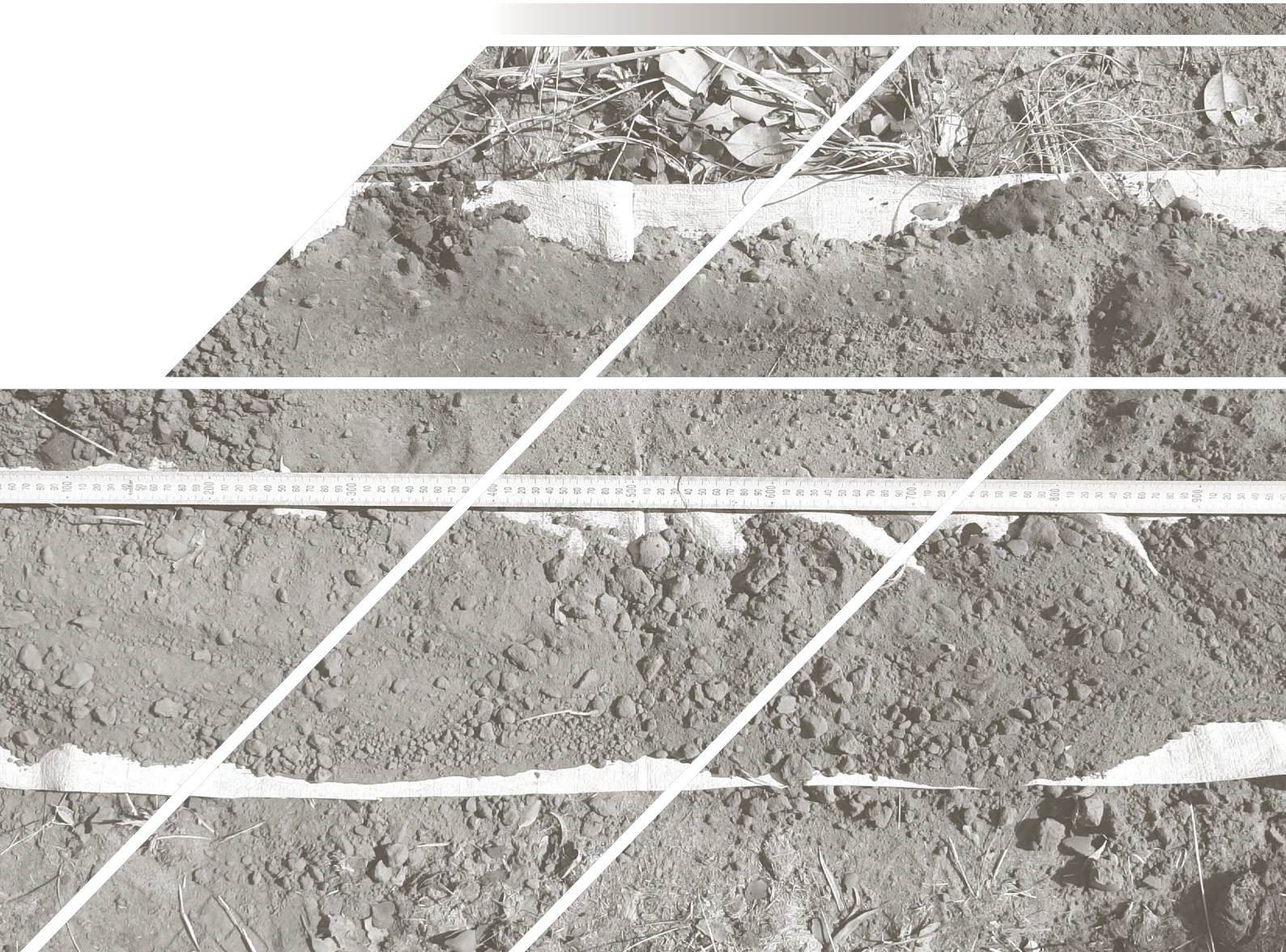
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GEOCHEMISTRY REPORT



TECHNICAL REPORT

Geochemistry Report for the Big Vein South Gold Project

Prepared for: Strategic Minerals Corporation Pty Ltd

Prepared by: RGS Environmental Consultants Pty Ltd

9 September 2026

RGS

MINE WASTE AND WATER MANAGEMENT

TECHNICAL REPORT

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Glossary of terms and abbreviations

ABA	Acid Base Account, an evaluation of the balance between acid generation and acid neutralisation processes. Generally, determines the MPA and the inherent ANC, as defined below, and is commonly used in assessing the potential for AMD associated with mining.
ABCC	Acid Base Characteristic Curves
Acidity	A measure of hydrogen ion (H+) concentration and certain dissolved metals in a solution when titrated to a set pH value; generally expressed as mg/L $CaCO_3$ equivalent.
Alkalinity	A measure of the capacity of a water to neutralise acids.
ALS	Australian Laboratory Services.
AMD	Acid and metalliferous drainage from mine waste materials characterised by low pH, elevated metal concentrations, high sulfate concentrations and high salinity.
ANC	Acid Neutralising Capacity expressed as kg H_2SO_4 per tonne of sample. A measure of a sample's maximum potential ability to neutralise acid.
ANC:MPA	The ratio of the acid neutralising capacity to the maximum potential acidity of a sample. Used to assess the risk of a sample generating acid conditions.
AS	Australian Standards
BVS	Big Vein South
CIL	Carbon-In-Leach gold processing plant using activated carbon.
EC	Electrical Conductivity, expressed as µS/cm.
eCEC	Effective cation exchange capacity provides a measure of the mass of exchangeable cations (Ca, Mg, Na and K) in a sample.
Eh	Redox potential. A measure of the tendency of a chemical species to acquire or lose electrons to an electrode. Used to measure oxidising (+ve) or reducing (-ve) conditions in a saturated column.
EAR	Environmental Assessment Report.
ESP	Exchangeable sodium percentage provides a measure of the sodicity of a material and propensity to erode.
FIMS	Flow Injection Mercury System.
GAI	Geochemical Abundance Index.
HEC	Hansen Environmental Consulting.
H_2SO_4	Sulfuric Acid.
HIL	Health Investigation Levels under the NEPM. The HILs are scientific, risk-based guidance levels (or Tier 1 criteria) designed to be used in the first stage of an assessment of potential risks to human health from chronic exposure to contaminants.
ICP-MS	Inductively Coupled Plasma Mass Spectrometry.
ICP-AES	Inductively Coupled Plasma Atomic Emission Spectrometry.
INAP	International Network on Acid Prevention.
KLC	Kinetic Leach Column. Leaching setup that generates time-dependent data on the kinetics and rate of acid generation and acid neutralising reactions under laboratory controlled (or onsite conditions).

LOR	Limit of Reporting. Laboratory detection limit for the reporting of results for a particular geochemical test.
MPA	Maximum Potential Acidity calculated by multiplying the total sulfur content of a sample by 30.625 (stoichiometric factor) and expressed as kg H_2SO_4 per tonne.
NAF	Non-Acid Forming. Geochemical classification criterion for a sample that will not generate acid conditions.
NAG test	Net acid generation test. Hydrogen peroxide solution is used to oxidise sulfides in a sample, then any acid generated through oxidation may be consumed by neutralising components in the sample. Any remaining acidity is expressed as kg H_2SO_4 per tonne.
NAPP	Nett Acid Producing Potential, expressed as kg H_2SO_4 per tonne. Calculated by subtracting the ANC from the MPA.
NEPC	National Environment Protection Council. The NEPC makes the National Environment Protection Measures (NEPMs) and reports on the implementation and effectiveness of NEPMs in participating jurisdictions.
PAF	Potentially Acid Forming. Geochemical classification criterion for a sample that has the potential to generate acid conditions.
PC Titrator	Potentiometric Compact Titrator. PC Titrators are specially designed for routine applications and simple operation, allowing basic titration analysis from a single device.
pH	A measure of hydrogen ion (H^+) concentration; generally expressed as pH.
PSD	Particle size distribution.
Scr	Chromium reducible sulfur test measures the sulfide sulfur content of a sample material.
SD	Saline Drainage. Water that is elevated in dissolved salts (e.g., Na^+, K^+, Ca^{2+}, Mg^{2+}, Cl^-, and SO_4^{2-}), but may have acidic, neutral, or alkaline pH.
SMC	Strategic Minerals Corporation.
SO_4^{2-}	Sulfate.
Spent heap leach residue	Material left over following heap leaching (i.e. once the leaching process is complete and no further gold can be recovered the spent ore and residual cyanide solution becomes waste). Typically the waste load is rinsed with water until the cyanide concentration in the effluent is below the adopted environmental criteria.
Static test	Procedure for characterising the geochemical nature of a sample at a single point in time. Static tests may include measurements of mineral and chemical composition of a sample and the Acid Base Account.
SWP	Strategic Woolgar Project.
Total Sulfur	Total sulfur content of a sample measured using a 'Leco' analyser expressed as % S.
Tailings	Material left over after the process of separating the economic fraction (ore) from the uneconomic fraction.
w:v	Weight to volume ratio.
Waste Rock	Material that surrounds an ore body and must be removed to mine the ore.
WAD cyanide	Weak Acid Dissociable cyanide.
WRD	Waste Rock Dump. A facility used to store waste rock.
XRD	X-ray diffraction is a rapid analytical technique providing elemental data for samples.

1 Introduction

RGS Environmental (RGS) was commissioned by Strategic Minerals Corporation (SMC) to complete a geochemistry assessment as part of the Environmental Assessment Report (EAR) for the Big Vein South Gold Project (the project).

1.1 Project description

The project involves the construction and operation of an open cut gold mine on a greenfield site in North Queensland. The project site covers an area of approximately 2,281 ha and is located approximately 100 km north of Richmond and 380 km west of Townsville (**Map 1**).

Open cut mining will be conducted using excavators and trucks. Gold ore will be processed on site to produce gold dore (solid bars containing gold alloy). The mine's peak production rate will be up to 1.95 million tonnes per annum (Mtpa) of run of mine (ROM) gold ore, yielding up to approximately 100,000 ounces of gold dore per annum. The mine life will be approximately 11 years.

The following mining and ore processing activities will be undertaken as part of the project:

- Developing three open cut pits, as follows:
  - The main Big Vein South Pit (BVS Pit) located in the centre of the project site (**Map 2**). Waste rock from this pit will be hauled by truck and stored in the Central and Southern Waste Rock Dumps (WRDs).
  - Two small satellite pits, BV1 Pit and BV2 Pit, located in the northern part of the project site (**Map 2**). Waste rock from these pits will be stored in the Northern WRD.
- Transporting mined ore in haul trucks from the open cut pits to the ROM area ore stockpiles located near the mine processing facilities at the southern end of the project site (**Map 2**).
- Processing ore from the BV1 and BV2 Pits in the first 2 years of mining using Heap Leach Pads and gold elution. Processing ore mined from the BVS Pit in an on-site Carbon In-Leach (CIL) Plant from Year 3 onwards. The heap leaching process will generate spent heap leach residues. These residues will be reprocessed in the CIL Plant over the life of the mine. The CIL Plant will generate wet tailings and dewatered tailings. Wet tailings will be pumped to a Tailings Storage Cell. Dewatered tailings will be stored with waste rock in the Central and Southern WRDs.
- Transporting dore bars from the site via plane to a refinery.

The majority of the mine infrastructure will be located at the southern end of the project site (**Map 2**). Key mine infrastructure will include ore processing facilities, workshop, warehouse, administration buildings, haul roads and access roads, vehicle servicing, refuelling and wash down facilities, fuel storage facilities, diesel and solar power station, water supply and water management infrastructure. Workforce accommodation and a private airstrip will also be located at the southern end of the project site.

1.2 Mine materials generated by the project

The project will generate the following distinct mine materials:

- Waste rock from BVS Pit;
- Waste rock from the two smaller satellite pits (BV1 Pit and BV2 Pit);
- High grade ore;
- Low grade ore;
- Wet tailings;
- Dewatered tailings; and

- Spent heap leach residues.

These materials will be stored and handled as follows:

- Waste rock from BVS Pit will be stored the southern and central WRDs, along with the dewatered tailings.
- Waste rock from BV1 Pit and BV2 Pit will be stored the northern WRD.
- High grade ore will be stockpiled in the mine industrial area or the heap leach pads for processing during mining operations. No high grade ore will be present at mine closure.
- Low grade ore will be stockpiled on dedicated pads prior to processing during mining operations. No low grade ore will be present at mine closure.
- Wet tailings will be stored in a dedicated Tailings Storage Cell during mining operations and post closure.
- Spent heap leach residues will be stockpiled on dedicated Heap Leach Pads prior to processing during mining operations. No spent heap leach residues will be present at mine closure.

1.3 Report scope and structure

The key objectives of the geochemistry assessment are to:

- Investigate the geochemical and physical characteristics of the materials listed in **Section 1.2**.
- For each of these materials, assess the risk of acid generation, the presence of soluble metals and salts and the potential risks of leachate from these materials; and
- Identify any rehabilitation and environmental management issues related to the geochemical and physical properties of these materials and propose appropriate management measures.

This report is structured as follows:

- **Section 1** provides an overview of the project, a description of the materials that will be generated by the project and describes the scope of work and report structure.
- **Section 2** provides a description of the project site geology.
- **Section 3** provides a detailed description of the geochemistry assessment methodology, including the geochemistry sampling and testing program.
- **Sections 4 to 9** present the geochemical results for each of the mine materials that will be generated by the project (i.e. as listed in **Section 1.2**).
- **Section 10** describes the management measures to be adopted for the storage and handling of mine materials based on the geochemistry results.
- **Section 11** provides a complete list of references relied upon to complete this report, as well as the figures referred to in text.

Attachment A provides an overview of the geochemical testing methodology. Laboratory test data are provided in **Attachments B** to **E**. The plan view and vertical section images of the BV1 and BV2 drill holes are provided in **Attachment F**.

2 Local Geology Overview

The project site and its surrounds have a long history of geological exploration. Exploration activities commenced in the 1950s and have continued at intervals until the present day. On this basis, the geology of the project site and its surrounds is well understood.

The project site is located at the northern margin of the Eromanga Basin, a sedimentary basin that was deposited in the Mesozoic era. Locally, the Eromanga Basin overlies a Proterozoic basement. The Proterozoic basement is part of the North Australian Craton, one of Australia's major mineral provinces.

The Eromanga Basin and Proterozoic basement have been extensively modified by weathering and erosion. The weathered profile extends to depths of up to 40 m below ground level in the project site.

The surface geology in the project site and its surrounds is shown in **Map 3**. The project site stratigraphy includes the following (from youngest to oldest):

- Alluvium associated with the Woolgar River and its floodplain;
- The weathered in-situ rocks of the Eromanga Basin and Proterozoic basement (herein called the 'weathered profile');
- Fresh (i.e. unweathered) Jurassic strata of the Eromanga Basin; and
- Fresh Proterozoic basement rocks, including the target gold ore.

The Woolgar River alluvium is a sand and gravel deposit that forms the Woolgar River floodplain. The floodplain alluvium is confined within a narrow valley. The floodplain alluvium thickness typically ranges from a few centimetres at the edge of the floodplain up to approximately 10 m on the riverbanks. The river channel is typically incised approximately 4 m into the floodplain alluvium. The base of the alluvium is located approximately 6 m below the riverbed.

The weathered profile comprises poorly consolidated, fine-grained, clay-bound sands and silts. It is present across the entire project site and is typically located at the ground surface, except where it is overlain by the alluvium. The weathered profile is up to approximately 40 m thick in the lower lying areas and is typically thinner in the elevated parts of the project site (approximately 0.5 m thick). The weathered profile is between 4 m and 25 m thick in the open cut mining areas.

Historical bore logs show that the fresh Jurassic strata forms a single, undifferentiated sedimentary rock formation, comprising mainly sandstone, with minor conglomerate, siltstone and claystone. Where present within the project site, the fresh Jurassic strata underlies the weathered profile (**Map 3**) and ranges in thickness up to approximately 70 m. The fresh Jurassic sediments are between 0 m and 30 m thick in the open cut mining areas.

Exploration data from the project site shows that the Proterozoic basement comprises folded metamorphic rocks (e.g. amphibolite), granite and intrusive (dolerite and rhyolite) dykes. The Proterozoic basement typically underlies the weathered profile and the fresh Jurassic sediments (where present) (**Map 3**). Within the open cut mining areas, the top of the Proterozoic basement is located at depths of between 10 m and 40 m below the ground surface. The Proterozoic basement is estimated to be several kilometres thick in the open cut mining areas.

The gold ore has been deposited in a deformation (or shear) zone within the Proterozoic basement. The shear zone is orientated along a south-southwest to north-northeast axis and extends across the project site. Exploration data from the project site shows that the shear zone has been completely mineralised.

3 Methodology

Contemporary best practice geochemical sampling and characterisation was undertaken in accordance with the Australian Government's handbook *Preventing Acid and Metalliferous Drainage* (the PAMD Handbook). The PAMD Handbook was published in 2016 and established the current overarching national framework for the assessment and management of acid and metalliferous drainage (AMD) across the mining industry. The PAMD Handbook is regarded as leading practice for AMD in Australia.

Dr Alan Robertson, Principal Geochemist at RGS was a member of the PAMD Handbook development panel and was engaged by the Australian Government to peer review the PAMD Handbook. Dr Robertson was also the expert peer reviewer for the 2024 South Australian guidelines *Assessment and Management of Acid and Metalliferous Drainage* and is chairperson of the NT Government's *McArthur River Independent Expert Panel on the Prevention and Management of Potential AMD from Large Waste Rock and Tailings Storage Facilities*.

The project geochemical sampling and characterisation program has been undertaken in accordance with the PAMD Handbook. Section 4.2 of the PAMD Handbook requires that a risk-based, site-specific material characterisation program is undertaken prior to mining, based primarily on the geological and geochemical variability of the in-situ rock and the consequences of misclassifying materials. Section 4.2 of the PAMD Handbook specifically recommends that the program should be designed to be representative rather than achieve a specific minimum sampling frequency or density.

For projects at this stage of development, the PAMD Handbook methodology involves:

- An initial desktop assessment to establish the geological variability and any known AMD risks;
- An initial screen of the in-situ rock for potential AMD risks; and
- A targeted sampling of the in-situ rock and/or mine materials to confirm the screening results and confirm the potential AMD risks.

The following sections describe the site-specific geochemistry sampling and characterisation program that has been undertaken for the project, in accordance with the risk-based approach required by the PAMD Handbook.

3.1 Desktop Assessment of Geological Variability and AMD Risks

The desktop review considered published geology mapping and SMC's geological exploration database, comprising approximately 40,000 m of logged drill core collected from 90 drill holes within the BVS Pit, 39 holes within the BV1 Pit and 27 holes within the BV2 Pit (refer to **Map 4**). Based on this review, it was concluded that:

- The waste rock in all three pits is dominated by weathered sediments overlying unmineralised Proterozoic rock (mainly dolerite, granite and metamorphic schist/gneiss) accounting for more than 90% of the total rock in each pit).
- All three pits contain a narrow band of mineralised rock that hosts the target gold ore.

The in-situ geology is relatively uniform across the gold resource and the geology within in each pit is similar. Hence, the waste rock and ore from each pit is expected to be consistent and predictable. Based on these geological conditions, it is highly probable that the only potential AMD risks would be associated with the mineralised rock rather than the weathered sediments or unmineralised Proterozoic rock.

3.2 Screening Assessment

A screening assessment was undertaken to confirm the geological interpretation presented in Section 3.1.

In total, the screening assessment considered :

- 10,003 geochemistry assay samples collected from the BVS Pit (i.e. an average of one result for approximately every 3.6 m of drilling in BVS Pit); and

- 1,208 additional geochemistry assay samples collected from the BV1 and BV2 Pit waste rock profiles.

Each geochemical assay sample was tested for a multi-element analysis for a broad suite of parameters (35 elements) including total/speciated sulfur and a range of metals and metalloids. These results span the entire waste rock profile in BVS Pit, BV1 Pit and BV2 Pit and represent all relevant rock types present in all three pits. These results were evaluated to assess AMD potential. 196 samples which contained over 1% Ca and Mg were analysed for ANC (Acid Neutralising Capacity). The measured ANC values were used with measured Ca and Mg data to derive correlations for inferred ANC values for the entire database. The maximum potential acidity (MPA) was calculated from total sulfur results in the assay database, which were then balanced against the inferred ANC values to determine the net acid producing potential (NAPP) of all assay datapoints in the assay database.

The findings of the initial screening assessment are consistent with the geological interpretation and confirm that:

- The waste rock in BVS Pit is overwhelmingly (98%) non-acid forming (NAF) rock with significant buffering capacity and is likely to be acid consuming.
- The waste rock in the satellite pits is NAF with significant buffering capacity and is likely to be acid consuming.
- Potentially acid-forming (PAF) material within the waste rock is mineralised rock that is very closely associated with the orebody (typically within a few metres). PAF material is not correlated to any specific lithology and is not widely distributed throughout the waste rock profile away from the mineralised zone.

3.3 Targeted sampling and testing program

3.3.1 Overview

A targeted geochemical sampling and assessment program was undertaken to confirm the screening results for waste rock, to provide additional detail on the characteristics of ore and other mine materials derived from the processing of ore (i.e. tailings and spent heap leach residues) and to confirm the potential AMD risks from the storage and handling of these materials. In summary, this included:

- The collection of a representative subset of 228 waste rock samples; and
- The preparation of seven ore, tailings and spent heap leach samples by processing of bulk ore samples in a laboratory-scale plant. As explained in Section 4 of the PAMD Handbook, processed waste samples are considered to be more representative than in-situ ore testing and are typically undertaken later in the project development process due to the significant time and cost involved in preparing these samples.

The test results from the targeted geochemical sampling confirmed the findings of the waste rock screening assessment and AMD risks, and the geochemical characteristics of the ore and process wastes produced from ore.

Based on the consistent and predictable geology and the significant number of representative geochemical datapoints (>11,000), there is a high level of confidence in the conclusions of the geochemical characterisation program and a low risk of materials being misclassified.

Sections 3.3.2 to 3.3.5 provide details of the geochemistry field investigation strategy, sampling effort and targeted geochemical analysis undertaken.

3.3.2 Waste Rock Samples

Between 2010 and 2021, SMC drilled several hundred exploration drill holes within the extent of the proposed BVS, BV1 and BV2 Pits. SMC's exploration geologists logged, sampled and assayed the exploration holes and provided RGS with the exploration database to identify exploration samples representative of the waste rock material from the three pits that will be stored in the relevant WRDs.

The following waste rock samples and selected assay results were selected for use in this assessment:

- For BVS Pit, a total of 10,213 samples comprising:
  - 10,003 geochemistry assay samples (exploration samples) collected from a total of 90 exploration drill holes.
    - This includes a subset of 196 representative exploration drill chip samples (Sample 1 to Sample 196) that were selected from 60 (of the 90) exploration drill holes selected by RGS for targeted geochemical testing.
  - 14 drill core samples (Sample 197 to Sample 210); and
- For BV1 and BV2 pits, a total of 1,226 samples comprising:
  - 1,208 geochemistry assay samples (exploration samples) collected from a total of 66 exploration drill holes.
  - 18 drill core samples from a total of 4 exploration drill holes (Sample 211 to Sample 228).
  - 2 composite samples representing waste rock from BV1 Pit (sample IDs 2021057_C003 and 2021057_C004, herein shortened to waste rock samples C003 and C004).
  - 2 composite samples representing waste rock from BV2 Pit (sample IDs 2021057_C005 and 2021057_C006, herein shortened to waste rock samples C005 and C006)

Map 4 shows the locations of the drill holes that provided the waste rock samples from BVS, BV1 and BV2 Pits. The samples and corresponding drill holes and lithologies are listed in the upper portion of **Table B1 (Attachment B)**. All drill chip and drill core materials were logged and sampled by a suitably qualified SMC geologist as directed by RGS to ensure the collection of representative samples. The drill chip and drill core waste rock samples were placed in individual plastic bags and transferred to ALS Environmental Laboratory (ALS Stafford) for testing.

3.3.3 Ore and Mine Waste Samples

A total of seven (7) ore and mine waste samples were prepared by SMC for use in the geochemical assessment as follows:

- 3 tailings samples (called Tailings Sample 1 to 3);
- 2 spent heap leach residue samples (Spent Heap Leach Residue Sample 1 and 2);
- 1 low-grade ore sample; and
- 1 high-grade ore sample.

The samples are listed in the lower portion of **Table B1 (Attachment B)**. All ore and tailings/spent heap leach residue samples were placed in individual plastic bags and transferred to ALS Environmental (ALS) and/or Trilab Laboratories for testing and certificates of analyses are provided in **Attachment C**.

3.3.4 Geochemistry analysis program

3.3.4.1 *Overview of Analysis*

Prior to testing, the samples were prepared by ALS Stafford. Drill core representing waste rock and ore was crushed to pass 20 mm sieve size and a 300 g subsample taken and pulverised to pass 0.075 mm sieve size for subsequent static Acid Base Account testing. Drill chip and “as received” sample material representing ore, waste rock, tailings and spent heap leach residue materials did not require initial crushing and a 300 g subsample was taken and pulverised to pass 0.075 mm sieve size for subsequent static Acid Base Account testing. For kinetic tests, crushed drill core samples and “as received” samples were utilised, as required. The sample preparation method was determined by the testing requirements and is described in the testing sections below.

The geochemical test program involved:

- Acid Base Account testing of the solid materials to determine the acid generation (and neutralisation) potential of the materials.
- Multi-element testing of the solid materials to characterise the typical elemental profile of each material.
- Testing of water extracts from the solid materials. Water extracts were collected using 'static' water extract tests and kinetic leach column tests. Static and kinetic leachate tests are highly idealised laboratory tests and the results of these tests do not represent field seepage water quality. Static tests measure the maximum solubility of each component of the mine materials under idealised laboratory conditions designed to maximise oxidation and dissolution from pulverised sample materials (<75 µm) with a very high surface area. Kinetic tests measure the timing, rate and duration of oxidation and acidity/alkalinity generation processes generally under highly concentrated, freely-oxidising conditions. The data collected from these tests show the quality parameters that are theoretically leachable from the solid materials under artificially enhanced laboratory conditions. The data can be used to identify the quality parameters that should be monitored in the project groundwater and/or surface water monitoring programs.

Table 3-1 summarises the total testing numbers used in this assessment. A summary of the parameters involved in geochemical assessment of the samples is provided in **Attachment A**. A detailed breakdown of each component of the testing work is provided in Sections **3.3.2 to 3.3.5**. **Table 3-2** Summarises the waste rock geochemistry sampling program at BVS, BV1 and BV2 pits.

Table 3-1: Summary of samples tested in this assessment

Sample Material	Waste Rock		High Grade Ore	Low Grade Ore	Tailings	Spent Heap Leach Residue
	BVS	BV1/BV2				
Geochemical Assay testing	10,003	1,208	Not applicable			
Acid Base Account testing	196 exploration drill chip samples and 14 drill core samples	18 drill core samples	1	1	3	2
Multi Element Solids	196 exploration samples and 2 composite samples	2 composite samples	1	1	3	2
Static Water Extracts	0	0	1	1	2	0
Kinetic Leach Column Water Extracts	9	2	1	1	1	2

Table 3-2: Summary of waste rock geochemistry sampling program

Mining Pits	No. of Geochemical Assay Samples	No. of Targeted Geochemical Samples	Total No. of Geochemical Samples
BVS Pit Waste Rock	10,003	210	10,213
- *Unmineralised/weathered rock*	*7,740*	*208*	*7,948*
- *Partially mineralised waste rock associated with the orebody*	*2,263*	*2*	*2,265*
Satellite Pits Waste Rock	1,208	18	1,226
TOTAL	**11,211**	**228**	**11,439**

3.3.4.2 *Acid Base Account Testing*

Acid Base Account testing was used as a standard procedure whereby the static acid-neutralising and acid-generating characteristics of a material were assessed (AMIRA, 2002; COA, 2016; and INAP, 2026). This standard laboratory procedure provides a homogenous sample but also generates a large sample surface area in contact with the resultant assay solution, thereby providing greater potential for dissolution and reaction, and represents an assumed initial 'worst case' scenario for these materials.

Acid Base Account testing was undertaken on the following samples:

- A total of 210 waste rock samples from BVS Pit, comprising:
  - 196 waste rock exploration samples from BVS Pit (i.e. Samples 1 to 196). These samples are a representative subset of the 10,003 exploration drill chip samples from BVS Pit that had existing total sulfur, calcium and magnesium assay data available (as well as a range of other metals and metalloids). RGS analysed the available exploration dataset to identify 196 representative waste rock samples from this dataset for further calibration using the Acid Neutralising Capacity test described below.
  - 14 additional drill core samples representing waste rock from BVS Pit (i.e. Samples 197 to 210).
- All 18 waste rock drill core samples from the BV1 and BV2 satellite pits (i.e. Sample 211 to Sample 228).
- All seven (7) ore, tailings and spent heap leach residue samples.

The testing included:

- Testing each sample for the following parameters:
  - Total sulfur [Leco method]; and
  - pH and Electrical Conductivity (EC) (1:5 sample:deionised water [w:v]) (drill core samples only);
  - Acid Neutralising Capacity (ANC) [AMIRA, 2002 method].
- For any samples with a concentration of ≥ 0.1% total sulfur (i.e. 20 samples in total), additional testing for the following parameters:
  - Chromium reducible sulfur (Scr) testing was undertaken to determine the sulfide sulfur content of the samples (Australian Standard AS 4969.7, 2008 method). The Scr test provides a more accurate representation of the MPA that could be generated from a sample material, as acid generation primarily forms from the reactive sulfide content measured by this method.
  - Net Acid Generation (NAG) testing was also completed on the 20 samples, as this provides additional information on the geochemical characteristics of sample materials and is typically used to compliment Acid Base Account test data at metalliferous mines (AMIRA, 2002; COA; 2016).
- Calculating the Maximum Potential Acidity (MPA) and Net Acid Producing Potential (NAPP) values of each sample from the total sulfur (or Scr data, where available) and these values were balanced against the ANC values to calculate the NAPP **(Table B1, Attachment B)**.

In addition, Acid Buffering Characteristic Curves (ABCC) tests were completed at the RGS in-house laboratory to investigate the acid buffering capacity of the sample materials at higher pH values than are used in the standard ANC tests. This method provides an indication of the potential for acid buffering at near neutral pH. A total of 50 ABCC tests were undertaken on the following samples:

- 40 waste rock samples from BVS Pit;
- 4 composite waste rock samples from BV1 and BV2 Pits (waste rock samples C003 to C006);
- 3 tailings samples (Tailings Samples 1 to 3);
- 1 spent heap leach residue sample (Spent Heap Leach Residue Sample 1); and

- 1 low grade ore sample and 1 high grade ore sample.

The ABCC test was completed by slowly acidifying a sample with dilute sulfuric acid to around pH 2.5 over a 16 to 24-hour period. The method is a less aggressive treatment of a sample than that applied in the ANC method, and typically only accounts for the more readily available carbonates (e.g., calcite and dolomite). When present in sufficient quantity, reactive carbonate minerals will typically buffer mine waste materials at near-neutral pH, subsequently maintaining low metal/metalloid solubilities.

The ABCC tests were completed using 1 g of sample (< 0.075 mm fraction contained in 25 mL of deionised water) and 0.05 M sulfuric acid (H_2SO_4) applied at a flow rate of 3.75 mL/hour using a Springfusor® pump. 0.05 M H_2SO_4 was selected as the appropriate acid concentration to generate accurate ABCC test curves following review of the ANC results for each sample. For this test, the pH probe was calibrated to pH 4.0 and pH 6.88 prior to testing each sample. The pH meter was set to log every five minutes until the solution pH reached 2.5.

3.3.4.3 *Multi-element tests on solid materials*

Multi-element testing was undertaken on the following samples:

- All 196 BVS Pit waste rock samples in the subset identified from the exploration samples (this testing was undertaken by SMC geologists as part of the exploration program).
- 2 composite samples representing waste rock from BV2 Pit (waste rock samples C003 and C004).
- 2 composite samples representing waste rock from BV1 Pit (waste rock samples C005 and C006).
- All seven (7) ore and mine waste samples (Tailings Samples 1 to 3, Spent Heap Leach Residue Samples 1 and 2, the high grade ore sample and the low grade ore sample).

The composite waste rock samples from BV1 and BV2 Pits were prepared based on the static Acid Base Account test results, sample lithology and sample weathering as detailed in **Table B2 (Attachment B).**

The multi-element testing suite was as follows:

For the 196 waste rock exploration samples:

- metals/metalloids in whole rock (4 acid digestion followed analysis of aluminium (Al), antimony (Sb), arsenic (As), boron (B), cadmium (Cd), calcium (Ca), chromium (Cr), cobalt (Co), copper (Cu), lead (Pb), iron (Fe), magnesium (Mg), manganese (Mn), mercury (Hg), molybdenum (Mo), nickel (Ni), potassium (K), selenium (Se), sodium (Na), thorium (Th), uranium (U), vanadium (V), and zinc (Zn) in whole rock) [ICP-AES and FIMS]).

