



Client : SINCLAIR KNIGHT MERZ
Project : - Not provided -

Work Order : ES0501612
ALS Quote Reference : ----

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Issue Date : 14 Mar 2005

ALS Environmental

Matrix Type: WATER

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

Analyte name		LOR	Method blank result	Actual Results		Recovery Limits	
				Spike concentration	Spike Recovery LCS	Low	High
EP080: BTEX							
EP080: BTEX - (QC Lot: 48263)				µg/L	%	%	%
Benzene	1 µg/L		µg/L	10	116	78	125
	1 µg/L		<1	----	----	----	----
Toluene	2 µg/L		µg/L	10	120	74	126
	2 µg/L		<2	----	----	----	----
Ethylbenzene	2 µg/L		µg/L	10	107	73	118
	2 µg/L		<2	----	----	----	----
meta- & para-Xylene	2 µg/L		µg/L	10	99.9	78	117
	2 µg/L		<2	----	----	----	----
ortho-Xylene	2 µg/L		µg/L	10	114	75	119
	2 µg/L		<2	----	----	----	----
EP080: BTEX - (QC Lot: 49206)				µg/L	%	%	%
Benzene	1 µg/L		µg/L	<1	----	----	----
	1 µg/L		µg/L	10	96.6	78	125
Toluene	2 µg/L		<2	----	----	----	----
	2 µg/L		µg/L	10	100	74	126
Ethylbenzene	2 µg/L		<2	----	----	----	----
	2 µg/L		µg/L	10	96.4	73	118
meta- & para-Xylene	2 µg/L		<2	----	----	----	----
	2 µg/L		µg/L	10	98.5	78	117
ortho-Xylene	2 µg/L		<2	----	----	----	----
	2 µg/L		µg/L	10	100	75	119



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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 Type: WATER

Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration	Actual Results		Recovery Limits		
					Sample Result	Spike Recovery	Low	High	
EG020F: Dissolved Metals by ICP-MS									
EG020F: Dissolved Metals by ICP-MS - (QC Lot: 48383)									
Arsenic	ES0500645-001	Anonymous	0.001 mg/L	0.2	mg/L	106	%	70	130
Cadmium			0.0001 mg/L	0.05	0.0001	94.4		70	130
Copper			0.001 mg/L	0.2	0.001	94.4		70	130
Lead			0.001 mg/L	0.2	<0.001	97.3		70	130
Nickel			0.001 mg/L	0.2	<0.001	99.4		70	130
Zinc			0.005 mg/L	0.2	0.016	94.9		70	130
EG020F: Dissolved Metals by ICP-MS - (QC Lot: 48385)									
Arsenic	ES0501612-004	MW16 S	0.001 mg/L	0.2	<0.001	116	%	70	130
Cadmium			0.0001 mg/L	0.05	<0.0001	93.6		70	130
Copper			0.001 mg/L	0.2	0.002	104		70	130
Lead			0.001 mg/L	0.2	<0.001	96.5		70	130
Nickel			0.001 mg/L	0.2	0.012	106		70	130
Zinc			0.005 mg/L	0.2	0.076	108		70	130
EG035F: Dissolved Mercury by FIMS									
EG035F: Dissolved Mercury by FIMS - (QC Lot: 49642)									
Mercury	ES0501610-007	Anonymous	0.0001 mg/L	0.0100	<0.0001	79.0	%	70	130
EG050F: Hexavalent Chromium - Filtered									
EG050F: Hexavalent Chromium - Filtered - (QC Lot: 48183)									
Hexavalent Chromium	ES0501612-001	DUP 2	1 mg/L	50	mg/L	116	%	70	130
EK055G: Ammonia as N by Discrete Analyser									
EK055G: Ammonia as N by Discrete Analyser - (QC Lot: 49081)									
Ammonia as N	ES0501599-004	Anonymous	0.01 mg/L	1.00	mg/L	113	%	70	130
EK059G: NOX as N by Discrete Analyser									
EK059G: NOX as N by Discrete Analyser - (QC Lot: 48198)									
Nitrite + Nitrate as N	ES0501599-001	Anonymous	0.01 mg/L	0.60	mg/L	91.2	%	70	130
EK061: Total Kjeldahl Nitrogen (TKN)									
EK061: Total Kjeldahl Nitrogen (TKN) - (QC Lot: 48379)									
				mg/L		%	%	%	%



