: 8.7.09	Relinquished by:	Signed: Date:
Recieved by:	Frank	Signed:	Date: 8/7/09 11am	Recieved by:	Signed: Date:

Printed copies of this document are uncontrolled

Grain size not required as per Richard Cole 8/7/09

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES0909946**		
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)
Site	: ----		
Sampler	: RC	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 08-JUL-2009	Issue Date	: 09-JUL-2009 13:42
Client Requested Due Date	: 17-JUL-2009	Scheduled Reporting Date	: **17-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 0.8'C - Ice present
No. of coolers/boxes	: 3 HARD	No. of samples received	: 18
Sercurity Seal	: Not intact.	No. of samples analysed	: 18

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.**
- **Added extra sample #17 and #18 for TBT and TOC on 09/07/09 and recommitted.**
- **THIS BATCH ES0909946 FOR TBT/TOC ONLY AND SPLIT INTO ES0909954 (ALS SYD BATCH ONLY), ES0909950 (ELUTRIATE) & ES0909943 (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
ES0909946-001	07-JUL-2009 15:00	PC1_0.0-0.3	✓	✓	✓
ES0909946-002	07-JUL-2009 15:00	PC2_0.0-0.3		✓	✓
ES0909946-003	07-JUL-2009 15:00	PC2_0.3-0.85	✓		
ES0909946-004	07-JUL-2009 15:00	PC3_0.0-0.3	✓	✓	✓
ES0909946-005	07-JUL-2009 15:00	PC4_0.0-0.33	✓	✓	✓
ES0909946-006	07-JUL-2009 15:00	PC6_0.0-0.27		✓	✓
ES0909946-007	07-JUL-2009 15:00	PC7_0.0-0.2	✓	✓	✓
ES0909946-008	07-JUL-2009 15:00	DUP 05		✓	✓
ES0909946-009	07-JUL-2009 15:00	PC21_0.0-0.35	✓	✓	✓
ES0909946-010	07-JUL-2009 15:00	PC32_0.0-0.23	✓	✓	✓
ES0909946-011	07-JUL-2009 15:00	PC31_0.0-0.26	✓	✓	✓
ES0909946-012	07-JUL-2009 15:00	PC18_0.26-0.52	✓		
ES0909946-013	07-JUL-2009 15:00	PC30_0.3-0.68	✓		
ES0909946-014	07-JUL-2009 15:00	PC17_0.0-0.7	✓	✓	✓
ES0909946-015	07-JUL-2009 15:00	PC18_0.0-0.26		✓	✓
ES0909946-016	07-JUL-2009 15:00	PC30_0.0-0.3		✓	✓
ES0909946-017	07-JUL-2009 15:00	PC16_0.0-0.3		✓	✓
ES0909946-018	07-JUL-2009 15:00	PC16_0.3-0.76	✓		

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	: **ES0909947**	Page	: 1 of 4
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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 17-JUL-2009
Site	: ----		
		No. of samples received	: 5
Quote number	: SY/330/09 V3	No. of samples analysed	: 5

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*
Matt Frost	Organic Instrument Chemist	Organics
Stephen Hislop	Senior Inorganic Chemist	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Stafford Minerals - AY

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: Sample PC33_0.0-0.2 shows poor surrogate recovery due to matrix interference. Confirmed by re-extraction and re-analysis.**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC22_0.0-0.2	PC22_0.3-0.5	PC33_0.0-0.2	PC33_0.3-0.5	DUP 04
				Client sampling date / time	06-JUL-2009 15:00	06-JUL-2009 15:00	06-JUL-2009 15:00	06-JUL-2009 15:00	06-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0909947-001	ES0909947-002	ES0909947-003	ES0909947-004	ES0909947-005
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		49.2	----	52.2	----	49.5
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		----	4.20	5.23	5.57	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		10.6	----	12.6	----	18.0
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		58.8	----	31.7	----	52.4

Surrogate Control Limits

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

QUALITY CONTROL REPORT

Work Order	: **ES0909947**	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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 17-JUL-2009
Order number	: ----		
		No. of samples received	: 5
Quote number	: SY/330/09 V3	No. of samples analysed	: 5

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*
Matt Frost	Organic Instrument Chemist	Organics
Stephen Hislop	Senior Inorganic Chemist	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Stafford Minerals - AY

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: 1034783)									
ES0909940-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	53.4	53.7	0.4	0% - 20%
EP005: Total Organic Carbon (TOC) (QC Lot: 1038075)									
ES0909947-002	PC22_0.3-0.5	EP005: Total Organic Carbon	---	0.02	%	4.20	4.36	3.7	0% - 20%
EP090: Organotin Compounds (QC Lot: 1036330)									
ES0909946-015	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	1.5	1.2	18.6	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: 1038075)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	98.9	70	130
EP090: Organotin Compounds (QCLot: 1036330)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	79.4	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: 1036330)							
ES0909947-003	PC30_0.0-0.3	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	52.6	20	130

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0909947**	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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 17-JUL-2009
Order number	: ----		
		No. of samples received	: 5
Quote number	: SY/330/09 V3	No. of samples analysed	: 5

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								
PC22_0.0-0.2, DUP 04	PC33_0.0-0.2,	**06-JUL-2009**	**----**	----	----	**09-JUL-2009**	13-JUL-2009	✓
EP005: Total Organic Carbon (TOC)								
Soil Glass Jar - Unpreserved								
PC22_0.3-0.5, PC33_0.3-0.5	PC33_0.0-0.2,	**06-JUL-2009**	**13-JUL-2009**	03-AUG-2009	✓	**14-JUL-2009**	03-AUG-2009	✓
EP090: Organotin Compounds								
Soil Glass Jar - Unpreserved								
PC22_0.0-0.2, DUP 04	PC33_0.0-0.2,	**06-JUL-2009**	**13-JUL-2009**	20-JUL-2009	✓	**14-JUL-2009**	22-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	1	10	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organotin Analysis	EP090	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	4	**25.0**	**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

- **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.

1 of 1

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: S3017805
Project Name: Port Kembla Outer Mbr
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 above for metals)	TOC	PAH (ultra trace)	BTEX TPH	SPOCAS	Grain Size	Eluviate Metals	Eluviate PAH	Cyanide	TBT	Phenols	OCP	Total PCBs	Other
1	PC22_0.0-0.2	6.7.09	X					X			✓									✓	✓	✓	✓	
2	PC22_0.3-0.5	↓	X					X			✓	✓	✓	✓					✓					
3	PC33_0.0-0.2		X					X		2 x soil jars	✓	✓	✓	✓						✓	✓	✓	✓	
4	PC33_0.3-0.5		X					X		*4 x soil jars 1 bags	✓	✓			✓	✓	✓	✓						
5	DUP04									4 x soil jars	✓									✓	✓	✓	✓	

Environmental Division
Sydney
Work Order
ES0909947
Telephone : +61-2-8784 8555

CONTRACT WORK
WO: ES0909947
LAB: ALS Brisbane
DATE: 08/07/09
SPLIT: ALS SYD BATCH ONLY (ES0909955)

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

Comments: Eluviate: ES0909947 SPOCAS: ES0909944

Relinquished by:	Richard Cole	Signed:	Date: 8/7/09	Relinquished by:		Signed:	Date:
Recieved by:	Frank	Signed:	Date: 8/7/09 11am	Recieved by:		Signed:	Date:

Lab Report No. ES0909947 Esky ID

Printed copies of this document are uncontrolled

Grain size not required as per Richard Cole 8/7/09

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES0909947**		
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)
Site	: ----		
Sampler	: RC	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 08-JUL-2009	Issue Date	: 09-JUL-2009 13:47
Client Requested Due Date	: 17-JUL-2009	Scheduled Reporting Date	: **17-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 0.8'C - Ice present
No. of coolers/boxes	: 3 HARD	No. of samples received	: 5
Sercurity Seal	: Not intact.	No. of samples analysed	: 5

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 ES0909947 FOR TBT/TOC ONLY AND SPLIT INTO ES0909955 (ALS SYD BATCH ONLY), ES0909947 (ELUTRIATE) & ES0909944 (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
ES0909947-001	06-JUL-2009 15:00	PC22_0.0-0.2		✓	✓
ES0909947-002	06-JUL-2009 15:00	PC22_0.3-0.5	✓		
ES0909947-003	06-JUL-2009 15:00	PC33_0.0-0.2	✓	✓	✓
ES0909947-004	06-JUL-2009 15:00	PC33_0.3-0.5	✓		
ES0909947-005	06-JUL-2009 15:00	DUP 04		✓	✓

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	: **ES0909950**	Page	: 1 of 9
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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 23-JUL-2009
Site	: ----		
		No. of samples received	: 9
Quote number	: SY/330/09 V3	No. of samples analysed	: 9

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

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
Wisam Abou-Maraseh	Spectroscopist	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

Analytical Results

Sub-Matrix: **ELUTRIATE**

Compound	CAS Number	LOR	Unit	Client sample ID	PC1_0.0-0.3	PC2_0.3-0.85	PC4_0.0-0.33	PC7_0.0-0.2	PC32_0.0-0.23
				Client sampling date / time	10-JUL-2009 12:00	10-JUL-2009 12:00	10-JUL-2009 12:00	10-JUL-2009 12:00	10-JUL-2009 12:00
					ES0909950-001	ES0909950-002	ES0909950-003	ES0909950-004	ES0909950-005
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG093T: Total Metals in Saline Water by ORC-ICPMS									
Selenium	7782-49-2	2	µg/L		<2	<2	<2	<2	<2
Antimony	7440-36-0	0.5	µg/L		**1.9**	**2.1**	**1.5**	**1.0**	**1.3**
Arsenic	7440-38-2	0.5	µg/L		**18.1**	**41.3**	**11.6**	**10.5**	**19.8**
Cadmium	7440-43-9	0.2	µg/L		<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	7440-47-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	7440-48-4	0.2	µg/L		<0.2	<0.2	<0.2	**0.3**	**0.3**
Copper	7440-50-8	1	µg/L		<1	<1	<1	<1	<1
Lead	7439-92-1	0.2	µg/L		**0.4**	**0.2**	**0.4**	**0.5**	**0.4**
Nickel	7440-02-0	0.5	µg/L		**2.6**	**1.0**	**1.0**	**1.4**	**1.4**
Silver	7440-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	7440-66-6	5	µg/L		<5	<5	<5	<5	<5
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylnaphthalene	91-57-6	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	83-32-9	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	208-96-8	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	120-12-7	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	56-55-3	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	50-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	205-99-2	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(e)pyrene	192-97-2	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g.h.i)perylene	191-24-2	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	207-08-9	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	218-01-9	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Coronene	191-07-1	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a.h)anthracene	53-70-3	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	206-44-0	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	86-73-7	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	91-20-3	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perylene	198-55-0	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	85-01-8	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	129-00-0	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: **ELUTRIATE**

Compound	CAS Number	LOR	Unit	Client sample ID: PC1_0.0-0.3	PC2_0.3-0.85	PC4_0.0-0.33	PC7_0.0-0.2	PC32_0.0-0.23
				Client sampling date / time: 10-JUL-2009 12:00	10-JUL-2009 12:00	10-JUL-2009 12:00	10-JUL-2009 12:00	10-JUL-2009 12:00
				ES0909950-001	ES0909950-002	ES0909950-003	ES0909950-004	ES0909950-005
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**78.3**	**100**	**60.6**	**55.9**	**64.9**
Anthracene-d10	1719-06-8	0.1	%	**89.9**	**122**	**71.6**	**66.1**	**74.1**
4-Terphenyl-d14	1718-51-0	0.1	%	**99.6**	**129**	**78.8**	**72.5**	**80.8**

Analytical Results

Sub-Matrix: ELUTRIATE				Client sample ID	PC18_0.26-0.52	PC30_0.3-0.68	PC17_0.0-0.7	ELUTRIATE WATER	----
				Client sampling date / time	10-JUL-2009 12:00	10-JUL-2009 12:00	10-JUL-2009 12:00	10-JUL-2009 12:00	----
Compound	CAS Number	LOR	Unit		ES0909950-006	ES0909950-007	ES0909950-008	ES0909950-009	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG093T: Total Metals in Saline Water by ORC-ICPMS									
Selenium	7782-49-2	2	µg/L		<2	<2	<2	<2	----
Antimony	7440-36-0	0.5	µg/L		**1.6**	**1.5**	<0.5	<0.5	----
Arsenic	7440-38-2	0.5	µg/L		**52.5**	**50.8**	**7.5**	**2.2**	----
Cadmium	7440-43-9	0.2	µg/L		<0.2	<0.2	<0.2	<0.2	----
Chromium	7440-47-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Cobalt	7440-48-4	0.2	µg/L		<0.2	**0.2**	<0.2	<0.2	----
Copper	7440-50-8	1	µg/L		<1	<1	<1	<1	----
Lead	7439-92-1	0.2	µg/L		**0.6**	**0.2**	<0.2	<0.2	----
Nickel	7440-02-0	0.5	µg/L		**1.0**	**1.0**	**1.4**	<0.5	----
Silver	7440-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Vanadium	7440-62-2	0.5	µg/L		<0.5	<0.5	<0.5	**1.3**	----
Zinc	7440-66-6	5	µg/L		**11**	<5	<5	<5	----
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
2-Methylnaphthalene	91-57-6	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Acenaphthene	83-32-9	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Acenaphthylene	208-96-8	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Anthracene	120-12-7	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Benz(a)anthracene	56-55-3	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Benzo(a)pyrene	50-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
Benzo(b)fluoranthene	205-99-2	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Benzo(e)pyrene	192-97-2	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Benzo(g.h.i)perylene	191-24-2	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Benzo(k)fluoranthene	207-08-9	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Chrysene	218-01-9	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Coronene	191-07-1	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Dibenz(a.h)anthracene	53-70-3	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Fluoranthene	206-44-0	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Fluorene	86-73-7	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Naphthalene	91-20-3	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Perylene	198-55-0	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Phenanthrene	85-01-8	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Pyrene	129-00-0	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----

Analytical Results

Sub-Matrix: ELUTRIATE				Client sample ID	PC18_0.26-0.52	PC30_0.3-0.68	PC17_0.0-0.7	ELUTRIATE WATER	----
				Client sampling date / time	10-JUL-2009 12:00	10-JUL-2009 12:00	10-JUL-2009 12:00	10-JUL-2009 12:00	----
Compound	CAS Number	LOR	Unit		ES0909950-006	ES0909950-007	ES0909950-008	ES0909950-009	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		66.6	76.7	56.6	53.7	----
Anthracene-d10	1719-06-8	0.1	%		73.1	92.9	63.9	66.0	----
4-Terphenyl-d14	1718-51-0	0.1	%		82.0	96.7	66.2	73.7	----

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC1_0.0-0.3	PC2_0.3-0.85	PC4_0.0-0.33	PC7_0.0-0.2	PC32_0.0-0.23
			Client sampling date / time	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
Compound	CAS Number	LOR	Unit	ES0909950-001	ES0909950-002	ES0909950-003	ES0909950-004	ES0909950-005
EN68: Seawater Elutriate Testing Procedure								
Seawater Sampling Date	----	0.1	--	7/7/09	7/7/09	7/7/09	7/7/09	7/7/09

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC18_0.26-0.52	PC30_0.3-0.68	PC17_0.0-0.7	ELUTRIATE WATER	----
			Client sampling date / time	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	----
Compound	CAS Number	LOR	Unit	ES0909950-006	ES0909950-007	ES0909950-008	ES0909950-009	----
EN68: Seawater Elutriate Testing Procedure								
Seawater Sampling Date	----	0.1	--	**7/7/09**	**7/7/09**	**7/7/09**	**7/7/09**	----

Surrogate Control Limits

Sub-Matrix: **ELUTRIATE**		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	: **ES0909950**	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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 23-JUL-2009
Order number	: ----		
		No. of samples received	: 9
Quote number	: SY/330/09 V3	No. of samples analysed	: 9

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

This Quality Control Report contains the following information:

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

NATA Accredited Laboratory 825

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
Wisam Abou-Maraseh	Spectroscopist	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: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1037730)									
ES0909950-007	PC30_0.3-0.68	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES0909952-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 1042808)									
ES0909939-001	Anonymous	EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG093A-T: Cobalt	7440-48-4	0.2	µg/L	0.3	0.3	0.0	No Limit
		EG093A-T: Lead	7439-92-1	0.2	µg/L	2.6	2.7	6.8	0% - 50%
		EG093A-T: Antimony	7440-36-0	0.5	µg/L	1.2	1.2	0.0	No Limit
		EG093A-T: Arsenic	7440-38-2	0.5	µg/L	10.5	11.3	6.9	0% - 20%
		EG093A-T: Chromium	7440-47-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-T: Nickel	7440-02-0	0.5	µg/L	1.5	1.8	19.5	No Limit
		EG093A-T: Vanadium	7440-62-2	0.5	µg/L	3.8	3.8	0.0	No Limit
		EG093A-T: Copper	7440-50-8	1	µg/L	2	2	0.0	No Limit
		EG093A-T: Zinc	7440-66-6	5	µg/L	<5	<5	0.0	No Limit
ES0909950-005	PC32_0.0-0.23	EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG093A-T: Cobalt	7440-48-4	0.2	µg/L	0.3	<0.2	0.0	No Limit
		EG093A-T: Lead	7439-92-1	0.2	µg/L	0.4	0.4	0.0	No Limit
		EG093A-T: Antimony	7440-36-0	0.5	µg/L	1.3	1.5	10.0	No Limit
		EG093A-T: Arsenic	7440-38-2	0.5	µg/L	19.8	19.8	0.0	0% - 20%
		EG093A-T: Chromium	7440-47-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-T: Nickel	7440-02-0	0.5	µg/L	1.4	1.3	0.0	No Limit
		EG093A-T: Vanadium	7440-62-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-T: Copper	7440-50-8	1	µg/L	<1	<1	0.0	No Limit
		EG093A-T: Zinc	7440-66-6	5	µg/L	<5	<5	0.0	No Limit
EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 1042809)									
ES0909939-001	Anonymous	EG093B-T: Selenium	7782-49-2	2	µg/L	<2	<2	0.0	No Limit
ES0909950-005	PC32_0.0-0.23	EG093B-T: Selenium	7782-49-2	2	µg/L	<2	<2	0.0	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1037885)									
ES0909950-007	PC30_0.3-0.68	EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP132: 3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: 2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1037885) - continued									
ES0909950-007	PC30_0.3-0.68	EP132: Anthracene	120-12-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Benzo(g.h.i)perylene	191-24-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Chrysene	218-01-9	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Coronene	191-07-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Dibenz(a.h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Perylene	198-55-0	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Phenanthrene	85-01-8	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	0.0	No Limit

