

CERTIFICATE OF ANALYSIS

Work Order	: ES1527158	Page	: 1 of 4
Client	: LOW ECOLOGICAL SERVICES	Laboratory	: Environmental Division Sydney
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Project	: INTERMIN WHITE RANGE	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 29-Jul-2015 14:16
C-O-C number	: ----	Date Analysis Commenced	: 29-Jul-2015
Sampler	: JEREMY SNOWDON-JAMES	Issue Date	: 04-Aug-2015 13:57
Site	: ----		
Quote number	: ----	No. of samples received	: 5
		No. of samples analysed	: 5

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

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>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney 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 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 sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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
ø = ALS is not NATA accredited for these tests.

- Ionic Balance out of acceptable limits due to analytes not quantified in this report.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S02	S03	S04	S05	S09
Client sampling date / time					27-Jul-2015 14:30	27-Jul-2015 14:45	27-Jul-2015 15:30	27-Jul-2015 15:00	27-Jul-2015 12:30
Compound	CAS Number	LOR	Unit		ES1527158-001	ES1527158-002	ES1527158-003	ES1527158-004	ES1527158-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.66	8.11	8.17	8.27	2.67
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		5900	2710	2270	1390	942
EA016: Calculated TDS (from Electrical Conductivity)									
^ Total Dissolved Solids (Calc.)	----	1	mg/L		3840	1760	1480	904	612
EA065: Total Hardness as CaCO3									
^ Total Hardness as CaCO3	----	1	mg/L		1870	678	569	304	36
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		722	825	692	462	<1
Total Alkalinity as CaCO3	----	1	mg/L		722	825	692	462	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		1080	376	290	84	211
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		969	229	190	116	8
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		386	100	91	51	8
Magnesium	7439-95-4	1	mg/L		220	104	83	43	4
Sodium	7440-23-5	1	mg/L		614	374	299	172	10
Potassium	7440-09-7	1	mg/L		16	13	9	9	4
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		0.001	<0.001	<0.001	0.005	<0.001
Boron	7440-42-8	0.05	mg/L		0.60	0.36	0.20	0.12	0.06
Barium	7440-39-3	0.001	mg/L		0.130	0.082	0.054	0.022	0.028
Beryllium	7440-41-7	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	0.001
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	7440-48-4	0.001	mg/L		0.148	0.074	0.022	0.046	0.022
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	0.005
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	21.3
Manganese	7439-96-5	0.001	mg/L		1.42	0.580	<0.001	0.087	0.068
Nickel	7440-02-0	0.001	mg/L		0.002	<0.001	<0.001	0.001	0.015
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	0.002
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01



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Compound	CAS Number	LOR	Unit		ES1527158-001	ES1527158-002	ES1527158-003	ES1527158-004	ES1527158-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		<0.005	0.181	<0.005	<0.005	0.009
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		0.920	0.259	0.028	0.093	<0.004
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		1.4	1.7	2.5	1.1	0.2
EK085M: Sulfide as S2-									
Sulfide as S2-	18496-25-8	0.1	mg/L		<0.1	<0.1	<0.1	0.2	<0.1
EN055: Ionic Balance									
^ Total Anions	----	0.01	meq/L		64.2	30.8	25.2	14.2	4.62
Total Cations	----	0.01	meq/L		----	----	----	----	3.00
^ Total Cations	----	0.01	meq/L		64.5	30.2	24.6	13.8	----
Ionic Balance	----	0.01	%		----	----	----	----	21.3
^ Ionic Balance	----	0.01	%		0.18	1.05	1.26	1.65	----