Matrix Type: WATER

Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration	Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Low	High
Total Kjeldahl Nitrogen as N	ES0501596-001	Anonymous	0.1 mg/L	5.0 mg/L	0.3 mg/L	109 %	70 %	130 %
EK061: Total Kjeldahl Nitrogen (TKN) - (QC Lot: 48381)								
Total Kjeldahl Nitrogen as N	ES0501616-001	Anonymous	0.1 mg/L	5.0 mg/L	1.1 mg/L	124 %	70 %	130 %
EP005: Total Organic Carbon (TOC)								
EP005: Total Organic Carbon (TOC) - (QC Lot: 48111)				mg/L		%	%	%
Total Organic Carbon	ES0501612-008	MW12 S	1 mg/L	100 mg/L	11 mg/L	104 %	70 %	130 %
EP026: Chemical Oxygen Demand (COD)								
EP026: Chemical Oxygen Demand (COD) - (QC Lot: 49592)				mg/L		%	%	%
Chemical Oxygen Demand	ES0501612-001	DUP 2	5 mg/L	143 mg/L	60 mg/L	96.5 %	70 %	130 %
EP074A: Monocyclic Aromatic Hydrocarbons								
EP074A: Monocyclic Aromatic Hydrocarbons - (QC Lot: 49205)				µg/L		%	%	%
Benzene	ES0501580-006	Anonymous	5 µg/L	25 µg/L	<5 µg/L	97.8 %	70 %	130 %
Toluene			5 µg/L	25 µg/L	12 µg/L	105 %	70 %	130 %
EP074E: Halogenated Aliphatic Compounds								
EP074E: Halogenated Aliphatic Compounds - (QC Lot: 49205)				µg/L		%	%	%
1,1-Dichloroethene	ES0501580-006	Anonymous	5 µg/L	25 µg/L	<5 µg/L	98.9 %	70 %	130 %
Trichloroethene			5 µg/L	25 µg/L	<5 µg/L	97.3 %	70 %	130 %
EP074F: Halogenated Aromatic Compounds								
EP074F: Halogenated Aromatic Compounds - (QC Lot: 49205)				µg/L		%	%	%
Chlorobenzene	ES0501580-006	Anonymous	5 µg/L	25 µg/L	<5 µg/L	100 %	70 %	130 %
EP080/071: Total Petroleum Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 48263)				µg/L		%	%	%
C6 - C9 Fraction	ES0501599-003	Anonymous	20 µg/L	250 µg/L	<20 µg/L	99.8 %	80 %	120 %
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 49206)				µg/L		%	%	%
C6 - C9 Fraction	ES0501580-006	Anonymous	20 µg/L	250 µg/L	30 µg/L	88.4 %	80 %	120 %
EP080: BTEX								
EP080: BTEX - (QC Lot: 48263)				µg/L		%	%	%
Benzene	ES0501599-003	Anonymous	1 µg/L	25 µg/L	<1 µg/L	92.8 %	80 %	120 %
Toluene			2 µg/L	25 µg/L	<2 µg/L	96.8 %	80 %	120 %
Ethylbenzene			2 µg/L	25 µg/L	<2 µg/L	99.9 %	80 %	120 %
mela- & para-Xylene			2 µg/L	25 µg/L	<2 µg/L	97.5 %	80 %	120 %
ortho-Xylene			2 µg/L	25 µg/L	<2 µg/L	100 %	80 %	120 %
EP080: BTEX - (QC Lot: 49206)				µg/L		%	%	%
Benzene	ES0501580-006	Anonymous	1 µg/L	25 µg/L	<1 µg/L	104 %	80 %	120 %



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Matrix Type: WATER

Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration	Actual Results		Recovery Limits	
					Sample Result	Spike Recovery MS	Low	High
Toluene	ES0501580-006	Anonymous	2 µg/L	25	12	95.3	80	120
Ethylbenzene			2 µg/L	25	<2	103	80	120
meta- & para-Xylene			2 µg/L	25	2	92.3	80	120
ortho-Xylene			2 µg/L	25	<2	104	80	120



INTERPRETIVE QUALITY CONTROL REPORT

Client	: SINCLAIR KNIGHT MERZ	Laboratory	: ALS Environmental Sydney	Page	: 1 of 8
Contact	: MS LOUISE MACDONALD	Contact	: Greg Vogel	Work order	: ES0501612
Address	: P O BOX 164 ST LEONARDS NSW AUSTRALIA 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164	Amendment No.	:
Project	: - Not provided -	Quote number	: ----	Date received	: 3 Mar 2005
Order number	: - Not provided -	E-mail	: Greg.Vogel@alsenviro.com	Date issued	: 14 Mar 2005
C-O-C number	: - Not provided -	Telephone	: 61-2-87848555	No. of samples Received	: 9
Site	: - Not provided -	Facsimile	: 61-2-87848500	Analysed	: 9
E-mail	: lmacdonald@skm.com.au				
Telephone	: (02) 9928-2100				
Facsimile	: (02) 9928-2272				

This Interpretive Quality Control Report was issued on 14 Mar 2005 for the ALS work order reference ES0501612 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