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1037730)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	108	81	119
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1042808)								
EG093A-T: Antimony	7440-36-0	0.5	µg/L	<0.5	----	----	----	----
EG093A-T: Arsenic	7440-38-2	0.5	µg/L	<0.5	10 µg/L	98.2	89	125
EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	10 µg/L	85.4	78	112
EG093A-T: Chromium	7440-47-3	0.5	µg/L	<0.5	10 µg/L	94.5	86	126
EG093A-T: Cobalt	7440-48-4	0.2	µg/L	<0.2	10 µg/L	95.0	90	126
EG093A-T: Copper	7440-50-8	1	µg/L	<1	10 µg/L	100	87	123
EG093A-T: Lead	7439-92-1	0.2	µg/L	<0.2	10 µg/L	95.5	89	121
EG093A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	100	85	125
EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	1 µg/L	91.4	70	130
EG093A-T: Vanadium	7440-62-2	0.5	µg/L	<0.5	10 µg/L	99.4	87	121
EG093A-T: Zinc	7440-66-6	5	µg/L	<5	10 µg/L	84.6	82	128
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1042809)								
EG093B-T: Selenium	7782-49-2	2	µg/L	<2	10 µg/L	93.3	75	130
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1036201)								
EP132: 3-Methylcholanthrene	56-49-5	0.10	µg/L	<0.1	2 µg/L	92.8	65.8	121
EP132: 2-Methylnaphthalene	91-57-6	0.10	µg/L	<0.1	2 µg/L	97.3	67.7	112
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.10	µg/L	<0.1	2 µg/L	98.3	11.6	146
EP132: Acenaphthene	83-32-9	0.10	µg/L	<0.1	2 µg/L	98.7	73.2	111
EP132: Acenaphthylene	208-96-8	0.10	µg/L	<0.1	2 µg/L	91.0	72.4	112
EP132: Anthracene	120-12-7	0.10	µg/L	<0.1	2 µg/L	96.6	73.4	113
EP132: Benz(a)anthracene	56-55-3	0.10	µg/L	<0.1	2 µg/L	108	73.6	114
EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	2 µg/L	98.0	75.2	117
EP132: Benzo(b)fluoranthene	205-99-2	0.10	µg/L	<0.1	2 µg/L	114	71.4	119
EP132: Benzo(e)pyrene	192-97-2	0.10	µg/L	<0.1	2 µg/L	114	75.3	118
EP132: Benzo(g.h.i)perylene	191-24-2	0.10	µg/L	<0.1	2 µg/L	111	66.6	121
EP132: Benzo(k)fluoranthene	207-08-9	0.10	µg/L	<0.1	2 µg/L	106	74.8	118
EP132: Chrysene	218-01-9	0.10	µg/L	<0.1	2 µg/L	105	69.6	120
EP132: Coronene	191-07-1	0.10	µg/L	<0.1	2 µg/L	106	47.4	131
EP132: Dibenz(a.h)anthracene	53-70-3	0.10	µg/L	<0.1	2 µg/L	112	71.5	117
EP132: Fluoranthene	206-44-0	0.10	µg/L	<0.1	2 µg/L	113	74.8	117
EP132: Fluorene	86-73-7	0.10	µg/L	<0.1	2 µg/L	101	72.9	114
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	0.10	µg/L	<0.1	2 µg/L	110	67.8	119

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1036201) - continued								
EP132: N-2-Fluorenyl Acetamide	53-96-3	0.10	µg/L	<0.1	20 µg/L	123	53.6	131
EP132: Naphthalene	91-20-3	0.10	µg/L	<0.1	2 µg/L	96.3	68.3	116
EP132: Perylene	198-55-0	0.10	µg/L	<0.1	2 µg/L	97.8	68	122
EP132: Phenanthrene	85-01-8	0.10	µg/L	<0.1	2 µg/L	105	74.8	112
EP132: Pyrene	129-00-0	0.10	µg/L	<0.1	2 µg/L	114	75.1	117
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1037885)								
EP132: 3-Methylcholanthrene	56-49-5	0.10	µg/L	<0.1	2 µg/L	96.6	65.8	121
EP132: 2-Methylnaphthalene	91-57-6	0.10	µg/L	<0.1	2 µg/L	104	67.7	112
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.10	µg/L	<0.1	2 µg/L	96.4	11.6	146
EP132: Acenaphthene	83-32-9	0.10	µg/L	<0.1	2 µg/L	105	73.2	111
EP132: Acenaphthylene	208-96-8	0.10	µg/L	<0.1	2 µg/L	105	72.4	112
EP132: Anthracene	120-12-7	0.10	µg/L	<0.1	2 µg/L	102	73.4	113
EP132: Benz(a)anthracene	56-55-3	0.10	µg/L	<0.1	2 µg/L	110	73.6	114
EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	2 µg/L	99.2	75.2	117
EP132: Benzo(b)fluoranthene	205-99-2	0.10	µg/L	<0.1	2 µg/L	101	71.4	119
EP132: Benzo(e)pyrene	192-97-2	0.10	µg/L	<0.1	2 µg/L	100	75.3	118
EP132: Benzo(g.h.i)perylene	191-24-2	0.10	µg/L	<0.1	2 µg/L	90.5	66.6	121
EP132: Benzo(k)fluoranthene	207-08-9	0.10	µg/L	<0.1	2 µg/L	101	74.8	118
EP132: Chrysene	218-01-9	0.10	µg/L	<0.1	2 µg/L	107	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	88.4	71.5	117
EP132: Fluoranthene	206-44-0	0.10	µg/L	<0.1	2 µg/L	111	74.8	117
EP132: Fluorene	86-73-7	0.10	µg/L	<0.1	2 µg/L	104	72.9	114
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	0.10	µg/L	<0.1	2 µg/L	89.3	67.8	119
EP132: N-2-Fluorenyl Acetamide	53-96-3	0.10	µg/L	<0.1	20 µg/L	105	53.6	131
EP132: Naphthalene	91-20-3	0.10	µg/L	<0.1	2 µg/L	102	68.3	116
EP132: Perylene	198-55-0	0.10	µg/L	<0.1	2 µg/L	96.1	68	122
EP132: Phenanthrene	85-01-8	0.10	µg/L	<0.1	2 µg/L	103	74.8	112
EP132: Pyrene	129-00-0	0.10	µg/L	<0.1	2 µg/L	111	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: **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: 1037730)							
ES0909950-007	PC30_0.3-0.68	EG035T: Mercury	7439-97-6	0.010 mg/L	104	70	130
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1042808)							
ES0909939-001	Anonymous	EG093A-T: Arsenic	7440-38-2	50 µg/L	111	70	130
		EG093A-T: Cadmium	7440-43-9	12.5 µg/L	87.9	70	130
		EG093A-T: Chromium	7440-47-3	50 µg/L	99.6	70	130
		EG093A-T: Cobalt	7440-48-4	50 µg/L	104	70	130
		EG093A-T: Copper	7440-50-8	50 µg/L	107	70	130
		EG093A-T: Lead	7439-92-1	50 µg/L	92.8	70	130
		EG093A-T: Nickel	7440-02-0	50 µg/L	106	70	130
		EG093A-T: Vanadium	7440-62-2	50 µg/L	99.2	70	130
		EG093A-T: Zinc	7440-66-6	50 µg/L	91.5	70	130
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1037885)							
ES0909950-007	PC30_0.3-0.68	EP132: 3-Methylcholanthrene	56-49-5	2 µg/L	102	59	115
		EP132: 2-Methylnaphthalene	91-57-6	2 µg/L	116	46	120
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	2 µg/L	112	21	135
		EP132: Acenaphthene	83-32-9	2 µg/L	# 116	62	114
		EP132: Acenaphthylene	208-96-8	2 µg/L	117	61	119
		EP132: Anthracene	120-12-7	2 µg/L	# 120	68	116
		EP132: Benz(a)anthracene	56-55-3	2 µg/L	# 124	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	105	69	119
		EP132: Benzo(e)pyrene	192-97-2	2 µg/L	105	71	119
		EP132: Benzo(g.h.i)perylene	191-24-2	2 µg/L	105	49	133
		EP132: Benzo(k)fluoranthene	207-08-9	2 µg/L	103	71	124
		EP132: Chrysene	218-01-9	2 µg/L	118	70	118
		EP132: Coronene	191-07-1	2 µg/L	129	29	138
		EP132: Dibenz(a.h)anthracene	53-70-3	2 µg/L	101	60	122
		EP132: Fluoranthene	206-44-0	2 µg/L	# 129	65	121
		EP132: Fluorene	86-73-7	2 µg/L	116	63	118
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	2 µg/L	101	57	123
		EP132: N-2-Fluorenyl Acetamide	53-96-3	20 µg/L	141	29	212
		EP132: Naphthalene	91-20-3	2 µg/L	113	53	115
		EP132: Perylene	198-55-0	2 µg/L	100	71	118
		EP132: Phenanthrene	85-01-8	2 µg/L	119	67	120
		EP132: Pyrene	129-00-0	2 µg/L	# 131	70	117

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0909950**	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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 23-JUL-2009
Order number	: ----		
		No. of samples received	: 9
Quote number	: SY/330/09 V3	No. of samples analysed	: 9

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

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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								
PC1_0.0-0.3,	PC2_0.3-0.85,	**10-JUL-2009**	**----**	----	----	**15-JUL-2009**	07-AUG-2009	✓
PC4_0.0-0.33,	PC7_0.0-0.2,							
PC32_0.0-0.23,	PC18_0.26-0.52,							
PC30_0.3-0.68,	PC17_0.0-0.7,							
ELUTRIATE WATER								
EG093T: Total Metals in Saline Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered								
PC1_0.0-0.3,	PC2_0.3-0.85,	**10-JUL-2009**	**18-JUL-2009**	06-JAN-2010	✓	**18-JUL-2009**	06-JAN-2010	✓
PC4_0.0-0.33,	PC7_0.0-0.2,							
PC32_0.0-0.23,	PC18_0.26-0.52,							
PC30_0.3-0.68,	PC17_0.0-0.7,							
ELUTRIATE WATER								
EN68: Seawater Elutriate Testing Procedure								
LabSplit: Leach for organics and other tests								
PC1_0.0-0.3,	PC2_0.3-0.85,	**07-JUL-2009**	**---**	---	----	**10-JUL-2009**	21-JUL-2009	✓
PC4_0.0-0.33,	PC7_0.0-0.2,							
PC32_0.0-0.23,	PC18_0.26-0.52,							
PC30_0.3-0.68,	PC17_0.0-0.7,							
ELUTRIATE WATER								
EP132B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved								
PC1_0.0-0.3,	PC2_0.3-0.85,	**10-JUL-2009**	**10-JUL-2009**	17-JUL-2009	✓	**13-JUL-2009**	19-AUG-2009	✓
PC4_0.0-0.33,	PC7_0.0-0.2,							
PC32_0.0-0.23,	PC18_0.26-0.52,							
PC17_0.0-0.7,	ELUTRIATE WATER							
Amber Glass Bottle - Unpreserved								
PC30_0.3-0.68		**10-JUL-2009**	**13-JUL-2009**	17-JUL-2009	✓	**14-JUL-2009**	22-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	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	2	17	**11.8**	**9.5**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	2	11	**18.2**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	17	**5.9**	**4.8**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	2	11	**18.2**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	17	**5.9**	**4.8**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	1	**100.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	17	**5.9**	**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
Matrix Spike (MS) Recoveries							
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909950-007	PC30_0.3-0.68	**Acenaphthene**	83-32-9	116 %	62-114%	**Recovery greater than upper data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909950-007	PC30_0.3-0.68	**Anthracene**	120-12-7	120 %	68-116%	**Recovery greater than upper data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909950-007	PC30_0.3-0.68	**Benz(a)anthracene**	56-55-3	124 %	67-122%	**Recovery greater than upper data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909950-007	PC30_0.3-0.68	**Fluoranthene**	206-44-0	129 %	65-121%	**Recovery greater than upper data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909950-007	PC30_0.3-0.68	**Pyrene**	129-00-0	131 %	70-117%	**Recovery greater than upper data quality objective**

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

Regular Sample Surrogates

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

Outliers : Analysis Holding Time Compliance

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

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

Outliers : Frequency of Quality Control Samples

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

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

Elutriates only

1 of 2

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: ~~S40~~ S4330 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.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 MIR (see quote)	TOC	PAH (ultra trace)	BTEX TPH	SPOCAS	Grain Size	Elutriate Metals	Elutriate PAH	Cyanide	TBT	Phenols	OCP	Total PCB	Other
1	PC1_0·0-0·3	7·7·09	X					X		4 x soil jars 2 bags	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
	PC1_0·3-0·6		X					X		2x soil jars	✓								✓					
	PC2_0·0-0·3		X					X		2 x soil jars	✓									✓				
2	PC2_0·3-0·85									4x soil jars 2 bags	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	
	PC3_0·0-0·3									2 x soil jars	✓	✓	✓	✓						✓				
	PC3_0·3-0·75									1 x soil jars	✓													
3	PC4_0·0-0·33									4x soil jars 1 bag	✓	✓			✓	✓	✓	✓		✓				
	PC6_0·0-0·27									2x soil jars	✓	✓			✓					✓				
4	PC7_0·0-0·2									4x soil jars 2 bags	✓	✓	✓	✓	✓	✓	✓	✓		✓				
	WWQ4 Dup05									1 x soil jars	✓									✓	✓	✓	✓	
	E1									1 x soil jars	QA	QC	Jar	for	Elutriate	for	PC30							
	Dup07	↓	X					X		1 soil Jar	✓													

Environmental Division
Sydney
Work Order
ES0909950
Telephone : +61-2-8784 8555

CONTRACT WORK
WO: ES0909950
LAB:
DATE: 08-07-09
SPLIT: ALS SYD BATCH ONLY
TBT/TOC: ES0909947
SPOCAS: ES0909947

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

Comments: E1 = QA/QC for PC30_0.3-0.68 Elutriates!!
Grain size not required as per Richard Cole 8/7/09

Relinquished by:	Richard Cole	Signed:		Date: 8.7.09	
Recieved by:	Frank	Signed:		Date: 8/7/09 11am	
Relinquished by:		Signed:		Date:	
Recieved by:		Signed:		Date:	

Lab Report No.
Esky ID

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BMS-PM-DV-F046

Revision: Jun 08

Chain of Custody

Lot 2

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 09
Project Name: Port Kembla Outer Hbr
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.donnett@aecom.com	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Metals M12 (see note)	TBT	PAH (Culler base)	BTEX / TPH	SPOCAS	Grain size	Elutriate Metals	Elutriate PAH	Cyanide	OTBT	Phenols	OCP	PCB Total	Other
	PC21_0.0-0.35	7.7.09	X					X		4x soil jars 1 bag	✓	✓	✓	✓						✓	✓	✓	✓	
5	PC32_0.0-0.23	|	X					X		4x soil jar 1x bags	✓	✓			✓	✓	✓	✓		✓				
	PC31_0.0-0.26	|	X					X		2x soil jars	✓	✓	✓	✓						✓	✓	✓	✓	
	PC31_0.26-0.52	|	X					X		1x soil jars	✓													
	PC18_0.0-0.26	|	X					X		1 x soil jar	✓									✓				
6	PC18_0.26-0.52	|	X					X		4x soil jars 1x bags	✓	✓	✓	✓	✓	✓	✓	✓						
	PC30_0.0-0.3	|	X					X		2x soil jars	✓									✓				
7 *	PC30_0.3-0.68	|	X					X		5x soil jars 1x bags	✓	✓	✓	✓	✓	✓	✓	✓	✓			*		Extra volume supplied for lab dup / MS on elutriate PAH
8	PC17_0.0-0.7	|	X					X		4x soil jars 1x bags	✓	✓	✓	✓	✓	✓	✓	✓		✓				
	PC17_0.7-1.0	|	X					X		1 x soil jar	✓													
	RB02	↓								2V, 2A			✓	✓										
9	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: 8.7.09	
Recieved by:	Frank	Signed:	Date: 8/7/09 11am	
Relinquished by:		Signed:	Date:	
Recieved by:		Signed:	Date:	