For all other samples:

- metals/metalloids in whole rock (2 acid digestion followed analysis of Al, Sb, As, B, Cd, Ca, Cr, Co, Cu, Pb, Fe, Mg, Mn, Hg, Mo, Ni, K, Se, Na, Th, U, V and Zn in whole rock) [ICP-AES and FIMS]).

It is important to note that total metals/metalloids assay dataset supplied to RGS by SMC geologists for the initial 196 waste rock samples (i.e., from the SMC assay database) was generated using a 4 acid digest (hydrofluoric [HF], nitric [HNO_3], perchloric [$HClO_4$] acid digestion and hydrochloric [HCl] acid leach followed by FIMS and/or ICP-AES/MS). This is a sample digestion method used by exploration geologists and is a more aggressive sample digestion method than the standard 2-acid ('environmental') digestion method used by RGS and the mining industry in general for geochemical and environmental assay (COA, 2016). While data generated by a 4 acid digest are generally not appropriate for use in an environmental assessment, these data are useful in this instance as they provide multi-element data from a broad range of waste rock materials at the project.

To provide some context, RGS compared the metal/metalloid concentration in the relevant samples with HIL(C) levels for soils in public open spaces (NEPC, 2013).

3.3.4.4 *Testing of static water extracts*

Static water extracts were undertaken on the following samples:

- Wet and dewatered tailings samples (Tailings Samples 2 and 3)

The water extract tests involved artificially agitating pulverised tailings samples (≤ 75 µm) at a ratio of 1:5 (w:v) in deionised water. The use of pulverised tailings samples with a large surface area in contact with the leaching solution, thereby providing greater potential for dissolution and reaction that would occur under real-world field conditions. Agitating the samples further encourages dissolution and reaction. Finally the use of a 1:5 (w:v) ratio is significantly more concentrated (4 times) than alternative static testing methods that involve ratios of 1:20. The data collected from these tests show the quality parameters that are theoretically leachable from the solid materials under artificially enhanced laboratory conditions, and do not reflect tailings water released within the Tailings Storage Cell.

The tailings samples underwent the following tests on the soluble fractions of 1:5 (w:v) water extracts, a sample to volume ratio that is routinely used in the mining industry for such analyses (COA, 2016) :

- pH and EC;
- soluble metals/metalloids (Al, As, B, Cd, Co, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Sb, Se, Th, U, V, and Zn) [ICP-AES/MS and FIMS].
- Weak acid dissociable (WAD) cyanide (the tailings samples only). WAD cyanide, refluxed under weakly acidic conditions (pH 4.5), includes all free cyanide species plus all Ag, Cu, Hg and Ni cyanides.

3.3.4.5 *Kinetic Leach Column (KLC) tests*

Following receipt and interpretation of the static geochemical test results, 16 KLC tests were established at the RGS in-house laboratory using the following samples as detailed in **Table B3** (**Attachment B**):

- 8 individual samples representing waste rock from BVS Pit (KLC 1 to KLC 8);
- 2 composite samples representing waste rock from BV1 and BV2 Pits (KLC 13 and KLC14);
- 1 individual sample representing tailings (KLC 9);
- 2 individual samples representing spent heap leach residue (KLC 11 and KLC 12);
- 1 individual sample representing low grade ore (KLC 10);
- 1 individual sample representing high grade ore (KLC 15); and
- 1 composite sample representing waste rock from BVS Pit (KLC 16).

3.3.4.5.1 Unsaturated Kinetic Leach Column tests

All but one of the KLC tests were operated under free-leach conditions based upon standard mining industry guidelines for such tests (AMIRA, 2002). These tests provide an indication of any dynamic changes in the chemistry of pore water derived from sample materials and can provide input into the development of a water quality monitoring program for any seepage derived from relevant storage facilities.

Most of the KLC tests were operated at a larger scale than ‘standard’ AMIRA style KLC tests although the actual size of the KLC tests was dependent on the volume of sample material available to complete the test program. Larger scale KLC tests typically allow the use of greater range of particle sizes, creating more flow paths through the material in the column and avoiding preferential flow paths for the leaching fluid that can occur using smaller AMIRA style columns. A larger range of particle sizes and wider distribution of flow paths helps to ensure intimate contact between the leaching fluid.

In the KLC tests, leachate was applied monthly and collected for laboratory assay. KLC sample materials were typically allowed to dry out during the interim period between leaching events to allow oxidation to freely occur and any oxidation products to be generated prior to the next leaching event. In some cases at a waste storage facility, stored bulk materials may retain moisture and/or remain saturated, although this is more likely with fine materials such as tailings or spent heap leach process residues. For one of the KLC tests on spent

heap leach residue materials (KLC 12), the column was intentionally kept saturated between leach events and compared against a free leaching KLC test (KLC 11), to investigate any effects on water quality under saturated anoxic conditions such as could be experienced by bulk materials in the field.

KLC tests were operated under a monthly and/or quarterly watering and leaching cycle for a period of approximately 12 months.

The free leaching KLC test methodology essentially represents the worst case or maximum potential for sulfide oxidation and potential acid/metal/metalloid/salt generation in pore water. An example of the typical KLC column set up used in this project is provided in **Attachment A** (**Figure A1**).

The specification for the KLC tests for this project included the following.

- Medium or large acrylic columns depending on the volume of sample material available.
  - Medium column (19 cm diameter x 34 cm height and a volume of 9.64 L) for KLC 10 to KLC 12 and KLC 15 to KLC 16.
  - Large column (19 cm diameter x 65 cm height and a volume of 18.4 L) for KLC 1 to KLC 9 and KLC 13 to KLC 14.
- A tap was fitted at the base of the column. The base was lined with 800 cm^3 of glass beads. Filter mesh was installed on top of the glass beads to prevent the material fines moving through the glass beads and blocking the tap.
- The mass and volume of material placed into the column was recorded.
- KLC 1 to KLC 11 and KLC 13 to KLC 16 were operated under oxic conditions (unsaturated, **free-leach**) and KLC 12 (0.86 L pore volume) was operated under anoxic conditions (**saturated**). For the oxic columns, 1.5 L of deionised water was generally added to each sample for each leach event. Based on the internal diameter of the column, this equates to an approximate depth of 50 mm of water for each leach event and a typical sample:water ratio of greater than 6:1.
- The leach cycle included turning off the taps at the bottom of the KLC before adding water to the column over a period of 10 minutes. The water was left to percolate through the sample and was then retained in the sample for 24 hours.
- After 24 hours the tap was opened, and the water collected. The volume, pH and EC were measured after eight hours in the free-leach columns.
- The volume of water utilised was sufficient to recover a sample for the required ALS laboratory analyses.

3.3.4.5.2 Saturated Kinetic Leach Column test

The **saturated** column (KLC 12) included material that was fully saturated to the top of the column under anoxic conditions.

- An Eh probe (to measure redox potential) was placed in the water column. Rather than within the spent heap leach residue material.
- The Eh cable passing through the access port in the column lid was sealed with silicon. A tap was fitted into the lid to allow water to recharge the column as samples were removed over time.
- The lid was then fixed to the top of the column providing a water and air-tight seal to ensure that no oxygen could interact with the column sample media.
- The process to recharge and drain samples from the saturated KLC column included the following steps:
  - Each month 1,000 mL of deionised water was put into a 1 L bottle fitted with a plastic tap.
  - The bottle was inverted and then fitted onto the column lid tap.
  - The column lid tap was opened to force air up into the bottle tap orifice.
  - The bottle tap was opened slowly to expel air from the column tap into the inverted bottle.

- The column drainage tap was then opened to release approximately 1.25 mL of leachate per minute.

3.3.4.5.3 KLC water extract testing

The leachate from each column sample was measured for pH and EC shortly after collection of the samples at the RGS in-house laboratory. The leachate samples were then submitted to ALS for the following analyses:

- pH and EC;
- Ionic balance;
- Acidity and alkalinity [Automatic titrator];
- Dissolved metals/metalloids (Al, As, B, Cd, Co, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Sb, Se, Th, U, V, and Zn [ICP-AES/MS and FIMS];
- Dissolved major cations (Ca, Mg, Na and K) [ICP-AES]; and
- Dissolved major anions (Cl, F and SO_4) [ICP-AES].

Summary results tables and trends for the kinetic geochemical test program are provided in **Attachment D** and discussed in **Sections 4.3**, **5.3**, **6.3**, **7.3**, **8.3** and **9.3**. The certificates of analyses for the ALS results from the kinetic geochemical test program are provided in **Attachment E**.

The KLC leachate concentrations are presented alongside applied water quality guideline values (ANZECC & ARMCANZ (2000); ANZG (2018)). These guidelines are provided for context only and are not intended to be interpreted as “maximum permissible levels” for site water storage or discharge. It should be noted that the ratio of sample to water in the KLC tests is typically in the range 3:1 to 10:1 (w/v) (i.e., concentrated), whereas the ratio of sample to water generally used in tests where results can (arbitrarily) be compared against guideline concentrations to provide relevant context is more than an order of magnitude more dilute at 1:5 (w/v). Whilst arbitrary comparisons against guideline concentrations can be useful in some situations and help to provide relevant context, such comparisons cannot be directly extrapolated to the field situation at the project site.

4 BVS Waste Rock Geochemistry

4.1 Acid Base Account and NAG test results

The Acid Base Account and NAG test results for waste rock samples from BVS Pit are presented in **Table B1 (Attachment B)** and summarised below.

- **pH:** The pH(1:5) values for sample numbers 197 to 210 are shown in **Figure 4-1**. The pH ranges from 8.8 to 9.6 (median 9.4) and is typically alkaline. The results show that waste rock materials represented by the samples tested are not acidic under initial 'worst case' laboratory conditions.

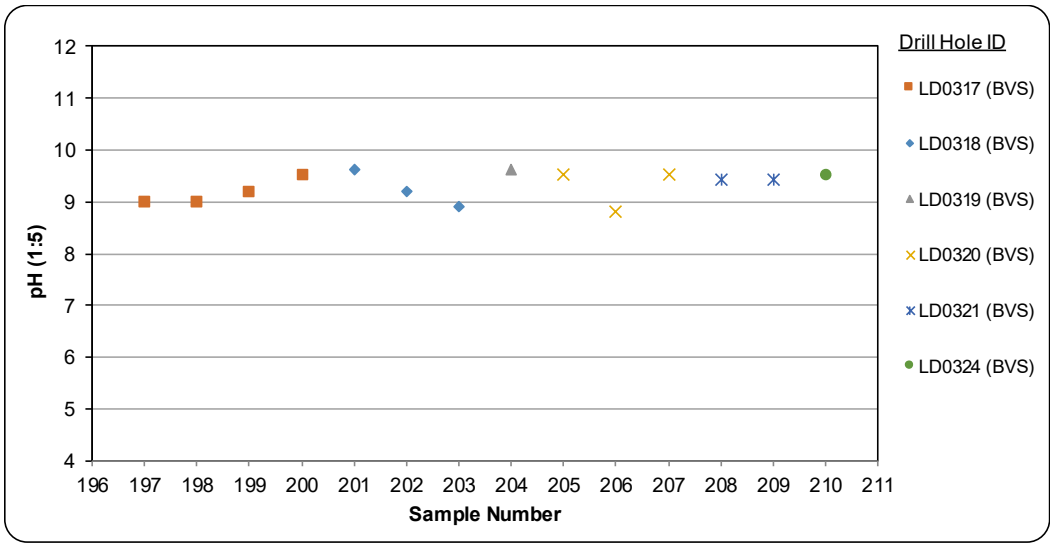


Figure 4-1: Waste rock pH values

- **EC**: The $EC_{(1:5)}$ values for sample numbers 197 to 210 are presented in **Figure 4-2**. The EC ranges from 154 to 593 µS/cm and has a low median value of 212 µS/cm. According to DME Guidelines (DME, 1995), the EC values are typically in the 'very low' to 'low' range. These results demonstrate that waste rock materials represented by the samples tested generate low concentrations of salts under initial 'worst case' laboratory conditions.

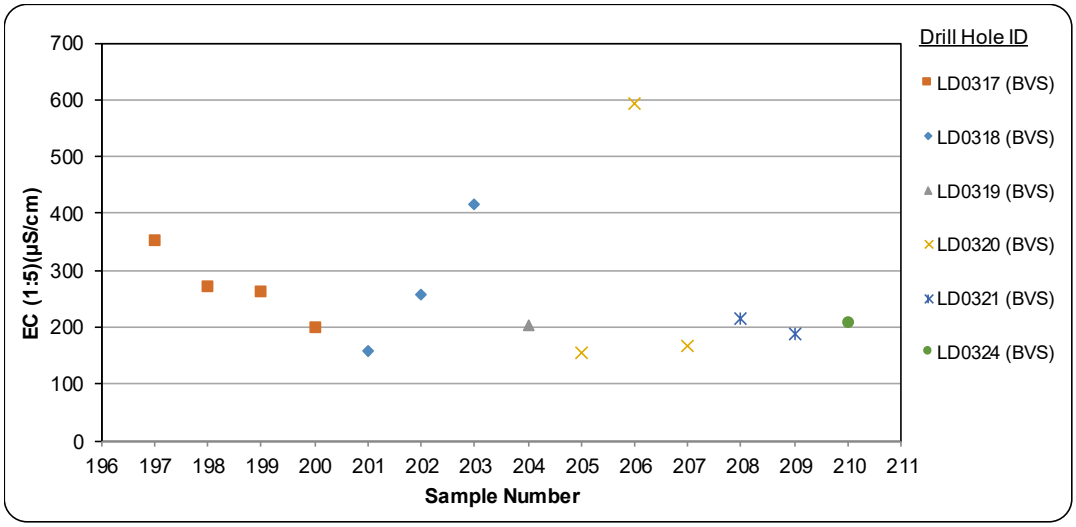


Figure 4-2: Waste rock EC values

- **Total sulfur**: The total sulfur values for the BVS Pit waste rock samples are presented in **Figure 4-3**. The total sulfur values range from less than 0.02 to 3.83 %S and has a low median sulfur content of 0.39 %S).

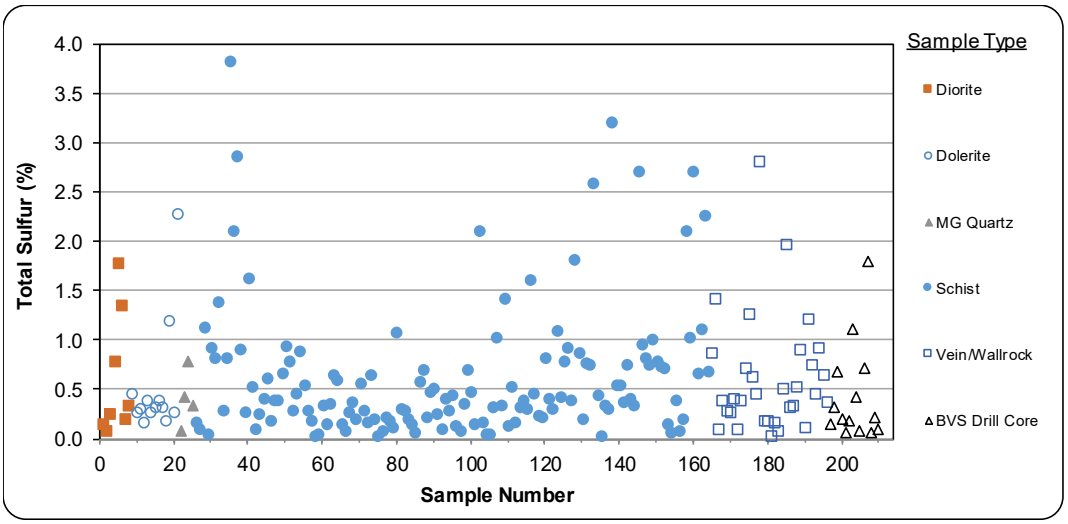


Figure 4-3: Waste rock total sulfur content

- **Chromium Reducible Sulfur (Scr)**: The Scr values, for the eight waste rock samples where Scr data are available, are presented in **Figure 4-4**. The Scr method measures the sulfide sulfur content or unoxidised portion of sulfur (e.g., pyrite; FeS_2) and provides a clearer indication of the MPA that a sample could generate if exposed to oxidising conditions over time. The results demonstrate that most of the total sulfur content in the waste rock samples is likely to be present as sulfide. A relatively strong correlation between total sulfur and sulfide sulfur is evident, although higher total sulfur numbers appear to have at least some other forms of sulfur present such as sulfate which in fresh materials would not be expected to contribute significantly to the overall MPA.

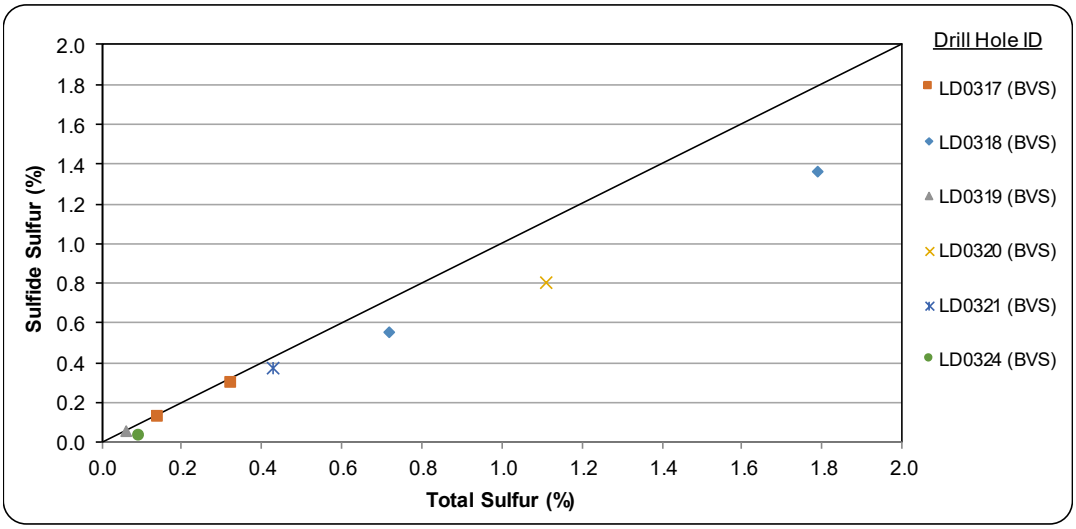


Figure 4-4: Waste rock total sulfur versus sulfide sulfur

- **MPA**: The MPA that could be generated through the oxidation of sulfur in all of the BVS Pit waste rock samples ranges from 0.6 to 117.3 kg H_2SO_4/t (median 11.8 kg H_2SO_4/t). The MPA value is calculated from the total sulfur content or sulfide sulfur content (where available).

- **ANC**: The ANC of all of the BVS Pit waste rock samples ranges from 15.5 to 181.0 kg H_2SO_4/t (median 55.6 kg H_2SO_4/t). The median ANC is approximately five times greater than the median MPA.
- **Acid Buffering Characterisation Curve (ABCC) tests**: ABCC test results for 40 waste rock samples from BVS Pit are presented in **Figures B1** to **B3** (**Attachment B)**. The ABCC test results show that the dolerite and schist materials that comprise the vast majority of the BVS Pit waste rock have available acid buffering capacity even at higher pH values. While the magnitude and availability of acid buffering in some minor lithologies is less (e.g. micro-granodiorite, granite, quartzite, and vein-hosted lithologies) this does not affect the overall ability of the bulk waste rock material to buffer acidity at a range of pH values.
- **ANC:MPA ratio**: The ANC:MPA ratio for all of the BVS Pit waste rock samples ranges from 0.4 to 93.7 and has a median value of 4.6. ANC:MPA ratio lines have been plotted on **Figure 4-5** to illustrate the factor of safety associated with the samples. Generally, those samples with an ANC:MPA ratio greater than 2 have a low to negligible risk of acid generation and a high factor of safety in terms of potential for generating acidic drainage (INAP[1], 2026; COA, 2016). The vast majority of the waste rock samples have an ANC:MPA ratio greater than 2 and therefore a high factor of safety with respect to acid generation. A small proportion of the samples tested (less than 5 %) have an ANC:MPA ratio less than 1 and therefore have a reduced factor of safety with respect to potential acid generation.

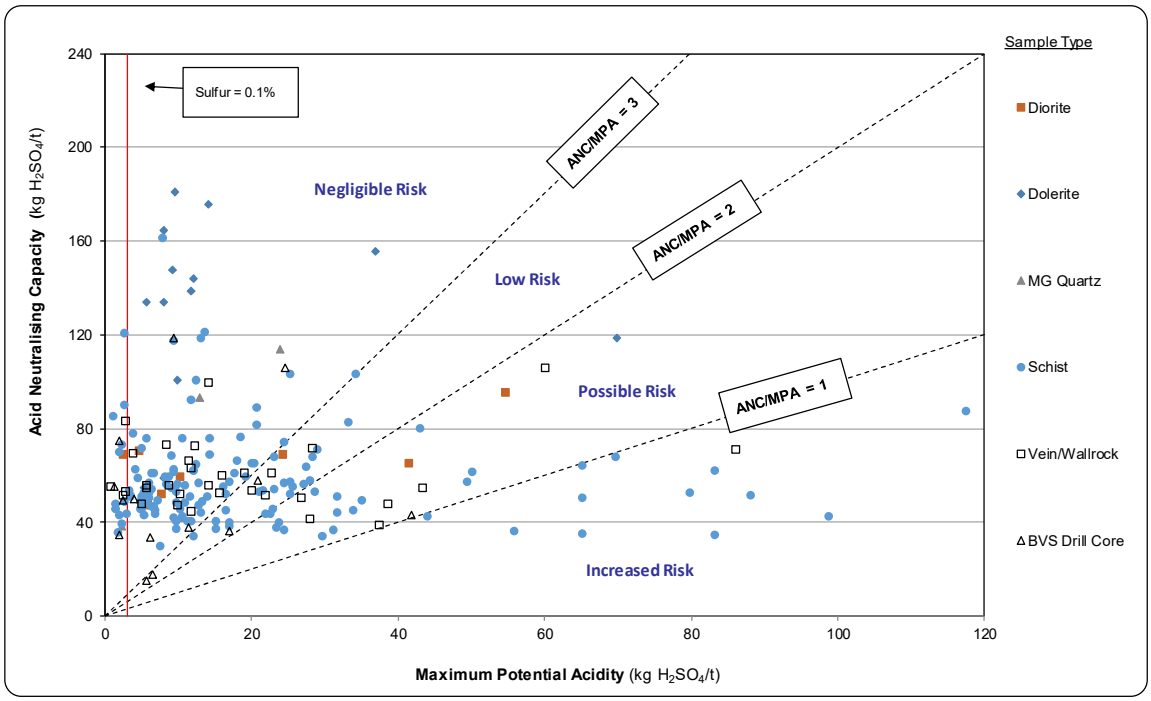


Figure 4-5: Waste rock ANC:MPA ratio

- **Net Acid Producing Potential (NAPP)**: The NAPP is the balance between the capacity of a sample to generate acidity (MPA) minus its capacity to neutralise acidity (ANC). The NAPP for all of the BVS Pit waste rock samples ranges from -171.5 to +55.4 kg H_2SO_4/t (median -42.8 kg H_2SO_4/t) (**Figure 4-6**). The bulk of the waste rock samples tested have a negative NAPP value. A small number of samples (10 or <5 % of samples) have a positive NAPP. Nine of the ten samples with a positive NAPP are derived from the schist lithology.

[1] INAP considers that mine materials with an ANC:MPA ratio greater than 2 are likely to be NAF unless significant preferential exposure of sulfides along fracture planes occurs in combination with insufficiently reactive ANC.

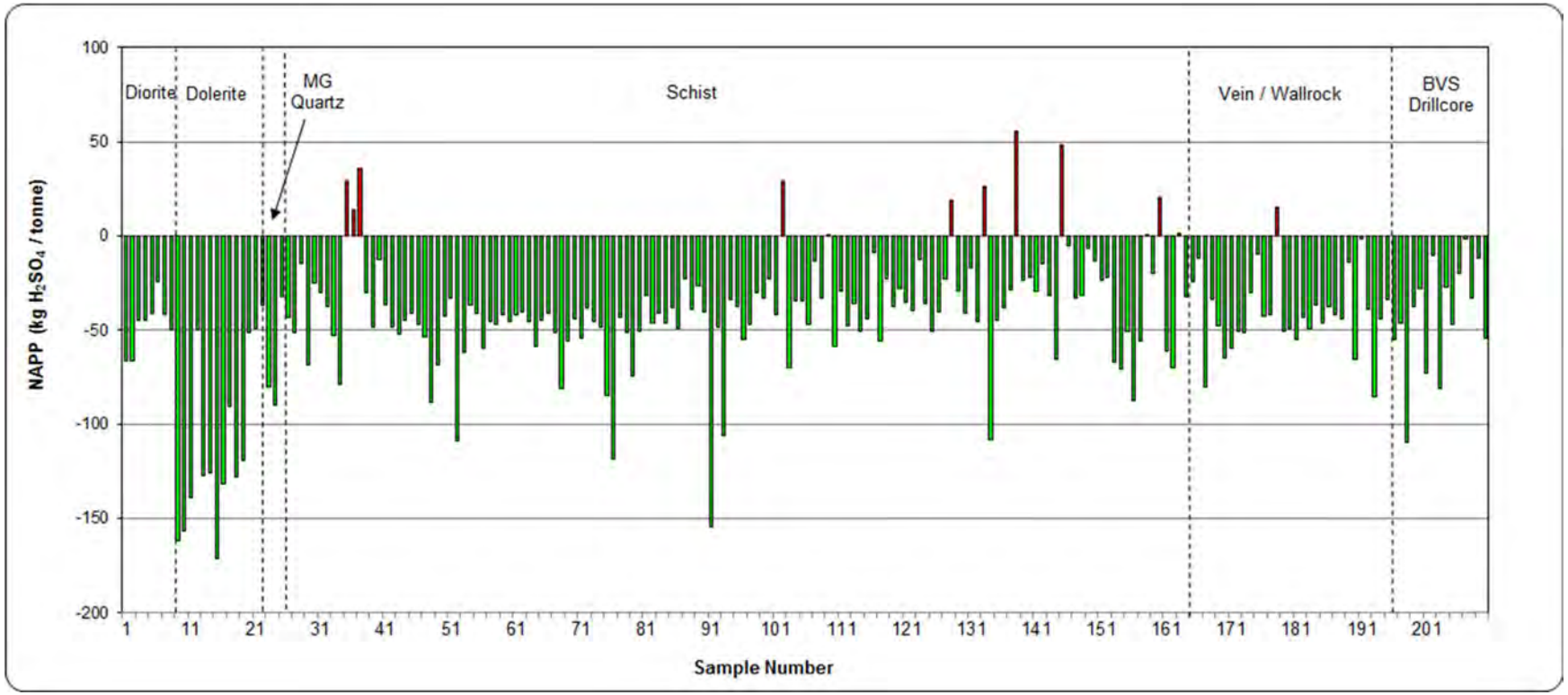


Figure 4-6: Waste rock NAPP values

- **Net Acid Generation (NAG) test**: The NAG test results for eight BVS Pit drill core waste rock samples are presented in **Figure 4-7**. The final NAG_{pH} values are all greater than pH 4.5 and range from pH 8.9 to 10.4. NAG capacity values titrated to pH 4.5 and pH 7.0 are below the laboratory limit of reporting (LoR) (0.1 kg H_2SO_4/t). Hence the combined NAPP and NAG results shown in **Figure 4-7** confirm that the BVS Pit waste rock materials represented by the samples tested are classified as non-acid forming (NAF).

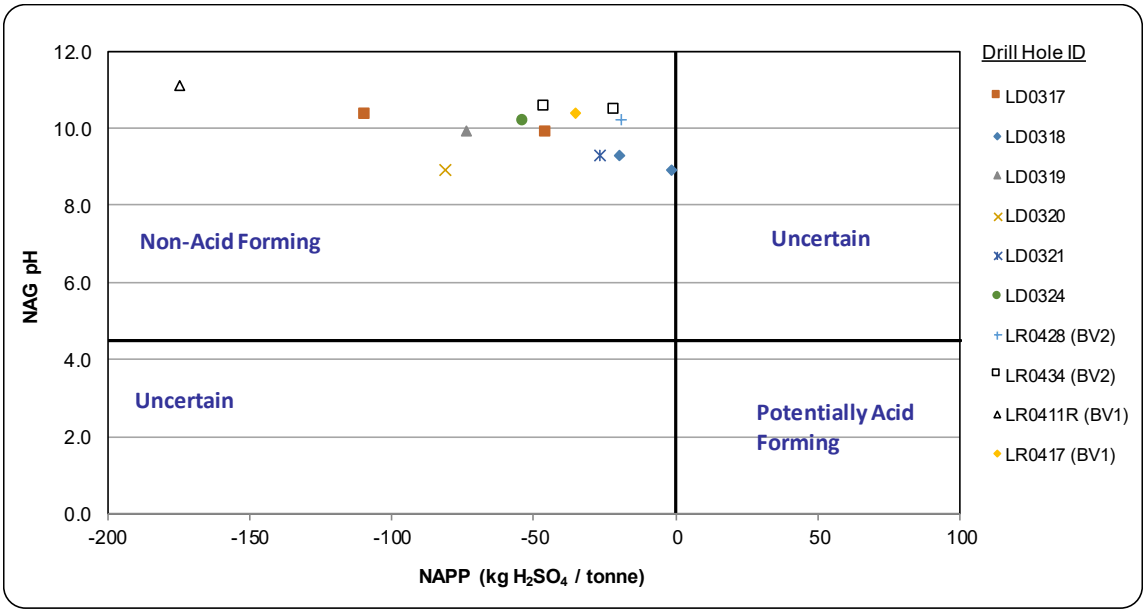


Figure 4-7: Waste rock NAG pH versus NAPP

Table 4-1 provides the geochemical classification criteria used by RGS to classify the acid forming nature of the BVS Pit waste rock materials and gives a breakdown of the number of samples in each classification category.

Table 4-1: Geochemical classification criteria for BVS Pit waste rock samples

Classification	Sulfur (%)	NAPP value (kg H_2SO_4/t)	ANC:MPA Ratio	No. of samples (n=210)
Non-Acid Forming (Barren)	≤ 0.1	-	-	24
Non-Acid Forming	> 0.1	≤ -5	≥ 2	172
Uncertain	> 0.1	> -5 to ≤ +5	< 2	4
Potentially Acid Forming - Low Capacity (PAF-LC)	> 0.1	> 5 to ≤ 10	< 2	0
Potentially Acid Forming (PAF)	> 0.1	> 10	< 2	10

The results show that the waste rock from BVS Pit is overwhelmingly NAF with significant excess ANC. The bulk waste rock therefore has a high factor of safety with respect to potential for acid generation.

These waste rock results are consistent with the larger SMC exploration drill hole/assay database comprising 10,003 waste rock samples from 90 drill holes at BVS Pit described in **Section 3.2.1**. For these samples, Acid Base Account data was derived from existing total sulfur, calcium and magnesium assay data and used to calculate the NAPP value for each sample interval assayed. The results showed that for the larger waste rock database, 98 % of samples were classified as NAF, 1 % were classified as PAF-LC and 1 % were classified as PAF.

Hence, a small proportion of the samples (approx. 2%) are classified as PAF-LC or PAF. The small number of PAF-LC/PAF samples were collected from lithologies located in close proximity to the ore body. On this basis, it is expected that any small amount of PAF material within the BVS Pit waste rock will be highly localised in close proximity to the ore body. The management of waste rock, including any potentially PAF materials, is described in **Section 10**.

4.2 Multi-element test results

The multi-element test results for metals/metalloids in BVS Pit waste rock samples are provided in **Table B4** (**Attachment B**), which provides a comparison of the multi-element test results against the adopted reference criteria discussed in **Section 3.3.3**.(NEPC, 2013).

The multi-element results show that even using a vigorous four-acid digestion methodology the waste rock samples typically have low metal/metalloid concentrations in whole rock compared to the reference criteria. Minor exceptions include As and Pb in approx. 0.5 % and 5 % of the 196 BVS Pit waste rock samples, respectively.

Therefore, it is not expected that the concentrations of metals/metalloids present in waste rock will have any potential for impacts on rehabilitation activities at the project.

Investigations into the potential water solubility and mobility of metals/metalloids in waste rock materials is presented for KLC tests in **Section 4.3**.

