



CERTIFICATE OF ANALYSIS

Work Order	: EP2308255	Page	: 1 of 6
Client	: COVALENT LITHIUM PTY LTD	Laboratory	: Environmental Division Perth
Contact	: BRIGITTA LONGBOTTOM	Contact	: Customer Services EP
Address	: L18, 109 St Georges Tce Perth 6000	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: Quarterly Groundwater Monitoring	Date Samples Received	: 21-Jun-2023 13:00
Order number	: 4500004484	Date Analysis Commenced	: 21-Jun-2023
C-O-C number	: 53844	Issue Date	: 19-Jul-2023 13:20
Sampler	: Jacinta Saad		
Site	: MTH GW		
Quote number	: EP/565/22_V4_V4		
No. of samples received	: 4		
No. of samples analysed	: 4		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
Joel Nicholson	Laboratory Manager	Radionuclides, Hume, ACT



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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
∅ = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- While ALS is NATA accredited to report Alkalinity via method ED037P ALS is not NATA accredited to report analytes under method ED037CC which are calculations based on Alkalinity results from method ED037P.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- EG020: LORs have been raised for some samples due to matrix interference (High sample salinity)
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	EGH09	MB1	MB2	MB4	----
Sampling date / time				20-Jun-2023 07:55	20-Jun-2023 10:55	20-Jun-2023 11:56	20-Jun-2023 16:00	----	----
Compound	CAS Number	LOR	Unit	EP2308255-001	EP2308255-002	EP2308255-003	EP2308255-004	-----	-----
				Result	Result	Result	Result	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	11600	21400	54000	33300	----	----
EA250: Gross Alpha and Beta Activity									
Gross beta	----	0.10	Bq/L	<0.10	5.87	12.7	5.97	----	----
ED009: Anions									
Bromide	24959-67-9	0.010	mg/L	11.5	23.1	44.0	31.9	----	----
ED037CC: Calculated Alkalinity Parameters									
∅ Hydroxide Alkalinity as Hydroxide	----	1	mg/L	<1	<1	<1	<1	----	----
∅ Bicarbonate Alkalinity as Bicarbonate	----	1	mg/L	601	612	335	522	----	----
∅ Carbonate Alkalinity as Carbonate	----	1	mg/L	<1	<1	<1	<1	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	492	502	274	428	----	----
Total Alkalinity as CaCO3	----	1	mg/L	492	502	274	428	----	----
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	38	35	52	20	----	----
ED040F: Dissolved Major Anions									
Silicon as SiO2	14464-46-1	0.1	mg/L	37.5	38.6	17.8	17.9	----	----
Silicon	7440-21-3	0.05	mg/L	17.5	18.0	8.32	8.37	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1040	1610	3200	2100	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	5850	10900	30800	17500	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	145	324	1200	529	----	----
Magnesium	7439-95-4	1	mg/L	499	1230	2780	1970	----	----
Sodium	7440-23-5	1	mg/L	3600	6500	16100	10600	----	----
Potassium	7440-09-7	1	mg/L	104	169	327	251	----	----
ED093F: SAR and Hardness Calculations									
Total Hardness as CaCO3	----	1	mg/L	2420	5870	14400	9430	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.03	<0.10	<0.10	----	----
Antimony	7440-36-0	0.001	mg/L	0.002	<0.001	<0.010	<0.010	----	----



Analytical Results

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 (Matrix: WATER)