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Grain size not required as per Richard Cole

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES0909950**		
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)
Site	: ----		
Sampler	: RC	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 08-JUL-2009	Issue Date	: 08-JUL-2009 17:36
Client Requested Due Date	: 22-JUL-2009	Scheduled Reporting Date	: **22-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 0.8'C - Ice present
No. of coolers/boxes	: 3 HARD	No. of samples received	: 9
Sercurity Seal	: Not intact.	No. of samples analysed	: 9

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **THIS BATCH ES0909950 FOR ELUTRIATE ONLY AND SPLIT INTO ES0909954 (ALS SYD BATCH ONLY), ES0909946 (TBT/TOC) & ES0909943 (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
ES0909950-001	08-JUL-2009 10:00	PC1_0.0-0.3	✓	✓	✓	✓
ES0909950-002	08-JUL-2009 10:00	PC2_0.3-0.85	✓	✓	✓	✓
ES0909950-003	08-JUL-2009 10:00	PC4_0.0-0.33	✓	✓	✓	✓
ES0909950-004	08-JUL-2009 10:00	PC7_0.0-0.2	✓	✓	✓	✓
ES0909950-005	08-JUL-2009 10:00	PC32_0.0-0.23	✓	✓	✓	✓
ES0909950-006	08-JUL-2009 10:00	PC18_0.26-0.52	✓	✓	✓	✓
ES0909950-007	08-JUL-2009 10:00	PC30_0.3-0.68	✓	✓	✓	✓
ES0909950-008	08-JUL-2009 10:00	PC17_0.0-0.7	✓	✓	✓	✓
ES0909950-009	08-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	: **ES0909952**	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
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 08-JUL-2009
Sampler	: RC	Issue Date	: 23-JUL-2009
Site	: ----		
		No. of samples received	: 2
Quote number	: SY/330/09 V3	No. of samples analysed	: 2

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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
Wisam Abou-Maraseh	Spectroscopist	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

Analytical Results

Sub-Matrix: ELUTRIATE				Client sample ID	PC33_0.3-0.5	ELUTRIATE WATER	----	----	----
				Client sampling date / time	10-JUL-2009 12:00	10-JUL-2009 12:00	----	----	----
Compound	CAS Number	LOR	Unit		ES0909952-001	ES0909952-002	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG093T: Total Metals in Saline Water by ORC-ICPMS									
Selenium	7782-49-2	2	µg/L		<2	<2	----	----	----
Antimony	7440-36-0	0.5	µg/L		**2.7**	<0.5	----	----	----
Arsenic	7440-38-2	0.5	µg/L		**59.1**	**2.1**	----	----	----
Cadmium	7440-43-9	0.2	µg/L		<0.2	<0.2	----	----	----
Chromium	7440-47-3	0.5	µg/L		<0.5	<0.5	----	----	----
Cobalt	7440-48-4	0.2	µg/L		<0.2	<0.2	----	----	----
Copper	7440-50-8	1	µg/L		<1	<1	----	----	----
Lead	7439-92-1	0.2	µg/L		**0.4**	**0.2**	----	----	----
Nickel	7440-02-0	0.5	µg/L		**0.9**	<0.5	----	----	----
Silver	7440-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Vanadium	7440-62-2	0.5	µg/L		**0.6**	**1.4**	----	----	----
Zinc	7440-66-6	5	µg/L		<5	<5	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	0.1	µg/L		<0.1	<0.1	----	----	----
2-Methylnaphthalene	91-57-6	0.1	µg/L		<0.1	<0.1	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L		<0.1	<0.1	----	----	----
Acenaphthene	83-32-9	0.1	µg/L		<0.1	<0.1	----	----	----
Acenaphthylene	208-96-8	0.1	µg/L		<0.1	<0.1	----	----	----
Anthracene	120-12-7	0.1	µg/L		<0.1	<0.1	----	----	----
Benz(a)anthracene	56-55-3	0.1	µg/L		<0.1	<0.1	----	----	----
Benzo(a)pyrene	50-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
Benzo(b)fluoranthene	205-99-2	0.1	µg/L		<0.1	<0.1	----	----	----
Benzo(e)pyrene	192-97-2	0.1	µg/L		<0.1	<0.1	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.1	µg/L		<0.1	<0.1	----	----	----
Benzo(k)fluoranthene	207-08-9	0.1	µg/L		<0.1	<0.1	----	----	----
Chrysene	218-01-9	0.1	µg/L		<0.1	<0.1	----	----	----
Coronene	191-07-1	0.1	µg/L		<0.1	<0.1	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.1	µg/L		<0.1	<0.1	----	----	----
Fluoranthene	206-44-0	0.1	µg/L		<0.1	<0.1	----	----	----
Fluorene	86-73-7	0.1	µg/L		<0.1	<0.1	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L		<0.1	<0.1	----	----	----
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L		<0.1	<0.1	----	----	----
Naphthalene	91-20-3	0.1	µg/L		<0.1	<0.1	----	----	----
Perylene	198-55-0	0.1	µg/L		<0.1	<0.1	----	----	----
Phenanthrene	85-01-8	0.1	µg/L		<0.1	<0.1	----	----	----
Pyrene	129-00-0	0.1	µg/L		<0.1	<0.1	----	----	----

Analytical Results

Sub-Matrix: **ELUTRIATE**				Client sample ID	PC33_0.3-0.5	ELUTRIATE WATER	----	----	----
				Client sampling date / time	10-JUL-2009 12:00	10-JUL-2009 12:00	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES0909952-001**	**ES0909952-002**	**----**	**----**	**----**
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**60.2**	**64.5**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**73.2**	**77.5**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**79.9**	**87.3**	----	----	----

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC33_0.3-0.5	ELUTRIATE WATER	----	----	----
			Client sampling date / time	06-JUL-2009 15:00	06-JUL-2009 15:00	----	----	----
Compound	CAS Number	LOR	Unit	ES0909952-001	ES0909952-002	----	----	----
EN68: Seawater Elutriate Testing Procedure								
Seawater Sampling Date	----	0.1	--	**6/7/09**	**6/7/09**	----	----	----

Surrogate Control Limits

Sub-Matrix: **ELUTRIATE**		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	: **ES0909952**	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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 23-JUL-2009
Order number	: ----		
		No. of samples received	: 2
Quote number	: SY/330/09 V3	No. of samples analysed	: 2

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

This Quality Control Report contains the following information:

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

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
Wisam Abou-Maraseh	Spectroscopist	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: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1037730)									
ES0909950-007	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES0909952-002	ELUTRIATE WATER	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 1042808)									
ES0909939-001	Anonymous	EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG093A-T: Cobalt	7440-48-4	0.2	µg/L	0.3	0.3	0.0	No Limit
		EG093A-T: Lead	7439-92-1	0.2	µg/L	2.6	2.7	6.8	0% - 50%
		EG093A-T: Antimony	7440-36-0	0.5	µg/L	1.2	1.2	0.0	No Limit
		EG093A-T: Arsenic	7440-38-2	0.5	µg/L	10.5	11.3	6.9	0% - 20%
		EG093A-T: Chromium	7440-47-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-T: Nickel	7440-02-0	0.5	µg/L	1.5	1.8	19.5	No Limit
		EG093A-T: Vanadium	7440-62-2	0.5	µg/L	3.8	3.8	0.0	No Limit
		EG093A-T: Copper	7440-50-8	1	µg/L	2	2	0.0	No Limit
		EG093A-T: Zinc	7440-66-6	5	µg/L	<5	<5	0.0	No Limit
ES0909950-005	Anonymous	EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG093A-T: Cobalt	7440-48-4	0.2	µg/L	0.3	<0.2	0.0	No Limit
		EG093A-T: Lead	7439-92-1	0.2	µg/L	0.4	0.4	0.0	No Limit
		EG093A-T: Antimony	7440-36-0	0.5	µg/L	1.3	1.5	10.0	No Limit
		EG093A-T: Arsenic	7440-38-2	0.5	µg/L	19.8	19.8	0.0	0% - 20%
		EG093A-T: Chromium	7440-47-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-T: Nickel	7440-02-0	0.5	µg/L	1.4	1.3	0.0	No Limit
		EG093A-T: Vanadium	7440-62-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-T: Copper	7440-50-8	1	µg/L	<1	<1	0.0	No Limit
		EG093A-T: Zinc	7440-66-6	5	µg/L	<5	<5	0.0	No Limit
EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 1042809)									
ES0909939-001	Anonymous	EG093B-T: Selenium	7782-49-2	2	µg/L	<2	<2	0.0	No Limit
ES0909950-005	Anonymous	EG093B-T: Selenium	7782-49-2	2	µg/L	<2	<2	0.0	No Limit

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1037730)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	108	81	119
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1042808)								
EG093A-T: Antimony	7440-36-0	0.5	µg/L	<0.5	----	----	----	----
EG093A-T: Arsenic	7440-38-2	0.5	µg/L	<0.5	10 µg/L	98.2	89	125
EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	10 µg/L	85.4	78	112
EG093A-T: Chromium	7440-47-3	0.5	µg/L	<0.5	10 µg/L	94.5	86	126
EG093A-T: Cobalt	7440-48-4	0.2	µg/L	<0.2	10 µg/L	95.0	90	126
EG093A-T: Copper	7440-50-8	1	µg/L	<1	10 µg/L	100	87	123
EG093A-T: Lead	7439-92-1	0.2	µg/L	<0.2	10 µg/L	95.5	89	121
EG093A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	100	85	125
EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	1 µg/L	91.4	70	130
EG093A-T: Vanadium	7440-62-2	0.5	µg/L	<0.5	10 µg/L	99.4	87	121
EG093A-T: Zinc	7440-66-6	5	µg/L	<5	10 µg/L	84.6	82	128
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1042809)								
EG093B-T: Selenium	7782-49-2	2	µg/L	<2	10 µg/L	93.3	75	130
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1036201)								
EP132: 3-Methylcholanthrene	56-49-5	0.10	µg/L	<0.1	2 µg/L	92.8	65.8	121
EP132: 2-Methylnaphthalene	91-57-6	0.10	µg/L	<0.1	2 µg/L	97.3	67.7	112
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.10	µg/L	<0.1	2 µg/L	98.3	11.6	146
EP132: Acenaphthene	83-32-9	0.10	µg/L	<0.1	2 µg/L	98.7	73.2	111
EP132: Acenaphthylene	208-96-8	0.10	µg/L	<0.1	2 µg/L	91.0	72.4	112
EP132: Anthracene	120-12-7	0.10	µg/L	<0.1	2 µg/L	96.6	73.4	113
EP132: Benz(a)anthracene	56-55-3	0.10	µg/L	<0.1	2 µg/L	108	73.6	114
EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	2 µg/L	98.0	75.2	117
EP132: Benzo(b)fluoranthene	205-99-2	0.10	µg/L	<0.1	2 µg/L	114	71.4	119
EP132: Benzo(e)pyrene	192-97-2	0.10	µg/L	<0.1	2 µg/L	114	75.3	118
EP132: Benzo(g.h.i)perylene	191-24-2	0.10	µg/L	<0.1	2 µg/L	111	66.6	121
EP132: Benzo(k)fluoranthene	207-08-9	0.10	µg/L	<0.1	2 µg/L	106	74.8	118
EP132: Chrysene	218-01-9	0.10	µg/L	<0.1	2 µg/L	105	69.6	120
EP132: Coronene	191-07-1	0.10	µg/L	<0.1	2 µg/L	106	47.4	131
EP132: Dibenz(a.h)anthracene	53-70-3	0.10	µg/L	<0.1	2 µg/L	112	71.5	117
EP132: Fluoranthene	206-44-0	0.10	µg/L	<0.1	2 µg/L	113	74.8	117
EP132: Fluorene	86-73-7	0.10	µg/L	<0.1	2 µg/L	101	72.9	114
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	0.10	µg/L	<0.1	2 µg/L	110	67.8	119

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1036201) - continued								
EP132: N-2-Fluorenyl Acetamide	53-96-3	0.10	µg/L	<0.1	20 µg/L	123	53.6	131
EP132: Naphthalene	91-20-3	0.10	µg/L	<0.1	2 µg/L	96.3	68.3	116
EP132: Perylene	198-55-0	0.10	µg/L	<0.1	2 µg/L	97.8	68	122
EP132: Phenanthrene	85-01-8	0.10	µg/L	<0.1	2 µg/L	105	74.8	112
EP132: Pyrene	129-00-0	0.10	µg/L	<0.1	2 µg/L	114	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: **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: 1037730)							
ES0909950-007	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	104	70	130
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1042808)							
ES0909939-001	Anonymous	EG093A-T: Arsenic	7440-38-2	50 µg/L	111	70	130
		EG093A-T: Cadmium	7440-43-9	12.5 µg/L	87.9	70	130
		EG093A-T: Chromium	7440-47-3	50 µg/L	99.6	70	130
		EG093A-T: Cobalt	7440-48-4	50 µg/L	104	70	130
		EG093A-T: Copper	7440-50-8	50 µg/L	107	70	130
		EG093A-T: Lead	7439-92-1	50 µg/L	92.8	70	130
		EG093A-T: Nickel	7440-02-0	50 µg/L	106	70	130
		EG093A-T: Vanadium	7440-62-2	50 µg/L	99.2	70	130
		EG093A-T: Zinc	7440-66-6	50 µg/L	91.5	70	130

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0909952**	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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 23-JUL-2009
Order number	: ----		
		No. of samples received	: 2
Quote number	: SY/330/09 V3	No. of samples analysed	: 2

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

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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								
PC33_0.3-0.5,	ELUTRIATE WATER	**10-JUL-2009**	**----**	----	----	**15-JUL-2009**	07-AUG-2009	✓
EG093T: Total Metals in Saline Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered								
PC33_0.3-0.5,	ELUTRIATE WATER	**10-JUL-2009**	**18-JUL-2009**	06-JAN-2010	✓	**18-JUL-2009**	06-JAN-2010	✓
EN68: Seawater Elutriate Testing Procedure								
LabSplit: Leach for organics and other tests								
PC33_0.3-0.5,	ELUTRIATE WATER	**06-JUL-2009**	**---**	---	----	**10-JUL-2009**	20-JUL-2009	✓
EP132B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved								
PC33_0.3-0.5,	ELUTRIATE WATER	**10-JUL-2009**	**10-JUL-2009**	17-JUL-2009	✓	**13-JUL-2009**	19-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)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	2	17	**11.8**	**9.5**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	17	**5.9**	**4.8**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	17	**5.9**	**4.8**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	17	**5.9**	**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

- **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.**

Elutriates only

1 of 1

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:

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 09

Project Name: Port Kembla Outer Mbr
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 above for metals)	TOC	PAH (ultra trace)	BTEX / TPH	SPOCAS	Grain Size	Eliminate Metals	Eliminate PAH	Cyanide	TBT	Phenols	OCP	Total PCBs	Other
	PC22_0.0-0.2	6.7.09	X					X			✓									✓	✓	✓	✓	
	PC22_0.3-0.5	↓	X					X			✓	✓	✓	✓					✓					
	PC33_0.0-0.2		X					X		2x soil jars	✓	✓	✓	✓						✓	✓	✓	✓	
1	PC33_0.3-0.5		X					X		4x soil jars	✓	✓			✓	✓	✓	✓						
	DUP04									1 bags										✓	✓	✓	✓	
2	Elutriate water									4 x soil jars	✓													

CONTRACT WORK
WO: ES0909952
LAB:
DATE: 08/07/09
SPLIT: ALS SYD BATCH ONLY (ES0909955)

Environmental Division
Sydney
Work Order
ES0909952
Telephone : +61-2-8784 8555

Lab Report No.

TBT/TOC ES0909947
Spocas ES0909944

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

Comments:

Relinquished by:	Richard Cole	Signed:	Date: 8/7/09	Relinquished by:	Signed: Date:
Recieved by:	Frank	Signed:	Date: 8/7/09 11am	Recieved by:	Signed: Date:

Printed copies of this document are uncontrolled

Grain size not required as per Richard Cole 8/7/09

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES0909952**		
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 2
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2009HLAENV0352 (SY/330/09)
Site	: ----		
Sampler	: RC	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 08-JUL-2009	Issue Date	: 08-JUL-2009 17:39
Client Requested Due Date	: 22-JUL-2009	Scheduled Reporting Date	: **22-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 0.8'C - Ice present
No. of coolers/boxes	: 3 HARD	No. of samples received	: 2
Sercurity Seal	: Not intact.	No. of samples analysed	: 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **THIS BATCH ES0909952 FOR ELUTRIATE ONLY AND SPLIT INTO ES0909955 (ALS SYD BATCH ONLY), ES0909947 (TBT/TOC) & ES0909944 (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
ES0909952-001	08-JUL-2009 10:00	PC33_0.3-0.5	✓	✓	✓	✓
ES0909952-002	08-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

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES0909954**	Page	: 1 of 22
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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 20-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
- Descriptive Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

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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.