4.3 KLC water extract test results

The KLC test results and trends for the eight BVS Pit waste rock samples (KLC 1 to KLC 8 and KLC 16) are presented in **Attachment D** and interpreted in this section**.**

4.3.1 pH, acidity and alkalinity

The pH of the waste rock leachate is typically within the range pH 6 to 9. The only two exceptions are:

- the first leachate sample from KLC 7 (schist) which has a pH of 4.84, although all subsequent leachate pH values are pH neutral (> pH 7), with negligible acidity (≤ 3 mg/L measured as $CaCO_3$) and excess alkalinity. This was the only BVS waste rock drill core sample classified as Uncertain in the Acid Base Account tests due to a finely balanced ANC:MPA ratio (sample number 207).
- KLC 3 (psammite), which can produce leachate at a pH value slightly greater than pH 9.

The leachate samples typically contain negligible acidity and excess alkalinity, resulting in a positive net alkalinity.

As discussed in **Section 4.1**, the Acid Base Account tests identified a small amount of waste rock located close to the ore body as PAF. The potential for acid generation from a blend of NAF and PAF waste rock materials was specifically tested in KLC 16 and the composition of the blended composite sample is detailed in **Table B3** (**Attachment B**). In summary, the KLC16 sample is a blend of 1 part PAF waste rock to 3 parts NAF waste rock (i.e. 25 % PAF to 75 % NAF) and therefore assessed NAF waste rock mixed with a high proportion (25 %) of PAF material (i.e. mineralised rock associated with the orebody). The KLC16 test was prepared from a total of 31 representative waste rock samples including 24 NAF samples and 7 PAF samples. This sample was specifically prepared with an unrepresentatively high proportion of PAF waste rock to ensure that the water used in the elution process interacted with and contacted the PAF waste rock and, hence, the water collected from this kinetic leach column contained drainage from the PAF waste rock. The KLC leachate results for these materials (KLC 16) show that the leachate is typically pH 6 to 8, has negligible acidity (≤ 3 mg/L) and excess alkalinity with an electrical conductivity (EC) of less than 350 µS/cm and low concentrations of metals and metalloids that are comparable to the referenced default toxicant guideline values. The only exception is dissolved aluminium, which is marginally elevated in the KLC16 leachate but can, at least partially, be present as part of fine colloidal material and pass through the standard laboratory filtration stage of analysis and would be expected to be sparingly soluble at neutral pH. Once the diluting effects of incident rainfall/infiltration in the field are considered for a range of larger particle size materials in a typical waste rock dump, the seepage quality from the storage of PAF materials within the NAF waste rock is expected to be pH neutral, non-saline and contain low concentrations of dissolved metals and metalloids (including aluminium).

While this sample does not represent any specific waste rock disposal ratio or storage scenario, the testing results collected from this sample demonstrate clearly that the NAF waste rock has the ability to neutralise PAF material at significantly higher proportions than will be present in the WRDs. This validates the Acid Base Account results discussed in **Section 4.1**.

Overall, this shows that the bulk waste rock stored in the Central and Southern WRDs (including any small amount of PAF materials) is unlikely to generate acidic leachate. It is therefore expected that bulk BVS waste rock materials will generate leachate that will remain pH neutral or slightly alkaline.

4.3.2 Salinity and major ions

The BVS Pit waste rock EC ranges from 115 to 1,560 µS/cm and generally shows a decreasing trend over time after initial KLC leaching.

The concentrations of dissolved calcium, sulfate and fluoride in KLC leachate are less than the applied livestock drinking water criteria of 1,000 mg/L, 1,000 mg/L and 2 mg/L, respectively (ANZG, 2018).

4.3.3 Residual Sulfur and ANC

The concentration of sulfate in leachate from the KLC tests has been used to calculate the residual sulfur content of the waste rock. The KLC results show that most (93.7 to 99.5 %) of the total sulfur content remains in the sample after leaching indicating a relatively slow rate of reaction.

The concentrations of dissolved Ca and Mg in leachate from the KLC tests have been used to calculate the residual ANC remaining in the waste rock. The KLC results indicate that most (97.3 to 100.0 %) of the measured ANC remains in the samples at the end of the current test period.

4.3.4 Reaction rates

The sulfate generation rate results obtained for the waste rock KLC tests have been used to determine the rate of sulfide oxidation in these materials. Most sulfate salts generated from sulfide reaction involving materials with a relatively low sulfide sulfur concentration are highly soluble and therefore will be collected in column leachate. The sulfate concentrations and oxidation rate calculations align well with existing static and dynamic geochemical data derived from a wide range of mine waste materials (AMIRA, 1995). The sulfate generation rate and associated sulfide oxidation rate for the waste rock KLC tests are shown in **Table 4-2**.

Table 4-2: Sulfate generation and sulfide oxidation rates for KLC tests on BVS Pit waste rock

KLC ID	Location	Sample description	Sulfate generation rate (mg/kg/week)	Oxidation rate (kg $O_2/m^3/s$)
KLC 1	BVS Pit	NAF Schist	4.91	3.14×10^{-9}
KLC 2		NAF Amphibolite	1.97	1.36×10^{-9}
KLC 3		NAF Psammite	0.54	3.44×10^{-10}
KLC 4		NAF Tectonic Breccia w/ vein and wall rock clasts	2.85	1.61×10^{-9}
KLC 5		NAF Psammite	2.36	1.48×10^{-9}
KLC 6		NAF Schist	5.26	3.18×10^{-9}
KLC 7		Uncertain Schist	18.9	1.14×10^{-8}
KLC 8		NAF Schist	0.88	5.56×10^{-10}
KLC 16		NAF/PAF Mixed Lithologies	22.62	1.47×10^{-8}

[#] Sulfate generation and sulfide oxidation rates for KLCs are averaged across the relevant KLC test period

The concentration of dissolved sulfate leached from the waste rock materials is variable, however all KLCs show a relatively consistent trend towards a long-term equilibrium value. The sulfate generation rate ranges from 0.54 to 22.62 mg/kg/week indicating that the rate of sulfide oxidation is typically low (equivalent to an oxidation rate ranging from 3.44×10^{-10} to 1.47×10^{-8} kg $O_2/m^3/s$). The highest sulfate generation rate is associated with the mixed PAF/NAF waste rock with elevated sulfur content in KLC 16 from BVS pit.

Mining waste materials with an oxidation rate in the low range (i.e., less than 5×10^{-8} kg $O_2/m^3/s$) and a moderate ANC level have an increased factor of safety and are likely to generate leachate that is pH neutral or slightly alkaline and/or has low levels of acidity (AMIRA, 1995). Hence, all the waste rock materials included in the KLC test program fall into this category.

Overall, the KLC results reflect the range of material characteristics predicted from the static geochemical test results presented in **Section 4.1**

4.3.5 Dissolved Metal/Metalloid Concentrations

The concentration of dissolved trace metals/metalloids in the KLC leachates from BVS Pit waste rock are typically low, and generally below the laboratory LOR (**Attachment D**). This indicates that most trace metals/metalloids have low solubility at the neutral to slightly alkaline pH of the KLC leachate and have concentrations below the applied water quality guideline values for livestock drinking water (ANZG, 2018).

Whilst it is noted that the concentration of some metals/metalloids in KLC leachate (i.e., Al, As, Cu, Cd, Mn, Ni and Zn) is sporadically greater than the applied freshwater aquatic ecosystem (95 % species protection) value (ANZG, 2018), most elevated metal/metalloid concentrations are associated with the first few KLC leachate events following initial sample preparation (i.e. crushing) and KLC set up.

As detailed in **Section 3.3.5.1,** the free leaching KLC test methodology essentially represents the worst case or maximum potential for sulfide oxidation and potential acid/metal/metalloid/salt generation in pore water for crushed materials under freely oxidising laboratory conditions. Whilst arbitrary comparisons against guideline concentrations can be useful in some situations and help to provide relevant context, such comparisons cannot be directly extrapolated to the field situation at the project site.

5 BV1 Pit and BV2 Pit Waste Rock Geochemistry

5.1 Acid Base Account and NAG test results

The Acid Base Account test and NAG results for the waste rock samples from BV1 and BV2 Pits (sample numbers 211 to 228) are presented in **Table B1 (Attachment B)** and summarised below.

- **pH**: The $pH_{(1:5)}$ values for the waste rock samples are shown in **Figure 5-1**. The pH ranges from 5.6 to 9.8 (median 9.5) ranges from pH neutral to alkaline. The two samples with a pH value less than 6 represent 'weathered Jurassic quartzose sandstone and conglomerate from 2 to 4 m depth in BV1 pit. The pH value for both samples was 5.6. These results show that the waste rock materials represented by the samples tested are not acidic under initial 'worst case' laboratory conditions.

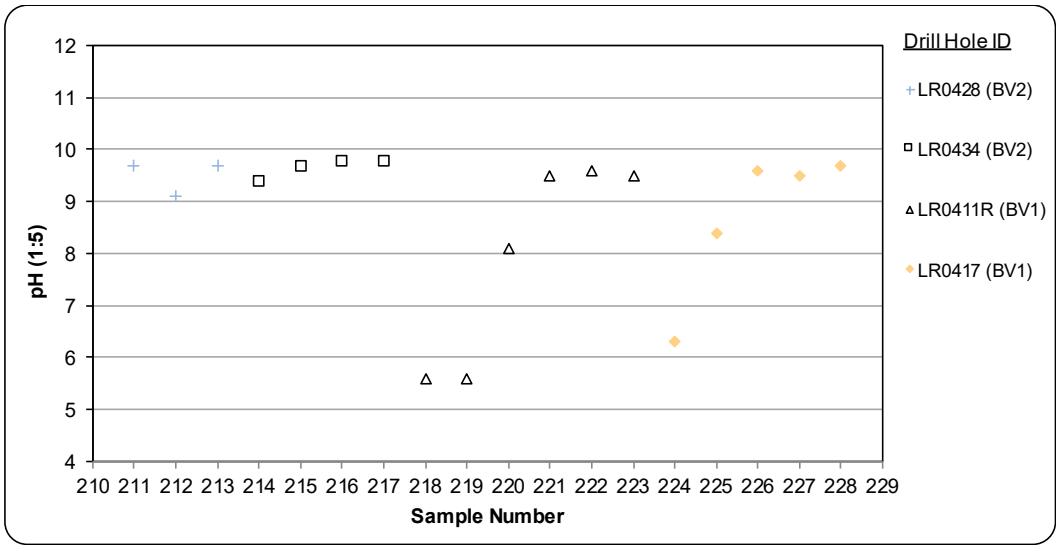


Figure 5-1: Waste rock pH values

- **EC**: The $EC_{(1:5)}$ values for the waste rock samples are presented in **Figure 5-2**. The EC ranges from 12 to 593 µS/cm and has a low median value of 113 µS/cm. According to DME Guidelines (DME, 1995), the EC values are typically in the 'very low' range. These results show that the waste rock samples tested generate low concentrations of salts under 'worst case' laboratory conditions.

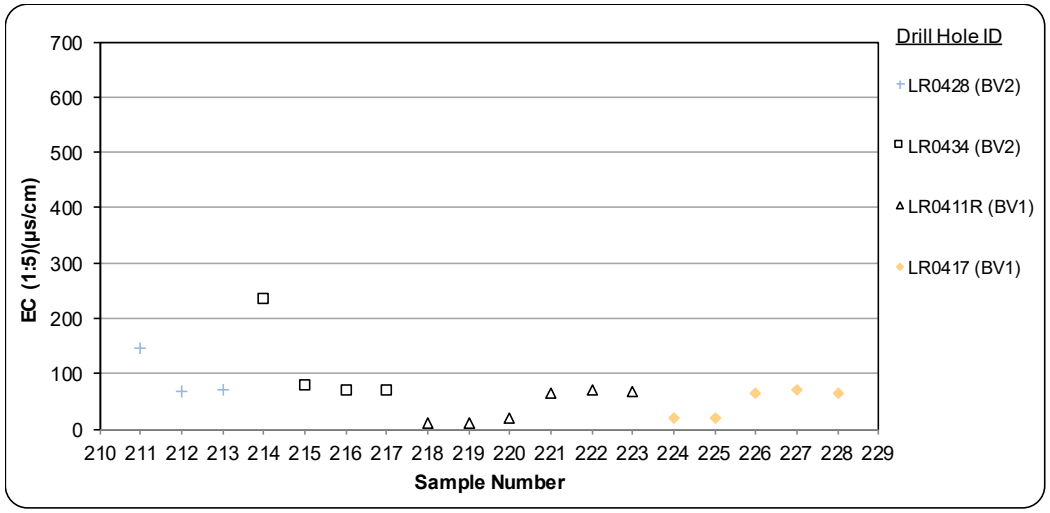


Figure 5-2: Waste rock EC values

- **Total sulfur**: The total sulfur values for the waste rock samples are presented in **Figure 5-3**. The total sulfur values range from < 0.01 to 0.42 %S and has a low median sulfur content of 0.05 %S (i.e. barren of sulfur).

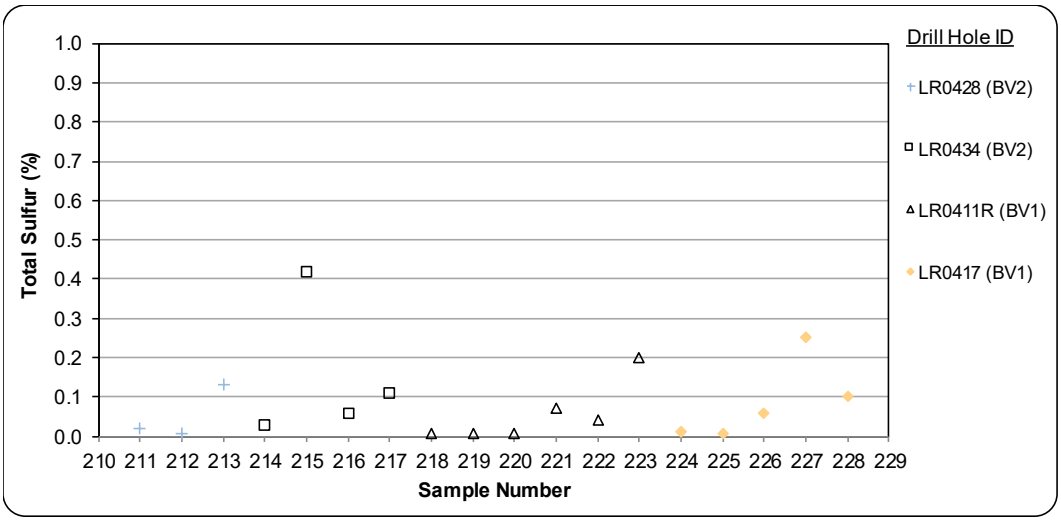


Figure 5-3: Waste rock total sulfur content

- **Scr**: The Scr values, for the five waste rock samples where Scr data are available, are presented in **Figure 5-4**. The results indicate that most of the total sulfur content in the waste rock samples is likely to be present as sulfide as a strong correlation between total sulfur and sulfide sulfur is evident.

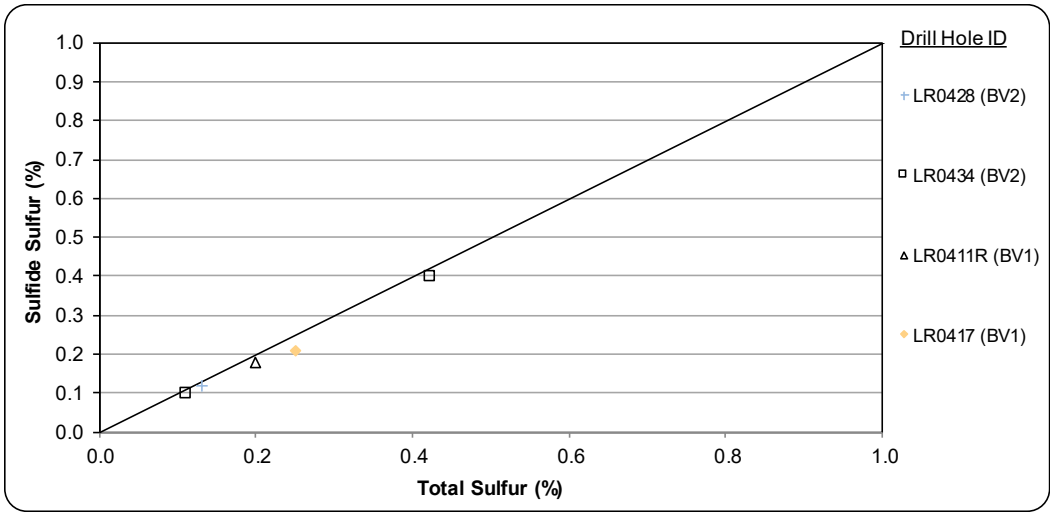


Figure 5-4: Waste rock total sulfur versus sulfide sulfur

- **MPA**: The MPA that could be generated through the oxidation of sulfur in all of the BV1/BV2 Pit waste rock samples tested ranges from 0.2 to 12.3 kg H_2SO_4/t (median 1.4 kg H_2SO_4/t). The MPA value is calculated from the total sulfur content or sulfide sulfur content (where available).
- **ANC**: The ANC of all of the BV1/BV2 Pit waste rock samples ranges from 1.8 to 180 kg H_2SO_4/t (median 15.8 kg H_2SO_4/t). The median ANC is approximately ten times greater than the median MPA.

- **ABCC tests**: The ABCC results are presented in **Figure B4 (Attachment B)**. The ABCC test results show that for the BV1/BV2 Pit samples tested, the majority of the acid buffering becomes available at lower pH values.
- **ANC:MPA ratio**: The ANC:MPA ratio of the waste rock samples ranges from 4.8 to 63.3 and has a median value of 10.4. ANC:MPA ratio lines have been plotted on **Figure 5-5** to illustrate the factor of safety associated with the samples. All of the waste rock samples have an ANC:MPA ratio greater than 2 and therefore a high factor of safety with respect to acid generation.

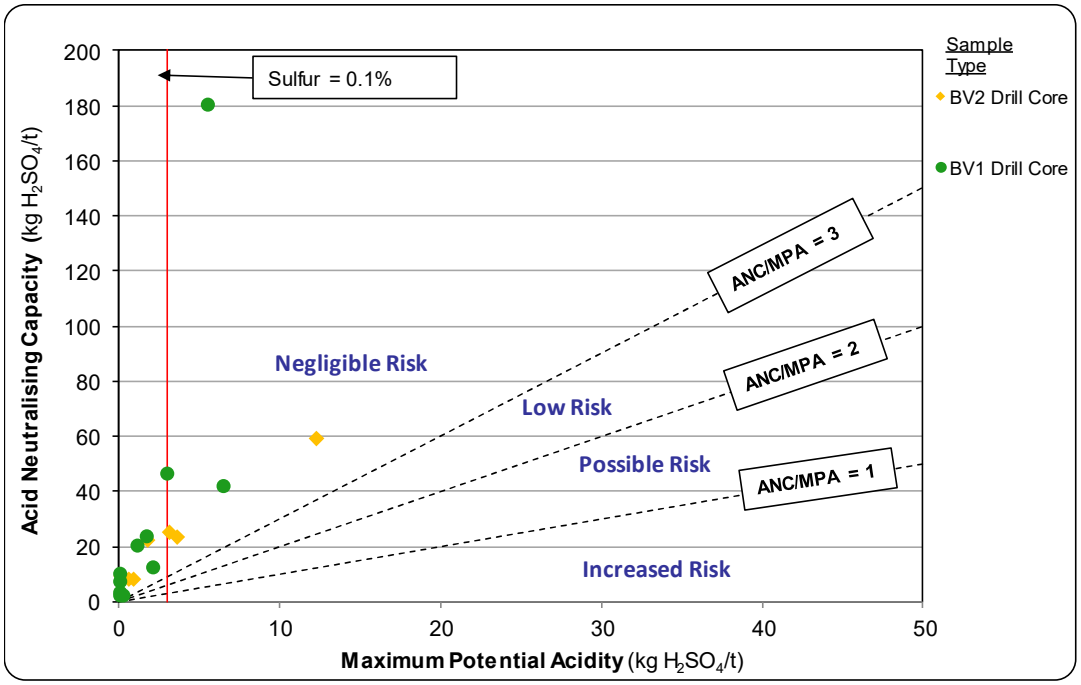


Figure 5-5: Waste rock ANC:MPA ratio

- **NAPP:** The NAPP value ranges from -174.4 to -55.4 kg H_2SO_4/t (median -41.6 kg H_2SO_4/t) (**Figure 5-6**) and therefore all of the waste rock samples tested have a negative NAPP value.

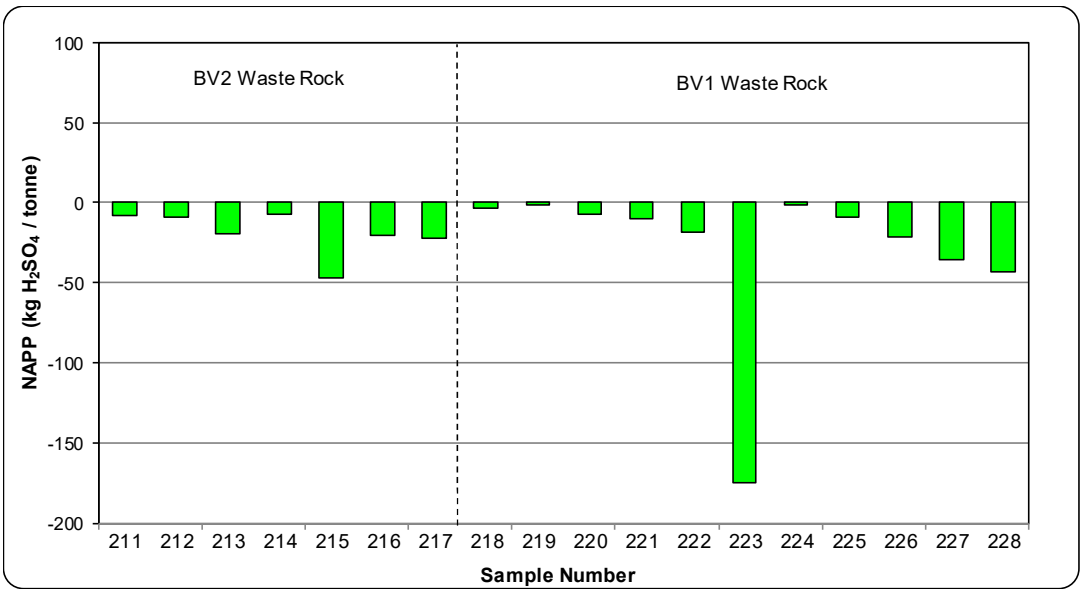


Figure 5-6: Waste rock NAPP values

- **NAG test**: The NAG_{pH} test results for the five waste rock samples subjected to this test are all greater than pH 4.5 and range from 10.2 to 11.1 (**Figure 5-7**). NAG capacity values titrated to pH 4.5 and pH 7.0 are below the laboratory LoR (0.1 kg H_2SO_4/t). Hence the combined NAPP and NAG results shown in **Figure 5-7** confirm that the waste rock is classified as NAF.

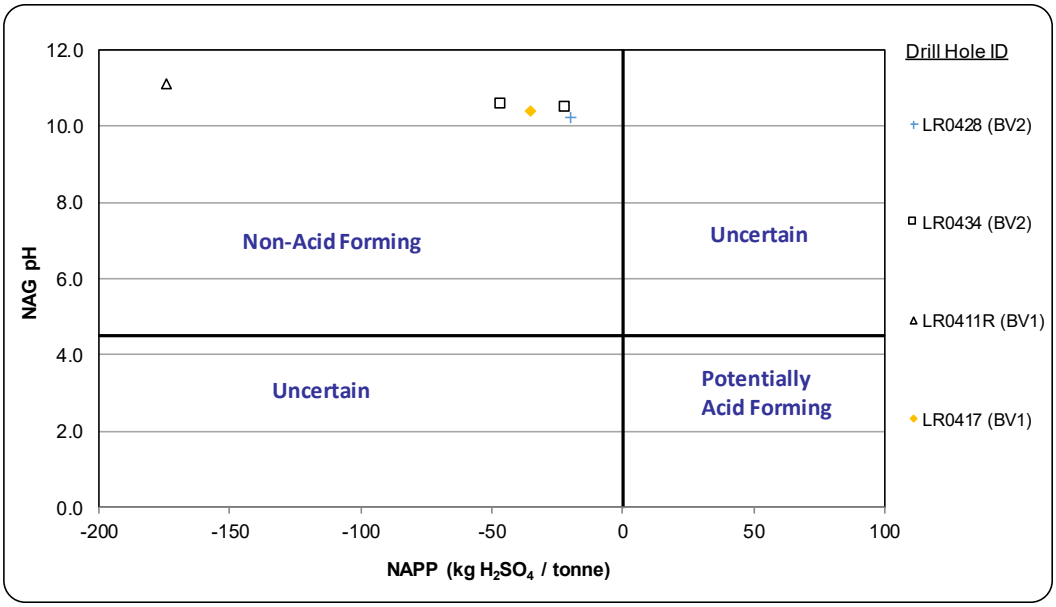


Figure 5-7: Waste rock NAG pH versus NAPP

Table 5-1 summarises the geochemical classification criteria used by RGS to classify the acid forming nature of the waste rock samples and gives a breakdown of the number of samples in each classification category. The results show that the bulk waste rock is classified as NAF (Barren) or NAF.

Table 5-1: Geochemical classification criteria for BV1/BV2 Pit waste rock samples

Classification	Sulfur (%)	NAPP value (kg H_2SO_4/t)	ANC:MPA Ratio	No. of samples (n=18)
Non-Acid Forming (Barren)	≤ 0.1	-	-	14
Non-Acid Forming	> 0.1	≤ -5	≥ 2	4
Uncertain	> 0.1	> -5 to ≤ +5	< 2	0
Potentially Acid Forming - Low Capacity	> 0.1	> 5 to ≤ 10	< 2	0
Potentially Acid Forming	> 0.1	> 10	< 2	0

5.2 Multi-element test results

The multi-element test results for metals/metalloids in four composite BV1/BV2 Pit waste rock samples are provided in **Table B4** (**Attachment B**), which provides a comparison of the multi-element test results against the adopted reference criteria discussed in **Section 3.3.3**.(NEPC, 2013).

The multi-element results show that the waste rock samples have low metal/metalloid concentrations in whole rock compared to the reference criteria. Therefore it is not expected that the concentrations of metals/metalloids present in waste rock will have any potential for impacts on rehabilitation activities at the project site.

Investigations into the potential water solubility and mobility of metals/metalloids in waste rock materials is presented for KLC tests in **Section 5.3**.

5.3 KLC water extract test results

The KLC test results and trends for the two composite BV1/BV2 Pit waste rock samples (KLC 13 and KLC 14) are presented in **Attachment D** and interpreted in this section**.**

5.3.1 pH, acidity and alkalinity

The pH of the waste rock leachate is typically within the pH range of 6 to 9.

The leachate samples contain negligible acidity and excess of alkalinity, resulting in a positive net alkalinity.

As discussed in **Section 5.1**, the Acid Base Account tests show that all BV1/BV2 Pit waste rock materials represented by the samples tested are NAF.

Overall, this shows that the bulk waste rock stored in the Northern WRD will not generate acidic leachate. and pH levels are likely to remain pH neutral or slightly alkaline.

5.3.2 Salinity and major ions

The BV1/BV2 Pit waste rock EC ranges from 620 to 4,610 µS/cm and generally shows a decreasing trend over time after initial KLC leaching. The EC in the BV2 Pit waste rock (KLC 13) is generally higher than KLC14 and aligns with the slightly elevated sulfate concentrations in the KLC 13 leachate. This result potentially shows a higher mobility of dissolved solids in the oxidised granite (KLC 13) relative to the fresh granite (KLC 14).

The dissolved sulfate concentration in the waste rock leachates ranges from 75 to 1,370 mg/L with elevated concentrations limited to some of the KLC 13 leachates. This trend in KLC 13 (BV2 waste rock) was also observed across other dissolved major cations (Na, Mg) and anions (Cl, F). The sulfate concentration is greater than the applied livestock drinking water criteria of 1,000 mg/L (ANZG, 2018) in two of the six KLC leachates collected from KLC 13 but shows a decreasing trend. The concentration of dissolved fluoride is generally greater than the livestock drinking water criteria of 2 mg/L for leachate collected from KLC 13 and KLC 14. There is a good correlation between sodium and sulfate concentrations and EC, inferring that the higher EC values in these samples are associated with the release of sulfate salts rather than chloride salts.

5.3.3 Residual Sulfur and ANC

The concentration of sulfate in leachate from the KLC tests has been used to calculate the residual sulfur content of the waste rock. The KLC results show that most (88.8 to 94.6 %) of the total sulfur content remains in the sample after leaching indicating a relatively slow rate of reaction.

The concentrations of dissolved Ca and Mg in leachate from the KLC tests have been used to calculate the residual ANC remaining in the waste rock. The KLC results indicate that at least 99.6% of the measured ANC remains in the samples at the end of the current test period.

5.3.4 Reaction rates

The sulfate generation rate results obtained for the waste rock KLC tests have been used to determine the rate of sulfide oxidation in these materials. Most sulfate salts generated from sulfide reaction involving materials with a relatively low sulfide sulfur concentration are highly soluble, and therefore will be collected in column leachate. The sulfate concentrations and oxidation rate calculations align well with existing static and dynamic geochemical data derived from a wide range of mine waste materials (AMIRA, 1995). The sulfate generation rate and associated sulfide oxidation rate for the waste rock KLC tests are shown in **Table 5-2**.

The concentration of dissolved sulfate leached from the waste rock materials is variable, however the KLCs show a relatively consistent trend towards a long-term equilibrium value. The sulfate generation rate ranges from 3.94 to 8.30 mg/kg/week indicating that the rate of sulfide oxidation is typically low (equivalent to an oxidation rate ranging from 2.57 to 5.16 x 10^{-8} kg $O_2/m^3/s$).

Mining waste materials with an oxidation rate in the low range (i.e., less than 5 x 10^{-8} kg $O_2/m^3/s$) and a moderate ANC level have an increased factor of safety and are likely to generate leachate that is pH neutral or slightly alkaline and/or has low levels of acidity (AMIRA, 1995). Hence, the BV1/BV2 Pit waste rock materials included in the KLC test program fall into this category.

Overall, the KLC results reflect the range of material characteristics predicted from the static geochemical test results presented in **Section 5.1**

Table 5-2: Sulfate generation and sulfide oxidation rates for KLC tests on BV1/BV2 Pit waste rock

KLC ID	Location	Sample description	Sulfate generation rate (mg/kg/week)	Oxidation rate (kg $O_2/m^3/s$)
KLC 13	BV2 pit	NAF oxidised granite	8.30	5.16×10^{-9}
KLC 14	BV1 pit	NAF Fresh granite and sericite schist	3.94	2.57×10^{-9}

[#] Sulfate generation and sulfide oxidation rates for KLCs are averaged across the relevant KLC test period

5.3.5 Dissolved metal/metalloid concentrations

The concentration of dissolved trace metals/metalloids in the KLC leachates from BV1/BV2 Pit waste rock are typically low, and generally below the laboratory LOR (**Attachment D**). This indicates that most trace metals/metalloids have low solubility at the neutral to slightly alkaline pH of the KLC leachate and have concentrations below the applied water quality guideline values for livestock drinking water (ANZG, 2018). The main exception is the dissolved molybdenum (Mo) concentration in leachates collected from KLC14 (BV1) which is greater than the applied water quality livestock drinking water guideline value of 0.15 mg/L.

Whilst it is noted that the concentration of some metals/metalloids in KLC leachate (i.e., Al, As, Cu and Zn) is sporadically greater than the applied freshwater aquatic ecosystem (95 % species protection) value (ANZG, 2018), most elevated metal/metalloid concentrations are associated with the first few KLC leachate events following initial sample preparation (i.e. crushing) and KLC set up.

As detailed in **Section 3.3.5.1,** the free leaching KLC test methodology essentially represents the 'worst case' or maximum potential for sulfide oxidation and potential acid/metal/metalloid/salt generation in pore water for crushed materials under freely oxidising laboratory conditions. Whilst arbitrary comparisons against guideline concentrations can be useful in some situations and help to provide relevant context, such comparisons cannot be directly extrapolated to the field situation at the project site.

6 Tailings Geochemistry

6.1 Acid Base Account and NAG test results

The Acid Base Account and NAG test results for the tailings samples are presented in **Table B1 (Attachment B)** and summarised below.

- **pH**: The $pH_{(1:5)}$ values for the tailings samples are presented in **Figure 6-1**. The pH ranges from 8.7 to 9.0 and is typically slightly alkaline (median pH 8.8). These results show that the tailing materials represented by the samples tested are not acidic under initial 'worst case' laboratory conditions.

