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Certificate of Analysis MGB0425

Client Details

Client	Natural Aqua Solutions Pty Ltd
Contact	Olaf Lyche
Address	33 Allenby Avenue, Malvern East, VIC, 3145

Sample Details

Your Reference	Three Bays base metal analysis
Number of Samples	2 Water
Date Samples Received	21/02/2025
Date Instructions Received	21/02/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for soils and on an as received basis for other matrices.

Report Details

Date Final Results Expected	28/02/2025
Date of Reissue	26/06/2025 - This report supercedes previous report, see amendment history for details

Accredited for compliance with ISO/IEC 17025. Tests not covered by NATA are denoted with *.

Authorisation Details

Results Approved By	Chaminda Gunasekara, Inorganics Supervisor Chris De Luca, Lab Manager Tara White, Metals Supervisor
Laboratory Manager	Chris De Luca

Report Amendment History

Revision	Reason for Amendment
R-01	This report supercedes MGB0425_R00 due to project ID update request.

Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
MGB0425-01	Z02061ST	Water	21/02/2025	21/02/2025
MGB0425-02	Z02061- Sparkling	Water	21/02/2025	21/02/2025

Acid Extractable Low Level Metals (Water)

Envirolab ID	Units	PQL	MGB0425-01	MGB0425-02
Your Reference			Z02061ST	Z02061-Sparkling
Date Sampled			21/02/2025	21/02/2025
Aluminium	µg/L	10	<10	<10
Arsenic	µg/L	1.0	<1.0	<1.0
Cadmium	µg/L	0.10	<0.10	<0.10
Chromium	µg/L	1.0	<1.0	<1.0
Copper	µg/L	1.0	4.8	5.5
Iron	µg/L	10	<10	<10
Mercury	µg/L	0.050	<0.050	<0.050
Manganese	µg/L	1.0	25	74
Nickel	µg/L	1.0	10	8.7
Lead	µg/L	1.0	<1.0	<1.0
Selenium	µg/L	1.0	<1.0	<1.0
Zinc	µg/L	1.0	7.8	7.2

Inorganics - Physical Parameters (Water)

Envirolab ID	Units	PQL	MGB0425-01	MGB0425-02
Your Reference			Z02061ST	Z02061-Sparkling
Date Sampled			21/02/2025	21/02/2025
Total Dissolved Solids	mg/L	5.0	1200	1300

Inorganics - Ionic Balance and Indexes (Water)

Envirolab ID	Units	PQL	MGB0425-01	MGB0425-02
Your Reference			Z02061ST	Z02061-Sparkling
Date Sampled			21/02/2025	21/02/2025
Bicarbonate Alkalinity as CaCO3	mg/L as CaCO3	5.0	330	320
Carbonate Alkalinity as CaCO3	mg/L as CaCO3	5.0	<5.0	<5.0
Hydroxide OH- as CaCO3	mg/L as CaCO3	5.0	<5.0	<5.0
Total Alkalinity as CaCO3	mg/L as CaCO3	5.0	330	320
Chloride	mg/L	1.0	390	350
Sulfate	mg/L	1.0	66	58
Calcium	mg/L	0.50	56	48
Magnesium	mg/L	0.50	83	71
Potassium	mg/L	0.50	3.2	2.7
Sodium	mg/L	0.50	180	150
Hardness (calc) equivalent CaCO3	mg/L	3.0	480	410
Ionic Balance	%		-4.6	-7.2
Total Anions	mg/L	7.0	790	720
Anions as meq	meq/L	0.59	18	16
Total Cations	mg/L	2.0	320	280
Cations as meq	meq/L	0.10	17	15

Method Summary

Method ID	Methodology Summary
Calc - ION	Calculation
INORG-006	Alkalinity - determined titrimetrically based on APHA latest edition 2320-B. Solids reported from a 1:5 water extract unless otherwise specified. Total Carbon Dioxide - determined by calculation in accordance with APHA latest edition,4500-CO2 D.
INORG-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180±10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation: TDS = EC*0.6
INORG-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% i.e. total anions = total cations +/-15%.
INORG-081	Anions determined by Ion Chromatography. Waters samples are filtered on receipt prior to analysis. Solids are analysed from a water extract. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
METALS-020	Determination of various metals by ICP-OES. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.
METALS-021	Determination of Mercury by Cold Vapour AAS.
METALS-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.

Result Definitions

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

Quality Control Definitions

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

Miscellaneous Information

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volume(s) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Data Quality Assessment Summary MGB0425

Client Details

Client	Natural Aqua Solutions Pty Ltd
Your Reference	Three Bays base metal analysis
Date Issued	26/06/2025

Recommended Holding Time Compliance

No recommended holding time exceedances

Quality Control and QC Frequency

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	Yes	No Outliers
Matrix Spike	No	Matrix Spike Outliers Exist - See detailed list below
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	Yes	No Outliers

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

Data Quality Assessment Summary MGB0425

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
Total Metals (LL) | Water	1-2	21/02/2025	24/02/2025	25/02/2025	Yes
Total Metals (LL)-Hg | Water	1-2	21/02/2025	24/02/2025	25/02/2025	Yes
TDS | Water	1-2	21/02/2025	26/02/2025	26/02/2025	Yes
Alkalinity Suite | Water	1-2	21/02/2025	21/02/2025	24/02/2025	Yes
Chloride | Water	1-2	21/02/2025	24/02/2025	26/02/2025	Yes
Dissolved Cations | Water	1-2	21/02/2025	24/02/2025	25/02/2025	Yes
Ion Balance | Water	1-2	21/02/2025	24/02/2025	26/02/2025	Yes
	1-2	21/02/2025	24/02/2025	28/02/2025	Yes
Sulfate | Water	1-2	21/02/2025	24/02/2025	26/02/2025	Yes