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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

- **EG020T: Poor precision was obtained for some elements on sample ES0909954-021due to sample heterogeneity.**
- **EP075(SIM): LOR for particular sample(s) raised due to high moisture content.**
- **EP080: Level of Reporting raised for toluene due to ambient background levels in the laboratory.**
- **EP131A+B: Particular samples required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly. Surrogates not determined due to sample matrix interferences.**
- **EP132, EP131A+B: Poor matrix spike recovery due to sample matrix interferences.**

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC1_0.0-0.3	PC1_0.3-0.6	PC2_0.0-0.3	PC2_0.3-0.85	PC3_0.0-0.3
			Client sampling date / time	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
Compound	CAS Number	LOR	Unit	ES0909954-001	ES0909954-002	ES0909954-003	ES0909954-004	ES0909954-005
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	50.6	48.6	53.6	53.2	49.2
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	2.79	4.64	1.15	4.63	1.59
Arsenic	7440-38-2	1.00	mg/kg	72.0	151	68.1	182	81.2
Cadmium	7440-43-9	0.1	mg/kg	3.5	5.8	1.4	8.0	2.0
Chromium	7440-47-3	1.0	mg/kg	205	240	133	142	184
Copper	7440-50-8	1.0	mg/kg	1740	1860	1040	1170	1120
Cobalt	7440-48-4	0.5	mg/kg	13.4	15.6	14.2	17.1	12.5
Lead	7439-92-1	1.0	mg/kg	1650	2740	725	2980	958
Nickel	7440-02-0	1.0	mg/kg	38.1	47.1	29.5	36.4	29.9
Selenium	7782-49-2	0.1	mg/kg	20.2	16.4	6.3	12.6	8.5
Silver	7440-22-4	0.1	mg/kg	8.1	5.8	3.5	3.5	3.9
Vanadium	7440-62-2	2.0	mg/kg	107	126	117	112	108
Zinc	7440-66-6	1.0	mg/kg	2770	4300	1580	3640	2020
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	2.2	3.7	1.7	2.6	2.2
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	----	----	<0.8	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.8	----	----	<0.8	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.8	----	----	<0.8	----
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.6	----	----	<1.6	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.8	----	----	<0.8	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.8	----	----	<0.8	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.8	----	----	<0.8	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.8	----	----	<0.8	----
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.8	----	----	<0.8	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.8	----	----	<0.8	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.8	----	----	<0.8	----
Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	----	----	<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	820	----	----	800	430
C29 - C36 Fraction	----	100	mg/kg	680	----	----	650	380
EP080: BTEX								

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: PC1_0.0-0.3	PC1_0.3-0.6	PC2_0.0-0.3	PC2_0.3-0.85	PC3_0.0-0.3
				Client sampling date / time: 07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
				ES0909954-001	ES0909954-002	ES0909954-003	ES0909954-004	ES0909954-005
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	<5.00	----	----	<5.00	----
alpha-BHC	319-84-6	0.50	µg/kg	<5.00	----	----	<5.00	----
beta-BHC	319-85-7	0.50	µg/kg	<5.00	----	----	<5.00	----
delta-BHC	319-86-8	0.50	µg/kg	<5.00	----	----	<5.00	----
4.4`-DDD	72-54-8	0.50	µg/kg	<5.00	----	----	<5.00	----
4.4`-DDE	72-55-9	0.50	µg/kg	<5.00	----	----	<5.00	----
4.4`-DDT	50-29-3	0.50	µg/kg	<5.00	----	----	<5.00	----
^ DDT (total)	----	0.50	µg/kg	<5.00	----	----	<5.00	----
Dieldrin	60-57-1	0.50	µg/kg	<5.00	----	----	<5.00	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	<5.00	----	----	<5.00	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	<5.00	----	----	<5.00	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<5.00	----	----	<5.00	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<5.00	----	----	<5.00	----
Endrin	72-20-8	0.50	µg/kg	<5.00	----	----	<5.00	----
Endrin aldehyde	7421-93-4	0.50	µg/kg	<5.00	----	----	<5.00	----
Endrin ketone	53494-70-5	0.50	µg/kg	<5.00	----	----	<5.00	----
Heptachlor	76-44-8	0.50	µg/kg	<5.00	----	----	<5.00	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<5.00	----	----	<5.00	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<5.00	----	----	<5.00	----
gamma-BHC	58-89-9	0.50	µg/kg	<5.00	----	----	<5.00	----
Methoxychlor	72-43-5	0.50	µg/kg	<5.00	----	----	<5.00	----
cis-Chlordane	5103-71-9	0.50	µg/kg	<5.00	----	----	<5.00	----
trans-Chlordane	5103-74-2	0.50	µg/kg	<5.00	----	----	<5.00	----
^ Total Chlordane (sum)	----	0.50	µg/kg	<5.00	----	----	<5.00	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<50.0	----	----	<50.0	----
Aroclor 1016	12974-11-2	5.0	µg/kg	<100	----	----	<100	----
Aroclor 1221	11104-28-2	5.0	µg/kg	<100	----	----	<100	----
Aroclor 1232	11141-16-5	5.0	µg/kg	<100	----	----	<100	----
Aroclor 1242	53469-21-9	5.0	µg/kg	<100	----	----	<100	----
Aroclor 1248	12672-29-6	5.0	µg/kg	<100	----	----	<100	----
Aroclor 1254	11097-69-1	5.0	µg/kg	<100	----	----	<100	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC1_0.0-0.3	PC1_0.3-0.6	PC2_0.0-0.3	PC2_0.3-0.85	PC3_0.0-0.3
				Client sampling date / time	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0909954-001	ES0909954-002	ES0909954-003	ES0909954-004	ES0909954-005
EP131B: Polychlorinated Biphenyls (as Aroclors) - Continued									
Aroclor 1260	11096-82-5	5.0	µg/kg		<100	----	----	<100	----
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	10	µg/kg		<10	----	----	<10	<10
2-Methylnaphthalene	91-57-6	10	µg/kg		1870	----	----	540	1230
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg		<10	----	----	<10	<10
Acenaphthene	83-32-9	10	µg/kg		430	----	----	100	310
Acenaphthylene	208-96-8	10	µg/kg		1600	----	----	470	1040
Anthracene	120-12-7	10	µg/kg		960	----	----	450	740
Benz(a)anthracene	56-55-3	10	µg/kg		990	----	----	690	1070
Benzo(a)pyrene	50-32-8	10	µg/kg		1180	----	----	850	1210
Benzo(b)fluoranthene	205-99-2	10	µg/kg		1350	----	----	1120	1500
Benzo(e)pyrene	192-97-2	10	µg/kg		710	----	----	570	740
Benzo(g.h.i)perylene	191-24-2	10	µg/kg		590	----	----	280	420
Benzo(k)fluoranthene	207-08-9	10	µg/kg		790	----	----	410	710
Chrysene	218-01-9	10	µg/kg		930	----	----	610	940
Coronene	191-07-1	10	µg/kg		90	----	----	40	70
Dibenz(a.h)anthracene	53-70-3	10	µg/kg		160	----	----	80	120
Fluoranthene	206-44-0	10	µg/kg		2900	----	----	1620	2820
Fluorene	86-73-7	10	µg/kg		1380	----	----	420	920
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg		520	----	----	270	410
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg		<100	----	----	<100	<100
Naphthalene	91-20-3	10	µg/kg		17300	----	----	3500	10300
Perylene	198-55-0	10	µg/kg		310	----	----	210	340
Phenanthrene	85-01-8	10	µg/kg		3680	----	----	1180	2800
Pyrene	129-00-0	10	µg/kg		2600	----	----	1730	2520
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		84.3	----	----	89.0	----
2-Chlorophenol-D4	93951-73-6	0.1	%		79.4	----	----	86.6	----
2.4.6-Tribromophenol	118-79-6	0.1	%		78.8	----	----	81.6	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		86.4	----	----	89.4	----
Anthracene-d10	1719-06-8	0.1	%		89.2	----	----	90.3	----
4-Terphenyl-d14	1718-51-0	0.1	%		87.1	----	----	87.9	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		108	----	----	93.3	86.4
Toluene-D8	2037-26-5	0.1	%		98.1	----	----	97.6	91.5
4-Bromofluorobenzene	460-00-4	0.1	%		104	----	----	87.2	100

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC1_0.0-0.3	PC1_0.3-0.6	PC2_0.0-0.3	PC2_0.3-0.85	PC3_0.0-0.3
				Client sampling date / time	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0909954-001	ES0909954-002	ES0909954-003	ES0909954-004	ES0909954-005
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		Not Determined	----	----	Not Determined	----
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		Not Determined	----	----	Not Determined	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		79.9	----	----	64.0	74.4
Anthracene-d10	1719-06-8	0.1	%		85.3	----	----	73.0	91.4
4-Terphenyl-d14	1718-51-0	0.1	%		98.0	----	----	75.8	106

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: PC3_0.3-0.75	PC4_0.0-0.33	PC6_0.0-0.27	PC7_0.0-0.2	DUP 05
				Client sampling date / time: 07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
				ES0909954-006	ES0909954-007	ES0909954-008	ES0909954-009	ES0909954-010
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	46.6	52.5	48.1	48.5	47.4
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	7.48	2.76	0.79	2.00	8.01
Arsenic	7440-38-2	1.00	mg/kg	227	108	48.8	81.1	234
Cadmium	7440-43-9	0.1	mg/kg	5.4	2.7	1.5	1.5	5.9
Chromium	7440-47-3	1.0	mg/kg	30.4	177	137	119	29.7
Copper	7440-50-8	1.0	mg/kg	1290	1440	472	603	1250
Cobalt	7440-48-4	0.5	mg/kg	11.2	13.3	11.7	11.1	11.2
Lead	7439-92-1	1.0	mg/kg	2940	1660	515	984	3050
Nickel	7440-02-0	1.0	mg/kg	30.4	34.4	21.5	26.0	28.8
Selenium	7782-49-2	0.1	mg/kg	9.2	9.5	3.3	4.7	8.6
Silver	7440-22-4	0.1	mg/kg	2.1	3.6	1.8	1.7	2.1
Vanadium	7440-62-2	2.0	mg/kg	120	119	98.3	108	120
Zinc	7440-66-6	1.0	mg/kg	2390	2560	1570	1960	2660
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	2.2	1.9	1.2	1.0	2.1
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	----	----	----	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	----	----	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	----	----	<0.5
3- & 4-Methylphenol	1319-77-3	1.0	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	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	360	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	270	----
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: PC3_0.3-0.75	PC4_0.0-0.33	PC6_0.0-0.27	PC7_0.0-0.2	DUP 05
				Client sampling date / time: 07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
				ES0909954-006	ES0909954-007	ES0909954-008	ES0909954-009	ES0909954-010
EP080: BTEX - Continued								
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	----	----	----	----	<5.00
alpha-BHC	319-84-6	0.50	µg/kg	----	----	----	----	<5.00
beta-BHC	319-85-7	0.50	µg/kg	----	----	----	----	<5.00
delta-BHC	319-86-8	0.50	µg/kg	----	----	----	----	<5.00
4.4`-DDD	72-54-8	0.50	µg/kg	----	----	----	----	<5.00
4.4`-DDE	72-55-9	0.50	µg/kg	----	----	----	----	<5.00
4.4`-DDT	50-29-3	0.50	µg/kg	----	----	----	----	<5.00
^ DDT (total)	----	0.50	µg/kg	----	----	----	----	<5.00
Dieldrin	60-57-1	0.50	µg/kg	----	----	----	----	<5.00
alpha-Endosulfan	959-98-8	0.50	µg/kg	----	----	----	----	<5.00
beta-Endosulfan	33213-65-9	0.50	µg/kg	----	----	----	----	<5.00
Endosulfan sulfate	1031-07-8	0.50	µg/kg	----	----	----	----	<5.00
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	----	----	----	----	<5.00
Endrin	72-20-8	0.50	µg/kg	----	----	----	----	<5.00
Endrin aldehyde	7421-93-4	0.50	µg/kg	----	----	----	----	<5.00
Endrin ketone	53494-70-5	0.50	µg/kg	----	----	----	----	<5.00
Heptachlor	76-44-8	0.50	µg/kg	----	----	----	----	<5.00
Heptachlor epoxide	1024-57-3	0.50	µg/kg	----	----	----	----	<5.00
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	----	----	----	----	<5.00
gamma-BHC	58-89-9	0.50	µg/kg	----	----	----	----	<5.00
Methoxychlor	72-43-5	0.50	µg/kg	----	----	----	----	<5.00
cis-Chlordane	5103-71-9	0.50	µg/kg	----	----	----	----	<5.00
trans-Chlordane	5103-74-2	0.50	µg/kg	----	----	----	----	<5.00
^ Total Chlordane (sum)	----	0.50	µg/kg	----	----	----	----	<5.00
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	----	----	----	----	<50.0
Aroclor 1016	12974-11-2	5.0	µg/kg	----	----	----	----	<50.0
Aroclor 1221	11104-28-2	5.0	µg/kg	----	----	----	----	<50.0
Aroclor 1232	11141-16-5	5.0	µg/kg	----	----	----	----	<50.0
Aroclor 1242	53469-21-9	5.0	µg/kg	----	----	----	----	<50.0
Aroclor 1248	12672-29-6	5.0	µg/kg	----	----	----	----	<50.0
Aroclor 1254	11097-69-1	5.0	µg/kg	----	----	----	----	<50.0
Aroclor 1260	11096-82-5	5.0	µg/kg	----	----	----	----	<50.0
EP132B: Polynuclear Aromatic Hydrocarbons								

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: PC3_0.3-0.75	PC4_0.0-0.33	PC6_0.0-0.27	PC7_0.0-0.2	DUP 05
				Client sampling date / time: 07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
				ES0909954-006	ES0909954-007	ES0909954-008	ES0909954-009	ES0909954-010
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
3-Methylcholanthrene	56-49-5	10	µg/kg	----	----	----	<10	----
2-Methylnaphthalene	91-57-6	10	µg/kg	----	----	----	920	----
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	----	----	----	<10	----
Acenaphthene	83-32-9	10	µg/kg	----	----	----	180	----
Acenaphthylene	208-96-8	10	µg/kg	----	----	----	730	----
Anthracene	120-12-7	10	µg/kg	----	----	----	530	----
Benz(a)anthracene	56-55-3	10	µg/kg	----	----	----	1160	----
Benzo(a)pyrene	50-32-8	10	µg/kg	----	----	----	1560	----
Benzo(b)fluoranthene	205-99-2	10	µg/kg	----	----	----	2050	----
Benzo(e)pyrene	192-97-2	10	µg/kg	----	----	----	960	----
Benzo(g.h.i)perylene	191-24-2	10	µg/kg	----	----	----	560	----
Benzo(k)fluoranthene	207-08-9	10	µg/kg	----	----	----	820	----
Chrysene	218-01-9	10	µg/kg	----	----	----	990	----
Coronene	191-07-1	10	µg/kg	----	----	----	90	----
Dibenz(a.h)anthracene	53-70-3	10	µg/kg	----	----	----	170	----
Fluoranthene	206-44-0	10	µg/kg	----	----	----	2560	----
Fluorene	86-73-7	10	µg/kg	----	----	----	600	----
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	----	----	----	560	----
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	----	----	----	<100	----
Naphthalene	91-20-3	10	µg/kg	----	----	----	6210	----
Perylene	198-55-0	10	µg/kg	----	----	----	460	----
Phenanthrene	85-01-8	10	µg/kg	----	----	----	1890	----
Pyrene	129-00-0	10	µg/kg	----	----	----	2280	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	----	----	----	86.2
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	----	----	90.8
2.4.6-Tribromophenol	118-79-6	0.1	%	----	----	----	----	64.8
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	----	----	89.5
Anthracene-d10	1719-06-8	0.1	%	----	----	----	----	89.5
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	----	----	74.8
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	----	92.5	----
Toluene-D8	2037-26-5	0.1	%	----	----	----	93.5	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	----	100	----
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	----	----	Not Determined

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC3_0.3-0.75	PC4_0.0-0.33	PC6_0.0-0.27	PC7_0.0-0.2	DUP 05
				Client sampling date / time	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0909954-006	ES0909954-007	ES0909954-008	ES0909954-009	ES0909954-010
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		---	---	---	---	**Not Determined**
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		---	---	---	**68.3**	---
Anthracene-d10	1719-06-8	0.1	%		---	---	---	**78.5**	---
4-Terphenyl-d14	1718-51-0	0.1	%		---	---	---	**87.0**	---

