Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) 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%

Matrix Type: WATER ***Laboratory Duplicates (DUP) Report***

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EG005C: Leachable Metals by ICPAES						
EG005C: Leachable Metals by ICPAES - (QC Lot: 268837)				**mg/L**	**mg/L**	**%**
ES0610665-001	Anonymous	Arsenic	0.1 mg/L	<0.1	<0.1	0.0
		Cadmium	0.05 mg/L	<0.05	<0.05	0.0
		Lead	0.1 mg/L	1.8	1.9	6.9
		Nickel	0.1 mg/L	<0.1	<0.1	0.0
ES0610871-002	Anonymous	Arsenic	0.1 mg/L	<0.1	<0.1	0.0
		Cadmium	0.05 mg/L	<0.05	<0.05	0.0
		Lead	0.1 mg/L	<0.1	<0.1	0.0
		Nickel	0.1 mg/L	<0.1	<0.1	0.0
EG035C: Leachable Mercury by FIMS						
EG035C: Leachable Mercury by FIMS - (QC Lot: 270167)				**mg/L**	**mg/L**	**%**
ES0610871-001	Anonymous	Mercury	0.0010 mg/L	<0.0010	<0.0010	0.0
ES0610901-010	Anonymous	Mercury	0.0010 mg/L	<0.0010	<0.0010	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

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 type is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. Abbreviations: LOR = Limit of reporting.

Matrix Type: WATER

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

		Method blank result	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
Analyte name	*LOR*			*LCS*	*Low*	*High*
EG005C: Leachable Metals by ICPAES						
EG005C: Leachable Metals by ICPAES - (QC Lot: 268837)		mg/L	mg/L	%	%	%
Arsenic	0.1 mg/L	----	1	89.6	75.7	132
	0.1 mg/L	<0.1	----	----	----	----
Cadmium	0.05 mg/L	----	0.250	104	83.1	123
	0.05 mg/L	<0.05	----	----	----	----
Lead	0.1 mg/L	----	1	102	79.9	122
	0.1 mg/L	<0.1	----	----	----	----
Nickel	0.1 mg/L	----	1	102	85.4	125
	0.1 mg/L	<0.1	----	----	----	----
EG035C: Leachable Mercury by FIMS						
EG035C: Leachable Mercury by FIMS - (QC Lot: 270167)		mg/L	mg/L	%	%	%
Mercury	0.001 mg/L	----	0.010	108	70	130
	0.0010 mg/L	<0.0010	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 269202)		µg/L	µg/L	%	%	%
Benzo(a)pyrene	0.2 µg/L	----	2	100	63.3	117
	0.5 µg/L	<0.5	----	----	----	----

Quality Control Report - Matrix Spikes (MS)

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 type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: WATER

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EG005C: Leachable Metals by ICPAES								
EG005C: Leachable Metals by ICPAES - (QC Lot: 268837)				mg/L	mg/L	%	%	%
Arsenic	ES0610665-002	Anonymous	0.1 mg/L	1	<0.1	109	70	130
Cadmium			0.05 mg/L	0.250	<0.05	116	70	130
Lead			0.1 mg/L	1	1.2	113	70	130
Nickel			0.1 mg/L	1	<0.1	111	70	130
EG035C: Leachable Mercury by FIMS								
EG035C: Leachable Mercury by FIMS - (QC Lot: 270167)				mg/L	mg/L	%	%	%
Mercury	ES0610871-001	Anonymous	0.001 mg/L	0.1	<0.0010	107	70	130

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**CH2M HILL PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	:	**1 of 5**
Contact	:	MR ADAM SULLIVAN	**Contact**	:	Greg Vogel			
Address	:	PO BOX 5392 CHATSWOOD NSW AUSTRALIA 1515	**Address**	:	Smithfield NSW Australia 2164	**Work order**	:	**ES0610884**
						Amendment No.	:	
Project	:	Rebatch	**Quote number**	:	----	**Date received**	:	4 Sep 2006
Order number	:	- Not provided -				**Date issued**	:	8 Sep 2006
C-O-C number	:	- Not provided -						
Site	:	- Not provided -						
E-mail	:	adam.sullivan@ch2m.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	02 9950 0200	**Telephone**	:	+61 (02) 8784 8555	**Received**	:	8
Facsimile	:	02 9950 0600	**Facsimile**	:	+61 (02) 8784 8500	**Analysed**	:	8