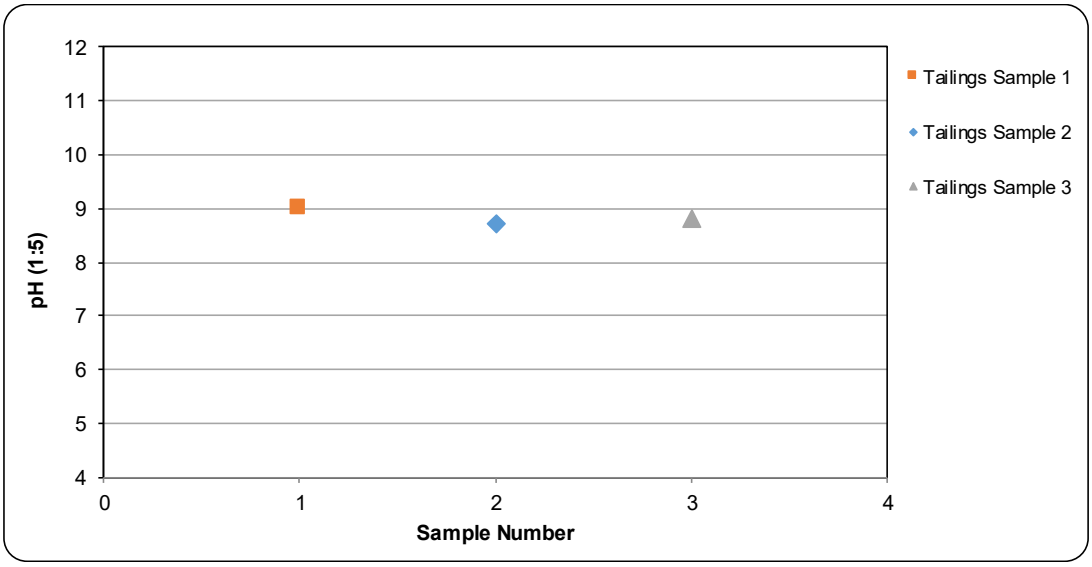


Figure 6-1: Tailings pH values

- **EC**: The $EC_{(1:5)}$ values for the tailings samples are presented in **Figure 6-2**. According to DME Guidelines (DME, 1995), the EC ranges from low to high (132 to 1,680 µS/cm) in the tailing samples under initial 'worst case' laboratory conditions.

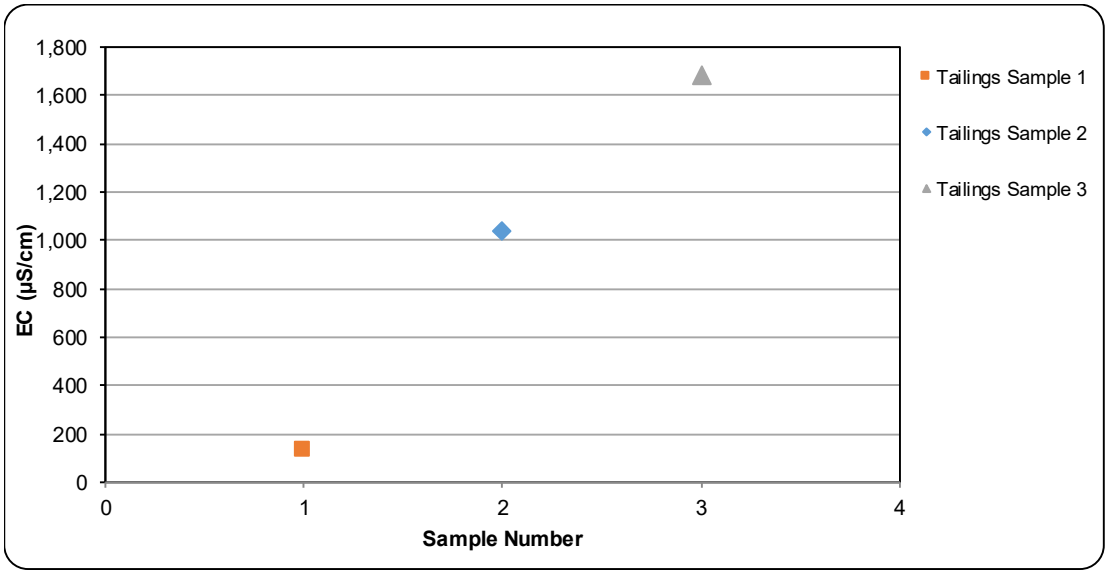


Figure 6-2: Tailings EC values

- **Total sulfur**: The total sulfur values for the tailings samples are presented in **Figure 6-3.** Total sulfur values range from 0.68 to 1.58 %.

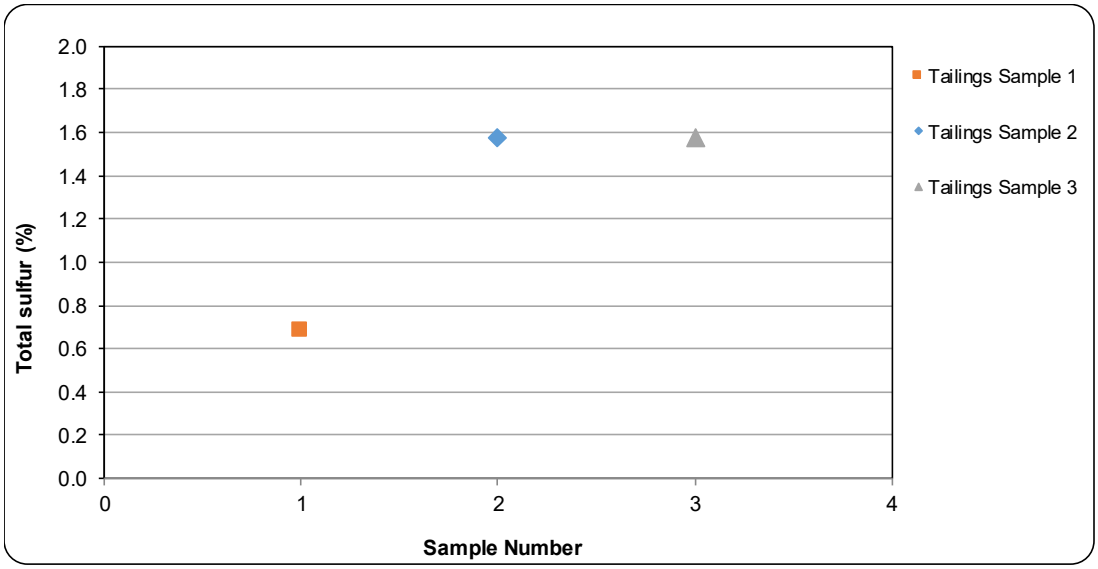


Figure 6-3: Tailings total sulfur content

- **Scr**: The Scr values are presented for the tailings samples in **Figure 6-4**. The results indicate that ~ 67 to 79 % of the total sulfur is present as sulfide in materials represented by these samples.

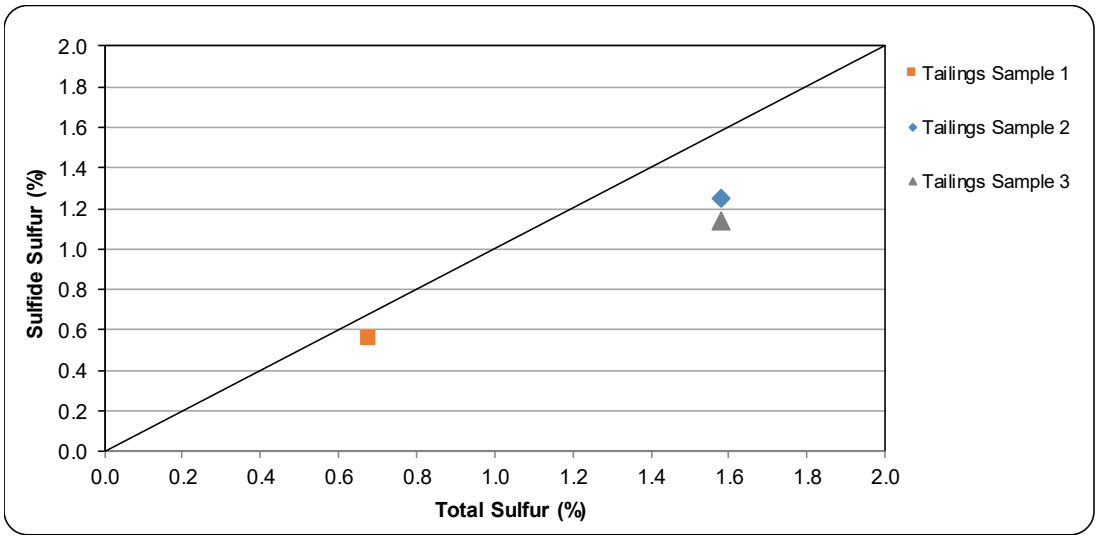


Figure 6-4: Tailings total sulfur versus sulfide sulfur

- **MPA**: The MPA that could be generated through the oxidation of sulfide in the tailing samples ranges from 17.0 to 38.3 kg H_2SO_4/t (mean 30.1 kg H_2SO_4/t /t) as calculated from the sulfide sulfur content.
- **ANC**: The ANC of the tailing samples ranges from 23.4 to 26.8 kg H_2SO_4/t /t (mean 24.6 kg H_2SO_4/t).
- **ABCC tests**: ABCC tests were completed the tailings samples and results are presented in **Figure B5** (**Attachment B)**. The ABCC test results show that whilst some acid buffering should be expected from the sample materials, the majority of this buffering may only be available at lower pH values.

- **ANC:MPA ratio**: The ANC:MPA ratio for the tailings samples ranges from 0.6 to 1.6 (mean 1.0). ANC:MPA ratio lines have been plotted on **Figure 6-5** to illustrate the factor of safety associated with the samples. Generally, those samples with an ANC:MPA ratio greater than 2 have negligible risk of acid generation and a high factor of safety in terms of potential for generating acidic drainage (COA, 2016; INAP, 2026). The tailing samples have an ANC:MPA ratio less than 2 indicating a reduced factor of safety with respect to potential acid generation, if materials represented by these samples are left exposed to oxidising conditions over time (COA, 2016; INAP, 2026).

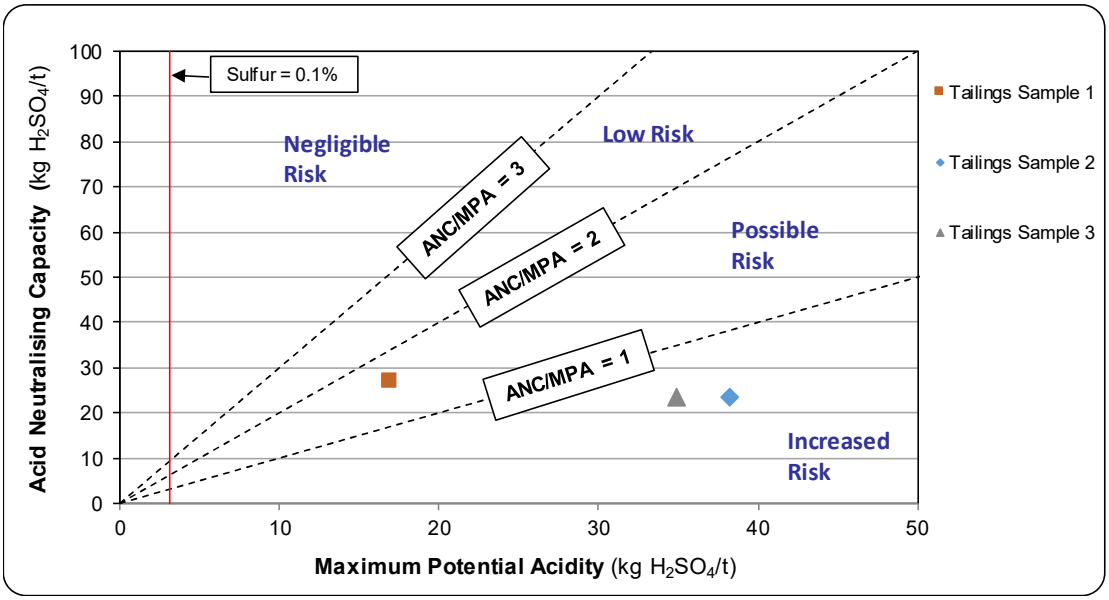


Figure 6-5: Tailings ANC:MPA ratio

- **NAPP**: The NAPP values for the tailing samples ranges from -9.8 to +14.7 kg H_2SO_4/t (**Figure 6-6**).

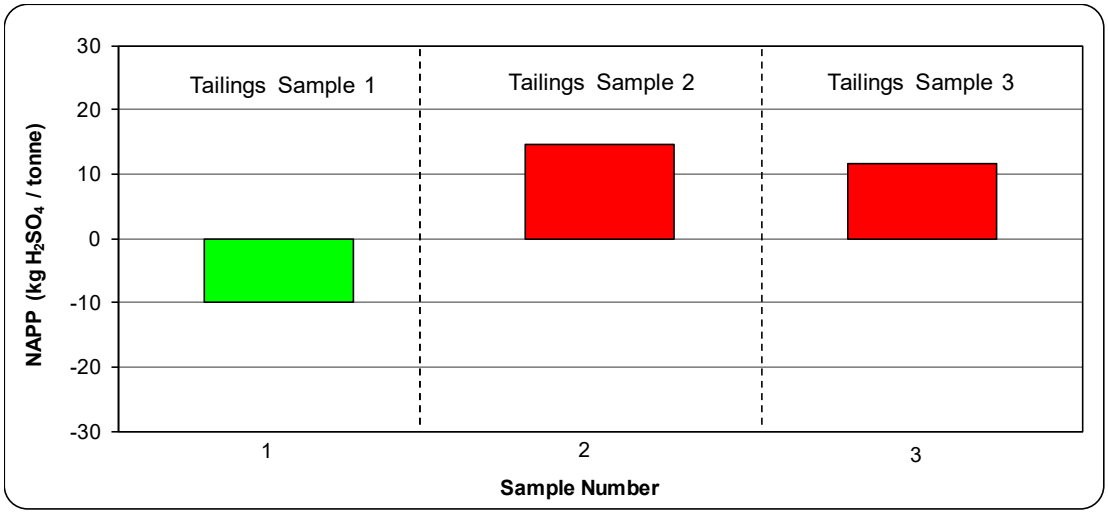


Figure 6-6: Tailings NAPP values

- **NAG**: The NAG_{pH} test results for the tailing samples range from pH 2.6 to pH 8.2. NAG capacity values titrated to pH 4.5 and pH 7.0 range from below the laboratory LoR (0.1 kg H_2SO_4/t) to 14.4 kg H_2SO_4/t and 18.2 kg H_2SO_4/t, respectively.

The NAG_{pH} and NAPP results shown in **Figure 6-7** indicate that materials represented by Tailings Sample 1 are NAF and Tailing Samples 2 and 3 are PAF.

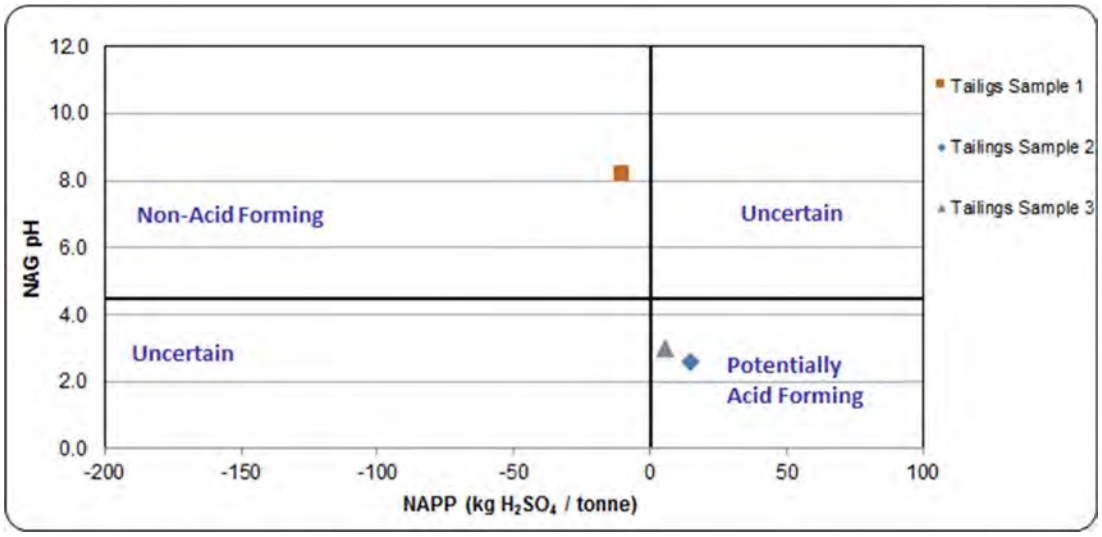


Figure 6-7: Tailings NAG pH versus NAPP

Table 6-1 summarises the geochemical classification criteria used by RGS to classify the acid forming nature of the tailings samples and gives a breakdown of the number of samples in each classification category. The results show that the Tailings Sample 1 is classified as NAF and Tailings Samples 2 and 3 are classified as PAF.

Table 6-1: Geochemical classification criteria for tailing samples

Classification	Sulfur (%)	NAPP value (kg H_2SO_4/t)	ANC:MPA Ratio	No. of samples (n=3)
Non-Acid Forming (Barren)	≤ 0.1	-	-	0
Non-Acid Forming	> 0.1	≤ -5	≥ 2	1
Uncertain	> 0.1	> -5 to ≤ +5	< 2	0
Potentially Acid Forming (Low Capacity)	> 0.1	> 5 to ≤ 10	< 2	0
Potentially Acid Forming	> 0.1	> 10	< 2	2

6.2 Multi-element test results

The multi-element test results for metals/metalloids in the solid tailing samples are provided in **Table B5 (Attachment B)**, which provides a comparison of the multi-element test results against the adopted reference criteria discussed in **Section 3.3.3**.(NEPC, 2013).

The multi-element results show that the tailing samples typically have low metal/metalloid concentrations compared to the reference criteria. The exception is one tailings sample (Tailing Sample 1), which has a slightly higher total chromium concentration (likely to be due to naturally occurring trivalent chromium present in ultramafic and mafic rocks). Leachate from Tailings Sample 1 was tested for total chromium and the concentrations are below the limits of reporting (refer **Section 6.3.5**).

Taking these multi-element results into account and noting that the tailings storage area will be covered at the end of mine life, it is not expected that the concentrations of metals/metalloids present in tailings solids will have any potential for impacts on rehabilitation activities at the project site.

Investigations into the potential water solubility and mobility of metals/metalloids in tailings are presented for static water extract tests and KLC tests in **Section 6.3**.

6.3 Water extract and KLC test results

The results from multi-element water extract tests on Tailing Samples 2 and 3 are presented in **Table B6 (Attachment B).** The KLC test program for Tailings Sample 1 (KLC 9) are presented in **Attachment D**.

6.3.1 pH, acidity and alkalinity

The pH of the water extracts and KLC leachate samples ranges from pH neutral to slightly alkaline (pH 6.5 and 8.8) and is within the applied guideline values of pH 6 to 9 (ANZG, 2018). The KLC leachate samples contain negligible acidity and excess of alkalinity, resulting in a positive net alkalinity.

As discussed in **Section 6.1**, the Acid Base Account tests show that Tailings Sample 1 is NAF and Tailings Samples 2 and 3 are PAF. **Section 10** describes the management measures for tailings.

6.3.2 Salinity and major ions

The EC values for the tailings sample water extracts and KLC leachate samples can be marginally greater than the applied freshwater aquatic ecosystem guideline value but is within the applied livestock drinking water criterion (ANZG, 2018). The EC concentration in KLC leachate is fairly consistent over the test period although for KLC 9, major ion concentrations are variable with sodium and chloride tending to decrease and calcium, magnesium and sulfate showing an increasing trend.

The sulfate concentration in the KLC leachates from the tailings (KLC9) ranged from 662 to 1,050 mg/L and remains below the applied livestock drinking water criterion of 1,000 mg/L until the last three leachate events. The concentration of fluoride was slightly greater than the livestock drinking water criterion of 2 mg/L in leachate from KLC 9 for the initial and final two leachate events of the test period.

6.3.3 Residual sulfur and ANC

The concentration of sulfate in leachate from the KLC tests has been used to calculate the residual sulfur content of the tailings. The KLC 9 test results show that 93.4 % of the total sulfur content remains in the sample material after leaching for 48 weeks.

The concentrations of dissolved Ca and Mg in leachate from the KLC tests have been used to calculate the residual ANC remaining in the tailing samples. The KLC 9 results indicate that 94.8 % of the measured ANC remains in the sample after 48 weeks of leaching.

6.3.4 Reaction rates

The sulfate generation rate obtained from the tailings sample (KLC 9) have been used to determine the rate of sulfide oxidation in this material. The sulfate generation rate and associated sulfide oxidation rate for the KLC test program are shown in **Table 6-2.**

The sulfate generation rate for the tailing sample (KLC 9) is 26.5 mg/kg/week indicating that the rate of sulfide oxidation is low (equivalent to an oxidation rate ranging from 8.74×10^{-9} kg $O_2/m^3/s$). Mining waste materials with an oxidation rate in the low range (i.e., less than 5×10^{-8} kg $O_2/m^3/s$) and a moderate ANC level have an increased factor of safety and are likely to generate leachate that is pH neutral (or in this case slightly alkaline) and/or has low levels of acidity (AMIRA, 1995). Hence, the tailing materials represented by the sample tested (Tailings Sample 1) fall into this category.

Table 6-2: Sulfate generation and sulfide oxidation rates for KLC test program on tailings

KLC ID	Sample description	Sulfate generation rate (mg/kg/week)	Oxidation rate (kg $O_2/m^3/s$)
KLC 9	Tailings Sample 1	26.50	8.74×10^{-9}

[#] Sulfate generation and sulfide oxidation rates for KLCs are averaged across the relevant KLC test period

Overall, the KLC results reflect the predicted NAF material characteristics predicted from the static geochemical test results for Tailings Sample 1 presented in **Section 6.1.**

6.3.5 Dissolved metal/metalloid concentrations and WAD cyanide

The concentrations in dissolved trace metals/metalloids in static water extracts and KLC leachates from NAF Tailings Sample 1 are generally low with most of the results below the relevant laboratory LOR (including chromium). This indicates that most trace metals/metalloids have low solubility at the neutral to slightly alkaline pH of the KLC leachate and have concentrations below the applied water quality guideline values for livestock drinking water (ANZG, 2018).

Whilst it is noted that the concentration of some dissolved metals/metalloids in KLC leachate (i.e., B, Cd, Cu and Zn) is sporadically greater than the applied freshwater aquatic ecosystem (95 % species protection) value (ANZG, 2018), this is most likely due to the crushed nature of the sample and KLC set up and reflects pore water chemistry under controlled laboratory conditions. As detailed in **Section 3.3.5.1,** the free leaching KLC test methodology essentially represents the 'worst case' or maximum potential for sulfide oxidation and potential acid/metal/metalloid/salt generation in pore water for crushed materials under freely oxidising laboratory conditions. Whilst arbitrary comparisons against guideline concentrations can be useful in some situations and help to provide relevant context, such comparisons cannot be directly extrapolated to the field situation at the project.

The weak acid dissociable (WAD) cyanide concentration in tailings water extracts is below the laboratory LOR and the concentration of WAD cyanide at the project is expected to be low.

7 Spent Heap Leach Residue Geochemistry

7.1 Acid Base Account and NAG test results

The Acid Base Account and NAG test results for the spent heap leach residue samples are presented in **Table B1 (Attachment B)** and summarised below.

- **pH**: The $pH_{(1:5)}$ values for the spent heap leach residue samples are presented in **Figure 7-1**. The pH ranges from 8.8 to 9.1 and is typically slightly alkaline. Materials represented by the samples tested add some alkalinity to initial contact water. These results show that the spent heap leach residue materials represented by the samples tested are not acidic under initial 'worst case' laboratory conditions.

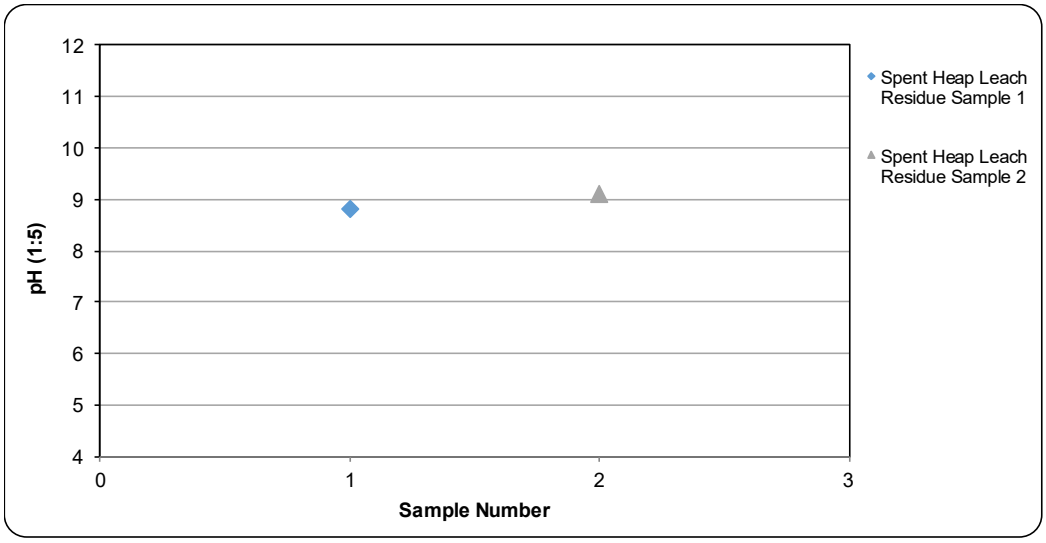


Figure 7-1: Spent heap leach residue pH values

- **EC**: The $EC_{(1:5)}$ values for the spent heap leach residue samples are presented in **Figure 7-2**. According to DME Guidelines (DME, 1995), the EC is low (158 to 267 µS/cm) in the spent heap leach residue samples under initial 'worst case' laboratory conditions.

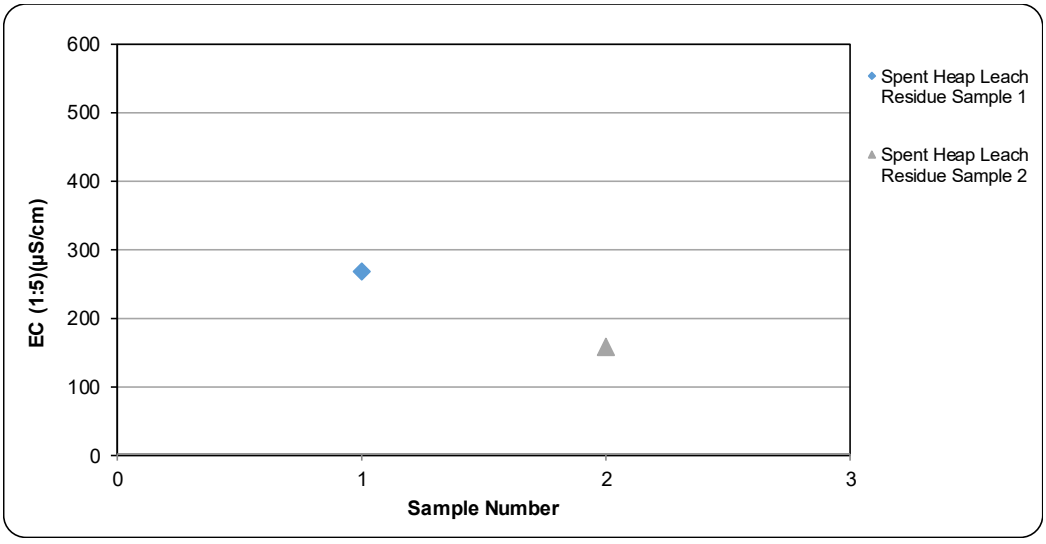


Figure 7-2: Spent heap leach residue EC values

- **Total sulfur**: The total sulfur values for the spent heap leach residue samples are presented in **Figure 7-3**. Total sulfur levels range from 0.78 to 1.11 %).

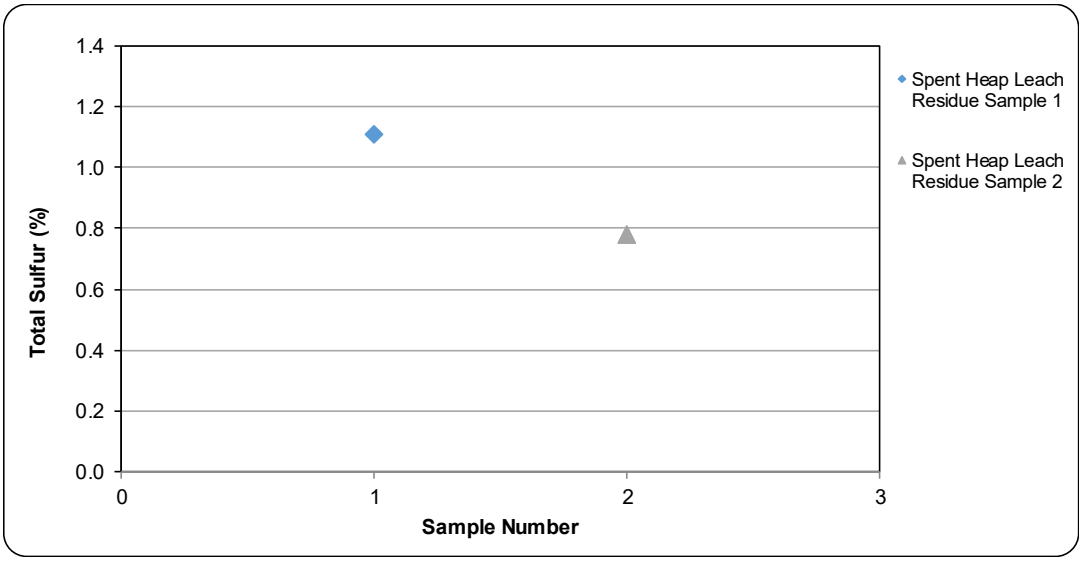


Figure 7-3: Spent heap leach residue total sulfur content

- **Scr**: The Scr values are presented for the spent heap leach residue samples in **Figure 7-4** and indicate that ~ 68 to 81 % of the total sulfur is present as sulfide in materials represented by these samples.

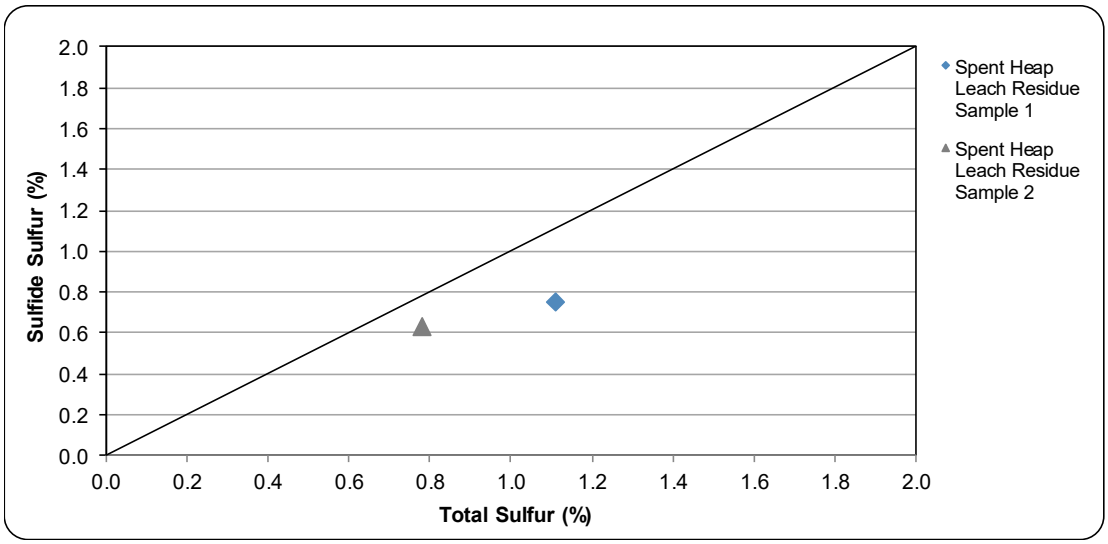


Figure 7-4: Spent heap leach residue total sulfur versus sulfide sulfur

- **MPA**: The MPA that could be generated through the oxidation of sulfide in the spent heap leach residue samples ranges from 19.3 to 23.0 kg H_2SO_4/t as calculated from the sulfide sulfur content.
- **ANC**: The ANC of the spent heap leach residue samples ranges from 11.4 to 13.7 kg H_2SO_4/t.
- **ABCC tests**: ABCC tests were completed the spent heap leach residue samples and results are presented in **Figure B5** (**Attachment B)**. The ABCC test results show that whilst some acid buffering should be expected from the sample materials, the majority of this buffering may only be available at lower pH values.