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: DUP 07	PC21_0.0-0.35	PC32_0.0-0.23	PC31_0.0-0.26	PC31_0.26-0.52
				Client sampling date / time: 07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
				ES0909954-011	ES0909954-012	ES0909954-013	ES0909954-014	ES0909954-015
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	---	1.0	%	44.0	52.1	45.5	51.0	35.5
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	2.01	1.27	9.92	0.87	1.20
Arsenic	7440-38-2	1.00	mg/kg	86.5	42.1	197	54.0	62.4
Cadmium	7440-43-9	0.1	mg/kg	1.3	3.0	14.4	1.1	1.2
Chromium	7440-47-3	1.0	mg/kg	65.4	126	46.8	93.9	30.2
Copper	7440-50-8	1.0	mg/kg	538	841	1410	701	506
Cobalt	7440-48-4	0.5	mg/kg	11.6	11.8	15.3	12.8	10.2
Lead	7439-92-1	1.0	mg/kg	890	551	4500	588	466
Nickel	7440-02-0	1.0	mg/kg	22.8	28.6	39.6	21.3	27.4
Selenium	7782-49-2	0.1	mg/kg	3.6	6.1	14.4	4.0	5.0
Silver	7440-22-4	0.1	mg/kg	1.4	3.0	5.8	2.0	1.0
Vanadium	7440-62-2	2.0	mg/kg	109	98.6	144	108	79.4
Zinc	7440-66-6	1.0	mg/kg	1660	1290	6420	1180	583
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.8	1.2	2.7	1.3	1.0
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	---	<0.8	---	<0.8	---
2-Chlorophenol	95-57-8	0.5	mg/kg	---	<0.8	---	<0.8	---
2-Methylphenol	95-48-7	0.5	mg/kg	---	<0.8	---	<0.8	---
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	---	<1.6	---	<1.6	---
2-Nitrophenol	88-75-5	0.5	mg/kg	---	<0.8	---	<0.8	---
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	---	<0.8	---	<0.8	---
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	---	<0.8	---	<0.8	---
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	---	<0.8	---	<0.8	---
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	---	<0.8	---	<0.8	---
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	---	<0.8	---	<0.8	---
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	---	<0.8	---	<0.8	---
Pentachlorophenol	87-86-5	2.0	mg/kg	---	<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	---	350	---	260	---
C29 - C36 Fraction	---	100	mg/kg	---	290	---	230	---
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: DUP 07	PC21_0.0-0.35	PC32_0.0-0.23	PC31_0.0-0.26	PC31_0.26-0.52
				Client sampling date / time: 07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
				ES0909954-011	ES0909954-012	ES0909954-013	ES0909954-014	ES0909954-015
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	----	<5.00	----	<5.00	----
alpha-BHC	319-84-6	0.50	µg/kg	----	<5.00	----	<5.00	----
beta-BHC	319-85-7	0.50	µg/kg	----	<5.00	----	<5.00	----
delta-BHC	319-86-8	0.50	µg/kg	----	<5.00	----	<5.00	----
4.4`-DDD	72-54-8	0.50	µg/kg	----	<5.00	----	<5.00	----
4.4`-DDE	72-55-9	0.50	µg/kg	----	<5.00	----	<5.00	----
4.4`-DDT	50-29-3	0.50	µg/kg	----	<5.00	----	<5.00	----
^ DDT (total)	----	0.50	µg/kg	----	<5.00	----	<5.00	----
Dieldrin	60-57-1	0.50	µg/kg	----	<5.00	----	<5.00	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	----	<5.00	----	<5.00	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	----	<5.00	----	<5.00	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	----	<5.00	----	<5.00	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	----	<5.00	----	<5.00	----
Endrin	72-20-8	0.50	µg/kg	----	<5.00	----	<5.00	----
Endrin aldehyde	7421-93-4	0.50	µg/kg	----	<5.00	----	<5.00	----
Endrin ketone	53494-70-5	0.50	µg/kg	----	<5.00	----	<5.00	----
Heptachlor	76-44-8	0.50	µg/kg	----	<5.00	----	<5.00	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg	----	<5.00	----	<5.00	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	----	<5.00	----	<5.00	----
gamma-BHC	58-89-9	0.50	µg/kg	----	<5.00	----	<5.00	----
Methoxychlor	72-43-5	0.50	µg/kg	----	<5.00	----	<5.00	----
cis-Chlordane	5103-71-9	0.50	µg/kg	----	<5.00	----	<5.00	----
trans-Chlordane	5103-74-2	0.50	µg/kg	----	<5.00	----	<5.00	----
^ Total Chlordane (sum)	----	0.50	µg/kg	----	<5.00	----	<5.00	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	----	<50.0	----	<50.0	----
Aroclor 1016	12974-11-2	5.0	µg/kg	----	<100	----	<100	----
Aroclor 1221	11104-28-2	5.0	µg/kg	----	<100	----	<100	----
Aroclor 1232	11141-16-5	5.0	µg/kg	----	<100	----	<100	----
Aroclor 1242	53469-21-9	5.0	µg/kg	----	<100	----	<100	----
Aroclor 1248	12672-29-6	5.0	µg/kg	----	<100	----	<100	----
Aroclor 1254	11097-69-1	5.0	µg/kg	----	<100	----	<100	----
Aroclor 1260	11096-82-5	5.0	µg/kg	----	<100	----	<100	----
EP132B: Polynuclear Aromatic Hydrocarbons								

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: DUP 07	PC21_0.0-0.35	PC32_0.0-0.23	PC31_0.0-0.26	PC31_0.26-0.52
				Client sampling date / time: 07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
				ES0909954-011	ES0909954-012	ES0909954-013	ES0909954-014	ES0909954-015
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
3-Methylcholanthrene	56-49-5	10	µg/kg	----	<10	----	<10	----
2-Methylnaphthalene	91-57-6	10	µg/kg	----	540	----	600	----
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	----	<10	----	<10	----
Acenaphthene	83-32-9	10	µg/kg	----	110	----	120	----
Acenaphthylene	208-96-8	10	µg/kg	----	380	----	460	----
Anthracene	120-12-7	10	µg/kg	----	430	----	460	----
Benz(a)anthracene	56-55-3	10	µg/kg	----	700	----	930	----
Benzo(a)pyrene	50-32-8	10	µg/kg	----	890	----	1010	----
Benzo(b)fluoranthene	205-99-2	10	µg/kg	----	1200	----	1440	----
Benzo(e)pyrene	192-97-2	10	µg/kg	----	540	----	650	----
Benzo(g.h.i)perylene	191-24-2	10	µg/kg	----	290	----	340	----
Benzo(k)fluoranthene	207-08-9	10	µg/kg	----	710	----	470	----
Chrysene	218-01-9	10	µg/kg	----	640	----	790	----
Coronene	191-07-1	10	µg/kg	----	50	----	60	----
Dibenz(a.h)anthracene	53-70-3	10	µg/kg	----	90	----	100	----
Fluoranthene	206-44-0	10	µg/kg	----	1640	----	2120	----
Fluorene	86-73-7	10	µg/kg	----	460	----	470	----
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	----	310	----	350	----
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	----	<100	----	<100	----
Naphthalene	91-20-3	10	µg/kg	----	3740	----	5110	----
Perylene	198-55-0	10	µg/kg	----	220	----	290	----
Phenanthrene	85-01-8	10	µg/kg	----	1430	----	1550	----
Pyrene	129-00-0	10	µg/kg	----	1450	----	1820	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	85.5	----	93.8	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	79.4	----	87.9	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	65.1	----	57.1	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	87.8	----	85.6	----
Anthracene-d10	1719-06-8	0.1	%	----	87.1	----	88.8	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	74.8	----	88.4	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	----	93.3	----	90.9	----
Toluene-D8	2037-26-5	0.1	%	----	92.4	----	83.2	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	100	----	84.7	----
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	Not Determined	----	Not Determined	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	DUP 07	PC21_0.0-0.35	PC32_0.0-0.23	PC31_0.0-0.26	PC31_0.26-0.52
				Client sampling date / time	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0909954-011	ES0909954-012	ES0909954-013	ES0909954-014	ES0909954-015
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		---	**Not Determined**	---	**Not Determined**	---
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		---	**71.9**	---	**68.0**	---
Anthracene-d10	1719-06-8	0.1	%		---	**85.0**	---	**78.7**	---
4-Terphenyl-d14	1718-51-0	0.1	%		---	**70.9**	---	**90.7**	---

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: PC18_0.0-0.26	PC18_0.26-0.52	PC30_0.0-0.3	PC30_0.3-0.68	PC17_0.0-0.7
				Client sampling date / time: 07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
				ES0909954-016	ES0909954-017	ES0909954-018	ES0909954-019	ES0909954-020
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	47.2	45.5	47.3	48.6	46.6
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	0.81	4.34	2.93	3.19	<0.50
Arsenic	7440-38-2	1.00	mg/kg	50.6	155	137	191	25.1
Cadmium	7440-43-9	0.1	mg/kg	2.0	5.1	3.7	4.0	3.4
Chromium	7440-47-3	1.0	mg/kg	92.8	104	185	106	101
Copper	7440-50-8	1.0	mg/kg	1050	2390	5530	1100	318
Cobalt	7440-48-4	0.5	mg/kg	13.3	14.6	17.6	14.9	21.1
Lead	7439-92-1	1.0	mg/kg	490	1900	1860	1990	265
Nickel	7440-02-0	1.0	mg/kg	20.3	28.4	35.5	33.3	20.9
Selenium	7782-49-2	0.1	mg/kg	5.2	10.0	19.2	10.1	3.5
Silver	7440-22-4	0.1	mg/kg	2.5	4.1	10.2	2.6	1.4
Vanadium	7440-62-2	2.0	mg/kg	106	116	122	134	121
Zinc	7440-66-6	1.0	mg/kg	1170	2920	3250	2630	932
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.9	2.1	3.0	1.7	0.7
EK026G: Total Cyanide By Discrete Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	----	3	----
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	----	830	----	250	250
C29 - C36 Fraction	----	100	mg/kg	----	570	----	180	220
EP080: BTEX								
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
EP132B: Polynuclear Aromatic Hydrocarbons								
3-Methylcholanthrene	56-49-5	10	µg/kg	----	<10	----	<10	<10
2-Methylnaphthalene	91-57-6	10	µg/kg	----	500	----	90	900
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	----	<10	----	<10	<10
Acenaphthene	83-32-9	10	µg/kg	----	80	----	20	180
Acenaphthylene	208-96-8	10	µg/kg	----	490	----	130	800
Anthracene	120-12-7	10	µg/kg	----	420	----	220	590
Benz(a)anthracene	56-55-3	10	µg/kg	----	900	----	820	980

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: PC18_0.0-0.26	PC18_0.26-0.52	PC30_0.0-0.3	PC30_0.3-0.68	PC17_0.0-0.7
				Client sampling date / time: 07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00
				ES0909954-016	ES0909954-017	ES0909954-018	ES0909954-019	ES0909954-020
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(a)pyrene	50-32-8	10	µg/kg	---	1050	---	900	1240
Benzo(b)fluoranthene	205-99-2	10	µg/kg	---	1270	---	1150	1540
Benzo(e)pyrene	192-97-2	10	µg/kg	---	660	---	520	660
Benzo(g.h.i)perylene	191-24-2	10	µg/kg	---	330	---	570	420
Benzo(k)fluoranthene	207-08-9	10	µg/kg	---	730	---	410	700
Chrysene	218-01-9	10	µg/kg	---	780	---	700	840
Coronene	191-07-1	10	µg/kg	---	60	---	160	90
Dibenz(a.h)anthracene	53-70-3	10	µg/kg	---	90	---	130	100
Fluoranthene	206-44-0	10	µg/kg	---	2110	---	1730	2390
Fluorene	86-73-7	10	µg/kg	---	400	---	120	670
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	---	310	---	470	400
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	---	<100	---	<100	<100
Naphthalene	91-20-3	10	µg/kg	---	3310	---	420	8340
Perylene	198-55-0	10	µg/kg	---	270	---	220	330
Phenanthrene	85-01-8	10	µg/kg	---	1270	---	700	2160
Pyrene	129-00-0	10	µg/kg	---	1930	---	1510	2080
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	---	122	---	118	82.5
Toluene-D8	2037-26-5	0.1	%	---	119	---	117	82.0
4-Bromofluorobenzene	460-00-4	0.1	%	---	125	---	123	91.8
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	---	68.8	---	81.7	61.6
Anthracene-d10	1719-06-8	0.1	%	---	85.1	---	94.0	67.5
4-Terphenyl-d14	1718-51-0	0.1	%	---	82.5	---	82.3	77.2

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC17_0.7-1.0	PC16_0.0-0.3	PC16_0.3-0.76	----	----
				Client sampling date / time	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	----	----
Compound	CAS Number	LOR	Unit		ES0909954-021	ES0909954-023	ES0909954-024	----	----
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		43.7	43.4	52.1	----	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		3.53	<0.50	1.21	----	----
Arsenic	7440-38-2	1.00	mg/kg		188	23.5	102	----	----
Cadmium	7440-43-9	0.1	mg/kg		2.8	0.9	2.5	----	----
Chromium	7440-47-3	1.0	mg/kg		35.4	58.4	178	----	----
Copper	7440-50-8	1.0	mg/kg		1130	181	417	----	----
Cobalt	7440-48-4	0.5	mg/kg		12.7	14.6	16.1	----	----
Lead	7439-92-1	1.0	mg/kg		2030	187	907	----	----
Nickel	7440-02-0	1.0	mg/kg		32.1	15.1	42.2	----	----
Selenium	7782-49-2	0.1	mg/kg		9.2	2.5	5.4	----	----
Silver	7440-22-4	0.1	mg/kg		2.3	0.7	2.1	----	----
Vanadium	7440-62-2	2.0	mg/kg		142	107	94.8	----	----
Zinc	7440-66-6	1.0	mg/kg		2140	618	3000	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		1.7	0.8	0.9	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		----	----	730	----	----
C29 - C36 Fraction	----	100	mg/kg		----	----	460	----	----
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	<0.5	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	10	µg/kg		----	----	<10	----	----
2-Methylnaphthalene	91-57-6	10	µg/kg		----	----	770	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg		----	----	<10	----	----
Acenaphthene	83-32-9	10	µg/kg		----	----	190	----	----
Acenaphthylene	208-96-8	10	µg/kg		----	----	890	----	----
Anthracene	120-12-7	10	µg/kg		----	----	560	----	----
Benz(a)anthracene	56-55-3	10	µg/kg		----	----	1080	----	----
Benzo(a)pyrene	50-32-8	10	µg/kg		----	----	1320	----	----
Benzo(b)fluoranthene	205-99-2	10	µg/kg		----	----	1660	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	PC17_0.7-1.0	PC16_0.0-0.3	PC16_0.3-0.76	----	----
				Client sampling date / time	07-JUL-2009 15:00	07-JUL-2009 15:00	07-JUL-2009 15:00	----	----
Compound	CAS Number	LOR	Unit		ES0909954-021	ES0909954-023	ES0909954-024	----	----
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(e)pyrene	192-97-2	10	µg/kg		----	----	800	----	----
Benzo(g.h.i)perylene	191-24-2	10	µg/kg		----	----	800	----	----
Benzo(k)fluoranthene	207-08-9	10	µg/kg		----	----	420	----	----
Chrysene	218-01-9	10	µg/kg		----	----	1010	----	----
Coronene	191-07-1	10	µg/kg		----	----	120	----	----
Dibenz(a.h)anthracene	53-70-3	10	µg/kg		----	----	210	----	----
Fluoranthene	206-44-0	10	µg/kg		----	----	2150	----	----
Fluorene	86-73-7	10	µg/kg		----	----	570	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg		----	----	800	----	----
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg		----	----	<100	----	----
Naphthalene	91-20-3	10	µg/kg		----	----	6520	----	----
Perylene	198-55-0	10	µg/kg		----	----	370	----	----
Phenanthrene	85-01-8	10	µg/kg		----	----	2010	----	----
Pyrene	129-00-0	10	µg/kg		----	----	2010	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	----	86.4	----	----
Toluene-D8	2037-26-5	0.1	%		----	----	98.9	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		----	----	99.5	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		----	----	96.1	----	----
Anthracene-d10	1719-06-8	0.1	%		----	----	91.3	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		----	----	78.1	----	----

Analytical Results

Sub-Matrix: WATER				Client sample ID	RB02	----	----	----	----
				Client sampling date / time	[08-JUL-2009]	----	----	----	----
Compound	CAS Number	LOR	Unit		ES0909954-022	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
EP080: BTEX									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<5	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
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	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		109	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		101	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		100	----	----	----	----

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: RB02	----	----	----	----
				Client sampling date / time: [08-JUL-2009]	----	----	----	----
				ES0909954-022	----	----	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**78.0**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**89.6**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**95.5**	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EP131A: Organochlorine Pesticides		
EP131A: Oxychlordane	PC1_0.0-0.3 - 07-JUL-2009 15:00	<5.00
EP131A: Oxychlordane	PC2_0.3-0.85 - 07-JUL-2009 15:00	<5.00
EP131A: Oxychlordane	DUP 05 - 07-JUL-2009 15:00	<5.00
EP131A: Oxychlordane	PC21_0.0-0.35 - 07-JUL-2009 15:00	<5.00
EP131A: Oxychlordane	PC31_0.0-0.26 - 07-JUL-2009 15:00	<5.00