This Interpretive Quality Control Report was issued on 8 Sep 2006 for the ALS work order reference ES0610884 and supersedes any previous reports with this reference.
This report contains the following information:

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

Interpretive Quality Control Report - Analysis Holding Time

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 preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: SOIL ***Analysis Holding Time and Preservation***

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EG005C: Leachable Metals by ICPAES								
Clear Plastic Bottle - Nitric Acid; Unfiltered								
MG02/1.8,	TP10/2.0,		**7 Sep 2006**	----		**7 Sep 2006**	----	
MG04/0.5,	MG06/2.0,							
MG10A/0.7,	MG11/2.0							
EG035C: Leachable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered								
MG04/0.5			----	----	----	**8 Sep 2006**	----	
EP075(SIM): PAH/Phenols (GC/MS - SIM)								
Amber Glass Bottle - Unpreserved								
MG01/1.8,	MG02/1.8,	**6 Sep 2006**	**7 Sep 2006**	13 Sep 2006	Pass	**8 Sep 2006**	18 Oct 2006	Pass
TP10/2.0,	TP06/0.25,							
MG04/0.5,	MG06/2.0,							
MG10A/0.7,	MG11/2.0							

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: WATER ***Frequency of Quality Control Samples***

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	**Actual**	**Expected**	
Laboratory Duplicates (DUP)					
EG005C: Leachable Metals by ICPAES	2	19	**10.5**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035C: Leachable Mercury by FIMS	2	11	**18.2**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EG005C: Leachable Metals by ICPAES	1	19	**5.3**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035C: Leachable Mercury by FIMS	1	11	**9.1**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)	1	18	**5.6**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EG005C: Leachable Metals by ICPAES	1	19	**5.3**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035C: Leachable Mercury by FIMS	1	11	**9.1**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)	1	18	**5.6**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Matrix Spikes (MS)					
EG005C: Leachable Metals by ICPAES	1	19	**5.3**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035C: Leachable Mercury by FIMS	1	11	**9.1**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

- **For all matrices, no RPD recovery outliers occur for the duplicate analysis.**
- **For all matrices, no method blank result outliers occur.**
- **For all matrices, no laboratory spike recoveries breaches occur.**
- **For all matrices, no matrix spike recoveries breaches occur.**

Surrogates

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

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

Method / **Container /** Client Sample ID(s)	**Date Sampled**	**Extraction / Preparation**			**Analysis**		
		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered MG02/1.8, TP10/2.0, MG04/0.5, MG06/2.0, MG10A/0.7, MG11/2.0		**7 Sep 2006**	----		**7 Sep 2006**	----	
Method / **Container /** Client Sample ID(s)	**Date Sampled**	**Extraction / Preparation**			**Analysis**		
		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EG035C: Leachable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered MG04/0.5		----	----	----	**8 Sep 2006**	----	

- **No holding time outliers occur.**

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: TCLP LEACHATE ***Method Reference Summary***

Preparation Methods

EN25C : Digestion for Total Recoverable Metals - USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

ORG14 : Separatory Funnel Extraction of Liquids - 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.

Analytical Methods

EG005C : Leachable Metals by ICPAES - APHA 20th ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EG035C : Leachable Mercury by FIMS - AS 3550, APHA 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 TCLP solution. 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)

EN33 : TCLP for Non and Semivolatile Analytes - (USEPA SW846-1311, ALS QWI-EN/33) The TCLP procedure is designed to determine the mobility of both organic and inorganic analytes present in wastes. The standard TCLP leach is for non-volatile and Semivolatile test parameters. Extraction Fluid #1 pH 4.88 - 4.98. Extraction Fluid #2 pH 2.83 - 2.93.