- **ANC:MPA ratio**: The ANC:MPA ratio for the spent heap leach residue samples ranges from 0.5 to 0.7. ANC:MPA ratio lines have been plotted on **Figure 7-5** to illustrate the factor of safety associated with the samples. Generally, those samples with an ANC:MPA ratio greater than 2 have negligible risk of acid generation and a high factor of safety in terms of potential for generating acidic drainage (COA, 2016; INAP, 2026). The spent heap leach residue samples have an ANC:MPA ratio less than 2 indicating a reduced factor of safety with respect to potential acid generation, if materials represented by these samples are left exposed to oxidising conditions over time (COA, 2016; INAP, 2026).

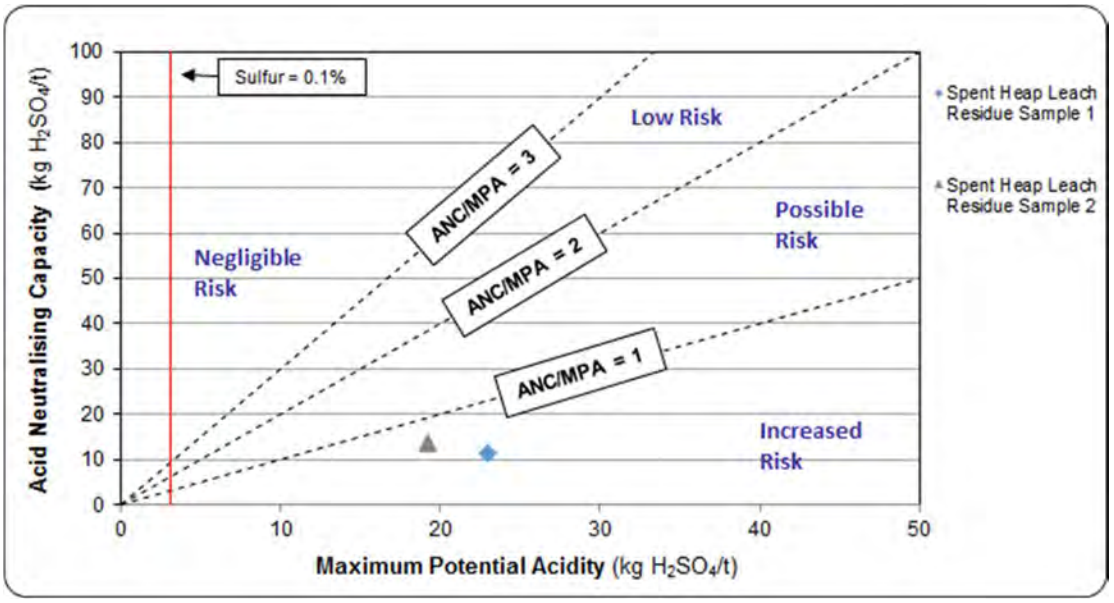


Figure 7-5: Spent heap leach residue ANC:MPA ratio

- **NAPP**: The NAPP values for the spent heap leach residue samples range from 5.6 to +11.6 kg H_2SO_4/t (**Figure 7-6**).

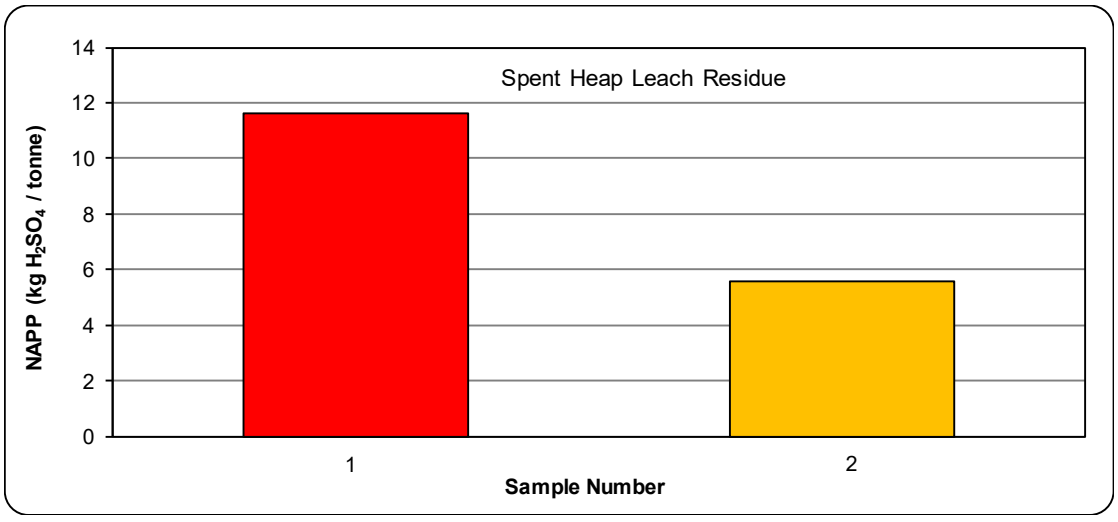


Figure 7-6: Spent heap leach residue NAPP values

- **NAG**: The NAG_{pH} test results for the spent heap leach residue samples range from pH 2.6 to pH 3.0. NAG capacity values titrated to pH 4.5 and pH 7.0 range from 6.7 kg H_2SO_4/t and 17.1 kg H_2SO_4/t, respectively. The NAG_{pH} and NAPP and results shown in **Figure 7-7** indicate that materials represented by the spent heap leach residue are PAF.

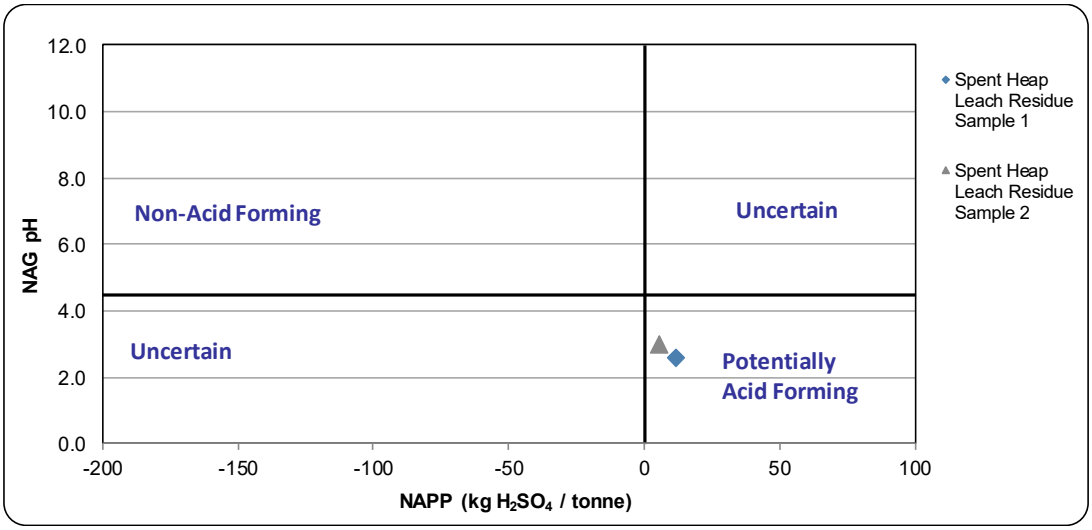


Figure 7-7: Spent heap leach residue NAG pH versus NAPP

Table 7-1 summarises the geochemical classification criteria used by RGS to classify the acid forming nature of the spent heap leach residue samples and gives a breakdown of the number of samples in each classification category. The results show that Spent Heap Leach Residue Sample 1 is classified as PAF and Spent Heap Leach Residue Sample is classified as PAF-LC.

Table 7-1: Geochemical classification criteria for spent heap leach residue samples

Classification	Sulfur (%)	NAPP value (kg H_2SO_4/t)	ANC:MPA Ratio	No. of samples (n=2)
Non-Acid Forming (Barren)	≤ 0.1	-	-	0
Non-Acid Forming	> 0.1	≤ -5	≥ 2	0
Uncertain	> 0.1	> -5 to ≤ +5	< 2	0
Potentially Acid Forming (Low Capacity)	> 0.1	> 5 to ≤ 10	< 2	1
Potentially Acid Forming	> 0.1	> 10	< 2	1

7.2 Multi-element test results

The multi-element test results for metals/metalloids in the solid spent heap leach residue samples are provided in **Table B7 (Attachment B)**, which provides a comparison of the multi-element test results against the adopted reference criteria discussed in **Section 3.3.3**.(NEPC, 2013).

The multi-element results show that the spent heap leach residue samples have low metal/metalloid concentrations compared to the reference criteria.

Taking these multi-element results into account and noting that the spent heap leach process residue will be reprocessed at the project, it is not expected that the concentrations of metals/metalloids present in these materials will present any environmental issues at the project site.

Investigations into the potential water solubility and mobility of metals/metalloids in spent heap leach residue materials are presented for KLC tests in **Section 7.3**.

7.3 KLC test results

The results for the KLC test program on spent heap leach residue samples under free draining (KLC 11) and saturated conditions (KLC 12) are presented in **Attachment D**.

7.3.1 pH, acidity and alkalinity

The pH of the KLC leachate samples ranges from pH neutral to slightly alkaline (pH 6.57 and 7.93) and is within the applied guideline values of pH 6 to 9 (ANZG, 2018). The pH value is generally higher in the spent heap leach residue material under unsaturated conditions (KLC 12) compared to free draining conditions (KLC 11).

The KLC leachate samples contain negligible acidity (≤ 6 mg/L as $CaCO_3$) and excess of alkalinity, resulting in a positive net alkalinity. The alkalinity released into KLC leachate is higher under saturated conditions.

As discussed in **Section 6.1**, the Acid Base Account and NAG tests indicate that Spent Heap Leach Residue Sample 1 is PAF and Spent Heap Leach Residue Sample 2 is PAF-LC.

7.3.2 Salinity and major ions

The EC values for the spent heap leach residue KLC leachate samples are low and less than the applied freshwater aquatic ecosystem and livestock drinking water criteria (ANZG, 2018). The EC concentration in KLC leachate is fairly consistent over the test period although under free draining conditions shows a decreasing trend. Major ion concentrations are relatively low and variable and generally dominated by calcium, potassium and sulfate.

The sulfate concentration in the KLC leachates from the spent heap leach residue KLC leachate ranges from 8 to 110 mg/L and typically remains more than an order of magnitude less than the applied livestock drinking water criterion of 1,000 mg/L. The concentration of fluoride is less than the livestock drinking water criterion of 2 mg/L in KLC leachate from the spent heap leach residue samples.

7.3.3 Residual sulfur and ANC

The concentration of sulfate in leachate from the KLC tests has been used to calculate the residual sulfur content of the spent heap leach residue materials. The KLC 11 and KLC 12 test results show that at least 99.2 % of the total sulfur content remains in the sample materials after leaching for 38 weeks.

The concentrations of dissolved Ca and Mg in leachate from the KLC tests have been used to calculate the residual ANC remaining in the spent heap leach residue samples. The KLC test results indicate that at least 97.2 % of the measured ANC remains in the sample materials after 38 weeks of leaching.

7.3.4 Reaction rates

The sulfate generation rate obtained from the spent heap leach residue samples (KLC 11 and KLC 12) have been used to determine the rate of sulfide oxidation in these materials. The sulfate generation rate and associated sulfide oxidation rate for the KLC test program are shown in **Table 7-2**.

The sulfate generation rate for the free leach sample (KLC 11) and saturated sample (KLC 12) is 9.08 and 6.02 mg/kg/week, respectively indicating that the rate of sulfide oxidation is low (equivalent to an oxidation rate ranging from 3.03 and 1.91 x 10^{-9} kg $O_2/m^3/s$). Mining waste materials with an oxidation rate in the low range (i.e., less than 5 x 10^{-8} kg $O_2/m^3/s$) and a moderate ANC level have an increased factor of safety and are likely to generate leachate that is pH neutral and/or has low levels of acidity (AMIRA, 1995). Hence, the spent heap residue materials represented by the samples tested fall into this category.

Overall, despite the spent heap leach residue samples having a PAF and PAF-LC classification using standard static geochemical Acid Base Account and NAG tests, the KLC results to date reflect a more benign material with NAF geochemical characteristics.

Table 7-2: Sulfate generation & sulfide oxidation rates for KLC tests on spent heap leach residue

KLC ID	Sample description	Sulfate generation rate (mg/kg/week)	Oxidation rate (kg $O_2/m^3/s$)
KLC 11	Spent Heap Leach Residue Sample 1	9.08	3.03 x 10^{-9}
KLC 12	Spent Heap Leach Residue Sample 2	6.02	1.91 x 10^{-9}

[#] Sulfate generation and sulfide oxidation rates for KLCs are averaged across the relevant KLC test period

7.3.5 Dissolved metal/metalloid concentrations

The concentrations in dissolved trace metals/metalloids in static water extracts and KLC leachates from the spent heap leach residue samples under both free leaching (KLC 11) and saturated (KLC 12) conditions are generally low with most of the results below the relevant laboratory LOR. This indicates that most trace metals/metalloids have low solubility at the neutral pH of the KLC leachate and have concentrations below the applied water quality guideline values for livestock drinking water (ANZG, 2018).

Whilst it is noted that the concentration of some dissolved metals/metalloids in KLC leachate (i.e., Al and Cu in KLC 11) and Al and Mn in KLC 12) are sporadically and marginally greater than the applied freshwater aquatic ecosystem (95 % species protection) value (ANZG, 2018), this is most likely due to the crushed nature of the sample and KLC set up and reflects pore water chemistry under controlled laboratory conditions. As detailed in **Section 3.3.5.1,** the free leaching KLC test methodology essentially represents the 'worst case' or maximum potential for sulfide oxidation and potential acid/metal/metalloid/salt generation in pore water for crushed materials under freely oxidising (KLC 11) or saturated (KLC 12) laboratory conditions. Whilst arbitrary comparisons against guideline concentrations can be useful in some situations and help to provide relevant context, such comparisons cannot be directly extrapolated to the field situation at the project.

8 Low Grade Ore Geochemistry

8.1 Acid Base Account and NAG test results

Acid Base Account and NAG results for a representative low grade ore sample are presented in **Table B1 (Attachment B)** and summarised below.

- **pH**: The $pH_{(1:5)}$ value for the low grade ore sample is 8.0 and classified as pH neutral to slightly alkaline. This result shows that the low grade ore material represented by the sample tested is not acidic under initial 'worst case' laboratory conditions.
- **EC**: According to DME Guidelines (DME, 1995), the $EC_{(1:5)}$ value for the low grade ore sample is very low (187 µS/cm).
- **Total sulfur**: The total sulfur content of the low grade ore sample is 0.8 %S.
- **Scr**: The Scr value for the low grade ore sample is 0.66 and indicates that ~ 83 % of the total sulfur is present as sulfide in material represented by this sample.
- **MPA**: The MPA that could be generated through the oxidation of sulfide in the low grade ore sample is 20.2 kg H_2SO_4/t. The MPA value was calculated from the sulfide sulfur content.
- **ANC**: The ANC of the low grade ore sample is 35.6 kg H_2SO_4/t.
- **ABCC tests**: ABCC tests were completed on the low grade ore sample and results are presented in **Figure B6** (**Attachment B**). The ABCC test results show that whilst some acid buffering should be expected from the sample material, the majority of this buffering may only be available at lower pH values.
- **ANC:MPA ratio**: The ANC:MPA ratio for the low grade ore samples is 1.8. ANC:MPA ratio lines have been plotted on **Figure 8-1** to illustrate the factor of safety associated with the samples. Generally, those samples with an ANC:MPA ratio greater than 2 have negligible risk of acid generation and a high factor of safety in terms of potential for generating acidic drainage (INAP, 2026; COA, 2016). The low grade ore sample has an ANC:MPA ratio just less than 2 and is unlikely to be a source of acidic drainage.
- **NAPP**: The NAPP value is negative (-15.4 kg H_2SO_4/t) for the low grade ore sample.
- **NAG**: The NAG_{pH} value for the low grade ore sample is pH 8.1. The NAG_{pH} and NAPP and results shown in **Figure 8-2** indicate that material represented by the low grade ore sample is NAF.

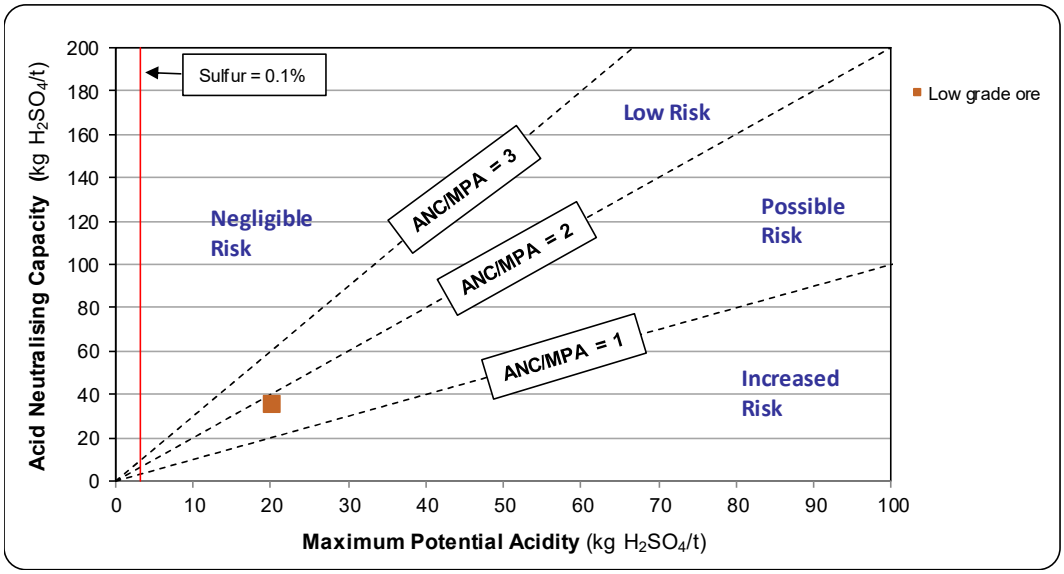


Figure 8-1: Low grade ore ANC:MPA ratio

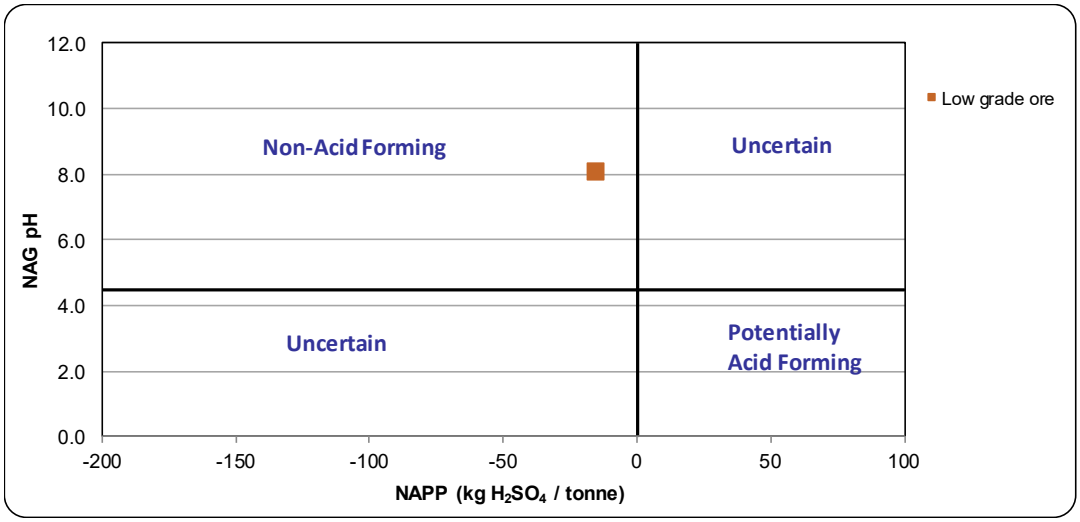


Figure 8-2: Low grade ore NAG pH vs. NAPP

Table 8-1 summarises the geochemical classification criteria used by RGS to classify the acid forming nature of the low grade ore sample and shows that it is classified as NAF.

Table 8-1: Geochemical classification criteria for low grade ore sample

Classification	Total S (%)	NAPP value (kg H_2SO_4/t)	ANC:MPA Ratio	No. of samples (n=1)
Non-Acid Forming (Barren)	≤ 0.1	-	-	0
Non-Acid Forming	> 0.1	≤ -5	≥ 2	1
Uncertain	> 0.1	> -5 to ≤ +5	< 2	0
Potentially Acid Forming – Low Capacity	> 0.1	> 5 to ≤ 10	< 2	0
Potentially Acid Forming	> 0.1	> 10	< 2	0

8.2 Multi-element test results

The multi-element test results for metals/metalloids in the low grade ore sample are provided in **Table B8 (Attachment B)**, which provides a comparison of the multi-element test results against the adopted reference criteria discussed in **Section 3.3.3**.(NEPC, 2013).

The multi-element results show that the low grade ore sample has low metal/metalloid concentrations compared to the reference criteria.

As discussed in **Section 10.2**, no low grade will remain at mine closure and therefore the concentrations of metals/metalloids present in these materials will not present any rehabilitation issues for the project.

Investigations into the potential water solubility and mobility of metals/metalloids in low grade ore materials are presented for KLC tests in **Section 8.3**.

8.3 KLC test results

The results for the KLC test program on the low grade ore sample under free draining conditions (KLC 10) are presented in **Attachment D**.

8.3.1 pH, acidity and alkalinity

The pH of the KLC leachate samples is in the pH neutral range (pH 6.46 and 7.52) and is within the applied guideline values of pH 6 to 9 (ANZG, 2018).

The KLC leachate samples contain negligible acidity (≤ 4 mg/L as $CaCO_3$) and excess of alkalinity, resulting in a positive net alkalinity.

As discussed in **Section 8.1**, the Acid Base Account and NAG tests show that the low grade ore sample is NAF.

8.3.2 Salinity and major ions

The EC values for the low grade ore KLC leachate samples are greater than the applied freshwater aquatic ecosystem guideline criterion for the first three leach events but shows a decreasing concentration trend over the test period. The EC values are all less than the applied livestock drinking water criterion (ANZG, 2018). Major ion concentrations are variable and generally dominated by calcium, magnesium and sulfate.

The sulfate concentration in the KLC leachates from the low grade ore KLC leachate ranges from 213 to 617 mg/L, shows a decreasing concentration trend, and is less than the applied livestock drinking water criterion of 1,000 mg/L. The concentration of fluoride is less than the livestock drinking water criterion of 2 mg/L in KLC leachate from the low grade ore sample.

8.3.3 Residual sulfur and ANC

The concentration of sulfate in leachate from the KLC tests has been used to calculate the residual sulfur content of the low grade ore material. The KLC 10 test results show that at least 98.7 % of the total sulfur content remains in the sample material after leaching for 48 weeks.

The concentrations of dissolved Ca and Mg in leachate from the KLC tests have been used to calculate the residual ANC remaining in the low grade ore sample. The KLC test results indicate that at least 99.3 % of the measured ANC remains in the sample material after 48 weeks of leaching.

8.3.4 Reaction rates

The sulfate generation rate obtained from the low grade ore sample (KLC 10) has been used to determine the rate of sulfide oxidation in this material. The sulfate generation rate and associated sulfide oxidation rate for the KLC test program are shown in **Table 8-2**.

The sulfate generation rate for the low grade ore sample (KLC 10) is 6.34 mg/kg/week indicating that the rate of sulfide oxidation is low (equivalent to an oxidation rate ranging from 4.08×10^{-9} kg $O_2/m^3/s$). Mining waste materials with an oxidation rate in the low range (i.e., less than 5×10^{-8} kg $O_2/m^3/s$) and a moderate ANC level have an increased factor of safety and are likely to generate leachate that is pH neutral and/or has low levels of acidity (AMIRA, 1995). Hence, the low grade ore material represented by the sample tested falls into this category.

Overall, the KLC results reflect the NAF material characteristics predicted for low grade ore from the static geochemical test results presented in **Section 8.1.**

Table 8-2: Sulfate generation and sulfide oxidation rates for KLC test on low grade ore

KLC ID	Sample description	Sulfate generation rate (mg/kg/week)	Oxidation rate (kg $O_2/m^3/s$)
KLC 10	Low grade ore	6.34	4.08×10^{-9}

[#] Sulfate generation and sulfide oxidation rates for KLCs are averaged across the relevant KLC test period

8.3.5 Dissolved metal/metalloid concentrations

The concentrations in dissolved trace metals/metalloids in KLC leachates from the low grade ore sample under free leaching (KLC 10) conditions are generally low with most of the results below the relevant laboratory LOR. This indicates that most trace metals/metalloids have low solubility at the neutral pH of the KLC leachate and have concentrations below the applied water quality guideline values for livestock drinking water (ANZG, 2018).

Whilst it is noted that the concentration of some dissolved metals/metalloids in KLC leachate (i.e., Cd, Cu, Ni and Zn are sporadically and marginally greater than the applied freshwater aquatic ecosystem (95 % species

protection) values (ANZG, 2018), this is most likely due to the crushed nature of the sample and KLC set up and reflects pore water chemistry under controlled laboratory conditions. As detailed in **Section 3.3.5.1,** the free leaching KLC test methodology essentially represents the 'worst case' or maximum potential for sulfide oxidation and potential acid/metal/metalloid/salt generation in pore water for crushed materials under freely oxidising laboratory conditions. Whilst arbitrary comparisons against guideline concentrations can be useful in some situations and help to provide relevant context, such comparisons cannot be directly extrapolated to the field situation at the project site.

9 High Grade Ore Geochemistry

9.1 Acid Base Account and NAG test results

Acid Base Account and NAG results for a representative high grade ore sample are presented in **Table B1 (Attachment B)** and summarised below.

- **pH**: The $pH_{(1:5)}$ value for the low grade ore sample is 7.0 and classified as pH neutral. This results shows that the high grade ore material represented by the sample tested is not acidic under initial 'worst case' laboratory conditions.
- **EC**: According to DME Guidelines (DME, 1995), the $EC_{(1:5)}$ value for the high grade ore sample is medium (799 µS/cm).
- **Total sulfur**: The total sulfur content of the high grade ore sample is 1.99 %S.
- **Scr**: The Scr value for the high grade ore sample is 1.66 and indicates that ~ 80 % of the total sulfur is present as sulfide in material represented by this sample.
- **MPA**: The MPA that could be generated through the oxidation of sulfide in the high grade ore sample is 50.8 kg H_2SO_4/t. The MPA value was calculated from the sulfide sulfur content.
- **ANC**: The ANC of the high grade ore sample is 18.9 kg H_2SO_4/t.
- **ABCC tests**: ABCC tests were completed on the high grade ore sample and results are presented in **Figure B6** (**Attachment B)**. The ABCC test results show that whilst some acid buffering should be expected from the sample material, the majority of this buffering may only be available at lower pH values.
- **ANC:MPA ratio**: The ANC:MPA ratio for the high grade ore samples is 0.4. ANC:MPA ratio lines have been plotted on **Figure 9-1** to illustrate the factor of safety associated with the samples. Generally, those samples with an ANC:MPA ratio greater than 2 have negligible risk of acid generation and a high factor of safety in terms of potential for generating acidic drainage (INAP, 2026; COA, 2016). The high grade ore sample has an ANC:MPA ratio less than 2 and therefore may be a source of acidic drainage.
- **NAPP**: The NAPP value is positive (31.9 kg H_2SO_4/t) for the high grade ore sample.
- **NAG**: The NAG_{pH} value for the high grade ore sample is pH 2.6. The NAG_{pH} and NAPP and results shown in **Figure 9-2** indicate that material represented by the high grade ore sample is PAF.

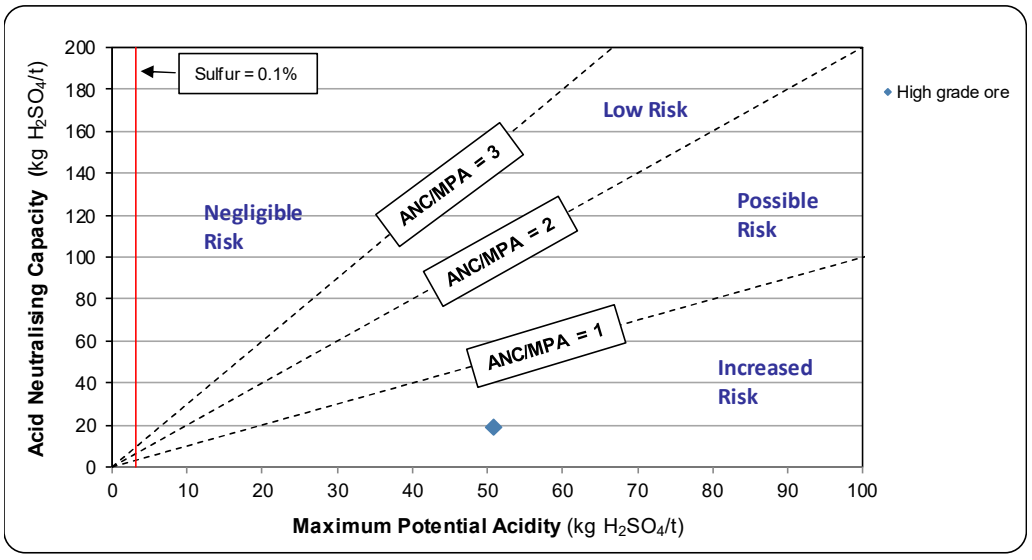


Figure 9-1: High grade ore ANC:MPA ratio

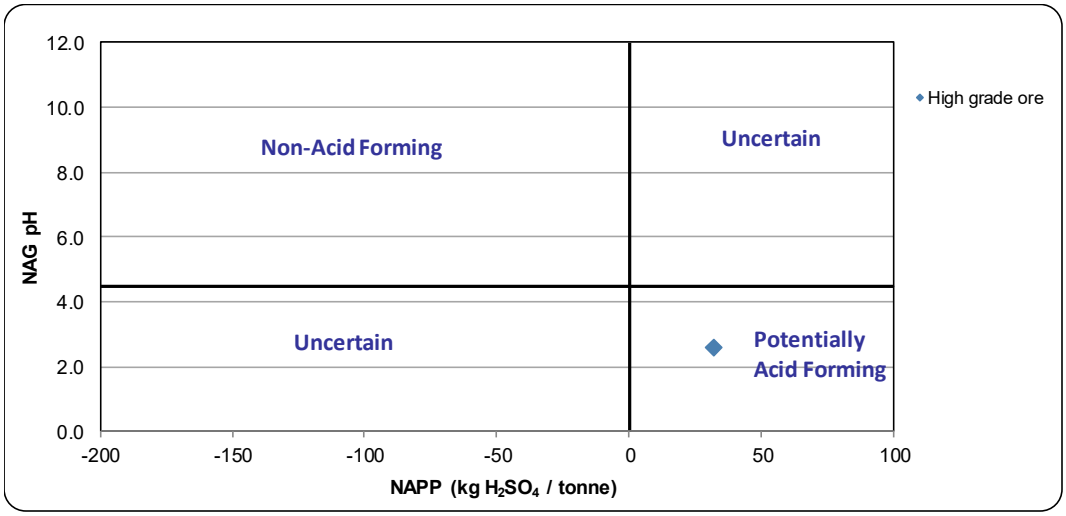


Figure 9-2: High grade ore NAG pH vs. NAPP

Table 9-1 summarises the geochemical classification criteria used by RGS to classify the acid forming nature of the high grade ore sample and shows that it is classified as PAF.

Table 9-1: Geochemical classification criteria for high grade ore sample

Classification	Total S (%)	NAPP value (kg H_2SO_4/t)	ANC:MPA Ratio	No. of samples (n=1)
Non-Acid Forming (Barren)	≤ 0.1	-	-	0
Non-Acid Forming	> 0.1	≤ -5	≥ 2	0
Uncertain	> 0.1	> -5 to ≤ +5	< 2	0
Potentially Acid Forming - Low Capacity	> 0.1	> 5 to ≤ 10	< 2	0
Potentially Acid Forming	> 0.1	> 10	< 2	1

9.2 Multi-element test results

The multi-element test results for metals/metalloids in the high grade ore sample are provided in **Table B8 (Attachment B)**, which provides a comparison of the multi-element test results against the adopted reference criteria discussed in **Section 3.3.3**.(NEPC, 2013).

The multi-element results show that the high grade ore sample has relatively low metal/metalloid concentrations compared to the reference criteria.

As discussed in **Section 10.2**, no high grade ore will remain at mine closure and therefore the concentrations of metals/metalloids present in these materials will not present any rehabilitation issues for the project.

Investigations into the potential water solubility and mobility of metals/metalloids in high grade ore materials are presented for KLC tests in **Section 9.3**.

9.3 KLC test results

The results for the KLC test program on the high grade ore sample under free draining conditions (KLC 15) are presented in **Attachment D**.

