Outliers : Analysis Holding Time

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

Summary of Outliers - Analysis Holding times and Preser

Matrix Type: WATER

Method / Container / Client Sample ID(s)	Date Sampled	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EG050G-F: Hexavalent Chromium by Discrete Analyser - Filtered							
Amber Glass Bottle - Unpreserved MW39S	**2 Mar 2005**	----	----	----	**8 Mar 2005**	3 Mar 2005	**Fail by 4**
EG050G-F: Hexavalent Chromium by Discrete Analyser - Filtered							
Clear Plastic Bottle - Natural MW39D, MW40S, MW40D	**2 Mar 2005**	----	----	----	**8 Mar 2005**	3 Mar 2005	**Fail by 4**
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser							
Amber Glass Bottle - Unpreserved MW39S	**2 Mar 2005**	----	----	----	**8 Mar 2005**	4 Mar 2005	**Fail by 3**
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Natural MW39D, MW40S, MW40D	**2 Mar 2005**	----	----	----	**8 Mar 2005**	4 Mar 2005	**Fail by 3**
EP030: Biochemical Oxygen Demand (BOD)							
Amber Glass Bottle - Unpreserved MW39S	**2 Mar 2005**	----	----	----	**8 Mar 2005**	4 Mar 2005	**Fail by 4**
EP030: Biochemical Oxygen Demand (BOD)							
Clear Plastic Bottle - Natural MW39D, MW40S, MW40D	**2 Mar 2005**	----	----	----	**8 Mar 2005**	4 Mar 2005	**Fail by 4**

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: WATER

Preparation Methods

EK061/EK067 : TKN/TP Digestion - APHA 20th ed., 4500 Norg - D; APHA 20th ed., 4500 P - H. 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

EA065 : Hardness as CaCO3 - APHA 20th ed., 2340. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

ED093F : Major Cations - Filtered - APHA 20th ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises filtered 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)

EG020A-F : Dissolved Metals by ICP-MS - Suite A - (APHA 20th 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.

EG035F : Dissolved 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 filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EG050G-F : Hexavalent Chromium by Discrete Analyser - Filtered - APHA 20th ed., 3500 Cr-A & B. Hexavalent chromium is determined directly on water sample by Seal Descrete Analyser as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EK055G : Ammonia as N by Discreate analyser - APHA 20th ed., 4500 NH3+-H Ammonia is determined by direct colorimetry by Seal. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EK059G : Nitrite and Nitrate as N (NOx) by Discrete Analyser - APHA 20th ed., 4500 NO3- I. SEAL Method 2-018-1-L February 2003. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by SEAL. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EK061 : Total Kjeldahl Nitrogen as N - APHA 20th ed., 4500-Norg-D 100mL water samples are digested using a traditional Kjeldahl digestion followed by determination by FIA. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EK062-SYD : Total Nitrogen as N (TKN + Nox) - APHA 20th ed., 4500 N org / NO3. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EP005 : Total Organic Carbon - APHA 20th ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EP026 : Chemical Oxygen Demand (COD) - APHA 20th ed., 5220 B. Samples are digested with a known excess of acidic potassium dichromate solution using silver sulphate as a catalyst. The chromium is reduced from Cr (VI) to Cr (III) by oxygen. The unreacted Cr (VI) can then be titrated with ferrous ammonium sulfate to determine the amount of Cr (VI) consumed. The oxidisable organic matter can be calculated in terms of oxygen equivalents. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Matrix Type: WATER

Analytical Methods

EP030 : Biochemical Oxygen Demand (BOD) - APHA 20th ed., 5210 B The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EP071 : TPH - Semivolatile Fraction - 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)

EP074 : Volatile Organic Compounds - 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)

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

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)

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NATA Accredited Laboratory Number: 1464

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CERTIFICATE OF ANALYSIS

Contents :
1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No.	:	5E0674
Attention	:	Ms Louise Macdonald
Client	:	Sinclair Knight Merz
	:	PO Box 164
	:	ST LEONARDS NSW 1590
Samples	:	3
Reference/Order	:	EN01669
Project	:	MACDONALDTOWN
Received Samples	:	21/02/05
Instructions	:	21/02/05
Date Reported	:	03/03/05

PLEASE SEE FOLLOWING PAGES FOR METHOD LISTING AND RESULTS

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "#", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for <10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been authorized by the NATA signatories listed in the method descriptions section on the following page.

James McMahon B.Sc.,Ph.D. (Chem.)
Manager - Environmental

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Report No. : 5E0674

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.
Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

Method	Description	Extracted	Analysed	Authorised	
E7500	Moisture (%w/w)	22/02/05	22/02/05	ZSI	096
E1230	TPH C6-C9 by Purge & Trap	22/02/05	22/02/05	GTO	094
E1221	TPH (C10-C36)	22/02/05	23/02/05	GTO	094
E1010	Benzene,Toluene,Ethylbenzene & Xylene	22/02/05	22/02/05	GTO	094
E5910	Metals by ICP-AES	28/02/05	28/02/05	DLU	093
E5950	Mercury in Soil	22/02/05	23/02/05	DLU	093
E1180	Semivolatile Organic Compounds	22/02/05	28/02/05	LHA	095
E1290	Volatile Organic Compounds	22/02/05	23/02/05	GTO	094

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NATA Signatory

Initials	Name	Sections/Methods
MCM	James McMahon	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094, 095
LHA	Ly Kim Ha	094, 095, 096
DJA	Dilanthi Jayamanne	094
GTO	Greg Towers	094
GPE	Geoff Peterson	095
DLU	Darrel Luck	093
MAV	Merrin Avery	101
DBL	Dianne Blane	101
NCO	Nathan Cooper	101
AGR	Alison Graham	101
PKE	Peter Keyte	101

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Job Number : 5E0674
Client : Sinclair Knight Merz
Reference : EN01669
Project : MACDONALDTOWN

Analyte	Lab No	E179645 MW41D	E179647 MW38D			
	Sample Id	7.0m	2-2.45m			
	PQL					
E7500 Moisture (%w/w) in Soil						
Moistures test performed at 105oC						
Moisture Content	1	19%	17%			
E1230 TPH in Soil by Purge & Trap/GC-MS						
C6-C9 Fraction	5	nd	nd			
E1221 TPH in Soil						
C10-C14 Fraction	10	nd	nd			
C15-C28 Fraction	50	nd	nd			
C29-C36 Fraction	50	nd	nd			
E1010 BTEX (P&T) in Soil						
Benzene	0.2	nd	nd			
Toluene	1	nd	nd			
Ethylbenzene	1	nd	nd			
m&p-Xylene	2	nd	nd			
o-Xylene	1	nd	nd			
4-Bromofluorobenzene-SURROGATE	1	85%	86%			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = < PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

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Job Number : 5E0674

Client : Sinclair Knight Merz

Reference : EN01669

Project : MACDONALDTOWN

Analyte	Lab No	E179645 MW41D	E179647 MW38D			
	Sample Id	7.0m	2-2.45m			
	PQL					
E5910 Metals in Soil						
Arsenic	5	nd	nd			
Cadmium	0.5	nd	nd			
Chromium	5	12	9			
Copper	5	17	nd			
Nickel	2	nd	3			
Lead	5	7	9			
Zinc	5	6	nd			
E5950 Mercury in Soil						
Mercury	0.05	0.05	0.05			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = <PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight unless otherwise specified
Waters : mg/L (ppm) unless otherwise specified in Method Header
Leachates : mg/L (ppm) in leachate unless otherwise specified in Method Header

Refer to Amdel standard laboratory qualifier codes for comments.