EP075(SIM) : PAH/Phenols (GC/MS - SIM) - USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
Smithfield NSW 2164 Australia
Telephone: +61 (02) 8784 8555 Facsimile: +61 (02) 8784 8500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive report

Client Details

Client	:	**CH2M HILL PTY LTD**
Contact	:	**MR ADAM SULLIVAN**
Address	:	PO BOX 5392 CHATSWOOD NSW AUSTRALIA 1515
Project	:	**- Not provided -**
Order number	:	**REBATCH OF ES0609995**
C-O-C Number	:	**- Not provided -**
Site	:	**- Not provided -**
Sampler	:	**- Not provided -**
E-mail	:	adam.sullivan@ch2m.com.au
Telephone	:	02 9950 0200
Facsimile	:	02 9950 0600

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	Smithfield NSW Australia 2164
Quote number	:	ES20050033
Work order	:	**ES0610884**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	+61 (02) 8784 8555
Facsimile	:	+61 (02) 8784 8500

Dates

Date Samples Received	:	4 Sep 2006	**SRA Issue Date**	:	4 Sep 2006
Scheduled Reporting Date	:	**8 Sep 2006**	**Client Requested Date**	:	8 Sep 2006

Delivery Details

Mode of Delivery	:	Carrier.	**Temperature**		:	AMBIENT
No. of coolers/boxes	:	REBATCH	**No. of samples**	**- Received**		8
Security Seal	:	Intact.		**- Analysed**		8

Comments

- **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).**

- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- Please direct any queries related to sample condition / numbering / breakages to Nazeeh Aoun.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Client	: CH2M HILL PTY LTD	**Work Order**	: ES0610884
Project	: - Not provided -	**ALS Quote Reference**	: ES20050033

Summary of Sample(s) / Container(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 moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		EG005C - WATER Leachable Metals by ICPAES	**EG035C - WATER** Leachable Mercury by FIMS	**EP075 SIM PAH only - WATER** SIM - PAH only	**TCLP - WATER** TCLP Leach	**TCLP - SOIL** TCLP Leach	**TCLP - WATER** TCLP Leach	**TCLP - SOIL** TCLP Leach	**TCLP - WATER** TCLP Leach		
ES0610884-001	**MG01/1.8 - 4 Sep 2006**			]	]	]	]	]	]		
ES0610884-002	**MG02/1.8 - 4 Sep 2006**	]		]	]	]	]	]	]		
ES0610884-003	**TP10/2.0 - 4 Sep 2006**	]		]	]	]	]	]	]		
ES0610884-004	**TP06/0.25 - 4 Sep 2006**			]	]	]	]	]	]		
ES0610884-005	**MG04/0.5 - 4 Sep 2006**	]	]	]	]	]	]	]	]		
ES0610884-006	**MG06/2.0 - 4 Sep 2006**	]		]	]	]	]	]	]		
ES0610884-007	**MG10A/0.7 - 4 Sep 2006**	]		]	]	]	]	]	]		
ES0610884-008	**MG11/2.0 - 4 Sep 2006**	]		]	]	]	]	]	]		
	Total(s) :	**6**	**1**	**8**	**8**	**8**	**8**	**8**	**8**		

Client	: CH2M HILL PTY LTD	**Work Order**	: ES0610884
Project	: - Not provided -	**ALS Quote Reference**	: ES20050033

Requested Reports

1 **MR ADAM SULLIVAN**

- A4 - Certificate of Analysis - NEPM format	Email	adam.sullivan@ch2m.com.au
- A4 - Quality Control Report - NEPM format	Email	adam.sullivan@ch2m.com.au
- A4 - Interpretive Quality Control Report - NEPM format	Email	adam.sullivan@ch2m.com.au
- ENMRG Export Format	Email	adam.sullivan@ch2m.com.au
- ESDAT Export Format	Email	adam.sullivan@ch2m.com.au
- Chain of Custody Acknowledgement	Email	adam.sullivan@ch2m.com.au
- A4 - Sample Receipt Notification - Comprehensive format	Email	adam.sullivan@ch2m.com.au
- Invoice	Email	adam.sullivan@ch2m.com.au