9.3.1 pH, acidity and alkalinity

The pH of the KLC leachate samples ranges from pH neutral to slightly alkaline (pH 4.47 and 6.30) and can be lower than the applied guideline value range of pH 6 to 9 (ANZG, 2018).

The KLC leachate samples initially have elevated acidity (200 mg/L as $CaCO_3$) which rapidly decreases to a negligible value (≤ 5 mg/L) with balanced alkalinity, resulting in a net alkalinity value close to zero.

As discussed in **Section 9.1**, the Acid Base Account and NAG tests show that the high grade ore sample is classified as PAF.

9.3.2 Salinity and major ions

The EC values for the high grade ore KLC leachate samples is greater than the applied freshwater aquatic ecosystem guideline criterion for the first leach event but displays a lower concentration trend over the remainder of the test period. The EC values are all less than the applied livestock drinking water criterion (ANZG, 2018). Major ion concentrations are variable and generally dominated by calcium, magnesium and sulfate.

The sulfate concentration in the KLC leachates from the high grade ore KLC leachate ranges from 367 to 1,160 mg/L, shows a reduced concentration trend, and after the initial leach event is less than the applied livestock drinking water criterion of 1,000 mg/L. The concentration of fluoride is less than the livestock drinking water criterion of 2 mg/L in KLC leachate from the high grade ore sample.

9.3.3 Residual sulfur and ANC

The concentration of sulfate in leachate from the KLC tests has been used to calculate the residual sulfur content of the high grade ore material. The KLC 15 test results show that at least 98.3 % of the total sulfur content remains in the sample material after leaching for 38 weeks.

The concentrations of dissolved Ca and Mg in leachate from the KLC tests have been used to calculate the residual ANC remaining in the high grade ore sample. The KLC test results indicate that at least 95.0 % of the measured ANC remains in the sample material after 38 weeks of leaching.

9.3.4 Reaction rates

The sulfate generation rate obtained from the high grade ore sample (KLC 15) has been used to determine the rate of sulfide oxidation in this material. The sulfate generation rate and associated sulfide oxidation rate for the KLC test program are shown in **Table 9-2**.

The sulfate generation rate for the high grade ore sample is 36.49 mg/kg/week indicating that the rate of sulfide oxidation is relatively low (equivalent to an oxidation rate ranging from 2.36×10^{-8} kg $O_2/m^3/s$). Mining waste materials with an oxidation rate in the low range (i.e., less than 5×10^{-8} kg $O_2/m^3/s$) and a moderate ANC level have an increased factor of safety and are likely to generate leachate that is pH neutral and/or has low levels of acidity (AMIRA, 1995). Hence, the high grade ore material represented by the sample tested falls into this category.

Overall, despite the high grade ore sample having a PAF classification using standard static geochemical Acid Base Account and NAG tests, the KLC results to date reflect a more benign material with 'Uncertain' geochemical characteristics**.**

Table 9-2: Sulfate generation and sulfide oxidation rates for KLC test on high grade ore

KLC ID	Sample description	Sulfate generation rate (mg/kg/week)	Oxidation rate (kg $O_2/m^3/s$)
KLC 15	High grade ore	36.49	2.36×10^{-8}

[#] Sulfate generation and sulfide oxidation rates for KLCs are averaged across the relevant KLC test period

9.3.5 Dissolved metal/metalloid concentrations

The concentrations in dissolved trace metals/metalloids in KLC leachates from the high grade ore sample under free leaching (KLC 15) conditions are generally low with many of the results below the relevant laboratory LOR. This indicates that most trace metals/metalloids have low solubility at the neutral pH of the

KLC leachate and have concentrations below the applied water quality guideline values for livestock drinking water (ANZG, 2018).

Whilst it is noted that the concentration of some dissolved metals/metalloids in KLC leachate (i.e., Al, Cd, Cu, Mn, Ni, Pb and Zn can be greater than the applied freshwater aquatic ecosystem (95 % species protection) values (ANZG, 2018), this is most likely due to the crushed nature of the sample and KLC set up and reflects pore water chemistry under controlled laboratory conditions. Most dissolved metal/metalloid concentrations in KLC leachate show a decreasing trend and the only metals/metalloids with concentrations greater than the applied livestock drinking water guideline criteria are Cd (during the first and second leach events) and Ni (during the first leach event).

As detailed in **Section 3.3.5.1,** the free leaching KLC test methodology essentially represents the 'worst case' or maximum potential for sulfide oxidation and potential acid/metal/metalloid/salt generation in pore water for crushed materials under freely oxidising laboratory conditions. Whilst arbitrary comparisons against guideline concentrations can be useful in some situations and help to provide relevant context, such comparisons cannot be directly extrapolated to the field situation at the project.

10 Geochemical Risks and Management Measures

10.1 Geochemical risks assessment and classification summary

Table 10-1 provides a summary of the results of the geochemical characterisation program presented in Sections 4 to 9 using the AMD risk classification scheme presented in Table 6 of the PAMD Handbook.

Section 10.2 provides additional discussion of the geochemical risks and implications for the handling and storage of mine materials

Table 10-1: Geochemical Characterisation and AMD Risk Classifications

Mine Waste Material	General AMD Risk Classification	Detailed AMD Risk Classification			
		AMD Risk	NMD Risk	SD Risk	Overall Classification
BVS Pit Waste Rock	NAF	Likely acid consuming (LAC)	Low potential for NMD	Low potential for SD	**LAC non-saline**
Satellite Pits Waste Rock	NAF	Likely acid consuming (LAC)	Low potential for NMD	Low potential for SD	**LAC non-saline**
Tailings	PAF	Moderate potential for acid generation (AG3)	N/A to PAF material	Moderate potential for SD	**PAF AG3 saline**
Spent Heap Leach Residue	PAF	Moderate potential for acid generation (AG3)	N/A to PAF material	Moderate potential for SD	**PAF AG3 saline**
Ore	PAF	Moderate potential for acid generation (AG3)	N/A to PAF material	Moderate potential for SD	**PAF AG3 saline**

AMD – Acid and Metalliferous Drainage
NMD – Neutral Metalliferous Drainage
SD – Saline Drainage
AG3 - Acid Generating Category 3 (Moderate potential)

10.2 Geochemistry Implications for Storage and Handling of Mine Materials

As discussed in **Section 1.2**, the mine materials will be stored and handled as follows:

- Waste rock from BVS Pit will be stored the southern and central WRDs, along with the dewatered tailings.
- Waste rock from BV1 Pit and BV2 Pit will be stored the northern WRD.
- High grade ore will be stockpiled in the mine industrial area or the heap leach pads for processing during mining operations. No high grade ore will be present at mine closure.
- Low grade ore will be stockpiled on dedicated pads prior to processing during mining operations. No low grade ore will be present at mine closure.
- Wet tailings will be stored in a dedicated Tailings Storage Cell during mining operations and post closure.
- Spent heap leach residues will be stockpiled on dedicated Heap Leach Pads prior to processing during mining operations. No spent heap leach residues will be present at mine closure.

This section provides an assessment of the geochemistry implications for the handling and storage of mine materials.

10.2.1 Central and Southern Waste Rock Dumps

The Central and Southern Waste Rock Dumps (WRDs) will store approximately 130 Million tonnes (Mt) of waste rock mined from the Big Vein South (BVS) Pit, co-disposed with approximately 12 Mt of dewatered tailings produced in the CIL Plant.

The large majority of waste rock from the BVS Pit (approximately 98%) is non-acid forming with significant excess acid neutralising capacity. The bulk waste rock stored in the Central and Southern WRDs will therefore have a high factor of safety with respect to potential for acid generation.

A small proportion of the waste rock (partially mineralised rock closely associated with the ore body) and dewatered tailings may have some potential for acid generation if stored in isolation. Any potentially acid forming waste rock or dewatered tailings will be selectively handled and encapsulated within NAF waste rock with excess ANC, within the WRD. This will ensure these materials do not generate acid drainage within the WRDs.

A Mine Material Management Plan (MMMP) has been developed for the project. The MMMP includes management measures for identifying, handling, storing and monitoring any potentially acid-forming materials, including a progressive MMMP monitoring program. The MMMP monitoring program specifically includes testing and analysis to confirm the geochemistry of the waste rock and tailings as they are produced and identify potentially acid forming waste rock that requires selective handling and storage. The MMMP also includes the selective handling and WRD waste storage procedures to ensure any potentially acid forming waste rock and tailings are fully encapsulated in non-acid forming waste rock within the WRDs.

The WRDs will be designed and operated to shed surface runoff and limit infiltration. Surface runoff quality from the WRDs will therefore not be adversely affected by the geochemistry of the waste rock. Surface runoff is likely to be pH neutral and non-saline, with negligible concentrations of metals and metalloids. However, surface runoff from the WRDs is expected to contain suspended sediments. Runoff from the WRDs will be captured in collection drains and directed to sediment dams for removal of suspended sediments.

The geochemical testing results show that seepage from the WRDs is likely to be pH neutral to slightly alkaline, with low salinity and low concentrations of metals and metalloids. Any seepage from the WRD batter slopes or the toe of the WRDs will be captured in the runoff collection drains located at the toe of the WRDs.

10.2.2 Northern Waste Rock Dump

The Northern WRD will store approximately 1.45 Mt of waste rock mined from BV1 Pit and BV2 Pit. Geochemical test results indicate that all of the waste rock from BV1 and BV2 Pits is non-acid forming with significant excess acid neutralising capacity. The bulk waste rock stored in the Northern WRD will therefore have a high factor of safety with respect to potential for acid generation. Due to the benign geochemistry of the waste rock, no specific handling or storage measures are required for waste rock from the BV1 and BV2 pits in the Northern WRD. Nonetheless, the MMMP includes progressive monitoring of the waste rock during mining in order to confirm the benign nature of these materials and identify any unexpected geochemistry.

Surface runoff and seepage from the Northern WRD will have the same characteristics as surface runoff and seepage from the Southern and Central WRDs and will be managed using the same water management strategies.

10.2.3 Tailings Storage Cell

The Tailings Storage Cell will be a lined containment structure that will store approximately 3.15 GL of tailings (settled solids) produced in the CIL Plant.

The tailings composition is variable, and ranges from NAF material with excess acid neutralising capacity to material that may have some potential for acid generation.

The geochemical testing results to date show that water from the stored wet tailings is pH neutral to slightly alkaline, with low salinity and low concentrations of metals and metalloids. Nonetheless, the MMMP includes progressive monitoring of the tailings stored in the Tailings Storage Cell in order to confirm the tailings geochemistry and water quality.

Water from the Tailings Storage Cell will be decanted and returned to the CIL pant over the life of the mine, via a return water pond, which will be designed with sufficient storage capacity to ensure nil discharge.

The Tailings Storage Cell will be rehabilitated and decommissioned at mine closure. This will involve covering the dewatered tailings with benign capping material (e.g. suitable subsoil) and topsoil and shaping the capped

surface to promote runoff and minimise infiltration. These measures will ensure that the stored tailings will not be a source of acid and metalliferous drainage in the long-term following mine closure.

10.2.4 Heap Leach Pads and Residues

Ore mined from BV1 Pit and BV2 Pit during the first two years of mining will be processed on fully lined Heap Leach Pads. The heap leaching process will produce dore gold, as well as spent heap leach residues.

The spent heap leach residues may have some inherent potential for acid generation, however, the geochemistry results to date indicate that these materials will generate pH neutral drainage with excess alkalinity. Nonetheless, the MMMP includes progressive monitoring of the spent heap leach residues stored in the Heap Leach Pad areas in order to confirm the residue geochemistry and water quality.

Process water and stormwater from the Heap Leach Pads will be collected in dedicated containment ponds. The Heap Leach ponds will be designed with sufficient storage capacity to ensure nil discharge. Stormwater from the Heap Leach stormwater pond will be reused in the Heap Leach process and/or pumped to the Tailings Storage Cell return water pond.

The spent heap leach residues will be fed through the CIL Plant over the life of the mine, producing approximately 1 Mt of dewatered tailings. Tailings produced by processing spent heap leach residues in the CIL Plant will be stored in the Central and Southern WRDs, along with the tailings produced from the processing of ore. Tailings produced from the spent heap leach residues will have similar geochemistry to the rest of the tailings produced by the CIL Plant and will be managed within the WRDs.

No spent heap leach residues will remain at the end of the mine life and hence, the Heap Leach Pad areas will be decommissioned at mine closure.

10.2.5 High Grade Ore Stockpiles

High grade ore may also be stockpiled in the mine industrial area for processing during mining operations. As discussed in **Section 10.2**, no high grade ore will be present at mine closure.

The high grade ore may have some inherent potential for acid generation, however, the geochemistry results to date indicate that these materials will generate more benign drainage with low concentrations of metals. Nonetheless, the MMMP includes progressive monitoring of the high grade ore stored in the mine industrial area in order to confirm the ore geochemistry and water quality.

Process water and stormwater from the mine industrial area will be collected in a dedicated containment dam. The mine industrial area dam will be designed with sufficient storage capacity to ensure nil discharge. Stormwater from the ore stockpile that collects in the mine industrial area dam will be reused in the site water management system.

The high grade ore will be fed through the CIL Plant over the life of the mine. The management of tailings produced by processing high grade ore is discussed in **Section 10.2.3**.

10.2.6 Low Grade Ore Stockpiles

Low grade ore will be stockpiled on dedicated pads prior to processing during mining operations. As discussed in **Section 10.2**, no low grade ore will be present at mine closure.

Geochemical test results indicate that all of the low grade ore is non-acid forming with excess acid neutralising capacity. The low grade ore will therefore have a high factor of safety with respect to potential for acid generation. Due to the benign geochemistry of the low grade ore, no specific handling or storage measures are required. Nonetheless, the MMMP includes progressive monitoring of the low grade ore during mining in order to confirm the benign nature of these materials and identify any unexpected geochemistry.

10.3 Mine Material Management Measures

The Environmental Authority (EA) will include a condition that requires the development and implementation of a Mine Material Management Plan prior to commencement of mining activities.

The MMMP includes the following:

- A progressive sampling program to validate the characterisation of mining materials presented in the EAR Geochemistry Report. The sampling program includes testing and analysis that confirms the waste rock and tailings geochemistry and the potential for waste rock to generate salinity, acidity, alkalinity and/or dissolved metals, metalloids and non-metallic inorganic substances.
- Mine waste management strategies, including strategies to manage any waste rock or tailings materials that are identified as potentially acid forming and any associated risk of acid and metalliferous drainage (AMD) (e.g. selective handling and/or encapsulation of waste rock and tailings).
    - A mine waste materials balance and disposal plan for all stages of the project.
    - Contingency measures and procedures for unexpected geochemical test results.
    - Record keeping specifications for all mine materials, including mine material characterisation and disposal records.
    - A program for monitoring and review of the effectiveness of the Mine Material Management Plan.

The MMMP will be reviewed and updated annually to ensure that it continues to operate effectively.

If the annual review identifies the need for revision, the MMMP will be revised, updated and re-issued as required.

In addition, the proponent will be required to implement multi-faceted surface water and groundwater monitoring programs in accordance with the EA requirements for the project. These monitoring programs and their components are described in the EAR Surface Water Report and EAR Groundwater Report, respectively.

11 References

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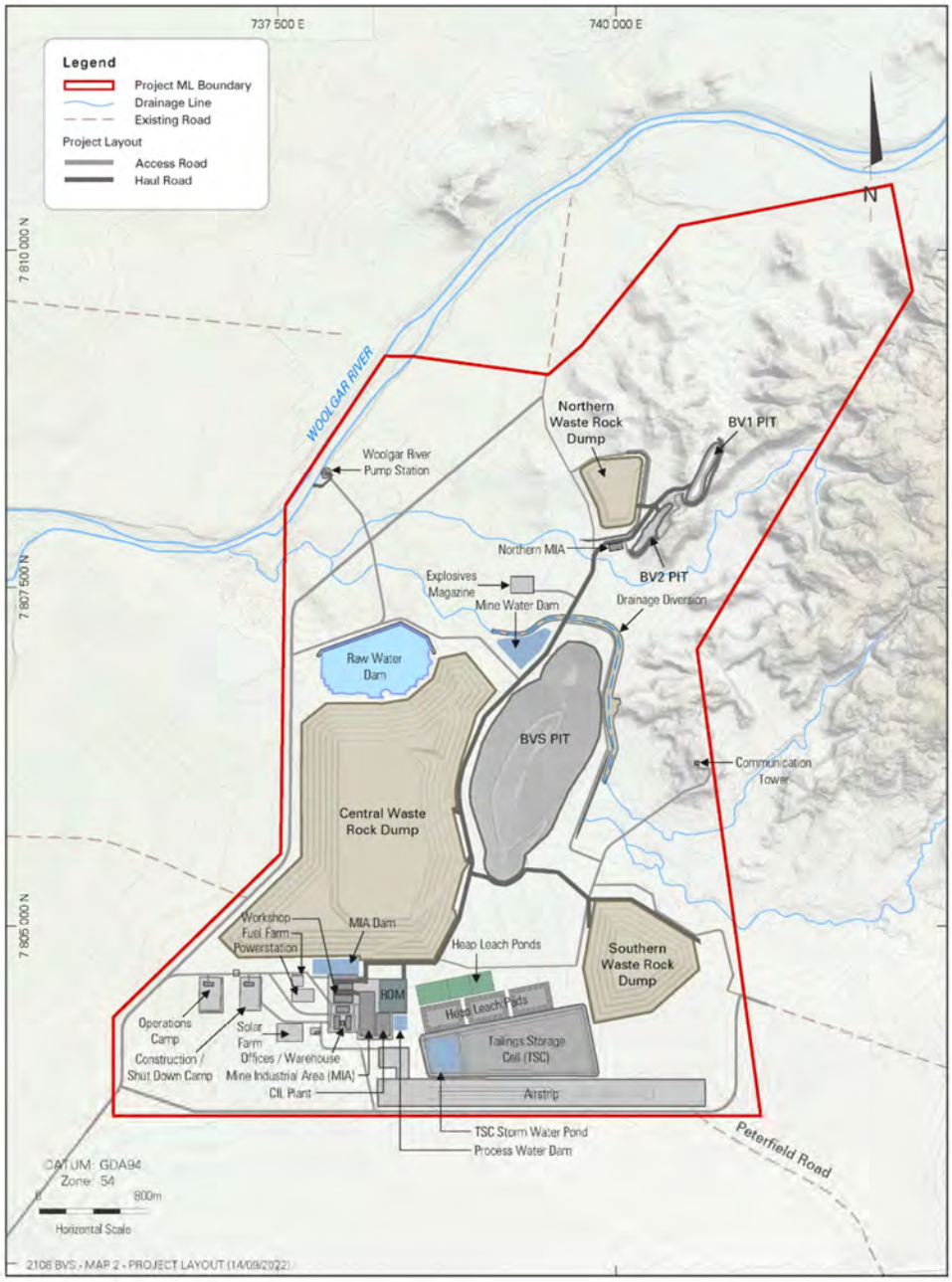


Source: Hansen Environmental Consultants

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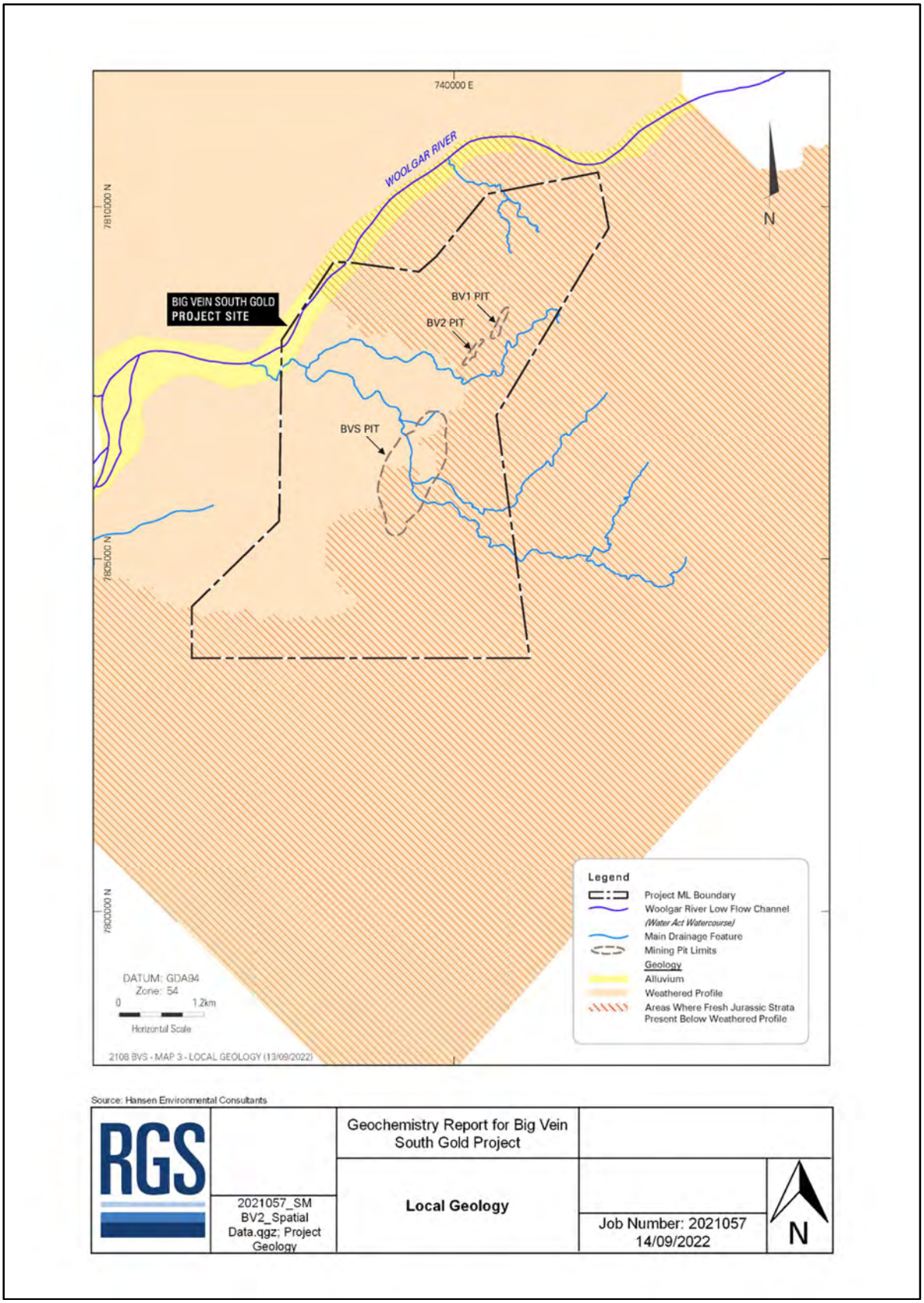
Map 1: Project Location



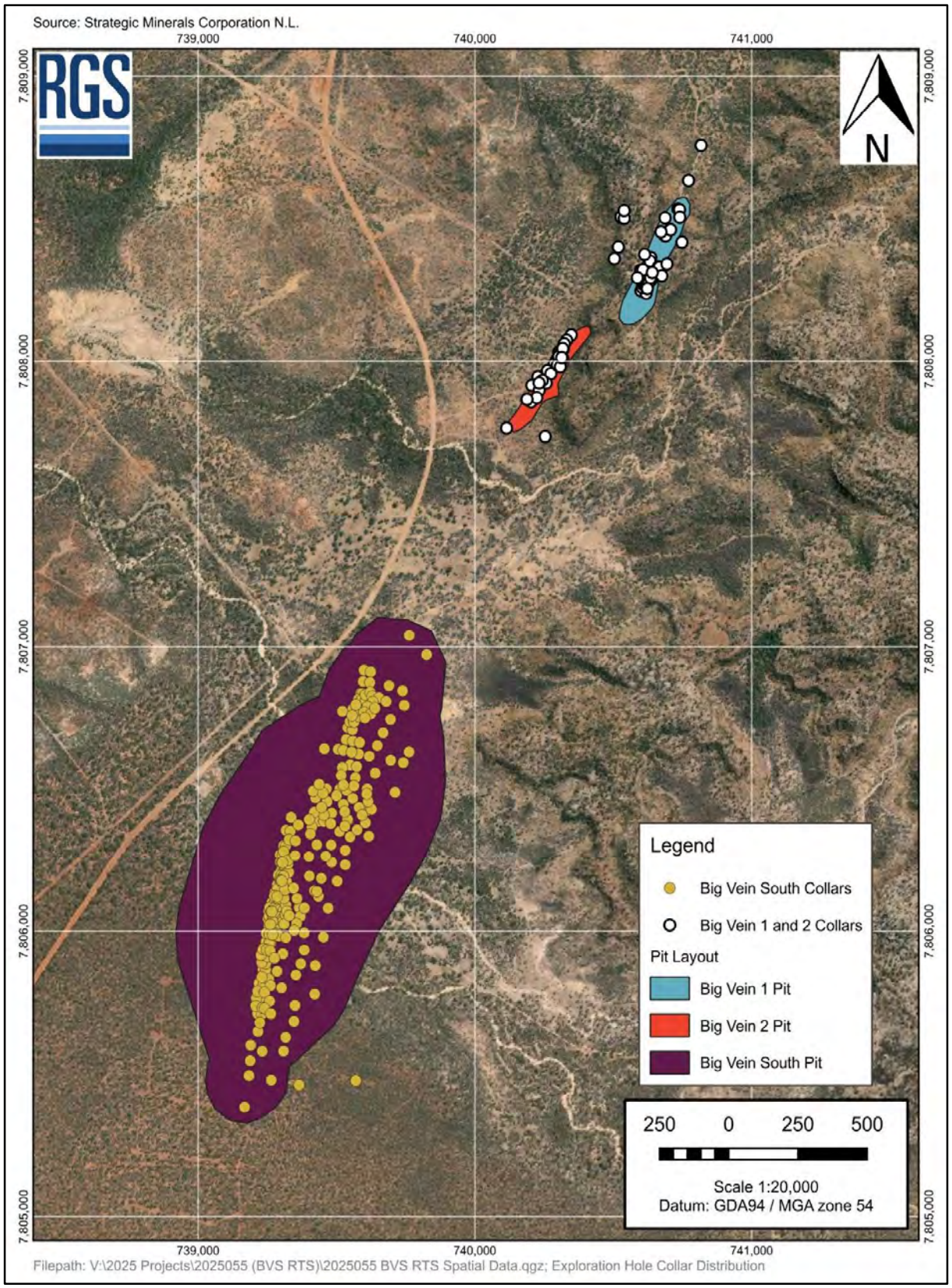
Source: Hansen Environmental Consulting

RGS		Geochemistry Report for Big Vein South Gold Project	
	2021057_SM BV2_Spatial Data.qgz; Project Layout	**Project Layout**	Job Number: 2021057 14/09/2022

Map 2: Project Layout



Map 3: Local Geology



Map 4: Collar locations of drill holes sampled at BVS, BV1 and BV2 Pits

12 Attachments

Attachment A: Geochemical assessment of mining waste materials

Attachment B: Static geochemistry summary tables and ABCC test results

Attachment C: ALS and Trilab static geochemistry data (Certificates of Analyses)

Attachment D: RGS KLC test program - summary tables and data trends

Attachment E: ALS kinetic leach data (Certificates of Analyses)

Attachment F: Supplementary information for BV1/BV2

Attachment A

Geochemical Assessment of Mining Waste Materials

ACID GENERATION AND PREDICTION

Acid generation is caused by the exposure of sulfide minerals, most commonly pyrite (FeS_2), to atmospheric oxygen and water. Sulfur assay results are used to calculate the maximum amount of acid that could be generated by a material based on either direct measurement of the pyritic sulfur content, or assuming that all sulfur, not present as sulfate, occurs as pyrite. Pyrite reacts under oxidising conditions to generate acid according to the following overall reaction:

$$FeS_2 + 15/4\ O_2 + 7/2\ H_2O \text{ ---> } Fe(OH)_3 + 2\ H_2SO_4$$

According to this reaction, the maximum potential acidity (MPA) of a sample containing 1%S as pyrite would be 30.6 kg H_2SO_4/t. The chemical components of the acid generation process consist of the above sulfide oxidation reaction and acid neutralization, which is mainly provided by inherent carbonates and to a lesser extent silicate materials. The amount and rate of acid generation is determined by the interaction and overall balance of the acid generation and neutralisation components.

NAPP

The NAPP is used as an indicator of materials that may be of concern with respect to acid generation. The NAPP calculation represents the balance between the maximum potential acidity (MPA) of a sample, which is derived from the sulfide sulfur content, and the acid neutralising capacity (ANC) of the material, which is determined experimentally. By convention, the NAPP result is expressed in units of kg H_2SO_4/t sample. If the capacity of the solids to neutralise acid (ANC) exceeds their capacity to generate acid (MPA), then the NAPP of the material is negative. Conversely, if the MPA exceeds the ANC, the NAPP of the material is positive. A NAPP assessment involves a series of analytical tests that include:

Determination of pH and EC

pH and EC measured on 1:5 w:v water extract. This gives an indication of the inherent acidity and salinity of the mining waste material when initially exposed in an emplacement area.

Total sulfur content and MPA

Total sulfur content is determined by the Leco high temperature combustion method. The total sulfur content is then used to calculate the MPA, which assumes that the entire sulfur content is present as reactive pyrite. Direct determination of the pyritic sulfur content can provide a more accurate estimate of the MPA.

ANC

The ANC is determined by addition of acid to a known weight of sample, then back titration with NaOH to determine the amount of residual acid. The ANC measures the capacity of a sample to react with and neutralise acid and can be further evaluated by slow acid titration to a set end point in the Acid Buffering Characteristic Curve (ABCC) test through calculation of the acid consumed during the reaction process.

NAG

The net acid generation (NAG) test involves the addition of hydrogen peroxide to a sample of mine rock or process residue to oxidise reactive sulfide, then measurement of pH and titration of any net acidity produced by the acid generation and neutralisation reactions occurring in the sample. A significant NAG result (*i.e.,* final $NAG_{pH} < 4.5$) indicates that the sample is potentially acid forming (PAF) and the test provides a direct measure of the net amount of acid remaining in the sample after all acid generating and acid neutralising reactions have taken place. A $NAG_{pH} > 4.5$ indicates that the sample is non-acid forming (NAF). The NAG test can provide a direct assessment of the potential for a material to produce acid after a period of exposure and weathering and is used to refine the results of the theoretical NAPP predictions. The NAG test can be used as a stand-alone test but is recommended that this only be considered after site specific calibration work is carried out.

ASSESSMENT OF ELEMENT ENRICHMENT AND SOLUBILITY

In mineralised areas it is common to find a suite of enriched elements that have resulted from natural geological processes. Multi-element scans are carried out to identify any elements that are present in a material (or readily leachable from a material) at concentrations that may be of environmental concern with respect to surface water quality, revegetation and public health. The samples are generally analysed for major elements (i.e. Al, Ca, Fe, K, Mg, Na and S) and a range of minor elements.

The concentration of these elements in samples can be directly compared with the median concentration in un-mineralised soils to determine the Geochemical Abundance Index (GAI) and level of significance (COA, 2016; INAP, 2026; Bowen, 1979). Water extracts are used to determine the immediate element solubilities under the existing sample pH conditions of the sample. The following tests are normally carried out:

Multi-element composition of solids

Multi-element composition of solid samples determined using a combination of ICP-mass spectroscopy (ICP-MS), ICP-atomic emission spectroscopy (AES), and atomic absorption spectrometry (AAS).

Multi-element composition of water extracts

Multi-element composition of 1:5 (w:v [deionised water]) water extracts from solid samples determined using a combination of ICP-mass spectroscopy (ICP-MS), ICP-atomic emission spectroscopy (AES), and atomic absorption spectrometry (AAS).

Under some conditions (e.g. low pH) the solubility and mobility of common environmentally important elements can increase significantly.

KINETIC LEACH COLUMN TESTS

Kinetic leach column (KLC) tests can be used to provide information on the reaction kinetics of mine waste materials. The major objectives of kinetics tests are to:

- Provide time-dependent data on the kinetics and rate of acid generation and acid neutralising reactions under laboratory controlled (or onsite conditions);
- Investigate metal(loid) release and drainage/seepage quality; and
- Assess treatment options such as addition of alkaline materials.

The KLC tests simulate the weathering process that leads to acid and base generation and reaction under laboratory controlled or site conditions. The kinetic tests allow an assessment of the acid forming or acid consuming characteristics and indicate the rate of acid generation/consumption, over what period it will occur, and what management controls may be required.

In the free draining KLC test used in this project, deionised water was typically added to the samples on a monthly basis to simulate rainfall. The mixture was then allowed to leach products and by-products of any acid producing and consuming reactions. Samples of leachate were collected and analysed monthly. In the single saturated KLC test (KLC 12), a head of water was maintained above the sample material and leachate samples collected monthly.