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) 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**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115
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	: **ES0909954**	Page	: 1 of 18
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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 20-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
Edwandy Fadjar	Senior Organic Chemist	Organics
Hoa Nguyen	Inorganic Chemist	Inorganics
Nanthini Coilparampil	Senior Inorganic Chemist	Inorganics
Phyu Phyu Lwin	Inorganic Chemist	Inorganics
Sanjeshni Jyoti Mala	Senior Chemist Volatile	Organics
Victor Kedicioglu	Business Manager - NSW	Inorganics
Wisam Abou-Maraseh	Spectroscopist	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 (%)*
EA055: Moisture Content (QC Lot: 1034285)									
ES0909864-018	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	27.7	28.5	2.7	0% - 20%
ES0909938-009	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	47.3	46.5	1.6	0% - 20%
EA055: Moisture Content (QC Lot: 1034286)									
ES0909954-011	DUP 07	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	44.0	45.4	3.1	0% - 20%
ES0909954-020	PC17_0.0-0.7	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	45.4	47.6	4.7	0% - 20%
EA055: Moisture Content (QC Lot: 1034591)									
ES0909914-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	33.2	32.8	1.1	0% - 20%
ES0909964-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	16.6	18.3	9.6	0% - 50%
EA055: Moisture Content (QC Lot: 1036386)									
ES0909954-001	PC1_0.0-0.3	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	50.6	50.2	0.8	0% - 20%
ES0909954-010	DUP 05	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	47.4	48.0	1.2	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1037514)									
ES0909954-001	PC1_0.0-0.3	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	3.5	3.1	12.4	0% - 20%
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	20.2	18.1	10.8	0% - 20%
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	8.1	7.4	9.4	0% - 20%
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	13.4	14.4	6.7	0% - 20%
		EG020-SD: Antimony	7440-36-0	0.50	mg/kg	2.79	2.56	8.7	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	205	204	0.8	0% - 20%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	1740	1720	1.0	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	1650	1550	6.3	0% - 20%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	38.1	38.9	2.3	0% - 20%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	2770	2680	3.6	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	72.0	79.4	9.8	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	107	114	5.8	0% - 20%
ES0909954-011	DUP 07	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	1.3	1.4	0.0	0% - 50%
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	3.6	3.9	8.2	0% - 20%
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	1.4	1.4	0.0	0% - 50%
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	11.6	11.7	1.4	0% - 20%
		EG020-SD: Antimony	7440-36-0	0.50	mg/kg	2.01	2.56	24.4	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	65.4	71.5	8.9	0% - 20%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	538	608	12.3	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	890	847	5.0	0% - 20%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	22.8	24.0	5.2	0% - 20%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	1660	1760	5.8	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	86.5	95.6	10.0	0% - 20%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1037514) - continued									
ES0909954-011	DUP 07	EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	109	108	0.6	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1037515)									
ES0909954-021	PC17_0.7-1.0	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	2.8	2.4	15.6	0% - 20%
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	9.2	8.0	14.0	0% - 20%
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	2.3	1.8	# 24.8	0% - 50%
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	12.7	11.5	9.6	0% - 20%
		EG020-SD: Antimony	7440-36-0	0.50	mg/kg	3.53	3.39	4.0	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	35.4	31.3	12.3	0% - 20%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	1130	902	# 22.6	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	2030	1820	10.6	0% - 20%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	32.1	28.9	10.4	0% - 20%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	2140	1810	16.6	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	188	161	15.8	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	142	137	3.2	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1034723)									
ES0909955-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	1.2	1.1	0.0	0% - 50%
ES0909957-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1034749)									
ES0909938-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	1.3	1.2	10.8	0% - 50%
ES0909954-002	PC1_0.3-0.6	EG035T: Mercury	7439-97-6	0.1	mg/kg	3.7	3.6	4.3	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1034751)									
ES0909954-012	PC21_0.0-0.35	EG035T: Mercury	7439-97-6	0.1	mg/kg	1.2	1.0	15.1	0% - 50%
EK026G: Total Cyanide By Discrete Analyser (QC Lot: 1036634)									
ES0909954-002	PC1_0.3-0.6	EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
ES0910073-002	Anonymous	EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 1033684)									
ES0909954-001	PC1_0.0-0.3	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
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1033682)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1033682) - continued									
ES0909954-001	PC1_0.0-0.3	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1033683)									
ES0909954-001	PC1_0.0-0.3	EP071: C15 - C28 Fraction	---	100	mg/kg	820	780	5.8	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	680	680	0.0	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1034645)									
ES0909914-001	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	12	10	13.4	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1035987)									
ES0910081-001	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
ES0909968-008	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	74100	77000	3.8	0% - 20%
		EP071: C29 - C36 Fraction	---	100	mg/kg	41200	39700	3.6	0% - 20%
		EP071: C10 - C14 Fraction	---	50	mg/kg	3670	3670	0.0	0% - 20%
EP080: BTEX (QC Lot: 1033682)									
ES0909954-001	PC1_0.0-0.3	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080: BTEX (QC Lot: 1034645)									
ES0909914-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	2.8	3.3	14.1	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	0.6	0.7	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: 1033880)									
ES0909954-001	PC1_0.0-0.3	EP131A: Aldrin	309-00-2	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: alpha-BHC	319-84-6	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: beta-BHC	319-85-7	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: delta-BHC	319-86-8	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: 4.4`-DDD	72-54-8	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: 4.4`-DDE	72-55-9	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: 4.4`-DDT	50-29-3	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: DDT (total)	---	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: Dieldrin	60-57-1	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.50	µg/kg	<5.00	<5.00	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: 1033880) - continued									
ES0909954-001	PC1_0.0-0.3	EP131A: beta-Endosulfan	33213-65-9	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: Endrin	72-20-8	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: Endrin ketone	53494-70-5	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: Heptachlor	76-44-8	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: gamma-BHC	58-89-9	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: Methoxychlor	72-43-5	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
		EP131A: Total Chlordane (sum)	---	0.50	µg/kg	<5.00	<5.00	0.0	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1033881)									
ES0909954-001	PC1_0.0-0.3	EP131B: Total Polychlorinated biphenyls	---	5.0	µg/kg	<50.0	<50.0	0.0	No Limit
		EP131B: Aroclor 1016	12974-11-2	5.0	µg/kg	<100	<100	0.0	No Limit
		EP131B: Aroclor 1221	11104-28-2	5.0	µg/kg	<100	<100	0.0	No Limit
		EP131B: Aroclor 1232	11141-16-5	5.0	µg/kg	<100	<100	0.0	No Limit
		EP131B: Aroclor 1242	53469-21-9	5.0	µg/kg	<100	<100	0.0	No Limit
		EP131B: Aroclor 1248	12672-29-6	5.0	µg/kg	<100	<100	0.0	No Limit
		EP131B: Aroclor 1254	11097-69-1	5.0	µg/kg	<100	<100	0.0	No Limit
		EP131B: Aroclor 1260	11096-82-5	5.0	µg/kg	<100	<100	0.0	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1033685)									
ES0909954-001	PC1_0.0-0.3	EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	<10	0.0	No Limit
		EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	1870	2070	9.8	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	430	430	0.0	0% - 20%
		EP132: Acenaphthylene	208-96-8	10	µg/kg	1600	1750	9.1	0% - 20%
		EP132: Anthracene	120-12-7	10	µg/kg	960	1100	13.7	0% - 20%
		EP132: Benz(a)anthracene	56-55-3	10	µg/kg	990	1200	18.5	0% - 20%
		EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	1180	1410	18.0	0% - 20%
		EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	1350	1750	# 26.1	0% - 20%
		EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	710	860	19.4	0% - 20%
		EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	590	680	14.4	0% - 20%
		EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	790	810	2.5	0% - 20%
		EP132: Chrysene	218-01-9	10	µg/kg	930	1110	17.8	0% - 20%
		EP132: Coronene	191-07-1	10	µg/kg	90	90	0.0	No Limit
		EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	160	190	21.3	0% - 50%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1033685) - continued									
ES0909954-001	PC1_0.0-0.3	EP132: Fluoranthene	206-44-0	10	µg/kg	2900	3440	17.2	0% - 20%
		EP132: Fluorene	86-73-7	10	µg/kg	1380	1470	6.4	0% - 20%
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	520	510	2.7	0% - 20%
		EP132: Naphthalene	91-20-3	10	µg/kg	17300	16600	4.2	0% - 20%
		EP132: Perylene	198-55-0	10	µg/kg	310	330	6.8	0% - 20%
		EP132: Phenanthrene	85-01-8	10	µg/kg	3680	4210	13.6	0% - 20%
		EP132: Pyrene	129-00-0	10	µg/kg	2600	3130	18.4	0% - 20%
		EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	<100	0.0	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1036138)									
ES0909954-024	PC16_0.3-0.76	EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	<10	0.0	No Limit
		EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	770	790	2.7	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	190	230	15.4	0% - 20%
		EP132: Acenaphthylene	208-96-8	10	µg/kg	890	960	7.9	0% - 20%
		EP132: Anthracene	120-12-7	10	µg/kg	560	580	3.6	0% - 20%
		EP132: Benz(a)anthracene	56-55-3	10	µg/kg	1080	1060	1.9	0% - 20%
		EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	1320	1270	3.2	0% - 20%
		EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	1660	1660	0.0	0% - 20%
		EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	800	790	1.3	0% - 20%
		EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	800	920	13.3	0% - 20%
		EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	420	480	14.0	0% - 20%
		EP132: Chrysene	218-01-9	10	µg/kg	1010	990	2.1	0% - 20%
		EP132: Coronene	191-07-1	10	µg/kg	120	120	0.0	0% - 50%
		EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	210	220	0.0	0% - 20%
		EP132: Fluoranthene	206-44-0	10	µg/kg	2150	2190	1.9	0% - 20%
		EP132: Fluorene	86-73-7	10	µg/kg	570	620	7.0	0% - 20%
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	800	770	4.0	0% - 20%
		EP132: Naphthalene	91-20-3	10	µg/kg	6520	6640	1.7	0% - 20%
		EP132: Perylene	198-55-0	10	µg/kg	370	400	8.0	0% - 20%
		EP132: Phenanthrene	85-01-8	10	µg/kg	2010	2110	4.6	0% - 20%
		EP132: Pyrene	129-00-0	10	µg/kg	2010	2010	0.0	0% - 20%
		EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	<100	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1034306)									
ES0909909-006	Anonymous	EP080: C6 - C9 Fraction	---	20	µg/L	<20	<20	0.0	No Limit
ES0909954-022	RB02	EP080: C6 - C9 Fraction	---	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEX (QC Lot: 1034306)									
ES0909909-006	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEX (QC Lot: 1034306) - continued									
ES0909909-006	Anonymous	EP080: Toluene	108-88-3	2	µg/L	<5	<5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
ES0909954-022	RB02	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<5	<5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit

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: 1037514)								
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	102	70	130
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	2.76 mg/kg	102	70	130
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	60.9 mg/kg	101	70	130
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	54.7 mg/kg	94.8	70	130
EG020-SD: Cobalt	7440-48-4	10	mg/kg	<10.0	24.5 mg/kg	98.2	70	130
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	54.8 mg/kg	88.9	70	130
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55.2 mg/kg	104	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	113	70	130
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	34 mg/kg	101	70	130
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	104 mg/kg	95.0	70	130
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1037515)								
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	105	70	130
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	2.76 mg/kg	99.1	70	130
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	60.9 mg/kg	112	70	130
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	54.7 mg/kg	96.4	70	130
EG020-SD: Cobalt	7440-48-4	10	mg/kg	<10.0	24.5 mg/kg	102	70	130
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	54.8 mg/kg	95.7	70	130
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55.2 mg/kg	104	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	108	70	130
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	34 mg/kg	111	70	130
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	104 mg/kg	98.4	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1034723)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.4 mg/kg	92.9	67	118
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1034749)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.4 mg/kg	92.6	67	118
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1034751)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.4 mg/kg	86.0	67	118
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1036634)								
EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	50 mg/kg	82.0	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 1033684)								

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: 1033684) - continued								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	88.6	73.9	115
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	87.1	80.2	115
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	85.8	76.8	114
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	8 mg/kg	86.4	72	119
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	89.3	60.3	117
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	85.9	74.5	119
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	81.8	71.6	113
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	88.1	74.8	115
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	86.6	76.4	114
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	105	62.2	115
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	90.5	68.9	112
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1.0	8 mg/kg	27.2	1.23	91.6
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1033682)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	92.5	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1033683)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	99.0	75.2	116
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	200 mg/kg	98.0	75.3	113
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	105	72.6	117
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1034645)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	90.0	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1035987)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	95.0	75.2	116
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	200 mg/kg	91.0	75.3	113
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	97.0	72.6	117
EP080: BTEX (QCLot: 1033682)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	93.4	67.5	125
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	96.5	69	122
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	102	65.3	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	103	66.5	124
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	106	66.7	123
EP080: BTEX (QCLot: 1034645)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	91.7	67.5	125
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	86.0	69	122
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	84.8	65.3	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	83.9	66.5	124
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	88.4	66.7	123

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: 1033880)								
EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	5 µg/kg	75.4	31.7	140
EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	5 µg/kg	40.9	24.5	150
EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	5 µg/kg	74.8	36.9	139
EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	5 µg/kg	59.3	38.2	137
EP131A: 4.4`-DDD	72-54-8	0.5	µg/kg	<0.50	5 µg/kg	87.8	42.5	141
EP131A: 4.4`-DDE	72-55-9	0.5	µg/kg	<0.50	5 µg/kg	76.4	34.8	140
EP131A: 4.4`-DDT	50-29-3	0.5	µg/kg	<0.50	5 µg/kg	112	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	91.5	43.2	134
EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	5 µg/kg	64.0	23.7	139
EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	5 µg/kg	101	35.8	138
EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	5 µg/kg	98.5	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	103	21.6	162
EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	5 µg/kg	59.2	19.3	131
EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	5 µg/kg	75.9	17.9	141
EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	5 µg/kg	100	31	153
EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	5 µg/kg	85.2	34.3	138
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	5 µg/kg	39.9	18.6	146
EP131A: gamma-BHC	58-89-9	0.5	µg/kg	<0.50	5 µg/kg	58.4	30.7	145
EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	5 µg/kg	104	15	157
EP131A: cis-Chlordane	5103-71-9	0.5	µg/kg	<0.50	5 µg/kg	85.0	22.3	145
EP131A: trans-Chlordane	5103-74-2	0.5	µg/kg	<0.50	5 µg/kg	68.2	42.4	139
EP131A: Total Chlordane (sum)	----	0.5	µg/kg	<0.50	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1033881)								
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	108	61.3	121
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1033685)								
EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	100 µg/kg	74.0	34.8	123
EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	<10	100 µg/kg	98.7	66.6	122
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	100 µg/kg	85.1	6.88	147
EP132: Acenaphthene	83-32-9	10	µg/kg	<10	100 µg/kg	97.6	62.9	124
EP132: Acenaphthylene	208-96-8	10	µg/kg	<10	100 µg/kg	92.4	58.2	117

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
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1033685) - continued								
EP132: Anthracene	120-12-7	10	µg/kg	<10	100 µg/kg	95.8	61.4	117
EP132: Benz(a)anthracene	56-55-3	10	µg/kg	<10	100 µg/kg	101	65.7	125
EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	<10	100 µg/kg	92.3	60.7	119
EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	<10	100 µg/kg	97.8	68.6	126
EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	<10	100 µg/kg	99.9	70	129
EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	<10	100 µg/kg	91.4	52.4	135
EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	<10	100 µg/kg	105	70.4	126
EP132: Chrysene	218-01-9	10	µg/kg	<10	100 µg/kg	106	67.5	126
EP132: Coronene	191-07-1	10	µg/kg	<10	100 µg/kg	79.5	34.7	141
EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	<10	100 µg/kg	92.2	61.7	129
EP132: Fluoranthene	206-44-0	10	µg/kg	<10	100 µg/kg	108	68.7	126
EP132: Fluorene	86-73-7	10	µg/kg	<10	100 µg/kg	96.8	66.7	123
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	<10	100 µg/kg	93.2	56.6	131
EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	1000 µg/kg	# 43.4	50	138
EP132: Naphthalene	91-20-3	10	µg/kg	<10	100 µg/kg	99.9	63.2	120
EP132: Perylene	198-55-0	10	µg/kg	<10	100 µg/kg	91.8	58.6	119
EP132: Phenanthrene	85-01-8	10	µg/kg	<10	100 µg/kg	100	65.4	124
EP132: Pyrene	129-00-0	10	µg/kg	<10	100 µg/kg	109	67.9	127
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1036138)								
EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	100 µg/kg	78.0	34.8	123
EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	<10	100 µg/kg	86.7	66.6	122
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	100 µg/kg	82.1	6.88	147
EP132: Acenaphthene	83-32-9	10	µg/kg	<10	100 µg/kg	91.8	62.9	124
EP132: Acenaphthylene	208-96-8	10	µg/kg	<10	100 µg/kg	80.2	58.2	117
EP132: Anthracene	120-12-7	10	µg/kg	<10	100 µg/kg	87.7	61.4	117
EP132: Benz(a)anthracene	56-55-3	10	µg/kg	<10	100 µg/kg	96.4	65.7	125
EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	<10	100 µg/kg	88.8	60.7	119
EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	<10	100 µg/kg	98.8	68.6	126
EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	<10	100 µg/kg	94.9	70	129
EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	<10	100 µg/kg	96.4	52.4	135
EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	<10	100 µg/kg	95.7	70.4	126
EP132: Chrysene	218-01-9	10	µg/kg	<10	100 µg/kg	98.3	67.5	126
EP132: Coronene	191-07-1	10	µg/kg	<10	100 µg/kg	93.2	34.7	141
EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	<10	100 µg/kg	95.6	61.7	129
EP132: Fluoranthene	206-44-0	10	µg/kg	<10	100 µg/kg	97.7	68.7	126
EP132: Fluorene	86-73-7	10	µg/kg	<10	100 µg/kg	94.0	66.7	123
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	<10	100 µg/kg	95.4	56.6	131
EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	100 µg/kg	132	50	138
EP132: Naphthalene	91-20-3	10	µg/kg	<10	100 µg/kg	87.1	63.2	120