Sample Container(s) / Preservation Non-Compliance Log

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

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Client	: **CH2M HILL PTY LTD**	*Laboratory*	: **ALS Environmental Sydney**	*Page*	: **1 of 4**
Contact	: **MR ADAM SULLIVAN**	*Contact*	: **Greg Vogel**	*Work Order*	: **ES0613357**
Address	: **PO BOX 5392 CHATSWOOD NSW AUSTRALIA 1515**	*Address*	: **277-289 Woodpark Road Smithfield NSW Australia 2164**		
E-mail	: **adam.sullivan@ch2m.com.au**	*E-mail*	: **Greg.Vogel@alsenviro.com**		
Telephone	: **02 9950 0200**	*Telephone*	: **+61 (02) 8784 8555**		
Facsimile	: **02 9950 0600**	*Facsimile*	: **+61 (02) 8784 8500**		
Project	: **347496**	*Quote number*	: **----**	*Date received*	: **25 Oct 2006**
Order number	: **REBATCH OF ES0612955**			*Date issued*	: **1 Nov 2006**
C-O-C number	: **- Not provided -**			*No. of samples*	- *Received* : **1**
Site	: **MACDONALDTOWN GASWORKS**				*Analysed* : **1**

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	*Position*	*Department*
PHALAK INTHAKESONE	**Organics Co-ordinator**	**Organics - NATA 825 (10911 - Sydney)**

Comments

This report for the ALSE reference ES0613357 supersedes any previous reports with this reference. Results apply to the sample as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- **Analytical Results for Samples Submitted**
- **Surrogate Recovery Data**

The analytical procedures used by ALS Environmental 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insuffient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits). Where LOR of reported result differ from standard LOR, this may be due to high moisture, reduced sample amount or matrix interference. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number, LOR = Limit of Reporting. * Indicates failed Surrogate Recoveries.

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Analytical Results

			Client Sample ID :	BHA1/7.0				
			Sample Matrix Type / Description :	ZHE LEACHATE				
			Sample Date / Time :	31 Oct 2006 11:30				
			Laboratory Sample ID :	ES0613357-001				
Analyte	**CAS number**	**LOR**	**Units**					
EP080: BTEX								
Benzene	71-43-2	1	µg/L	<1				
Toluene	108-88-3	2	µg/L	<2				
Ethylbenzene	100-41-4	2	µg/L	<2				
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2				
ortho-Xylene	95-47-6	2	µg/L	<2				
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	107				
Toluene-D8	2037-26-5	0.1	%	104				
4-Bromofluorobenzene	460-00-4	0.1	%	102				

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Surrogate Control Limits

Matrix Type: SOIL - Surrogate Control Limits ***Surrogate Control Limits***

Method name	*Analyte name*	*Lower Limit*	*Upper Limit*
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	88	110
	4-Bromofluorobenzene	86	115

3268 - 269

Fadi Soro

TAISI 25/10/06 2.50pm

From: Nanthini Coilparampil
Sent: Wednesday, 25 October 2006 2:40 PM
To: Samples Sydney
Subject: FW: Additional analysis

es0612955_coc.pdf

Hi Fadi

Please follow the E-mail

From: Adam.Sullivan@ch2m.com.au [mailto:Adam.Sullivan@ch2m.com.au]
Sent: Wednesday, 25 October 2006 2:22 PM
To: Nanthini Coilparampil
Subject: Additional analysis

Nanthini

1

Please reschedule our sample ID BHA1/7.0 for TCLP and neutral water leach analysis for BTEX. Please do so in accordance with our project quote SY/148/06.

Regards

Adam

****

This e-mail has been swept by mimesweeper

through the ALS North America gateway.