Client : SINCLAIR KNIGHT MERZ
Project : - Not provided -

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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: WATER

Analysis Holding Time and Preservation

Method Container / Client Sample ID(s)	Date Sampled	Extraction / Preparation		Analysis	
		Date extracted	Due for extraction	Date analysed	Due for analysis
ED093F: Major Cations - Filtered Clear Plastic Bottle - Natural DUP 2	1 Mar 2005	----	----	8 Mar 2005	29 Mar 2005
EG020A-F: Dissolved Metals by ICP-MS - Suite A Amber Glass Bottle - Unpreserved MW12 S	1 Mar 2005	----	----	7 Mar 2005	28 Aug 2005
Clear Plastic Bottle - Nitric Acid; Filtered DUP 2, MW14 S, MW16 S, MW17 S, MW04 S, MW04 D, MW13 S	1 Mar 2005	----	----	7 Mar 2005	28 Aug 2005
EK061: Total Kjeldahl Nitrogen as N Clear Plastic Bottle - Sulphuric Acid DUP 2, MW14 S, MW16 S, MW17 S, MW04 S, MW04 D, MW12 S, MW13 S	1 Mar 2005	8 Mar 2005	29 Mar 2005	8 Mar 2005	29 Mar 2005
EP071: TPH - Semivolatile Fraction Amber Glass Bottle - Unpreserved DUP 2, MW14 S, MW16 S, MW17 S, MW04 S, MW04 D, MW12 S, MW13 S	1 Mar 2005	7 Mar 2005	8 Mar 2005	9 Mar 2005	16 Apr 2005
EP074: Volatile Organic Compounds Amber VOC Vial - HCl MW14 S, MW16 S, MW17 S, MW04 S, MW04 D, MW12 S, MW13 S	1 Mar 2005	----	----	8 Mar 2005	15 Mar 2005
EP075: Semivolatile Organic Compounds Amber Glass Bottle - Unpreserved MW14 S, MW16 S, MW17 S, MW04 S, MW04 D, MW12 S, MW13 S	1 Mar 2005	7 Mar 2005	8 Mar 2005	10 Mar 2005	16 Apr 2005
EP080: TPH Volatiles/BTEX					

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ALS Environmental
Analysis Holding Time and Preservation

Matrix Type: WATER

Method Container / Client Sample ID(s)	Date Sampled	Extraction / Preparation		Analysis	
		Date extracted	Due for extraction	Date analysed	Due for analysis
EP080: TPH Volatiles/BTEX - continued					
Amber VOC Vial - HCl DUP 2	1 Mar 2005	----	----	5 Mar 2005	15 Mar 2005
Amber VOC Vial - HCl MW14 S, MW16 S, MW04 S, MW12 S,	1 Mar 2005	----	----	8 Mar 2005	15 Mar 2005
					Pass
					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)							
ED093F: Major Cations - Filtered		2	20	10.0	10.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EG020A-F: Dissolved Metals by ICP-MS - Suite A		3	30	10.0	10.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EG035F: Dissolved Mercury by FIMS		3	20	15.0	10.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EG050G-F: Hexavalent Chromium by Discrete Analyser - Filtered		1	9	11.1	10.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EK055G: Ammonia as N by Discreate analyser		2	18	11.1	10.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser		2	20	10.0	10.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EK061: Total Kjeldahl Nitrogen as N		3	22	13.6	10.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EP005: Total Organic Carbon		2	20	10.0	10.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EP026: Chemical Oxygen Demand (COD)		1	9	11.1	10.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EP030: Biochemical Oxygen Demand (BOD)		2	15	13.3	13.3	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EP074: Volatile Organic Compounds		2	19	10.5	10.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX		4	36	11.1	10.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)							
ED093F: Major Cations - Filtered		1	20	5.0	5.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EG020A-F: Dissolved Metals by ICP-MS - Suite A		2	30	6.7	5.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EG035F: Dissolved Mercury by FIMS		2	20	10.0	5.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EG050G-F: Hexavalent Chromium by Discrete Analyser - Filtered		1	9	11.1	5.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EK055G: Ammonia as N by Discreate analyser		1	18	5.6	5.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser		1	20	5.0	5.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EK061: Total Kjeldahl Nitrogen as N		2	22	9.1	5.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EP005: Total Organic Carbon		1	20	5.0	5.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EP026: Chemical Oxygen Demand (COD)		2	9	22.2	10.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EP030: Biochemical Oxygen Demand (BOD)		1	15	6.7	6.7	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction		1	20	5.0	5.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EP074: Volatile Organic Compounds		1	19	5.3	5.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EP075: Semivolatile Organic Compounds		1	16	6.3	5.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX		2	36	5.6	5.0	NEPM 1999	Schedule B(3) and ALSE QCS3 requirement