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: 1036138) - continued								
EP132: Perylene	198-55-0	10	µg/kg	<10	100 µg/kg	85.8	58.6	119
EP132: Phenanthrene	85-01-8	10	µg/kg	<10	100 µg/kg	95.6	65.4	124
EP132: Pyrene	129-00-0	10	µg/kg	<10	100 µg/kg	97.8	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
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1034078)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	82.0	58.9	131
EP071: C15 - C28 Fraction	----	100	µg/L	<100	400 µg/L	94.5	73.9	138
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	92.0	62.7	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1034306)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	104	75	127
EP080: BTEX (QCLot: 1034306)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	105	76.2	124
EP080: Toluene	108-88-3	2	µg/L	----	10 µg/L	102	74.4	124
		5	µg/L	<5	----	----	----	----
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	110	76.1	122
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	112	75.7	123
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	110	77.9	121
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1034094)								
EP132: 3-Methylcholanthrene	56-49-5	0.10	µg/L	<0.1	2 µg/L	79.6	65.8	121
EP132: 2-Methylnaphthalene	91-57-6	0.10	µg/L	<0.1	2 µg/L	79.0	67.7	112
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.10	µg/L	<0.1	2 µg/L	81.4	11.6	146
EP132: Acenaphthene	83-32-9	0.10	µg/L	<0.1	2 µg/L	82.6	73.2	111
EP132: Acenaphthylene	208-96-8	0.10	µg/L	<0.1	2 µg/L	84.1	72.4	112
EP132: Anthracene	120-12-7	0.10	µg/L	<0.1	2 µg/L	84.4	73.4	113
EP132: Benz(a)anthracene	56-55-3	0.10	µg/L	<0.1	2 µg/L	87.9	73.6	114
EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	2 µg/L	84.6	75.2	117
EP132: Benzo(b)fluoranthene	205-99-2	0.10	µg/L	<0.1	2 µg/L	88.5	71.4	119
EP132: Benzo(e)pyrene	192-97-2	0.10	µg/L	<0.1	2 µg/L	84.6	75.3	118
EP132: Benzo(g.h.i)perylene	191-24-2	0.10	µg/L	<0.1	2 µg/L	79.2	66.6	121
EP132: Benzo(k)fluoranthene	207-08-9	0.10	µg/L	<0.1	2 µg/L	81.7	74.8	118
EP132: Chrysene	218-01-9	0.10	µg/L	<0.1	2 µg/L	87.4	69.6	120
EP132: Coronene	191-07-1	0.10	µg/L	<0.1	2 µg/L	70.0	47.4	131
EP132: Dibenz(a.h)anthracene	53-70-3	0.10	µg/L	<0.1	2 µg/L	80.4	71.5	117
EP132: Fluoranthene	206-44-0	0.10	µg/L	<0.1	2 µg/L	91.2	74.8	117
EP132: Fluorene	86-73-7	0.10	µg/L	<0.1	2 µg/L	81.4	72.9	114

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1034094) - continued								
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	0.10	µg/L	<0.1	2 µg/L	81.0	67.8	119
EP132: N-2-Fluorenyl Acetamide	53-96-3	0.10	µg/L	<0.1	20 µg/L	56.4	53.6	131
EP132: Naphthalene	91-20-3	0.10	µg/L	<0.1	2 µg/L	80.8	68.3	116
EP132: Perylene	198-55-0	0.10	µg/L	<0.1	2 µg/L	85.2	68	122
EP132: Phenanthrene	85-01-8	0.10	µg/L	<0.1	2 µg/L	83.5	74.8	112
EP132: Pyrene	129-00-0	0.10	µg/L	<0.1	2 µg/L	92.8	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: 1037514)							
ES0909954-002	PC1_0.3-0.6	EG020-SD: Arsenic	7440-38-2	50 mg/kg	89.5	70	130
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	97.4	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	113	70	130
		EG020-SD: Copper	7440-50-8	250 mg/kg	96.5	70	130
		EG020-SD: Lead	7439-92-1	250 mg/kg	# Not Determined	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	94.9	70	130
		EG020-SD: Zinc	7440-66-6	250 mg/kg	# Not Determined	70	130
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1037515)							
ES0909954-023	PC16_0.0-0.3	EG020-SD: Arsenic	7440-38-2	50 mg/kg	89.1	70	130
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	96.6	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	114	70	130
		EG020-SD: Copper	7440-50-8	250 mg/kg	91.0	70	130
		EG020-SD: Lead	7439-92-1	250 mg/kg	86.0	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	98.6	70	130
		EG020-SD: Zinc	7440-66-6	250 mg/kg	97.3	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1034723)							
ES0909955-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	101	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1034749)							
ES0909938-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	92.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1034751)							
ES0909954-012	PC21_0.0-0.35	EG035T: Mercury	7439-97-6	5 mg/kg	97.3	70	130
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1036634)							
ES0909954-002	PC1_0.3-0.6	EK026G: Total Cyanide	57-12-5	50 mg/kg	91.6	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 1033684)							
ES0909954-001	PC1_0.0-0.3	EP075(SIM): Phenol	108-95-2	10 mg/kg	79.9	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	79.0	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	75.2	60	130
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	77.6	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	51.6	20	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1033682)							
ES0909954-001	PC1_0.0-0.3	EP080: C6 - C9 Fraction	----	26 mg/kg	76.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1033683)							
ES0909954-001	PC1_0.0-0.3	EP071: C10 - C14 Fraction	----	640 mg/kg	97.5	70	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1033683) - continued							
ES0909954-001	PC1_0.0-0.3	EP071: C15 - C28 Fraction	----	3140 mg/kg	89.4	70	130
		EP071: C29 - C36 Fraction	----	2860 mg/kg	92.2	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1034645)							
ES0909914-001	Anonymous	EP080: C6 - C9 Fraction	----	26 mg/kg	89.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1035987)							
ES0910081-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	88.4	70	130
		EP071: C15 - C28 Fraction	----	3140 mg/kg	90.6	70	130
		EP071: C29 - C36 Fraction	----	2860 mg/kg	89.7	70	130
EP080: BTEX (QCLot: 1033682)							
ES0909954-001	PC1_0.0-0.3	EP080: Benzene	71-43-2	2.5 mg/kg	78.7	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	73.6	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	77.9	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	76.4	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	79.8	70	130
EP080: BTEX (QCLot: 1034645)							
ES0909914-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	74.5	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	70.0	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	81.0	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	72.7	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	85.3	70	130
EP131A: Organochlorine Pesticides (QCLot: 1033880)							
ES0909954-001	PC1_0.0-0.3	EP131A: Aldrin	309-00-2	5 µg/kg	# Not Determined	31.7	140
		EP131A: alpha-BHC	319-84-6	5 µg/kg	# Not Determined	24.5	150
		EP131A: beta-BHC	319-85-7	5 µg/kg	# Not Determined	36.9	139
		EP131A: delta-BHC	319-86-8	5 µg/kg	# Not Determined	38.2	137
		EP131A: 4.4`-DDD	72-54-8	5 µg/kg	# Not Determined	42.5	141
		EP131A: 4.4`-DDE	72-55-9	5 µg/kg	# Not Determined	34.8	140
		EP131A: 4.4`-DDT	50-29-3	5 µg/kg	# Not Determined	38	143
		EP131A: Dieldrin	60-57-1	5 µg/kg	# Not Determined	43.2	134
		EP131A: alpha-Endosulfan	959-98-8	5 µg/kg	# Not Determined	23.7	139
		EP131A: beta-Endosulfan	33213-65-9	5 µg/kg	# Not Determined	35.8	138
		EP131A: Endosulfan sulfate	1031-07-8	5 µg/kg	# Not Determined	7.45	158
		EP131A: Endrin	72-20-8	5 µg/kg	# Not Determined	21.6	162
		EP131A: Endrin aldehyde	7421-93-4	5 µg/kg	# Not Determined	19.3	131
		EP131A: Endrin ketone	53494-70-5	5 µg/kg	# Not Determined	17.9	141
		EP131A: Heptachlor	76-44-8	5 µg/kg	# Not Determined	31	153

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: 1033880) - continued							
ES0909954-001	PC1_0.0-0.3	EP131A: Heptachlor epoxide	1024-57-3	5 µg/kg	# Not Determined	34.3	138
		EP131A: Hexachlorobenzene (HCB)	118-74-1	5 µg/kg	# Not Determined	18.6	146
		EP131A: gamma-BHC	58-89-9	5 µg/kg	# Not Determined	30.7	145
		EP131A: Methoxychlor	72-43-5	5 µg/kg	# Not Determined	15	157
		EP131A: cis-Chlordane	5103-71-9	5 µg/kg	# Not Determined	22.3	145
		EP131A: trans-Chlordane	5103-74-2	5 µg/kg	# Not Determined	42.4	139
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1033881)							
ES0909954-001	PC1_0.0-0.3	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	# Not Determined	61.3	121
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1033685)							
ES0909954-001	PC1_0.0-0.3	EP132: 3-Methylcholanthrene	56-49-5	100 µg/kg	# Not Determined	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	# Not Determined	8	158
		EP132: Acenaphthene	83-32-9	100 µg/kg	# Not Determined	38	127
		EP132: Acenaphthylene	208-96-8	100 µg/kg	# Not Determined	35	122
		EP132: Anthracene	120-12-7	100 µg/kg	# Not Determined	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	# Not Determined	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	# Not Determined	46	129
		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	100 µg/kg	# Not Determined	28	152
		EP132: Naphthalene	91-20-3	100 µg/kg	# Not Determined	34	130
		EP132: Perylene	198-55-0	100 µg/kg	# 3.3	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
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1036138)							
ES0909954-024	PC16_0.3-0.76	EP132: 3-Methylcholanthrene	56-49-5	100 µg/kg	62.1	21	129
		EP132: 2-Methylnaphthalene	91-57-6	100 µg/kg	109	40	130
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	100 µg/kg	86.4	8	158
		EP132: Acenaphthene	83-32-9	100 µg/kg	52.4	38	127
		EP132: Acenaphthylene	208-96-8	100 µg/kg	# Not Determined	35	122

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Spike Recovery (%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1036138) - continued							
ES0909954-024	PC16_0.3-0.76	EP132: Anthracene	120-12-7	100 µg/kg	60.6	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	71.8	54	123
		EP132: Chrysene	218-01-9	100 µg/kg	# Not Determined	55	122
		EP132: Coronene	191-07-1	100 µg/kg	# 29.0	33	134
		EP132: Dibenz(a.h)anthracene	53-70-3	100 µg/kg	# 19.1	46	129
		EP132: Fluoranthene	206-44-0	100 µg/kg	# Not Determined	52	125
		EP132: Fluorene	86-73-7	100 µg/kg	82.1	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	67.7	28	152
		EP132: Naphthalene	91-20-3	100 µg/kg	# Not Determined	34	130
		EP132: Perylene	198-55-0	100 µg/kg	# 21.2	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

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Spike Recovery (%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1034306)							
ES0909909-006	Anonymous	EP080: C6 - C9 Fraction	----	250 µg/L	90.7	70	130
EP080: BTEX (QCLot: 1034306)							
ES0909909-006	Anonymous	EP080: Benzene	71-43-2	25 µg/L	79.5	70	130
		EP080: Toluene	108-88-3	25 µg/L	100	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	89.9	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	102	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	88.7	70	130

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0909954**	Page	: 1 of 15
Client	: ENSR AUSTRALIA PTY LIMITED	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
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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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 20-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							
PC1_0.0-0.3, PC1_0.3-0.6, PC2_0.0-0.3, PC2_0.3-0.85, PC3_0.0-0.3, PC3_0.3-0.75, PC4_0.0-0.33, PC6_0.0-0.27, PC7_0.0-0.2, DUP 05, DUP 07, PC21_0.0-0.35, PC32_0.0-0.23, PC31_0.0-0.26, PC31_0.26-0.52, PC18_0.0-0.26, PC18_0.26-0.52, PC30_0.0-0.3, PC30_0.3-0.68, PC17_0.0-0.7, PC17_0.7-1.0, PC16_0.0-0.3, PC16_0.3-0.76	**07-JUL-2009**	**----**	----	----	**09-JUL-2009**	14-JUL-2009	✓
Soil Glass Jar - Unpreserved							
PC1_0.0-0.3, PC1_0.3-0.6, PC2_0.0-0.3, PC2_0.3-0.85, PC3_0.0-0.3, PC3_0.3-0.75, PC4_0.0-0.33, PC6_0.0-0.27, PC7_0.0-0.2, DUP 05, DUP 07, PC21_0.0-0.35, PC32_0.0-0.23, PC31_0.0-0.26, PC31_0.26-0.52, PC18_0.0-0.26, PC30_0.0-0.3, PC30_0.3-0.68, PC17_0.0-0.7, PC17_0.7-1.0, PC16_0.0-0.3, PC16_0.3-0.76	**07-JUL-2009**	**----**	----	----	**10-JUL-2009**	14-JUL-2009	✓
Soil Glass Jar - Unpreserved							
PC18_0.26-0.52	**07-JUL-2009**	**----**	----	----	**14-JUL-2009**	14-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
EG020-SD: Total Metals in Sediments by ICPMS								
Soil Glass Jar - Unpreserved								
PC1_0.0-0.3,	PC1_0.3-0.6,	**07-JUL-2009**	**13-JUL-2009**	04-AUG-2009	✓	**14-JUL-2009**	03-JAN-2010	✓
PC2_0.0-0.3,	PC2_0.3-0.85,							
PC3_0.0-0.3,	PC3_0.3-0.75,							
PC4_0.0-0.33,	PC6_0.0-0.27,							
PC7_0.0-0.2,	DUP 05,							
DUP 07,	PC21_0.0-0.35,							
PC32_0.0-0.23,	PC31_0.0-0.26,							
PC31_0.26-0.52,	PC18_0.0-0.26,							
PC18_0.26-0.52,	PC30_0.0-0.3,							
PC30_0.3-0.68,	PC17_0.0-0.7,							
PC17_0.7-1.0,	PC16_0.0-0.3,							
PC16_0.3-0.76								
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
PC1_0.0-0.3,	PC1_0.3-0.6,	**07-JUL-2009**	**09-JUL-2009**	04-AUG-2009	✓	**10-JUL-2009**	04-AUG-2009	✓
PC2_0.0-0.3,	PC2_0.3-0.85,							
PC3_0.0-0.3,	PC3_0.3-0.75,							
PC4_0.0-0.33,	PC6_0.0-0.27,							
PC7_0.0-0.2,	DUP 05,							
DUP 07,	PC21_0.0-0.35,							
PC32_0.0-0.23,	PC31_0.0-0.26,							
PC31_0.26-0.52,	PC18_0.0-0.26,							
PC18_0.26-0.52,	PC30_0.0-0.3,							
PC30_0.3-0.68,	PC17_0.0-0.7,							
PC17_0.7-1.0,	PC16_0.0-0.3,							
PC16_0.3-0.76								
EK026G: Total Cyanide By Discrete Analyser								
Soil Glass Jar - Unpreserved								
PC1_0.3-0.6,	PC30_0.3-0.68	**07-JUL-2009**	**09-JUL-2009**	14-JUL-2009	✓	**13-JUL-2009**	24-JUL-2009	✓
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved								
PC1_0.0-0.3,	PC2_0.3-0.85,	**07-JUL-2009**	**08-JUL-2009**	21-JUL-2009	✓	**09-JUL-2009**	17-AUG-2009	✓
DUP 05,	PC21_0.0-0.35,							
PC31_0.0-0.26								

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved PC1_0.0-0.3, PC2_0.3-0.85, PC3_0.0-0.3, PC7_0.0-0.2, PC21_0.0-0.35, PC31_0.0-0.26, PC18_0.26-0.52, PC30_0.3-0.68, PC17_0.0-0.7	**07-JUL-2009**	**08-JUL-2009**	21-JUL-2009	✓	**09-JUL-2009**	21-JUL-2009	✓
Soil Glass Jar - Unpreserved PC16_0.3-0.76	**07-JUL-2009**	**09-JUL-2009**	21-JUL-2009	✓	**09-JUL-2009**	21-JUL-2009	✓
Soil Glass Jar - Unpreserved PC16_0.3-0.76	**07-JUL-2009**	**10-JUL-2009**	21-JUL-2009	✓	**13-JUL-2009**	19-AUG-2009	✓
EP080: BTEX							
Soil Glass Jar - Unpreserved PC1_0.0-0.3, PC2_0.3-0.85, PC3_0.0-0.3, PC7_0.0-0.2, PC21_0.0-0.35, PC31_0.0-0.26, PC18_0.26-0.52, PC30_0.3-0.68, PC17_0.0-0.7	**07-JUL-2009**	**08-JUL-2009**	21-JUL-2009	✓	**09-JUL-2009**	21-JUL-2009	✓
Soil Glass Jar - Unpreserved PC16_0.3-0.76	**07-JUL-2009**	**09-JUL-2009**	21-JUL-2009	✓	**09-JUL-2009**	21-JUL-2009	✓
EP131A: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved PC1_0.0-0.3, PC2_0.3-0.85, DUP 05, PC21_0.0-0.35, PC31_0.0-0.26	**07-JUL-2009**	**08-JUL-2009**	21-JUL-2009	✓	**14-JUL-2009**	17-AUG-2009	✓
EP131B: Polychlorinated Biphenyls (as Aroclors)							
Soil Glass Jar - Unpreserved PC1_0.0-0.3, PC2_0.3-0.85, DUP 05, PC21_0.0-0.35, PC31_0.0-0.26	**07-JUL-2009**	**08-JUL-2009**	21-JUL-2009	✓	**14-JUL-2009**	17-AUG-2009	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved PC1_0.0-0.3, PC2_0.3-0.85, PC3_0.0-0.3, PC7_0.0-0.2, PC21_0.0-0.35, PC31_0.0-0.26, PC18_0.26-0.52, PC30_0.3-0.68, PC17_0.0-0.7	**07-JUL-2009**	**08-JUL-2009**	21-JUL-2009	✓	**10-JUL-2009**	17-AUG-2009	✓
Soil Glass Jar - Unpreserved PC16_0.3-0.76	**07-JUL-2009**	**10-JUL-2009**	21-JUL-2009	✓	**14-JUL-2009**	19-AUG-2009	✓