****

ALS Environmental
Sydney
Work Order
ES0613357
Telephone : +61 (02) 8784 8555

ALS Environmental

QUALITY CONTROL REPORT

Client	:	**CH2M HILL PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	:	**1 of 4**
Contact	:	MR ADAM SULLIVAN	**Contact**	:	Greg Vogel			
Address	:	PO BOX 5392 CHATSWOOD NSW AUSTRALIA 1515	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	:	**ES0613357**
						Amendment No.	:	
Project	:	347496	**Quote number**	:	----	**Date received**	:	25 Oct 2006
Order number	:	REBATCH OF ES0612955				**Date issued**	:	1 Nov 2006
C-O-C number	:	- Not provided -						
Site	:	MACDONALDTOWN GASWORKS						
E-mail	:	adam.sullivan@ch2m.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	02 9950 0200	**Telephone**	:	+61 (02) 8784 8555	**Received**	:	1
Facsimile	:	02 9950 0600	**Facsimile**	:	+61 (02) 8784 8500	**Analysed**	:	1

This final report for the ALSE work order reference ES0613357 supersedes any previous reports with this reference.

Results apply to the sample as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
PHALAK INTHAKESONE	Organics - NATA 825 (10911 - Sydney)

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** = *Limit of Reporting,* ***RPD*** = *Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) 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%

Matrix Type: WATER ***Laboratory Duplicates (DUP) Report***

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EP080: BTEX						
EP080: BTEX - (QC Lot: 298413)				µg/L	µg/L	%
ES0613573-019	Anonymous	Benzene	1 µg/L	<1	<1	0.0
		Toluene	2 µg/L	<2	<2	0.0
		Ethylbenzene	2 µg/L	<2	<2	0.0
		meta- & para-Xylene	2 µg/L	<2	<2	0.0
		ortho-Xylene	2 µg/L	<2	<2	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

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 type is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. Abbreviations: LOR = Limit of reporting.

Matrix Type: WATER

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

		Method blank result	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
Analyte name	*LOR*			*LCS*	*Low*	*High*
EP080: BTEX						
EP080: BTEX - (QC Lot: 298413)		µg/L	µg/L	%	%	%
Benzene	1 µg/L	----	10	102	76.2	124
	1 µg/L	<1	----	----	----	----
Ethylbenzene	2 µg/L	----	10	102	76.1	122
	2 µg/L	<2	----	----	----	----
meta- & para-Xylene	2 µg/L	----	10	104	75.7	123
	2 µg/L	<2	----	----	----	----
ortho-Xylene	2 µg/L	----	10	104	77.9	121
	2 µg/L	<2	----	----	----	----
Toluene	2 µg/L	----	10	105	74.4	124
	2 µg/L	<2	----	----	----	----

Quality Control Report - Matrix Spikes (MS)

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 type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: WATER

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EP080: BTEX								
EP080: BTEX - (QC Lot: 298413)				µg/L	µg/L	%	%	%
Benzene	ES0613573-019	Anonymous	1 µg/L	25	<1	96.2	70	130
Toluene			2 µg/L	25	<2	86.1	70	130
Ethylbenzene			2 µg/L	25	<2	102	70	130
meta- & para-Xylene			2 µg/L	25	<2	101	70	130
ortho-Xylene			2 µg/L	25	<2	101	70	130

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**CH2M HILL PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	:	**1 of 5**
Contact	:	MR ADAM SULLIVAN	**Contact**	:	Greg Vogel			
Address	:	PO BOX 5392 CHATSWOOD NSW AUSTRALIA 1515	**Address**	:	Smithfield NSW Australia 2164	**Work order**	:	**ES0613357**
						Amendment No.	:	
Project	:	347496	**Quote number**	:	----	**Date received**	:	25 Oct 2006
Order number	:	REBATCH OF ES0612955				**Date issued**	:	1 Nov 2006
C-O-C number	:	- Not provided -						
Site	:	MACDONALDTOWN GASWORKS						
E-mail	:	adam.sullivan@ch2m.com.au	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	02 9950 0200	**Telephone**	:	+61 (02) 8784 8555	**Received**	:	1
Facsimile	:	02 9950 0600	**Facsimile**	:	+61 (02) 8784 8500	**Analysed**	:	1

