



Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: ES0905274	Page	: 1 of 6
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Project	: ----	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 09-APR-2009
C-O-C number	: ----	Issue Date	: 21-APR-2009
Sampler	: KL/HB	No. of samples received	: 3
Site	: GUNNEDAH	No. of samples analysed	: 3
Quote number	: EN/039/08		

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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Spectroscopist	Inorganics
Hoa Nguyen	Inorganic Chemist	Inorganics
Pabi Subba	Senior Organic Chemist (Semi-Volatile)	Organics
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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 insufficient 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

- **ED041: LOR raised for Turbidimetric Sulfate for sample ID 'RESERVE PIT' due to matrix interference.**
- **ED093F:: ES0905274-001 and 003 required dilution (X10) prior to digestion due to matrix interference and LOR's have been raised accordingly.**
- **EG020A-T: Natural bottles are used for batch ES0905274-001, 002 and 003.**
- **Sample diluted by ten due to hard to be filtered**



Analytical Results

Sub-Matrix: WATER

				Client sample ID	FLOW PIT	RESERVE PIT	RETURN PIT	----	----
				Client sampling date / time	07-APR-2009 15:30	07-APR-2009 15:30	07-APR-2009 15:30	----	----
Compound	CAS Number	LOR	Unit	ES0905274-001	ES0905274-002	ES0905274-003	----	----	
EA005: pH									
pH Value	----	0.01	pH Unit	7.59	8.49	7.55	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	19400	1840	19400	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	670	193	683	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	670	193	683	----	----	
ED041: Sulfate (Turbidimetric) as SO4 2-									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	59	<10	55	----	----	
ED045G: Chloride Discrete analyser									
Chloride	16887-00-6	1	mg/L	4700	359	4750	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	79	28	79	----	----	
Magnesium	7439-95-4	1	mg/L	57	20	58	----	----	
Sodium	7440-23-5	1	mg/L	601	69	604	----	----	
Potassium	7440-09-7	1	mg/L	3800	283	3900	----	----	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.076	<0.001	0.073	----	----	
Beryllium	7440-41-7	0.001	mg/L	0.005	<0.001	0.004	----	----	
Barium	7440-39-3	0.001	mg/L	4.81	0.166	4.14	----	----	
Cadmium	7440-43-9	0.0001	mg/L	0.0010	<0.0001	0.0010	----	----	
Chromium	7440-47-3	0.001	mg/L	0.428	0.007	0.357	----	----	
Cobalt	7440-48-4	0.001	mg/L	0.065	0.001	0.053	----	----	
Copper	7440-50-8	0.001	mg/L	0.213	0.006	0.169	----	----	
Lead	7439-92-1	0.001	mg/L	0.096	<0.001	0.085	----	----	
Manganese	7439-96-5	0.001	mg/L	2.62	0.078	2.16	----	----	
Nickel	7440-02-0	0.001	mg/L	0.164	0.003	0.137	----	----	
Vanadium	7440-62-2	0.01	mg/L	0.29	<0.01	0.28	----	----	
Zinc	7440-66-6	0.005	mg/L	1.07	0.024	0.842	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0010	<0.0001	<0.0010	----	----	
EN055: Ionic Balance									
^ Total Anions	----	0.01	meq/L	147	14.0	149	----	----	
^ Total Cations	----	0.01	meq/L	----	13.2	135	----	----	
Total Cations	----	0.01	meq/L	133	----	----	----	----	
^ Ionic Balance	----	0.01	%	----	2.69	4.90	----	----	



Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

				FLOW PIT	RESERVE PIT	RETURN PIT	----	----
				07-APR-2009 15:30	07-APR-2009 15:30	07-APR-2009 15:30	----	----
Compound	CAS Number	LOR	Unit	ES0905274-001	ES0905274-002	ES0905274-003	----	----
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	4.95	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	260	<20	260	----	----
C10 - C14 Fraction	----	50	µg/L	2560	<50	1950	----	----
C15 - C28 Fraction	----	100	µg/L	9500	<100	12900	----	----
C29 - C36 Fraction	----	50	µg/L	730	<50	810	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	111	110	109	----	----
Toluene-D8	2037-26-5	0.1	%	110	99.1	102	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	111	92.1	116	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	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