Matrix: **WATER**

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

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved							
RB02	**08-JUL-2009**	**09-JUL-2009**	15-JUL-2009	✓	**10-JUL-2009**	18-AUG-2009	✓
Amber VOC Vial - HCl or NaHSO4							
RB02	**08-JUL-2009**	**---**	---	----	**09-JUL-2009**	22-JUL-2009	✓
EP080: BTEX							
Amber VOC Vial - HCl or NaHSO4							
RB02	**08-JUL-2009**	**---**	---	----	**09-JUL-2009**	22-JUL-2009	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
RB02	**08-JUL-2009**	**09-JUL-2009**	15-JUL-2009	✓	**10-JUL-2009**	18-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	12	81	**14.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organochlorine Pesticides (Ultra-trace)	EP131A	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	5	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	5	45	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	8	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	3	28	**10.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	3	23	**13.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organochlorine Pesticides (Ultra-trace)	EP131A	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	2	14	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	45	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	2	28	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	23	**8.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	14	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organochlorine Pesticides (Ultra-trace)	EP131A	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	2	14	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	45	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	2	28	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	23	**8.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	14	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organochlorine Pesticides (Ultra-trace)	EP131A	1	8	**12.5**	**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							
PAH/Phenols (SIM)	EP075(SIM)	1	5	**20.0**	**5.0**	✓	ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	2	14	**14.3**	**5.0**	✓	ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	11	**9.1**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	45	**6.7**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	2	28	**7.1**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	23	**8.7**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	14	**14.3**	**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 Duplicates (DUP)							
TPH Volatiles/BTEX	EP080	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
TPH Volatiles/BTEX	EP080	1	11	**9.1**	**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 Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Mercury by FIMS	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.
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Analytical Methods	Method	Matrix	Method Descriptions
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
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)
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.
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Sep. Funnel Extraction /Acetylation of Phenolic Compounds	ORG14-AC	WATER	USEPA 3510 (Extraction)/ In-house (Acetylation): A 1L sample is extracted into dichloromethane and concentrated to 1 mL with 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	ES0909954-021	PC17_0.7-1.0	**Copper**	7440-50-8	22.6 %	0-20%	**RPD exceeds LOR based limits**
EG020-SD: Total Metals in Sediments by ICPMS	ES0909954-021	PC17_0.7-1.0	**Silver**	7440-22-4	24.8 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Benzo(b)fluoranthene**	205-99-2	26.1 %	0-20%	**RPD exceeds LOR based limits**
Laboratory Control Spike (LCS) Recoveries							
EP132B: Polynuclear Aromatic Hydrocarbons	1186877-002	----	**N-2-Fluorenyl Acetamide**	53-96-3	43.4 %	50-138%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EG020-SD: Total Metals in Sediments by ICPMS	ES0909954-002	PC1_0.3-0.6	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG020-SD: Total Metals in Sediments by ICPMS	ES0909954-002	PC1_0.3-0.6	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**Aldrin**	309-00-2	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**alpha-BHC**	319-84-6	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**beta-BHC**	319-85-7	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**delta-BHC**	319-86-8	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**4.4`-DDD**	72-54-8	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**4.4`-DDE**	72-55-9	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**4.4`-DDT**	50-29-3	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**Dieldrin**	60-57-1	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**alpha-Endosulfan**	959-98-8	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**beta-Endosulfan**	33213-65-9	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries - Continued							
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**Endosulfan sulfate**	1031-07-8	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**Endrin**	72-20-8	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**Endrin aldehyde**	7421-93-4	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**Endrin ketone**	53494-70-5	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**Heptachlor**	76-44-8	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**Heptachlor epoxide**	1024-57-3	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**Hexachlorobenzene (HCB)**	118-74-1	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**gamma-BHC**	58-89-9	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**Methoxychlor**	72-43-5	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**cis-Chlordane**	5103-71-9	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	ES0909954-001	PC1_0.0-0.3	**trans-Chlordane**	5103-74-2	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131B: Polychlorinated Biphenyls (as Aroclors)	ES0909954-001	PC1_0.0-0.3	**Aroclor 1254**	11097-69-1	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**3-Methylcholanthrene**	56-49-5	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**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	ES0909954-001	PC1_0.0-0.3	**7.12-Dimethylbenz(a)anthracene**	57-97-6	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Acenaphthene**	83-32-9	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Acenaphthylene**	208-96-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-024	PC16_0.3-0.76	**Acenaphthylene**	208-96-8	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							
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Anthracene**	120-12-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-024	PC16_0.3-0.76	**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	ES0909954-001	PC1_0.0-0.3	**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	ES0909954-001	PC1_0.0-0.3	**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	ES0909954-024	PC16_0.3-0.76	**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	ES0909954-024	PC16_0.3-0.76	**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	ES0909954-001	PC1_0.0-0.3	**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	ES0909954-024	PC16_0.3-0.76	**Benzo(e)pyrene**	192-97-2	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Benzo(e)pyrene**	192-97-2	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-024	PC16_0.3-0.76	**Benzo(g.h.i)perylene**	191-24-2	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Benzo(g.h.i)perylene**	191-24-2	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Benzo(k)fluoranthene**	207-08-9	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-024	PC16_0.3-0.76	**Chrysene**	218-01-9	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Chrysene**	218-01-9	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Coronene**	191-07-1	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-024	PC16_0.3-0.76	**Coronene**	191-07-1	29.0 %	33-134%	**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	ES0909954-001	PC1_0.0-0.3	**Dibenz(a.h)anthracene**	53-70-3	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-024	PC16_0.3-0.76	**Dibenz(a.h)anthracene**	53-70-3	19.1 %	46-129%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-024	PC16_0.3-0.76	**Fluoranthene**	206-44-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Fluoranthene**	206-44-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Fluorene**	86-73-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-024	PC16_0.3-0.76	**Indeno(1.2.3.cd)pyrene**	193-39-5	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Indeno(1.2.3.cd)pyrene**	193-39-5	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**N-2-Fluorenyl Acetamide**	53-96-3	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Naphthalene**	91-20-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-024	PC16_0.3-0.76	**Naphthalene**	91-20-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Perylene**	198-55-0	3.3 %	38-124%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-024	PC16_0.3-0.76	**Perylene**	198-55-0	21.2 %	38-124%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**Phenanthrene**	85-01-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-024	PC16_0.3-0.76	**Phenanthrene**	85-01-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-024	PC16_0.3-0.76	**Pyrene**	129-00-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0909954-001	PC1_0.0-0.3	**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	ES0909954-017	PC18_0.26-0.52	**1.2-Dichloroethane-D4**	17060-07-0	122 %	80-120 %	**Recovery greater than upper data quality objective**
EP080S: TPH(V)/BTEX Surrogates	ES0909954-017	PC18_0.26-0.52	**Toluene-D8**	2037-26-5	119 %	81-117 %	**Recovery greater than upper data quality objective**
EP080S: TPH(V)/BTEX Surrogates	ES0909954-019	PC30_0.3-0.68	**Toluene-D8**	2037-26-5	117 %	81-117 %	**Recovery greater than upper data quality objective**
EP080S: TPH(V)/BTEX Surrogates	ES0909954-017	PC18_0.26-0.52	**4-Bromofluorobenzene**	460-00-4	125 %	74-121 %	**Recovery greater than upper data quality objective**
EP080S: TPH(V)/BTEX Surrogates	ES0909954-019	PC30_0.3-0.68	**4-Bromofluorobenzene**	460-00-4	123 %	74-121 %	**Recovery greater than upper data quality objective**
EP131S: OC Pesticide Surrogate	ES0909954-004	PC2_0.3-0.85	**Dibromo-DDE**	21655-73-2	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP131S: OC Pesticide Surrogate	ES0909954-010	DUP 05	**Dibromo-DDE**	21655-73-2	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP131S: OC Pesticide Surrogate	ES0909954-012	PC21_0.0-0.35	**Dibromo-DDE**	21655-73-2	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP131S: OC Pesticide Surrogate	ES0909954-014	PC31_0.0-0.26	**Dibromo-DDE**	21655-73-2	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP131S: OC Pesticide Surrogate	ES0909954-001	PC1_0.0-0.3	**Dibromo-DDE**	21655-73-2	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP131T: PCB Surrogate	ES0909954-004	PC2_0.3-0.85	**Decachlorobiphenyl**	2051-24-3	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP131T: PCB Surrogate	ES0909954-010	DUP 05	**Decachlorobiphenyl**	2051-24-3	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP131T: PCB Surrogate	ES0909954-012	PC21_0.0-0.35	**Decachlorobiphenyl**	2051-24-3	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP131T: PCB Surrogate	ES0909954-014	PC31_0.0-0.26	**Decachlorobiphenyl**	2051-24-3	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	**Analyte**	CAS Number	Data	Limits	**Comment**
Samples Submitted - Continued							
EP131T: PCB Surrogate	ES0909954-001	PC1_0.0-0.3	**Decachlorobiphenyl**	2051-24-3	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**

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.**

SYDNEY W/O

1 of 2

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: ~~S40~~ S4330 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: richard.cole@aecom.com christiaan.donnethi@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	Grain Size	Eluviate Metals	Eluviate PAH	Cyanide	TBT	Phenols	OCP - Ultra Trace	Total PCB - Ultra Trace	Other
1	PC1_0.0-0.3	7.7.09	X					X		4x soil jars 1 bags	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
2	PC1_0.3-0.6		X					X		2x soil jars	✓								✓					
3	PC2_0.0-0.3		X					X		2x soil jars	✓									✓				
4	PC2_0.3-0.85									4x soil jars 1 bags	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	
5	PC3_0.0-0.3									2x soil jars	✓	✓	✓	✓						✓				
6	PC3_0.3-0.75									1x soil jars	✓													
7	PC4_0.0-0.33									4x soil jars 1 bag	✓	✓			✓	✓	✓	✓		✓				
8	PC6_0.0-0.27									2x soil jars	✓	✓			✓					✓				
9	PC7_0.0-0.2									4x soil jars 1 bags	✓	✓	✓	✓	✓	✓	✓	✓		✓				
10	QAQC04 Dup05									1x soil jars	✓									✓	✓	✓	✓	
19 *	E1									1x soil jars	QA	QC	Jar	for	Eluviate	for	PC30_0.3-0.69						
11	Dup07		X					X		130ml Jar	✓													

Environmental Division Sydney
Work Order
ES0909954
Telephone : +61-2-8784 8555

CONTRACT WORK
WO: ES0909954
LAB:
DATE: 08/7/09
SPLIT: Eluviates: ES0909
TBT/TOC: ES0909946
SPOCAS: ES0909944

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

Comments: E1 = QA/QC for PC30_0.3-0.69 Eluviates!!

Lab Report No.
Esky ID

Relinquished by: Richard Cole Signed: Date: 8.7.09
Recieved by: Frank Signed: Date: 8/7/09 11am

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

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Grain size not required as per Richard Cole 8/7/09

Chain of Custody

2 of 2

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: S3017805
Project Name: Port Kembla Outer Hbr
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 quote)	TOC	PAH (ultra trace)	BTEX / TPH	SPOCAS	Grain Size	Eliutriate Metals	Eliutriate PAH	Cyanide	TBT	Phenols	OCP - ultra trace	Total PCB - ultra trace	Other
12	PC21_0.0-0.35	7.7.09	X					X		4x soil jars & bags	✓	✓	✓	✓						✓	✓	✓	✓	
13	PC32_0.0-0.23	"	X					X		4x soil jar 1x bags	✓	✓			✓	✓	✓	✓		✓				
14	PC31_0.0-0.26		X					X		2x soil jars	✓	✓	✓	✓						✓	✓	✓	✓	
15	PC31_0.26-0.52		X					X		1x soil jars	✓													
16	PC18_0.0-0.26		X					X		1x soil jar	✓									✓				
17	PC18_0.26-0.52		X					X		4x soil jars 1x bags	✓	✓	✓	✓	✓	✓	✓	✓						
18	PC30_0.0-0.3		X					X		2x soil jars	✓									✓				
19 *	PC30_0.3-0.68		X					X		5x soil jars 1x bags	✓	✓	✓	✓	✓	✓	✓	✓	✓					* Extra volume supplied for lab dup / MS on elutriate PAH
20	PC17_0.0-0.7		X					X		4x soil jars 1x bags	✓	✓	✓	✓	✓	✓	✓	✓		✓				
21	PC17_0.7-1.0		X					X		1x soil jar	✓													
22	RB02	↓								2V, 2A			✓	✓										

* 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: 8.7.09
Recieved by: Frank Signed: Date: 8/7/09 11am

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

Printed copies of this document are uncontrolled

Grain size not required as per Richard Cole 8/7/09

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES0909954**		
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)
Site	: ----		
Sampler	: RC	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 08-JUL-2009	Issue Date	: 08-JUL-2009 17:09
Client Requested Due Date	: 20-JUL-2009	Scheduled Reporting Date	: **20-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 0.8'C - Ice present
No. of coolers/boxes	: 3 HARD	No. of samples received	: 24
Sercurity Seal	: Not intact.	No. of samples analysed	: 22

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).**
- **THIS BATCH ES0909954 FOR ALS SYD BATCH ONLY AND SPLIT INTO ES0909950 (ELUTRIATE), ES0909946 (TBT/TOC) & ES0909943 (SPOCAS)**
- **Sample id PC16_0.0-0.3 and PC16_0.3-0.76 were received extra and placed on hold, please confrim**
- 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*	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	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
ES0909954-001	07-JUL-2009 15:00	PC1_0.0-0.3		✓	✓	✓		✓	✓	✓
ES0909954-002	07-JUL-2009 15:00	PC1_0.3-0.6		✓	✓	✓	✓			
ES0909954-003	07-JUL-2009 15:00	PC2_0.0-0.3		✓	✓	✓				
ES0909954-004	07-JUL-2009 15:00	PC2_0.3-0.85		✓	✓	✓		✓	✓	✓
ES0909954-005	07-JUL-2009 15:00	PC3_0.0-0.3			✓	✓			✓	✓
ES0909954-006	07-JUL-2009 15:00	PC3_0.3-0.75		✓	✓	✓				
ES0909954-007	07-JUL-2009 15:00	PC4_0.0-0.33		✓	✓	✓				
ES0909954-008	07-JUL-2009 15:00	PC6_0.0-0.27		✓	✓	✓				
ES0909954-009	07-JUL-2009 15:00	PC7_0.0-0.2			✓	✓			✓	✓
ES0909954-010	07-JUL-2009 15:00	DUP 05		✓	✓	✓		✓		
ES0909954-011	07-JUL-2009 15:00	DUP 07		✓	✓	✓				
ES0909954-012	07-JUL-2009 15:00	PC21_0.0-0.35		✓	✓	✓		✓	✓	✓
ES0909954-013	07-JUL-2009 15:00	PC32_0.0-0.23		✓	✓	✓				
ES0909954-014	07-JUL-2009 15:00	PC31_0.0-0.26		✓	✓	✓		✓	✓	✓
ES0909954-015	07-JUL-2009 15:00	PC31_0.26-0.52		✓	✓	✓				
ES0909954-016	07-JUL-2009 15:00	PC18_0.0-0.26		✓	✓	✓				
ES0909954-017	07-JUL-2009 15:00	PC18_0.26-0.52			✓	✓			✓	✓
ES0909954-018	07-JUL-2009 15:00	PC30_0.0-0.3		✓	✓	✓				
ES0909954-019	07-JUL-2009 15:00	PC30_0.3-0.68			✓	✓	✓		✓	✓
ES0909954-020	07-JUL-2009 15:00	PC17_0.0-0.7			✓	✓			✓	✓
ES0909954-021	07-JUL-2009 15:00	PC17_0.7-1.0		✓	✓	✓				
ES0909954-023	07-JUL-2009 15:00	PC16_0.0-0.3	✓							
ES0909954-024	07-JUL-2009 15:00	PC16_0.3-0.76	✓							

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - UTO-2S Ultratrace OC PCB Pesticides
ES0909954-001	07-JUL-2009 15:00	PC1_0.0-0.3	✓
ES0909954-004	07-JUL-2009 15:00	PC2_0.3-0.85	✓
ES0909954-010	07-JUL-2009 15:00	DUP 05	✓
ES0909954-012	07-JUL-2009 15:00	PC21_0.0-0.35	✓
ES0909954-014	07-JUL-2009 15:00	PC31_0.0-0.26	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EP132(PAH) Ultra Trace Polynuclear Aromatic Compounds	WATER - W-04 TPH/BTEX
ES0909954-022	[08-JUL-2009]	RB02	✓	✓

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	: **ES0909955**	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	: 08-JUL-2009
Sampler	: RC	Issue Date	: 20-JUL-2009
Site	: ----		
		No. of samples received	: 5
Quote number	: SY/330/09 V3	No. of samples analysed	: 5

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
- Descriptive 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
Edwandy Fadjar	Senior Organic Chemist	Organics
Hoa Nguyen	Inorganic Chemist	Inorganics
Sanjeshni Jyoti Mala	Senior Chemist Volatile	Organics
Wisam Abou-Maraseh	Spectroscopist	Inorganics