This Interpretive Quality Control Report was issued on 1 Nov 2006 for the ALS work order reference ES0613357 and supersedes any previous reports with this reference.
This report contains the following information:

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

Interpretive Quality Control Report - Analysis Holding Time

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 preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: SOIL ***Analysis Holding Time and Preservation***

Method / **Container /** Client Sample ID(s)	**Date Sampled**	**Extraction / Preparation**			**Analysis**		
		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EP080: TPH Volatiles/BTEX							
Amber VOC Vial - HCl or NaHSO4							
BHA1/7.0	**31 Oct 2006**	**----**	----	----	**31 Oct 2006**	14 Nov 2006	Pass

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: WATER ***Frequency of Quality Control Samples***

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	**Actual**	**Expected**	
Laboratory Duplicates (DUP)					
EP080: TPH Volatiles/BTEX	1	9	**11.1**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EP080: TPH Volatiles/BTEX	1	9	**11.1**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EP080: TPH Volatiles/BTEX	1	9	**11.1**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Matrix Spikes (MS)					
EP080: TPH Volatiles/BTEX	1	9	**11.1**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

- **For all matrices, no RPD recovery outliers occur for the duplicate analysis.**
- **For all matrices, no method blank result outliers occur.**
- **For all matrices, no laboratory spike recoveries breaches occur.**
- **For all matrices, no matrix spike recoveries breaches occur.**

Surrogates

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

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

- **No holding time outliers occur.**

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: ZHE LEACHATE ***Method Reference Summary***

Analytical Methods

EP080 : TPH Volatiles/BTEX - 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)

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164 Australia
Telephone: +61 (02) 8784 8555 Facsimile: +61 (02) 8784 8500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive report

Client Details

Client	:	**CH2M HILL PTY LTD**
Contact	:	**MR ADAM SULLIVAN**
Address	:	PO BOX 5392 CHATSWOOD NSW AUSTRALIA 1515
Project	:	**347496**
Order number	:	**REBATCH OF ES0612955**
C-O-C Number	:	**- Not provided -**
Site	:	**MACDONALDTOWN GASWORKS**
Sampler	:	**- Not provided -**
E-mail	:	adam.sullivan@ch2m.com.au
Telephone	:	02 9950 0200
Facsimile	:	02 9950 0600

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	----
Work order	:	**ES0613357**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	+61 (02) 8784 8555
Facsimile	:	+61 (02) 8784 8500

Dates

Date Samples Received	:	25 Oct 2006	**SRA Issue Date**	:	25 Oct 2006
Scheduled Reporting Date	:	**1 Nov 2006**	**Client Requested Date**	:	1 Nov 2006

Delivery Details

Mode of Delivery	:	Carrier.	**Temperature**		:	AMBIENT
No. of coolers/boxes	:	REBATCH	**No. of samples**	**- Received**		1
Security Seal	:	Intact.		**- Analysed**		1

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **This is a rebatch of ES0612955.**
- **This is a TCLP analysis only. Neutral (ASTM) Leach analysis to be conducted in work order ES0613375.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**

- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Please direct any turn around / technical queries to the laboratory contact designated above.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Client	: CH2M HILL PTY LTD	**Work Order**	: ES0613357
Project	: 347496	**ALS Quote Reference**	: ----

Summary of Sample(s) / Container(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 moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		EP080 - WATER BTEX	**TCLP-ZHE - WATER** TCLP ZHE Leach	**TCLP-ZHE - SOIL** TCLP ZHE Leach							
ES0613357-001	**BHA1/7.0 - 13 Oct 2006**	]	]	]							
	Total(s) :	**1**	**1**	**1**							

Client	: CH2M HILL PTY LTD	**Work Order**	: ES0613357
Project	: 347496	**ALS Quote Reference**	: ----