Outliers: Matrix Spike

METALS-020|Inorganics - Ionic Balance and Indexes (Water)| Batch BGB3853

Sample ID	Analyte	% Limits	% Recovery
BGB3853-MS1#	Sodium	70 - 130	##[1]

METALS-022|Acid Extractable Low Level Metals (Water)| Batch BGB3849

Sample ID	Analyte	% Limits	% Recovery
BGB3849-MS1#	Zinc	70 - 130	##[1]

Quality Control MGB0425

METALS-022|Acid Extractable Low Level Metals (Water) | Batch BGB3849

Analyte	Units	PQL	Blank	DUP1 BGB3849-DUP1# Samp | QC | RPD %	DUP2 BGB3849-DUP2# Samp | QC | RPD %	LCS %	Spike % BGB3849-MS1#
Aluminium	µg/L	10	<10	<10 | <10 | [NA]	21.3 | 16.7 | [NA]	104	108
Arsenic	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	106	104
Cadmium	µg/L	0.10	<0.10	0.120 | <0.10 | [NA]	<0.10 | <0.10 | [NA]	107	107
Chromium	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	105	105
Copper	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	125 | 127 | 1.62	107	107
Iron	µg/L	10	<10	<10 | <10 | [NA]	39.0 | 38.1 | [NA]	110	112
Lead	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	102	98.0
Manganese	µg/L	1.0	<1.0	2.74 | 2.44 | [NA]	9.24 | 9.62 | 3.99	106	105
Nickel	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	106	104
Selenium	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	104	96.2
Zinc	µg/L	1.0	<1.0	2620 | 2580 | 1.55	10.8 | 10.9 | 1.09	109	##[1]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-021|Acid Extractable Low Level Metals (Water) | Batch BGB3851

Analyte	Units	PQL	Blank	DUP1 BGB3851-DUP1# Samp | QC | RPD %	LCS %	Spike % BGB3851-MS1#
Mercury	µg/L	0.050	<0.050	<0.050 | <0.050 | [NA]	111	121

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-018|Inorganics - Physical Parameters (Water) | Batch BGB4368

Analyte	Units	PQL	Blank	DUP1 BGB4368-DUP1# Samp | QC | RPD %	DUP2 BGB4368-DUP2# Samp | QC | RPD %	LCS %
Total Dissolved Solids	mg/L	5.0	<5.0	27000 | 27300 | 1.11	1660 | 1680 | 0.900	119

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-020|Inorganics - Ionic Balance and Indexes (Water) | Batch BGB3853

Analyte	Units	PQL	Blank	DUP1 BGB3853-DUP1# Samp | QC | RPD %	LCS %	Spike % BGB3853-MS1#
Calcium	mg/L	0.50	<0.50	5.56 | 5.58 | 0.233	93.7	75.3
Magnesium	mg/L	0.50	<0.50	1.37 | 1.36 | [NA]	93.2	81.8
Potassium	mg/L	0.50	<0.50	0.634 | 0.652 | [NA]	92.0	96.0
Sodium	mg/L	0.50	<0.50	4.72 | 4.78 | 1.37	91.5	##[1]
Hardness (calc) equivalent CaCO3	mg/L	3.0	<3.0	19.5 | 19.5 | 0.0819	[NA]	[NA]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-081|Inorganics - Ionic Balance and Indexes (Water) | Batch BGB3879

Analyte	Units	PQL	Blank	DUP1 BGB3879-DUP1# Samp | QC | RPD %	DUP2 BGB3879-DUP2# Samp | QC | RPD %	LCS %	Spike % BGB3879-MS1#
Chloride	mg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	172 | 160 | 7.17	104	92.2
Sulfate	mg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	153 | 146 | 4.72	105	91.2

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

Quality Control MGB0425

INORG-006|Inorganics - Ionic Balance and Indexes (Water) | Batch BGB3985

Analyte	Units	PQL	Blank	DUP1 BGB3985-DUP1# Samp | QC | RPD %	DUP2 BGB3985-DUP2# Samp | QC | RPD %	LCS %
Bicarbonate Alkalinity as CaCO3	mg/L as CaCO3	5.0	<5.0	23.0 | 21.1 | [NA]	5.40 | <5.0 | [NA] [2]	[NA]
Carbonate Alkalinity as CaCO3	mg/L as CaCO3	5.0	<5.0	<5.0 | <5.0 | [NA]	<5.0 | <5.0 | [NA] [2]	[NA]
Hydroxide OH- as CaCO3	mg/L as CaCO3	5.0	<5.0	<5.0 | <5.0 | [NA]	<5.0 | <5.0 | [NA] [2]	[NA]
Total Alkalinity as CaCO3	mg/L as CaCO3	5.0	<5.0	23.0 | 21.1 | [NA]	5.40 | <5.0 | [NA] [2]	111

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

QC Comments

Identifier	Description
[1]	Spike recovery is not applicable due to the relatively high analyte background in the sample (>3* spike level). However, the LCS recovery is within acceptance criteria.
[2]	Duplicate %RPD may be flagged as an outlier to routine laboratory acceptance, however, where one or both results are <10*PQL, the RPD acceptance criteria increases exponentially.