KLC tests provide real-time information and generally continue for months up to about a year or more. Monitoring includes trends in pH, sulfate, acidity or alkalinity, and dissolved metals/metalloids, for example. The pH of the collected leachate simulates the acid drainage/consumption process, acidity or alkalinity levels indicate the rate of acid production and acid neutralisation, and sulfate production can be related to the rate of sulfide oxidation. Metal/metalloid concentration data provides an indication of metal/metalloid solubility and potential mobility into pore water.

Figure A1 provides a representation of the typical medium and large KLC test columns used in the KLC test program.



Figure A1: Typical KLC test columns used for the Big Vein South Project

Attachment B

Static geochemistry summary tables and ABCC test results

Table B1: Acid Base Account Test Results

Sample Number	Strategic Sample ID	Drill Hole ID	Sample Type	Description	From (m)	To (m)	pH[1]	EC[1] (µS/cm)	Total S[4] (%)	Scr[2] (%)	MPA[2] kg H_2SO_4/t	ANC[2] kg H_2SO_4/t	NAPP[2] kg H_2SO_4/t	ANC: MPA Ratio	NAG_{pH}	NAG Capacity (pH 4.5) kg H_2SO_4/t	NAG Capacity (pH 7) kg H_2SO_4/t	Sample Classification[3]
196 Waste rock samples selected from BVS Pit using the SWC Assay Database																		
1	254369	LR0187	Waste Rock	Diorite	65	66	-	-	0.15	-	4.6	71.0	-66.4	15.5				Non-Acid Forming
2	254383	LR0187	Waste Rock	Diorite	78	79	-	-	0.08	-	2.5	69.2	-66.8	28.2				Non-Acid Forming (Barren)
3	255174	LR0193	Waste Rock	Diorite	94	95	-	-	0.25	-	7.7	52.3	-44.6	6.8				Non-Acid Forming
4	255189	LR0193	Waste Rock	Diorite	108	109	-	-	0.79	-	24.2	69.2	-45.0	2.9				Non-Acid Forming
5	257926	LR0216	Waste Rock	Diorite	85	86	-	-	1.78	-	54.5	95.4	-40.9	1.8				Non-Acid Forming
6	257928	LR0216	Waste Rock	Diorite	87	88	-	-	1.35	-	41.3	65.4	-24.1	1.6				Non-Acid Forming
7	30604_SMC	LR0239	Waste Rock	Diorite	71	72	-	-	0.19	-	5.8	47.6	-41.8	8.2				Non-Acid Forming
8	258617	LRD0223	Waste Rock	Diorite	49	50	-	-	0.33	-	10.1	59.8	-49.7	5.9				Non-Acid Forming
9	33143	LR0248	Waste Rock	Dolerite	80	81	-	-	0.46	-	14.1	176.0	-161.9	12.5				Non-Acid Forming
10	33571	LR0249	Waste Rock	Dolerite	100	101	-	-	0.26	-	8.0	165.0	-157.0	20.7				Non-Acid Forming
11	33573	LR0249	Waste Rock	Dolerite	102	103	-	-	0.30	-	9.2	148.0	-138.8	16.1				Non-Acid Forming
12	34210	LR0251	Waste Rock	Dolerite	197	198	-	-	0.17	-	5.2	55.0	-49.8	10.6				Non-Acid Forming
13	34214	LR0251	Waste Rock	Dolerite	201	202	-	-	0.38	-	11.6	139.0	-127.4	11.9				Non-Acid Forming
14	35085	LR0255	Waste Rock	Dolerite	49	50	-	-	0.26	-	8.0	134.0	-126.0	16.8				Non-Acid Forming
15	37769	LR0263	Waste Rock	Dolerite	90	91	-	-	0.31	-	9.5	181.0	-171.5	19.1				Non-Acid Forming
16	38826	LR0267	Waste Rock	Dolerite	53	54	-	-	0.39	-	11.9	144.0	-132.1	12.1				Non-Acid Forming
17	40855	LR0274	Waste Rock	Dolerite	54	55	-	-	0.32	-	9.8	101.0	-91.2	10.3				Non-Acid Forming
18	40856	LR0274	Waste Rock	Dolerite	55	56	-	-	0.18	-	5.5	134.0	-128.5	24.3				Non-Acid Forming
19	40887	LR0274	Waste Rock	Dolerite	84	85	-	-	1.20	-	36.8	156.0	-119.3	4.2				Non-Acid Forming
20	41998	LR0279	Waste Rock	Dolerite	50	51	-	-	0.26	-	8.0	59.4	-51.4	7.5				Non-Acid Forming
21	42716	LR0282	Waste Rock	Dolerite	128	129	-	-	2.28	-	69.8	119.0	-49.2	1.7				Non-Acid Forming
22	36387	LR0259	Waste Rock	Micro-granodiorite	67	68	-	-	0.07	-	2.1	38.7	-36.6	18.1				Non-Acid Forming (Barren)
23	36431	LR0259	Waste Rock	Micro-granodiorite	109	110	-	-	0.42	-	12.9	93.3	-80.4	7.3				Non-Acid Forming
24	39278	LR0268	Waste Rock	Micro-granodiorite	45	46	-	-	0.78	-	23.9	114.0	-90.1	4.8				Non-Acid Forming
25	39419	LR0268	Waste Rock	Quartzite	179	180	-	-	0.33	-	10.1	42.2	-32.1	4.2				Non-Acid Forming
26	260144	LD0235	Waste Rock	Schist	75.4	76	-	-	0.18	-	5.5	49.1	-43.6	8.9				Non-Acid Forming
27	260145	LD0235	Waste Rock	Schist	76	76.3	-	-	0.10	-	3.1	54.1	-51.0	17.7				Non-Acid Forming (Barren)
28	260712	LD0236	Waste Rock	Schist	36	37	-	-	1.14	-	34.9	49.8	-14.9	1.4				Non-Acid Forming
29	260767	LD0236	Waste Rock	Schist	88	89	-	-	0.06	-	1.8	70.7	-68.9	38.5				Non-Acid Forming (Barren)
30	255602	LR0197	Waste Rock	Schist	134	135	-	-	0.93	-	28.5	53.7	-25.2	1.9				Non-Acid Forming
31	255712	LR0198	Waste Rock	Schist	66	67	-	-	0.83	-	25.4	55.6	-30.2	2.2				Non-Acid Forming
32	257919	LR0216	Waste Rock	Schist	79	80	-	-	1.40	-	42.9	80.3	-37.4	1.9				Non-Acid Forming
33	258144	LR0219	Waste Rock	Schist	26	27	-	-	0.30	-	9.2	62.0	-52.8	6.7				Non-Acid Forming
34	258273	LR0219	Waste Rock	Schist	52	53	-	-	0.82	-	25.1	104.0	-78.9	4.1				Non-Acid Forming
35	258181	LR0219	Waste Rock	Schist	61	62	-	-	3.83	-	117.3	87.8	29.5	0.7				Potentially Acid Forming
36	258236	LR0219	Waste Rock	Schist	114	115	-	-	2.12	-	64.9	50.9	14.0	0.8				Potentially Acid Forming
37	258238	LR0219	Waste Rock	Schist	116	117	-	-	2.87	-	87.9	51.8	36.1	0.6				Potentially Acid Forming
38	258248	LR0219	Waste Rock	Schist	125	126	-	-	0.91	-	27.9	58.3	-30.4	2.1				Non-Acid Forming
39	258263	LR0219	Waste Rock	Schist	139	140	-	-	0.27	-	8.3	56.6	-48.3	6.8				Non-Acid Forming
40	258374	LR0220	Waste Rock	Schist	89	90	-	-	1.63	-	49.9	62.1	-12.2	1.2				Non-Acid Forming
41	36264	LR0221	Waste Rock	Schist	158	159	-	-	0.53	-	16.2	52.7	-36.5	3.2				Non-Acid Forming
42	258923	LR0225	Waste Rock	Schist	63	64	-	-	0.11	-	3.4	51.4	-48.0	15.3				Non-Acid Forming
43	258927	LR0225	Waste Rock	Schist	67	68	-	-	0.26	-	8.0	59.8	-51.8	7.5				Non-Acid Forming
44	258944	LR0225	Waste Rock	Schist	83	84	-	-	0.41	-	12.6	57.4	-44.8	4.6				Non-Acid Forming
45	259035	LR0226	Waste Rock	Schist	61	62	-	-	0.62	-	19.0	59.9	-40.9	3.2				Non-Acid Forming
46	259037	LR0226	Waste Rock	Schist	63	64	-	-	0.19	-	5.8	53.1	-47.3	9.1				Non-Acid Forming
47	259074	LR0226	Waste Rock	Schist	98	99	-	-	0.40	-	12.3	65.5	-53.3	5.3				Non-Acid Forming
48	259167	LR0227	Waste Rock	Schist	53	54	-	-	0.40	-	12.3	101.0	-88.8	8.2				Non-Acid Forming
49	259168	LR0227	Waste Rock	Schist	54	55	-	-	0.67	-	20.5	89.6	-69.1	4.4				Non-Acid Forming
50	259176	LR0227	Waste Rock	Schist	62	63	-	-	0.94	-	28.8	71.4	-42.6	2.5				Non-Acid Forming

Table B1: Acid Base Account Test Results

Sample Number	Strategic Sample ID	Drill Hole ID	Sample Type	Description	From	To	pH[1]	EC[1]	Total S[4]	Scr[2]	MPA[2]	ANC[2]	NAPP[2]	ANC: MPA Ratio	NAG_{pH}	NAG Capacity (pH 4.5)	NAG Capacity (pH 7)	Sample Classification[3]
					(m)			(µS/cm)	(%)	(%)	kg H_2SO_4/t					kg H_2SO_4/t		
51	259209	LR0227	Waste Rock	Schist	93	94	-	-	0.79	-	24.2	57.4	-33.2	2.4				Non-Acid Forming
52	259262	LR0228	Waste Rock	Schist	39	40	-	-	0.30	-	9.2	118.0	-108.8	12.8				Non-Acid Forming
53	259263	LR0228	Waste Rock	Schist	40	41	-	-	0.46	-	14.1	76.5	-62.4	5.4				Non-Acid Forming
54	259290	LR0228	Waste Rock	Schist	66	67	-	-	0.89	-	27.3	64.1	-36.8	2.4				Non-Acid Forming
55	259304	LR0228	Waste Rock	Schist	79	80	-	-	0.55	-	16.8	57.7	-40.9	3.4				Non-Acid Forming
56	259325	LR0228	Waste Rock	Schist	99	100	-	-	0.29	-	8.9	68.9	-60.0	7.8				Non-Acid Forming
57	259559	LR0231	Waste Rock	Schist	99	100	-	-	0.19	-	5.8	51.0	-45.2	8.8				Non-Acid Forming
58	259723	LR0232	Waste Rock	Schist	48	49	-	-	0.04	-	1.2	48.5	-47.3	39.6				Non-Acid Forming (Barren)
59	259748	LR0232	Waste Rock	Schist	72	73	-	-	0.06	-	1.8	43.7	-41.9	23.8				Non-Acid Forming (Barren)
60	259819	LR0232	Waste Rock	Schist	140	141	-	-	0.35	-	10.7	56.5	-45.8	5.3				Non-Acid Forming
61	30081_SMC	LR0237	Waste Rock	Schist	75	76	-	-	0.15	-	4.6	46.1	-41.5	10.0				Non-Acid Forming
62	30092_SMC	LR0237	Waste Rock	Schist	86	87	-	-	0.37	-	11.3	51.4	-40.1	4.5				Non-Acid Forming
63	30131_SMC	LR0237	Waste Rock	Schist	123	124	-	-	0.66	-	20.2	65.8	-45.6	3.3				Non-Acid Forming
64	30170_SMC	LR0237	Waste Rock	Schist	160	161	-	-	0.60	-	18.4	76.9	-58.5	4.2				Non-Acid Forming
65	30341_SMC	LR0238	Waste Rock	Schist	79	80	-	-	0.15	-	4.6	49.3	-44.7	10.7				Non-Acid Forming
66	30344_SMC	LR0238	Waste Rock	Schist	82	83	-	-	0.09	-	2.8	43.9	-41.1	15.9				Non-Acid Forming (Barren)
67	30402_SMC	LR0238	Waste Rock	Schist	137	138	-	-	0.28	-	8.6	59.8	-51.2	7.0				Non-Acid Forming
68	30424_SMC	LR0238	Waste Rock	Schist	158	159	-	-	0.38	-	11.6	92.8	-81.2	8.0				Non-Acid Forming
69	30602_SMC	LR0239	Waste Rock	Schist	69	70	-	-	0.21	-	6.4	61.8	-55.4	9.6				Non-Acid Forming
70	30695_SMC	LR0239	Waste Rock	Schist	158	159	-	-	0.57	-	17.5	61.8	-44.3	3.5				Non-Acid Forming
71	30708_SMC	LR0239	Waste Rock	Schist	170	171	-	-	0.30	-	9.2	63.3	-54.1	6.9				Non-Acid Forming
72	30936_SMC	LR0240	Waste Rock	Schist	124	125	-	-	0.17	-	5.2	43.5	-38.3	8.4				Non-Acid Forming
73	30968_SMC	LR0240	Waste Rock	Schist	154	155	-	-	0.65	-	19.9	65.6	-45.7	3.3				Non-Acid Forming
74	32009_SMC	LR0245	Waste Rock	Schist	97	98	-	-	0.20	-	6.1	54.7	-48.6	8.9				Non-Acid Forming
75	32024_SMC	LR0245	Waste Rock	Schist	111	112	-	-	0.03	-	0.9	86.1	-85.2	93.7				Non-Acid Forming (Barren)
76	32058_SMC	LR0245	Waste Rock	Schist	144	145	-	-	0.08	-	2.5	121.0	-118.6	49.4				Non-Acid Forming (Barren)
77	32059_SMC	LR0245	Waste Rock	Schist	145	146	-	-	0.23	-	7.0	50.1	-43.1	7.1				Non-Acid Forming
78	32084_SMC	LR0245	Waste Rock	Schist	168	169	-	-	0.19	-	5.8	57.2	-51.4	9.8				Non-Acid Forming
79	32102_SMC	LR0245	Waste Rock	Schist	185	186	-	-	0.12	-	3.7	78.4	-74.7	21.3				Non-Acid Forming
80	32142_SMC	LR0245	Waste Rock	Schist	223	224	-	-	1.08	-	33.1	83.3	-50.2	2.5				Non-Acid Forming
81	32390	LR0246	Waste Rock	Schist	69	70	-	-	0.31	-	9.5	41.1	-31.6	4.3				Non-Acid Forming
82	32398	LR0246	Waste Rock	Schist	77	78	-	-	0.29	-	8.9	55.3	-46.4	6.2				Non-Acid Forming
83	32434	LR0246	Waste Rock	Schist	111	112	-	-	0.21	-	6.4	47.2	-40.8	7.3				Non-Acid Forming
84	32450	LR0246	Waste Rock	Schist	126	127	-	-	0.16	-	4.9	51.4	-46.5	10.5				Non-Acid Forming
85	32473	LR0246	Waste Rock	Schist	148	149	-	-	0.07	-	2.1	40.0	-37.9	18.7				Non-Acid Forming (Barren)
86	32517	LR0246	Waste Rock	Schist	190	191	-	-	0.58	-	17.8	66.8	-49.0	3.8				Non-Acid Forming
87	32523	LR0246	Waste Rock	Schist	195	196	-	-	0.71	-	21.7	44.3	-22.6	2.0				Non-Acid Forming
88	32706	LR0247	Waste Rock	Schist	93	94	-	-	0.22	-	6.7	45.9	-39.2	6.8				Non-Acid Forming
89	32842	LR0247	Waste Rock	Schist	222	223	-	-	0.49	-	15.0	41.1	-26.1	2.7				Non-Acid Forming
90	33266	LR0248	Waste Rock	Schist	197	198	-	-	0.52	-	15.9	56.0	-40.1	3.5				Non-Acid Forming
91	33567	LR0249	Waste Rock	Schist	96	97	-	-	0.25	-	7.7	162.0	-154.3	21.2				Non-Acid Forming
92	33863	LR0250	Waste Rock	Schist	40	41	-	-	0.11	-	3.4	52.0	-48.6	15.4				Non-Acid Forming
93	33967	LR0250	Waste Rock	Schist	139	140	-	-	0.42	-	12.9	119.0	-106.1	9.3				Non-Acid Forming
94	34109	LR0251	Waste Rock	Schist	101	102	-	-	0.30	-	9.2	42.7	-33.5	4.6				Non-Acid Forming
95	34119	LR0251	Waste Rock	Schist	111	112	-	-	0.45	-	13.8	51.5	-37.7	3.7				Non-Acid Forming
96	35396	LR0256	Waste Rock	Schist	131	132	-	-	0.14	-	4.3	59.3	-55.0	13.8				Non-Acid Forming
97	35417	LR0256	Waste Rock	Schist	151	152	-	-	0.08	-	2.5	49.4	-47.0	20.2				Non-Acid Forming (Barren)
98	35468	LR0256	Waste Rock	Schist	199	200	-	-	0.36	-	11.0	40.9	-29.9	3.7				Non-Acid Forming
99	35833	LR0256	Waste Rock	Schist	206	217	-	-	0.70	-	21.4	54.4	-33.0	2.5				Non-Acid Forming
100	35675	LR0257	Waste Rock	Schist	180	181	-	-	0.49	-	15.0	37.8	-22.8	2.5				Non-Acid Forming

Table B1: Acid Base Account Test Results

Sample Number	Strategic Sample ID	Drill Hole ID	Sample Type	Description	From	To	pH[1]	EC[1]	Total S[4]	Scr[2]	MPA[2]	ANC[2]	NAPP[2]	ANC: MPA Ratio	NAG_{pH}	NAG Capacity (pH 4.5)	NAG Capacity (pH 7)	Sample Classification[3]
					(m)			(µS/cm)	(%)	(%)	kg H_2SO_4/t					kg H_2SO_4/t		
101	36388	LR0259	Waste Rock	Schist	68	69	-	-	0.16	-	4.9	46.4	-41.5	9.5				Non-Acid Forming
102	36446	LR0259	Waste Rock	Schist	123	124	-	-	2.12	-	64.9	35.6	29.3	0.5				Potentially Acid Forming
103	37556	LR0262	Waste Rock	Schist	144	145	-	-	0.18	-	5.5	76.2	-70.7	13.8				Non-Acid Forming
104	37822	LR0263	Waste Rock	Schist	140	141	-	-	0.05	-	1.5	36.0	-34.5	23.5				Non-Acid Forming (Barren)
105	37823	LR0263	Waste Rock	Schist	141	142	-	-	0.05	-	1.5	36.1	-34.6	23.6				Non-Acid Forming (Barren)
106	37843	LR0263	Waste Rock	Schist	160	161	-	-	0.32	-	9.8	56.6	-46.8	5.8				Non-Acid Forming
107	37851	LR0263	Waste Rock	Schist	168	169	-	-	1.03	-	31.5	44.5	-13.0	1.4				Non-Acid Forming
108	37861	LR0263	Waste Rock	Schist	177	178	-	-	0.34	-	10.4	43.2	-32.8	4.1				Non-Acid Forming
109	38114	LR0264	Waste Rock	Schist	93	94	-	-	1.43	-	43.8	43.0	0.8	1.0				Uncertain
110	38132	LR0264	Waste Rock	Schist	110	111	-	-	0.13	-	4.0	62.9	-58.9	15.8				Non-Acid Forming
111	38137	LR0264	Waste Rock	Schist	115	116	-	-	0.53	-	16.2	45.8	-29.6	2.8				Non-Acid Forming
112	38161	LR0264	Waste Rock	Schist	137	138	-	-	0.17	-	5.2	52.9	-47.7	10.2				Non-Acid Forming
113	38356	LR0265	Waste Rock	Schist	41	42	-	-	0.33	-	10.1	46.3	-36.2	4.6				Non-Acid Forming
114	38377	LR0265	Waste Rock	Schist	61	62	-	-	0.39	-	11.9	62.8	-50.9	5.3				Non-Acid Forming
115	38389	LR0265	Waste Rock	Schist	72	73	-	-	0.31	-	9.5	53.7	-44.2	5.7				Non-Acid Forming
116	38399	LR0265	Waste Rock	Schist	82	83	-	-	1.61	-	49.3	58.1	-8.8	1.2				Non-Acid Forming
117	38424	LR0265	Waste Rock	Schist	105	106	-	-	0.46	-	14.1	69.7	-55.6	4.9				Non-Acid Forming
118	38590	LR0266	Waste Rock	Schist	49	50	-	-	0.24	-	7.4	30.4	-23.1	4.1				Non-Acid Forming
119	38619	LR0266	Waste Rock	Schist	77	78	-	-	0.22	-	6.7	44.0	-37.3	6.5				Non-Acid Forming
120	38667	LR0266	Waste Rock	Schist	122	123	-	-	0.82	-	25.1	52.7	-27.6	2.1				Non-Acid Forming
121	38843	LR0267	Waste Rock	Schist	69	70	-	-	0.41	-	12.6	47.8	-35.2	3.8				Non-Acid Forming
122	38858	LR0267	Waste Rock	Schist	84	85	-	-	0.31	-	9.5	48.9	-39.4	5.2				Non-Acid Forming
123	38894	LR0267	Waste Rock	Schist	118	119	-	-	1.10	-	33.7	45.9	-12.2	1.4				Non-Acid Forming
124	39287	LR0268	Waste Rock	Schist	53	54	-	-	0.43	-	13.2	49.3	-36.1	3.7				Non-Acid Forming
125	39351	LR0268	Waste Rock	Schist	114	115	-	-	0.79	-	24.2	74.6	-50.4	3.1				Non-Acid Forming
126	39403	LR0268	Waste Rock	Schist	163	164	-	-	0.92	-	28.2	68.6	-40.4	2.4				Non-Acid Forming
127	39407	LR0268	Waste Rock	Schist	167	168	-	-	0.39	-	11.9	34.6	-22.7	2.9				Non-Acid Forming
128	39337	LR0269	Waste Rock	Schist	101	102	-	-	1.82	-	55.7	36.7	19.0	0.7				Potentially Acid Forming
129	39429	LR0269	Waste Rock	Schist	188	189	-	-	0.88	-	27.0	56.6	-29.7	2.1				Non-Acid Forming
130	39784	LR0270	Waste Rock	Schist	97	98	-	-	0.20	-	6.1	47.2	-41.1	7.7				Non-Acid Forming
131	39854	LR0270	Waste Rock	Schist	164	165	-	-	0.77	-	23.6	40.5	-16.9	1.7				Non-Acid Forming
132	40610	LR0273	Waste Rock	Schist	63	64	-	-	0.75	-	23.0	68.2	-45.2	3.0				Non-Acid Forming
133	40685	LR0273	Waste Rock	Schist	134	135	-	-	2.60	-	79.6	53.2	26.4	0.7				Potentially Acid Forming
134	40876	LR0274	Waste Rock	Schist	74	75	-	-	0.44	-	13.5	122.0	-108.5	9.1				Non-Acid Forming
135	40902	LR0274	Waste Rock	Schist	98	99	-	-	0.04	-	1.2	46.3	-45.1	37.8				Non-Acid Forming (Barren)
136	40910	LR0274	Waste Rock	Schist	106	107	-	-	0.35	-	10.7	49.0	-38.3	4.6				Non-Acid Forming
137	40916	LR0274	Waste Rock	Schist	112	113	-	-	0.31	-	9.5	37.9	-28.4	4.0				Non-Acid Forming
138	41096	LR0274	Waste Rock	Schist	170	171	-	-	3.22	-	98.6	43.2	55.4	0.4				Potentially Acid Forming
139	40978	LR0274	Waste Rock	Schist	171	172	-	-	0.55	-	16.8	40.5	-23.7	2.4				Non-Acid Forming
140	41012	LR0274	Waste Rock	Schist	203	204	-	-	0.55	-	16.8	39.1	-22.3	2.3				Non-Acid Forming
141	41048	LR0274	Waste Rock	Schist	237	238	-	-	0.38	-	11.6	40.7	-29.1	3.5				Non-Acid Forming
142	41162	LR0275	Waste Rock	Schist	57	58	-	-	0.76	-	23.3	38.1	-14.8	1.6				Non-Acid Forming
143	42045	LR0279	Waste Rock	Schist	94	95	-	-	0.42	-	12.9	44.7	-31.8	3.5				Non-Acid Forming
144	42252	LR0280	Waste Rock	Schist	133	134	-	-	0.34	-	10.4	76.2	-65.8	7.3				Non-Acid Forming
145	42285	LR0280	Waste Rock	Schist	164	165	-	-	2.71	-	83.0	35.0	48.0	0.4				Potentially Acid Forming
146	42302	LR0280	Waste Rock	Schist	180	181	-	-	0.96	-	29.4	34.6	-5.2	1.2				Non-Acid Forming
147	42471	LR0281	Waste Rock	Schist	121	122	-	-	0.82	-	25.1	57.8	-32.7	2.3				Non-Acid Forming
148	42658	LR0282	Waste Rock	Schist	73	74	-	-	0.75	-	23.0	54.8	-31.8	2.4				Non-Acid Forming
149	42977	LR0284	Waste Rock	Schist	108	109	-	-	1.01	-	30.9	37.5	-6.6	1.2				Non-Acid Forming
150	43141	LR0285	Waste Rock	Schist	123	124	-	-	0.79	-	24.2	37.3	-13.1	1.5				Non-Acid Forming

Table B1: Acid Base Account Test Results

Sample Number	Strategic Sample ID	Drill Hole ID	Sample Type	Description	From	To	pH[1]	EC[1]	Total S[4]	Scr[2]	MPA[2]	ANC[2]	NAPP[2]	ANC: MPA Ratio	NAG_{pH}	NAG Capacity (pH 4.5)	NAG Capacity (pH 7)	Sample Classification[3]
					(m)			(µS/cm)	(%)	(%)	kg H_2SO_4/t					kg H_2SO_4/t		
151	43142	LR0285	Waste Rock	Schist	124	125	-	-	0.74	-	22.7	46.5	-23.8	2.1				Non-Acid Forming
152	43323	LR0286	Waste Rock	Schist	132	133	-	-	0.73	-	22.4	44.3	-21.9	2.0				Non-Acid Forming
153	256327	LRD0203	Waste Rock	Schist	43	44	-	-	0.16	-	4.9	72.2	-67.3	14.7				Non-Acid Forming
154	256328	LRD0203	Waste Rock	Schist	44	45	-	-	0.07	-	2.1	73.5	-71.4	34.3				Non-Acid Forming (Barren)
155	256387	LRD0203	Waste Rock	Schist	99	100	-	-	0.39	-	11.9	62.4	-50.5	5.2				Non-Acid Forming
156	256449	LRD0204	Waste Rock	Schist	54	55	-	-	0.08	-	2.5	90.4	-88.0	36.9				Non-Acid Forming (Barren)
157	256454	LRD0204	Waste Rock	Schist	59	60	-	-	0.20	-	6.1	61.8	-55.7	10.1				Non-Acid Forming
158	34256	LRD0218	Waste Rock	Schist	90.1	91.1	-	-	2.12	-	64.9	64.7	0.2	1.0				Uncertain
159	34257	LRD0218	Waste Rock	Schist	91.1	92	-	-	1.03	-	31.5	51.4	-19.9	1.6				Non-Acid Forming
160	260608	LRD0218	Waste Rock	Schist	102.5	103.3	-	-	2.71	-	83.0	62.5	20.5	0.8				Potentially Acid Forming
161	260614	LRD0218	Waste Rock	Schist	108.9	108.95	-	-	0.67	-	20.5	82.0	-61.5	4.0				Non-Acid Forming
162	260619	LRD0218	Waste Rock	Schist	113.9	114.4	-	-	1.11	-	34.0	104.0	-70.0	3.1				Non-Acid Forming
163	260631	LRD0218	Waste Rock	Schist	124.9	125.9	-	-	2.27	-	69.5	68.4	1.1	1.0				Uncertain
164	258629	LRD0223	Waste Rock	Schist	60	61	-	-	0.68	-	20.8	53.4	-32.6	2.6				Non-Acid Forming
165	260748	LD0236	Waste Rock	Stockwork (>25% veining) (NOT RC)	70	71	-	-	0.87	-	26.6	50.6	-24.0	1.9				Non-Acid Forming
166	253742	LR0182	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	43	44	-	-	1.41	-	43.2	55.2	-12.0	1.3				Non-Acid Forming
167	253970	LR0185	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	108	109	-	-	0.09	-	2.8	83.5	-80.7	30.3				Non-Acid Forming (Barren)
168	253978	LR0185	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	116	117	-	-	0.38	-	11.6	45.1	-33.5	3.9				Non-Acid Forming
169	253990	LR0185	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	127	128	-	-	0.28	-	8.6	55.9	-47.3	6.5				Non-Acid Forming
170	253991	LR0185	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	128	129	-	-	0.27	-	8.3	73.4	-65.1	8.9				Non-Acid Forming
171	254009	LR0185	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	145	146	-	-	0.40	-	12.3	72.7	-60.5	5.9				Non-Acid Forming
172	254015	LR0185	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	151	152	-	-	0.09	-	2.8	53.5	-50.7	19.4				Non-Acid Forming (Barren)
173	254187	LR0186	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	91	92	-	-	0.38	-	11.6	63.2	-51.6	5.4				Non-Acid Forming
174	254206	LR0186	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	108	109	-	-	0.71	-	21.7	51.6	-29.9	2.4				Non-Acid Forming
175	254207	LR0186	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	109	110	-	-	1.26	-	38.6	48.1	-9.5	1.2				Non-Acid Forming
176	254208	LR0186	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	110	111	-	-	0.62	-	19.0	61.3	-42.3	3.2				Non-Acid Forming
177	254235	LR0186	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	136	137	-	-	0.46	-	14.1	56.1	-42.0	4.0				Non-Acid Forming
178	254242	LR0186	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	142	143	-	-	2.81	-	86.1	71.1	15.0	0.8				Potentially Acid Forming
179	254401	LR0187	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	95	96	-	-	0.18	-	5.5	56.2	-50.7	10.2				Non-Acid Forming
180	254416	LR0187	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	110	111	-	-	0.18	-	5.5	54.7	-49.2	9.9				Non-Acid Forming
181	254761	LR0190	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	76	77	-	-	0.02	-	0.6	55.5	-54.9	90.6				Non-Acid Forming (Barren)
182	255049	LR0192	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	93	94	-	-	0.16	-	4.9	48.2	-43.3	9.8				Non-Acid Forming
183	255405	LR0196	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	65	66	-	-	0.08	-	2.5	51.6	-49.2	21.1				Non-Acid Forming (Barren)
184	257903	LR0216	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	63	64	-	-	0.51	-	15.6	52.6	-37.0	3.4				Non-Acid Forming
185	258165	LR0219	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	46	47	-	-	1.96	-	60.0	106.0	-46.0	1.8				Non-Acid Forming
186	258205	LR0219	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	84	85	-	-	0.32	-	9.8	47.3	-37.5	4.8				Non-Acid Forming
187	258367	LR0220	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	82	83	-	-	0.33	-	10.1	52.1	-42.0	5.2				Non-Acid Forming
188	259255	LR0228	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	33	34	-	-	0.52	-	15.9	60.1	-44.2	3.8				Non-Acid Forming
189	259604	LR0231	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	141	142	-	-	0.91	-	27.9	42.0	-14.1	1.5				Non-Acid Forming
190	259935	LR0233	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	81	82	-	-	0.12	-	3.7	69.7	-66.0	19.0				Non-Acid Forming
191	42256	LR0280	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	137	138	-	-	1.22	-	37.4	39.0	-1.6	1.0				Uncertain
192	260247	LRD0203	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	134	134.38	-	-	0.74	-	22.7	61.5	-38.8	2.7				Non-Acid Forming
193	260174	LRD0204	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	92.58	92.7	-	-	0.46	-	14.1	100.0	-85.9	7.1				Non-Acid Forming
194	260605	LRD0218	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	100	100.5	-	-	0.92	-	28.2	72.0	-43.8	2.6				Non-Acid Forming
195	258667	LRD0223	Waste Rock	Vein Breccia w/ >90% vein clasts (NOT RC)	96	97	-	-	0.65	-	19.9	53.7	-33.8	2.7				Non-Acid Forming
196	258671	LRD0223	Waste Rock	Vein Breccia w/ >90% vein clasts (NOT RC)	100	101	-	-	0.37	-	11.3	66.4	-55.1	5.9				Non-Acid Forming