Requested Reports

l **ALL ACCOUNTS**

- Invoice	Email	mogibu.rahman@ch2m.com.au

l **MR ADAM SULLIVAN**

- A4 - Certificate of Analysis - NEPM format	Email	adam.sullivan@ch2m.com.au
- A4 - Quality Control Report - NEPM format	Email	adam.sullivan@ch2m.com.au
- A4 - Interpretive Quality Control Report - NEPM format	Email	adam.sullivan@ch2m.com.au
- ENMRG Export Format	Email	adam.sullivan@ch2m.com.au
- ESDAT Export Format	Email	adam.sullivan@ch2m.com.au
- Chain of Custody Acknowledgement	Email	adam.sullivan@ch2m.com.au
- A4 - Sample Receipt Notification - Comprehensive format	Email	adam.sullivan@ch2m.com.au

Sample Container(s) / Preservation Non-Compliance Log

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

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Client	: **CH2M HILL PTY LTD**	*Laboratory*	: **ALS Environmental Sydney**	*Page*	: **1 of 4**
Contact	: **MR ADAM SULLIVAN**	*Contact*	: **Greg Vogel**	*Work Order*	: **ES0613375**
Address	: **PO BOX 5392 CHATSWOOD NSW AUSTRALIA 1515**	*Address*	: **277-289 Woodpark Road Smithfield NSW Australia 2164**		
E-mail	: **adam.sullivan@ch2m.com.au**	*E-mail*	: **Greg.Vogel@alsenviro.com**		
Telephone	: **02 9950 0200**	*Telephone*	: **+61 (02) 8784 8555**		
Facsimile	: **02 9950 0600**	*Facsimile*	: **+61 (02) 8784 8500**		
Project	: **ES0612955**	*Quote number*	: **----**	*Date received*	: **25 Oct 2006**
Order number	: **REBATCH OF ES0612955**			*Date issued*	: **1 Nov 2006**
C-O-C number	: **- Not provided -**			*No. of samples*	- *Received* : **1**
Site	: **- Not provided -**				*Analysed* : **1**

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NATA Accredited Laboratory 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	*Position*	*Department*
Pabi Subba		**Organics - NATA 825 (10911 - Sydney)**
PHALAK INTHAKESONE	**Organics Co-ordinator**	**Organics - NATA 825 (10911 - Sydney)**

Comments

This report for the ALSE reference ES0613375 supersedes any previous reports with this reference. Results apply to the sample as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- **Analytical Results for Samples Submitted**
- **Surrogate Recovery Data**

The analytical procedures used by ALS Environmental 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insuffient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits). Where LOR of reported result differ from standard LOR, this may be due to high moisture, reduced sample amount or matrix interference. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number, LOR = Limit of Reporting. * Indicates failed Surrogate Recoveries.

ALS Environmental

Analytical Results

			Client Sample ID :	BHA1/7.0				
			Sample Matrix Type / Description :	ASTM LEACHATE				
			Sample Date / Time :	(31 Oct 2006) (11:34)				
			Laboratory Sample ID :	ES0613375-001				
Analyte	**CAS number**	**LOR**	**Units**					
EP080: BTEX								
Benzene	71-43-2	1	µg/L	<1				
Toluene	108-88-3	2	µg/L	<2				
Ethylbenzene	100-41-4	2	µg/L	<2				
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2				
ortho-Xylene	95-47-6	2	µg/L	<2				
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	107				
Toluene-D8	2037-26-5	0.1	%	102				
4-Bromofluorobenzene	460-00-4	0.1	%	101				

ALS Environmental

Surrogate Control Limits

Matrix Type: SOIL - Surrogate Control Limits ***Surrogate Control Limits***

Method name	*Analyte name*	*Lower Limit*	*Upper Limit*
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	88	110
	4-Bromofluorobenzene	86	115