				Sample ID	EGH09	MB1	MB2	MB4	----
				Sampling date / time	20-Jun-2023 07:55	20-Jun-2023 10:55	20-Jun-2023 11:56	20-Jun-2023 16:00	----
Compound	CAS Number	LOR	Unit		EP2308255-001	EP2308255-002	EP2308255-003	EP2308255-004	-----
					Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued									
∅ Niobium	7440-03-1	0.001	mg/L		<0.001	<0.001	<0.010	<0.010	----
Arsenic	7440-38-2	0.001	mg/L		0.184	0.002	<0.010	<0.010	----
Beryllium	7440-41-7	0.001	mg/L		<0.001	<0.001	<0.010	<0.010	----
Barium	7440-39-3	0.001	mg/L		0.026	0.096	0.164	0.086	----
Bismuth	7440-69-9	0.001	mg/L		<0.001	<0.001	<0.010	<0.010	----
Cadmium	7440-43-9	0.0001	mg/L		0.0001	<0.0001	<0.0010	<0.0010	----
Caesium	7440-46-2	0.001	mg/L		0.345	0.235	0.560	0.075	----
Chromium	7440-47-3	0.001	mg/L		<0.001	0.006	<0.010	<0.010	----
Cobalt	7440-48-4	0.001	mg/L		0.009	<0.001	<0.010	<0.010	----
Copper	7440-50-8	0.001	mg/L		0.016	<0.001	<0.010	<0.010	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.010	<0.010	----
Lithium	7439-93-2	0.001	mg/L		1.46	0.748	1.15	0.974	----
Manganese	7439-96-5	0.001	mg/L		0.367	0.747	2.72	2.42	----
Molybdenum	7439-98-7	0.001	mg/L		0.005	0.004	<0.010	<0.010	----
Nickel	7440-02-0	0.001	mg/L		0.079	0.010	<0.010	<0.010	----
Rubidium	7440-17-7	0.001	mg/L		0.110	0.144	0.309	0.151	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.10	<0.10	----
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.010	<0.010	----
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.010	<0.010	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.010	<0.010	----
Uranium	7440-61-1	0.001	mg/L		0.037	0.005	0.025	0.010	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.10	<0.10	----
Zinc	7440-66-6	0.005	mg/L		0.026	0.020	<0.050	<0.050	----
Boron	7440-42-8	0.05	mg/L		1.59	1.55	1.82	1.88	----
Iron	7439-89-6	0.05	mg/L		0.15	<0.05	1.24	<0.10	----
Tantalum	7440-25-7	0.001	mg/L		<0.001	<0.001	<0.010	<0.010	----
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		0.08	3.78	1.50	<0.10	----
Iron	7439-89-6	0.05	mg/L		0.25	4.90	4.99	0.21	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
EK040P: Fluoride by PC Titrator									



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Compound	CAS Number	LOR	Unit	EP2308255-001	EP2308255-002	EP2308255-003	EP2308255-004	-----	-----
				Result	Result	Result	Result	----	----
EK040P: Fluoride by PC Titrator - Continued									
Fluoride	16984-48-8	0.1	mg/L	0.4	0.2	0.5	0.3	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.09	2.59	0.89	1.12	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.06	0.18	<0.01	0.03	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.06	0.18	<0.01	0.03	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	10.8	4.4	2.4	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.3	11.0	4.4	2.4	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.10	0.13	0.09	0.05	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.07	0.05	<0.01	0.03	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	196	351	941	546	----	----
∅ Total Cations	----	0.01	meq/L	208	404	997	656	----	----
∅ Ionic Balance	----	0.01	%	2.73	7.07	2.91	9.16	----	----
EA250CA: Gross Alpha and Beta Activity									
Gross alpha	----	0.05	Bq/L	0.07	4.91	1.80	3.68	----	----
Gross beta activity - 40K	----	0.10	Bq/L	<0.10	3.56	8.86	<0.10	----	----

Page : 6 of 6
Work Order : EP2308255
Client : COVALENT LITHIUM PTY LTD
Project : Quarterly Groundwater Monitoring



Inter-Laboratory Testing

Analysis conducted by ALS Canberra, NATA accreditation no. 992.

(WATER) EA250: Gross Alpha and Beta Activity

(WATER) EA250CA: Gross Alpha and Beta Activity

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EG020F: Dissolved Metals by ICP-MS

(WATER) ED009: Anions

(WATER) EG020T: Total Metals by ICP-MS

(WATER) EG035F: Dissolved Mercury by FIMS