3268 - 269

Fadi Soro

FADI 25/10/06
2.50pm

From: Nanthini Coilparampil
Sent: Wednesday, 25 October 2006 2:40 PM
To: Samples Sydney
Subject: FW: Additional analysis

es0612955_coc.pdf

CONTRACT WORK
WO: ES0613357
LAB: Sydney
DATE:
SPLIT: from batch.
ASTM

Hi Fadi

Please follow the E-mail

From: Adam.Sullivan@ch2m.com.au [mailto:Adam.Sullivan@ch2m.com.au]
Sent: Wednesday, 25 October 2006 2:22 PM
To: Nanthini Coilparampil
Subject: Additional analysis

Nanthini

1

Please reschedule our sample ID BHA1/7.0 for TCLP and neutral water leach analysis for BTEX. Please do so in accordance with our project quote SY/148/06.

Regards

Adam

****

This e-mail has been swept by mimesweeper

through the ALS North America gateway.

****

ALS Environmental
Sydney
Work Order
ES0613375
Telephone : +61 (02) 8784 8555

ALS Environmental

QUALITY CONTROL REPORT

Client	:	**CH2M HILL PTY LTD**	**Laboratory**	: ALS Environmental Sydney	**Page**	:	**1 of 4**
Contact	:	MR ADAM SULLIVAN	**Contact**	: Greg Vogel			
Address	:	PO BOX 5392 CHATSWOOD NSW AUSTRALIA 1515	**Address**	: 277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	:	**ES0613375**
					Amendment No.	:	
Project	:	ES0612955	**Quote number**	: ----	**Date received**	:	25 Oct 2006
Order number	:	REBATCH OF ES0612955			**Date issued**	:	1 Nov 2006
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	adam.sullivan@ch2m.com.au	**E-mail**	: Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	02 9950 0200	**Telephone**	: +61 (02) 8784 8555	**Received**	:	1
Facsimile	:	02 9950 0600	**Facsimile**	: +61 (02) 8784 8500	**Analysed**	:	1

This final report for the ALSE work order reference ES0613375 supersedes any previous reports with this reference.

Results apply to the sample as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

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Accredited for compliance with ISO/IED 17025

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Pabi Subba	Organics - NATA 825 (10911 - Sydney)
PHALAK INTHAKESONE	Organics - NATA 825 (10911 - Sydney)

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** = *Limit of Reporting,* ***RPD*** = *Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) 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%

Matrix Type: WATER ***Laboratory Duplicates (DUP) Report***

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EP080: BTEX						
EP080: BTEX - (QC Lot: 298413)				µg/L	µg/L	%
ES0613573-019	Anonymous	Benzene	1 µg/L	<1	<1	0.0
		Toluene	2 µg/L	<2	<2	0.0
		Ethylbenzene	2 µg/L	<2	<2	0.0
		meta- & para-Xylene	2 µg/L	<2	<2	0.0
		ortho-Xylene	2 µg/L	<2	<2	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

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 type is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. Abbreviations: LOR = Limit of reporting.

Matrix Type: WATER

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

		Method blank result	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
Analyte name	*LOR*			*LCS*	*Low*	*High*
EP080: BTEX						
EP080: BTEX - (QC Lot: 298413)		µg/L	µg/L	%	%	%
Benzene	1 µg/L	<1	----	----	----	----
	1 µg/L	----	10	102	76.2	124
Ethylbenzene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	102	76.1	122
meta- & para-Xylene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	104	75.7	123
ortho-Xylene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	104	77.9	121
Toluene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	105	74.4	124

Quality Control Report - Matrix Spikes (MS)

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 type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: WATER

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EP080: BTEX								
EP080: BTEX - (QC Lot: 298413)				µg/L	µg/L	%	%	%
Benzene	ES0613573-019	Anonymous	1 µg/L	25	<1	96.2	70	130
Toluene			2 µg/L	25	<2	86.1	70	130
Ethylbenzene			2 µg/L	25	<2	102	70	130
meta- & para-Xylene			2 µg/L	25	<2	101	70	130
ortho-Xylene			2 µg/L	25	<2	101	70	130