Table B1: Acid Base Account Test Results

Sample Number	Strategic Sample ID	Drill Hole ID	Sample Type	Description	From (m)	To (m)	pH[1]	EC[1] (µS/cm)	Total S[4] (%)	Scr[2] (%)	MPA[2] kg H_2SO_4/t	ANC[2] kg H_2SO_4/t	NAPP[2] kg H_2SO_4/t	ANC: MPA Ratio	NAG_{pH}	NAG Capacity (pH 4.5) kg H_2SO_4/t	NAG Capacity (pH 7) kg H_2SO_4/t	Sample Classification[3]
14 Waste Rock Drill Core Samples from the BVS Pit																		
197	RGS01 LD0317 39 45	LD0317	Waste Rock	Schist	39	45	9.0	352	0.14	0.129	4.0	50.0	-46.0	12.7	9.9	<0.1	<0.1	Non-Acid Forming
198	RGS02 LD0317 53.97 58.69	LD0317	Waste Rock	Amphibolite	54.0	58.7	9.0	272	0.32	0.301	9.2	119.0	-109.8	12.9	10.4	<0.1	<0.1	Non-Acid Forming
199	RGS04 LD0317 111 117.2	LD0317	Waste Rock	Schist	111	117.2	9.2	262	0.68	-	20.8	58.0	-37.2	2.8	-	-	-	Non-Acid Forming
200	RGS05 LD0318 169 175	LD0318	Waste Rock	Schist	169	175	9.6	157	0.20	-	6.1	33.9	-27.8	5.5	-	-	-	Non-Acid Forming
201	RGS06 LD0319 49 54	LD0319	Waste Rock	Psammite	49	54	9.6	204	0.06	0.055	1.8	75.2	-73.4	40.9	9.9	<0.1	<0.1	Non-Acid Forming (Barren)
202	RGS07 LD0320 43.5 49.59	LD0320	Waste Rock	Schist	44	50	9.5	154	0.18	-	5.5	15.5	-10.0	2.8	-	-	-	Non-Acid Forming
203	RGS08 LD0320 170 176.06	LD0320	Waste Rock	Tectonic Breccia w/ vein and wallrock clasts	170	176	8.8	593	1.11	0.802	24.6	106.0	-81.4	4.3	8.9	<0.1	<0.1	Non-Acid Forming
204	RGS09 LD0321 38.73 46	LD0321	Waste Rock	Psammite	39	46	9.4	214	0.43	0.371	11.4	38.2	-26.8	3.4	9.3	<0.1	<0.1	Non-Acid Forming
205	RGS10 LD0317 226 231.42	LD0317	Waste Rock	Schist	226	231	9.5	200	0.08	-	2.5	49.5	-47.1	20.2	-	-	-	Non-Acid Forming (Barren)
206	RGS11 LD0318 42.32 47	LD0318	Waste Rock	Schist	42	47	9.2	258	0.72	0.554	17.0	36.7	-19.7	2.2	9.3	<0.1	<0.1	Non-Acid Forming
207	RGS12 LD0318 93.7 96.58	LD0318	Waste Rock	Schist	94	97	8.9	415	1.79	1.360	41.7	43.4	-1.7	1.0	8.9	<0.1	<0.1	Uncertain
208	RGS13 LD0320 107.51 113	LD0320	Waste Rock	Schist	108	113	9.5	166	0.06	-	1.8	35.1	-33.3	19.1	-	-	-	Non-Acid Forming (Barren)
209	RGS14 LD0321 179 185.69	LD0321	Waste Rock	Schist	179	186	9.4	188	0.21	-	6.4	18.0	-11.6	2.8	-	-	-	Non-Acid Forming
210	RGS16 LD0324 176.43 180.64	LD0324	Waste Rock	Schist	176	181	9.5	209	0.09	0.037	1.1	55.6	-54.5	49.1	10.2	<0.1	<0.1	Non-Acid Forming (Barren)
18 Waste Rock Drill Core Samples from BV1 and BV2 Pits																		
211	521323 LR0428 3	-	Waste Rock BV2	Oxidised Granite, unmineralised	3.0	4.0	9.7	145	0.02		0.6	8.3	-7.7	13.6				Non-Acid Forming (Barren)
212	521336 LR0428 16	-	Waste Rock BV2	Oxidised Granite within alteration halo, unmineralised	16.0	17.0	9.1	69	0.005		0.2	9.3	-9.1	60.7				Non-Acid Forming (Barren)
213	521362 LR0428 40	-	Waste Rock BV2	Fresh Granite with Schist bands, unmineralised (FW of vein)	40.0	41.0	9.7	70	0.13	0.119	3.6	23.3	-19.7	6.4	10.2	<0.1	<0.1	Non-Acid Forming
214	521597 LR0434 6	-	Waste Rock BV2	Oxidised Granite near top of the hole	6.0	7.0	9.4	236	0.03		0.9	8.0	-7.1	8.7				Non-Acid Forming (Barren)
215	521621 LR0434 28	-	Waste Rock BV2	Fresh sericite altered Granite with minor veining, potential mineralisation	28.0	29.0	9.7	81	0.42	0.400	12.3	59.0	-46.8	4.8	10.6	<0.1	<0.1	Non-Acid Forming
216	521638 LR0434 45	-	Waste Rock BV2	Fresh, unaltered Granite (FW of vein)	45.0	46.0	9.8	71	0.06		1.8	22.3	-20.5	12.1				Non-Acid Forming (Barren)
217	521646 LR0434 52	-	Waste Rock BV2	Secondary zone of alteration, unlikely economic, potential mineralisation with quartz and sericite	52.0	53.0	9.8	70	0.11	0.104	3.2	25.3	-22.1	7.9	10.5	<0.1	<0.1	Non-Acid Forming (Barren)
218	518397 LR0411R 2	-	Waste Rock BV1	Two samples of unconformatable Jurassic quartzose sandstone and conglomerate that forms part of the overburden on some holes, FeOx weathering.	2.0	3.0	5.6	12	0.005		0.2	3.1	-2.9	20.2				Non-Acid Forming (Barren)
219	518398 LR0411R 3	-	Waste Rock BV1		3.0	4.0	5.6	12	0.005		0.2	2.1	-1.9	13.7				Non-Acid Forming (Barren)
220	518417 LR0411R 21	-	Waste Rock BV1	Oxidised and altered micaceous Schist	21.0	22.0	8.1	19	0.005		0.2	7.1	-6.9	46.4				Non-Acid Forming (Barren)
221	518430 LR0411R 33	-	Waste Rock BV1	Fresh Granite with 10-25% Schist bands, weak-moderate sericite alteration	33.0	34.0	9.5	65	0.07		2.1	12.3	-10.2	5.7				Non-Acid Forming (Barren)
222	518445 LR0411R 47	-	Waste Rock BV1	Granite within alteration zone associated with ore zone	47.0	48.0	9.6	72	0.04		1.2	19.9	-18.7	16.2				Non-Acid Forming (Barren)
223	518463 LR0411R 64	-	Waste Rock BV1	Undifferentiated mafic dike (likely dolerite), chlorite and carbonate altered.	64.0	65.0	9.5	68	0.20	0.184	5.6	180.0	-174.4	31.9	11.1	<0.1	<0.1	Non-Acid Forming
224	518608 LR0417 6	-	Waste Rock BV1	Oxidised sandstone near the base of the unconformity	6.0	7.0	6.3	19	0.01		0.3	1.8	-1.5	5.9				Non-Acid Forming (Barren)
225	518622 LR0417 19	-	Waste Rock BV1	Massive partially oxidised granite	19.0	20.0	8.4	21	0.005		0.2	9.7	-9.5	63.3				Non-Acid Forming (Barren)
226	518652 LR0417 48	-	Waste Rock BV1	Granite/Granofels within alteration zone associated with ore zone, weak sericite alt	48.0	49.0	9.6	66	0.06		1.8	23.6	-21.8	12.8				Non-Acid Forming (Barren)
227	518669 LR0417 64	-	Waste Rock BV1	Fresh Granite with 10-25% Schist bands, moderate sericite alteration next to ore zone	64.0	65.0	9.5	71	0.25	0.214	6.6	41.8	-35.2	6.4	10.4	<0.1	<0.1	Non-Acid Forming
228	518684 LR0417 78	-	Waste Rock BV1	Granite/Granofels within alteration zone associated with ore zone, weak sericite alt	78.0	79.0	9.7	66	0.10		3.1	46.0	-42.9	15.0				Non-Acid Forming (Barren)

Table B1: Acid Base Account Test Results

Sample Number	Strategic Sample ID	Drill Hole ID	Sample Type	Description	From (m)	To (m)	pH[1]	EC[1] (µS/cm)	Total S[4] (%)	Scr[2] (%)	MPA[2] kg H_2SO_4/t	ANC[2] kg H_2SO_4/t	NAPP[2] kg H_2SO_4/t	ANC:MPA Ratio	NAG_{pH}	NAG Capacity (pH 4.5) kg H_2SO_4/t	NAG Capacity (pH 7) kg H_2SO_4/t	Sample Classification[3]
3 Tailings Samples																		
1	Strategic Woolgar Tailings	-	Tailings	Tailings Sample 1	NA		9.0	132	0.68	0.554	17.0	26.8	-9.8	1.6	8.2	<0.1	<0.1	Non-Acid Forming
2	PSM Woolgar Gold-106 slurry	-	Tailings	Tailings Sample 2	NA		8.7	1,040	1.58	1.250	38.3	23.6	14.7	0.6	2.6	14.4	18.2	Potentially Acid Forming
3	PSM Woolgar Gold-106 cakes	-	Tailings	Tailings Sample 3	NA		8.8	1,680	1.58	1.140	34.9	23.4	11.5	0.7	2.7	11.2	16.0	Potentially Acid Forming
3 Spent Heap Leach Residue Samples																		
1	HLBRT-1_25mm	-	Heap Leach Residue	Spent Heap Leach Residue Sample 1	NA		8.8	267	1.11	0.752	23.0	11.4	11.6	0.5	2.6	13.6	17.1	Potentially Acid Forming
2	HLBRT-2_12.5mm	-	Heap Leach Residue	Spent Heap Leach Residue Sample 2	NA		9.1	158	0.78	0.629	19.3	13.7	5.6	0.7	3.0	6.7	10.0	Potentially Acid Forming-LC
2 Ore Samples																		
1	1046C LD0324 34-58.6	-	Low Grade Ore	Low Grade Ore	34.0	58.6	8.0	187	0.80	0.658	20.2	35.6	-15.4	1.8	8.1	<0.1	<0.1	Non-Acid Forming
2	1046G LD0324	-	High Grade Ore	High Grade Ore	103.4	139.3	7.0	799	1.99	1.660	50.8	18.9	31.9	0.4	2.6	30.5	35.8	Potentially Acid Forming

Notes:

1. Current pH and EC are provided for 1:5 sample:water extracts.
2. Scr = Chromium Reducible Sulfur; MPA = Maximum Potential Acidity; ANC = Acid Neutralising Capacity; NAPP = Net Acid Producing Potential and NAG = Net Acid Generation.
3. Sample classification criteria detail provided in report text.
4. Where total sulfur results are less than the laboratory LOR (0.01 %S), a value of half of the LOR is used.

Table B2: Composite Waste Rock Samples from BV1 and BV2 Pits prepared for Multi-Element Test Program

Sample Number	Strategic Sample ID	Sample Type	Description	From	To	Sample Classification	RGS Composite Sample ID
				(m)			
211	521323 LR0428 3	Waste Rock BV2	Oxidised Granite, unmineralised	3.0	4.0	Non-Acid Forming (Barren)	2021057_C003
212	521336 LR0428 16	Waste Rock BV2	Oxidised Granite within alteration halo, unmineralised	16.0	17.0	Non-Acid Forming (Barren)	
214	521597 LR0434 6	Waste Rock BV2	Oxidised Granite near top of the hole	6.0	7.0	Non-Acid Forming (Barren)	
213	521362 LR0428 40	Waste Rock BV2	Fresh Granite with Schist bands, unmineralised (FW of vein)	40.0	41.0	Non-Acid Forming	2021057_C004
215	521621 LR0434 28	Waste Rock BV2	Fresh sericite altered Granite with minor veining, potential mineralisation	28.0	29.0	Non-Acid Forming	
216	521638 LR0434 45	Waste Rock BV2	Fresh, unaltered Granite (FW of vein)	45.0	46.0	Non-Acid Forming (Barren)	
217	521646 LR0434 52	Waste Rock BV2	Secondary zone of alteration, unlikely economic, potential mineralisation with quartz and sericite	52.0	53.0	Non-Acid Forming (Barren)	
218	518397 LR0411R 2	Waste Rock BV1	Two samples of unconformatable Jurassic quartzose sandstone and conglomerate that forms part of the overburden on some holes, FeOx weathering.	2.0	3.0	Non-Acid Forming (Barren)	2021057_C005
219	518398 LR0411R 3	Waste Rock BV1		3.0	4.0	Non-Acid Forming (Barren)	
224	518608 LR0417 6	Waste Rock BV1	Oxidised sandstone near the base of the unconformity	6.0	7.0	Non-Acid Forming (Barren)	
225	518622 LR0417 19	Waste Rock BV1	Massive partially oxidised granite	19.0	20.0	Non-Acid Forming (Barren)	
220	518417 LR0411R 21	Waste Rock BV1	Oxidised and altered micaceous Schist	21.0	22.0	Non-Acid Forming (Barren)	2021057_C006
221	518430 LR0411R 33	Waste Rock BV1	Fresh Granite with 10-25% Schist bands, weak-moderate sericite alteration	33.0	34.0	Non-Acid Forming (Barren)	
222	518445 LR0411R 47	Waste Rock BV1	Granite within alteration zone associated with ore zone	47.0	48.0	Non-Acid Forming (Barren)	
223	518463 LR0411R 64	Waste Rock BV1	Undifferentiated mafic dike (likely dolerite), chlorite and carbonate altered.	64.0	65.0	Non-Acid Forming	
226	518652 LR0417 48	Waste Rock BV1	Granite/Granofels within alteration zone associated with ore zone, weak sericite alt	48.0	49.0	Non-Acid Forming (Barren)	
227	518669 LR0417 64	Waste Rock BV1	Fresh Granite with 10-25% Schist bands, moderate sericite alteration next to ore zone	64.0	65.0	Non-Acid Forming	
228	518684 LR0417 78	Waste Rock BV1	Granite/Granofels within alteration zone associated with ore zone, weak sericite alt	78.0	79.0	Non-Acid Forming (Barren)	

Table B3: Samples used for KLC test program

Sample Number	Strategic Sample ID	Sample Type	Description	From (m)	To (m)	Sample Classification	KLC ID	KLC Details
197	RGS01 LD0317 39 45	Waste Rock	Schist	39	45	Non-Acid Forming	KLC 1	10 kg of material. Free leach large column.
198	RGS02 LD0317 53.97 58.69	Waste Rock	Amphibolite	54	58.7	Non-Acid Forming	KLC 2	10 kg of material. Free leach large column.
201	RGS06 LD0319 49 54	Waste Rock	Psammite	49	54	Non-Acid Forming (Barren)	KLC 3	10 kg of material. Free leach large column.
203	RGS08 LD0320 170 176.06	Waste Rock	Tectonic Breccia w/ vein and wallrock clasts	170	176	Non-Acid Forming	KLC 4	10 kg of material. Free leach large column.
204	RGS09 LD0321 38.73 46	Waste Rock	Psammite	39	46	Non-Acid Forming	KLC 5	10 kg of material. Free leach large column.
206	RGS11 LD0318 42.32 47	Waste Rock	Schist	42	47	Non-Acid Forming	KLC 6	9 kg of material. Free leach large column.
207	RGS12 LD0318 93.7 96.58	Waste Rock	Schist	94	97	Uncertain	KLC 7	2.5 kg of material. Free leach large column.
210	RGS16 LD0324 176.43 180.64	Waste Rock	Schist	176	181	Non-Acid Forming (Barren)	KLC 8	10 kg of material. Free leach large column.
1	Tailings	Tailings	Tailings Sample 1	NA		Non-Acid Forming	KLC 9	5 kg of material. Free leach large column.
1	1046C LD0324 34-58.6	Low Grade Ore	Low Grade Ore	34	58.6	Uncertain	KLC 10	11 kg of material. Free leach large column.
1	HLBRT-1_25mm	Heap leach residue	Spent Heap leach residue Sample 1	NA		Potentially Acid Forming	KLC 11	1 kg of material. Free leach medium column.
2	HLBRT-2_12.5mm	Heap leach residue	Spent Heap leach residue Sample 2	NA		Potentially Acid Forming	KLC 12	1 kg of material. Saturated medium column.
211	521323 LR0428 3	Waste Rock BV2	Oxidised Granite, unmineralised	3.0	4.0	Non-Acid Forming (Barren)	KLC 13	10 kg of material. Free leach large column.
212	521336 LR0428 16	Waste Rock BV2	Oxidised Granite within alteration halo, unmineralised	16.0	17.0	Non-Acid Forming (Barren)		
213	521362 LR0428 40	Waste Rock BV2	Fresh Granite with Schist bands, unmineralised (FW of vein)	40.0	41.0	Non-Acid Forming		
214	521597 LR0434 6	Waste Rock BV2	Oxidised Granite near top of the hole	6.0	7.0	Non-Acid Forming (Barren)		
215	521621 LR0434 28	Waste Rock BV2	Fresh sericite altered Granite with minor veining, potential mineralisation	28.0	29.0	Non-Acid Forming		
216	521638 LR0434 45	Waste Rock BV2	Fresh, unaltered Granite (FW of vein)	45.0	46.0	Non-Acid Forming (Barren)		
217	521646 LR0434 52	Waste Rock BV2	Secondary zone of alteration, unlikely economic, potential mineralisation with quartz and sericite	52.0	53.0	Non-Acid Forming (Barren)		
218	518397 LR0411R 2	Waste Rock BV1	Two samples of unconformatable Jurassic quartzose sandstone and conglomerate that forms part of the overburden on some holes, FeOx weathering.	2.0	3.0	Non-Acid Forming (Barren)	KLC 14	10 kg of material. Free leach large column.
219	518398 LR0411R 3	Waste Rock BV1		3.0	4.0	Non-Acid Forming (Barren)		
220	518417 LR0411R 21	Waste Rock BV1	Oxidised and altered micaceous Schist	21.0	22.0	Non-Acid Forming (Barren)		
221	518430 LR0411R 33	Waste Rock BV1	Fresh Granite with 10-25% Schist bands, weak-moderate sericite alteration	33.0	34.0	Non-Acid Forming (Barren)		
222	518445 LR0411R 47	Waste Rock BV1	Granite within alteration zone associated with ore zone	47.0	48.0	Non-Acid Forming (Barren)		
223	518463 LR0411R 64	Waste Rock BV1	Undifferentiated mafic dike (likely dolerite), chlorite and carbonate altered.	64.0	65.0	Non-Acid Forming		
224	518608 LR0417 6	Waste Rock BV1	Oxidised sandstone near the base of the unconformity	6.0	7.0	Non-Acid Forming (Barren)		
225	518622 LR0417 19	Waste Rock BV1	Massive partially oxidised granite	19.0	20.0	Non-Acid Forming (Barren)		
226	518652 LR0417 48	Waste Rock BV1	Granite/Granofels within alteration zone associated with ore zone, weak sericite alt	48.0	49.0	Non-Acid Forming (Barren)		
227	518669 LR0417 64	Waste Rock BV1	Fresh Granite with 10-25% Schist bands, moderate sericite alteration next to ore zone	64.0	65.0	Non-Acid Forming		
228	518684 LR0417 78	Waste Rock BV1	Granite/Granofels within alteration zone associated with ore zone, weak sericite alteration	78.0	79.0	Non-Acid Forming (Barren)		

Table B3: Samples used for KLC test program

Sample Number	Strategic Sample ID	Sample Type	Description	From (m)	To (m)	Sample Classification	KLC ID	KLC Details
2	1046G LD0324	High-Grade Ore	High-Grade Ore	103.4	139.3	Potentially Acid Forming	KLC 15	2 kg of material. Free leach medium column.
158	34256	Waste Rock	Schist	90.1	91.1	Uncertain		
159	34257	Waste Rock	Schist	91.1	92	Non-Acid Forming		
107	37851	Waste Rock	Schist	168	169	Non-Acid Forming		
102	36446	Waste Rock	Schist	123	124	Potentially Acid Forming		
128	39337	Waste Rock	Schist	101	102	Potentially Acid Forming		
131	39854	Waste Rock	Schist	164	165	Non-Acid Forming		
123	38894	Waste Rock	Schist	118	119	Non-Acid Forming		
109	38114	Waste Rock	Schist	93	94	Uncertain		
116	38399	Waste Rock	Schist	82	83	Non-Acid Forming		
160	260608	Waste Rock	Schist	102.5	103.3	Potentially Acid Forming		
163	260631	Waste Rock	Schist	124.9	125.9	Uncertain		
28	260712	Waste Rock	Schist	36	37	Non-Acid Forming		
37	258238	Waste Rock	Schist	116	117	Potentially Acid Forming		1 kg of material (PAF/NAF BVS waste rock). Free leach medium column. 1.5 kg of material (PAF/NAF BVS waste rock + spent heap leach residue (Sample 1). Free leach medium column.
189	259604	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	141	142	Non-Acid Forming		
40	258374	Waste Rock	Schist	89	90	Non-Acid Forming	KLC 16	
36	258236	Waste Rock	Schist	114	115	Potentially Acid Forming		
185	258165	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	46	47	Non-Acid Forming	KLC 17	
175	254207	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	109	110	Non-Acid Forming		
32	257919	Waste Rock	Schist	79	80	Non-Acid Forming		
5	257926	Waste Rock	Diorite	85	86	Non-Acid Forming		
6	257928	Waste Rock	Diorite	87	88	Non-Acid Forming		
30	255602	Waste Rock	Schist	134	135	Non-Acid Forming		
166	253742	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	43	44	Non-Acid Forming		
178	254242	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	142	143	Potentially Acid Forming		
152	43323	Waste Rock	Schist	132	133	Non-Acid Forming		
150	43141	Waste Rock	Schist	123	124	Non-Acid Forming		
21	42716	Waste Rock	Dolerite	128	129	Non-Acid Forming		
191	42256	Waste Rock	Vein %50-90% (>wallrock) (RC ONLY)	137	138	Uncertain		
146	42302	Waste Rock	Schist	180	181	Non-Acid Forming		
142	41162	Waste Rock	Schist	57	58	Non-Acid Forming		
138	41096	Waste Rock	Schist	170	171	Potentially Acid Forming		

Notes:

KLC = Kinetic leach column.

Table B4: Multi-Element Test Results for Waste Rock

		RGS Sample ID >		2021057_C003	2021057_C004	2021057_C005	2021057_C006	147	65	115	90	131	61	157	172	150	1	75	4	3	5	82	15	198	123	21	11	55
		Strategic Sample ID-->		-	-	-	-	32390	32398	32434	32450	32473	32517	32523	32706	32842	33143	33266	33567	33571	33573	33863	33967	34109	34119	34210	34214	34256
		Sample Digestion Method-->		2-acid	2-acid	2-acid	2-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
Parameters	Unit	Limit of Reporting	NEPC[1] Health-Based Investigation Level (HIL C)	Waste Rock BV2	Waste Rock BV2	Waste Rock BV1	Waste Rock BV1	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS
Major Elements																												
Aluminium (Al)	%	0.01	-	2.09	1.98	0.33	1.62	2.26	1.47	1.91	2.68	1.00	0.73	0.65	1.38	2.19	4.45	1.10	4.28	4.11	3.89	2.17	1.91	2.00	1.61	2.29	3.83	0.96
Calcium (Ca)	%	0.01		0.15	1.03	0.03	0.7	1.20	1.67	1.33	1.50	1.27	1.73	1.18	1.12	1.19	5.52	1.58	4.98	5.15	4.59	1.54	3.19	1.00	1.30	2.78	3.92	1.80
Iron (Fe)	%	0.01	-	4.33	4.11	0.79	3.35	3.86	3.47	3.43	4.88	1.62	3.11	2.72	3.51	4.00	9.38	3.42	8.25	8.67	8.26	3.94	9.08	3.82	3.04	5.38	9.61	3.55
Potassium (K)	%	0.01	-	0.83	0.7	0.07	0.31	0.82	0.55	0.43	0.89	0.36	0.50	0.53	0.48	0.45	0.24	0.40	0.23	0.25	0.29	0.79	0.51	0.38	0.37	0.20	0.21	0.47
Magnesium (Mg)	%	0.01	-	0.99	1.13	0.07	0.79	1.15	0.93	1.04	1.68	0.40	0.69	0.51	0.92	0.95	3.42	0.78	2.92	3.09	3.05	1.15	2.34	1.11	0.83	1.37	2.66	0.64
Sodium (Na)	%	0.01	-	0.09	0.03	0.01	0.03	0.07	0.03	0.06	0.05	0.05	0.02	0.01	0.04	0.03	0.04	0.02	0.01	0.04	0.07	0.07	0.04	0.04	0.03	0.19	0.10	0.03
Trace Elements																												
Antimony (Sb)	mg/kg	0.01	-	0.2	0.4	0.1	5.3	<2	2	12	2	<2	2	4	3	<2	<2	<2	<2	<2	<2	<2	4	<2	<2	<2	<2	6
Arsenic (As)	mg/kg	0.1	300	4	38	1	48	2	14	3	9	4	22	39	22	3	<2	21	<2	<2	<2	2	7	14	2	<2	<2	60
Boron (B)	mg/kg	10	20,000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10
Cadmium (Cd)	mg/kg	0.01	100	0.26	0.35	0.02	0.1	<0.5	<0.5	<0.5	<0.5	0.7	0.9	1.1	<0.5	4.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	0.6	16
Chromium (Cr) - hexavalent	mg/kg	1	240	41	46	12	33	47	28	40	48	21	9	12	29	36	77	17	64	83	70	61	32	42	25	27	54	9
Cobalt (Co)	mg/kg	0.1	300	19.2	14.5	2.3	10.6	14	13	11	14	4	11	11	12	21	49	13	38	42	43	12	30	15	12	25	41	17
Copper (Cu)	mg/kg	0.2	20,000	47.5	25	4.1	12.6	29	30	21	15	7	22	38	23	56	38	26	12	21	25	17	49	32	30	175	143	61
Lead (Pb)	mg/kg	0.2	600	18	34	4	17	10	32	36	28	44	37	38	18	268	18	49	28	8	19	20	15	20	45	7	46	1,180
Manganese (Mn)	mg/kg	5	9,000	562	482	179	488	455	586	416	460	363	1,260	891	444	630	1,620	713	1,330	1,290	1,250	448	1,280	391	426	847	1,500	758
Mercury (Hg)	mg/kg	0.01	400	0.1	0.11	<0.01	0.09	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	1	1	<1	1	<1	<1	1	<1	<1	<1
Molybdenum (Mo)	mg/kg	0.05	-	1.39	1.52	0.96	3.3	1	<1	2	1	1	<1	2	<1	1	1	1	<1	<1	<1	1	2	1	2	1	<1	<1
Nickel (Ni)	mg/kg	0.2	800	36.3	31.7	6.8	22	36	34	40	46	15	23	25	40	31	26	32	24	26	24	37	40	37	31	29	50	22
Selenium (Se)	mg/kg	0.2	700	0.3	0.2	<0.2	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (Th)	mg/kg	0.2	-	14.2	13.7	3.5	15.9	20	20	20	<20	<20	<20	<20	20	20	<20	20	<20	<20	<20	<20	<20	20	<20	<20	<20	<20
Uranium (U)	mg/kg	0.05	-	2.33	2.93	0.39	2.59	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vanadium (V)	mg/kg	1	-	41	40	7	32	42	23	37	134	11	6	6	23	32	155	13	104	163	148	81	139	35	22	166	287	12
Zinc (Zn)	mg/kg	2	30,000	166	232	11	62	56	65	114	101	65	100	274	210	245	155	66	159	137	130	65	84	75	91	82	201	1,040

Notes:

< indicates less than the laboratory limit of reporting. Shaded cells exceed applied guideline limit.

** Guideline level for Cr(VI) = 300 mg/kg. Guideline level for Cr(III) = 24 % of total Cr.

1. National Environmental Protection Council (NEPC) 2013. National Environmental Protection (Assessment of Site Contamination) Measure. Health-Based Investigation Level - HIL(C); public open spaces - recreational use.

Table B4: Multi-Element Test Results for Waste Rock

		RGS Sample ID >	140	14	83	122	128	196	159	185	88	113	25	197	36	2	108	132	84	109	189	121	56	141	127	171	62	160	166	95	170
		Strategic Sample ID-->	34257	35085	35396	35417	35468	35675	35833	36264	36387	36388	36431	36446	37556	37769	37822	37823	37843	37851	37861	38114	38132	38137	38161	38356	38377	38389	38399	38424	38590
		Sample Digestion Method-->	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
Parameters	Unit	Limit of Reporting	NEPC[1] Health-Based Investigation Level (HIL C)	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS
Major Elements																															
Aluminium (Al)	%	0.01	-	2.57	3.91	2.08	2.10	1.23	0.98	1.51	2.58	1.18	1.49	2.48	0.59	0.85	4.93	0.39	0.87	1.97	1.49	2.10	0.46	1.85	2.07	1.08	2.11	0.85	0.90	1.17	0.61	2.63
Calcium (Ca)	%	0.01		1.23	3.40	1.54	1.31	1.29	1.02	1.16	1.07	1.52	1.34	2.59	1.01	2.07	5.24	1.36	1.27	1.54	1.35	1.04	1.32	1.75	1.23	1.29	1.12	1.70	1.16	1.13	1.44	1.12
Iron (Fe)	%	0.01	-	4.94	11.70	3.59	3.50	1.86	2.41	4.53	2.78	1.77	2.90	7.57	2.79	2.86	9.09	0.63	1.34	2.62	3.58	4.19	2.69	3.88	4.53	2.98	3.95	3.08	4.14	5.29	3.42	5.33
Potassium (K)	%	0.01	-	0.46	0.59	0.44	0.48	0.36	0.27	0.52	1.40	0.36	0.62	0.59	0.45	0.42	0.55	0.22	0.27	0.64	0.45	0.42	0.36	0.61	0.37	0.31	0.63	0.32	0.39	0.44	0.40	0.63
Magnesium (Mg)	%	0.01	-	1.26	2.07	1.05	1.10	0.49	0.60	0.99	0.63	0.72	1.05	1.78	0.32	0.79	3.56	0.08	0.31	0.69	0.76	1.20	0.41	1.18	1.22	0.84	0.99	0.70	0.86	1.00	0.74	1.21
Sodium (Na)	%	0.01	-	0.05	0.08	0.10	0.07	0.08	0.02	0.02	0.12	0.06	0.08	0.01	0.01	0.04	0.03	0.04	0.06	0.08	0.03	0.03	<0.01	0.03	0.05	0.03	0.06	0.03	0.03	0.01	0.03	0.10
Trace Elements																															
Antimony (Sb)	mg/kg	0.01	-	<2	<2	2	<2	<2	<2	<2	<2	<2	2	3	6	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Arsenic (As)	mg/kg	0.1	300	8	3	<2	<2	<2	2	17	21	<2	2	8	65	16	5	<2	<2	4	15	6	67	15	72	5	6	11	15	15	19	6
Boron (B)	mg/kg	10	20,000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cadmium (Cd)	mg/kg	0.01	100	<0.5	<0.5	<0.5	<0.5	<0.5	7.8	6.7	3.5	<0.5	<0.5	0.8	10.4	0.8	<0.5	0.8	<0.5	2.2	<0.5	1.3	<0.5	<0.5	<0.5	0.5	<0.5	1.0	1.0	1.4	0.8	<0.5
Chromium (Cr) - hexavalent	mg/kg	1	240	43	31	50	44	30	24	29	29	51	78	25	10	16	81	15	29	31	32	41	15	32	50	20	40	12	15	22	13	62
Cobalt (Co)	mg/kg	0.1	300	15	42	8	8	11	8	14	6	9	13	26	8	8	45	1	3	8	17	12	13	11	22	7	10	9	13	19	9	13
Copper (Cu)	mg/kg	0.2	20,000	9	169	11	3	45	31	40	22	20	76	38	54	7	21	3	2	25	51	14	12	4	68	6	20	23	26	81	15	24
Lead (Pb)	mg/kg	0.2	600	12	2	42	27	41	466	470	156	9	6	59	469	38	37	51	22	139	54	83	30	23	13	15	27	29	34	46	34	54
Manganese (Mn)	mg/kg	5	9,000	541	2,860	478	391	322	362	890	880	473	551	1,260	1,010	583	1,510	182	217	537	482	763	972	743	421	589	505	740	773	1,150	917	638
Mercury (Hg)	mg/kg	0.01	400	<1	<1	<1	<1	1	<1	1	<1	1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1
Molybdenum (Mo)	mg/kg	0.05	-	<1	<1	2	1	2	2	2	1	4	8	1	2	1	1	4	3	2	2	1	1	1	7	<1	1	2	2	1	1	6
Nickel (Ni)	mg/kg	0.2	800	27	47	24	28	36	20	31	15	27	48	31	21	17	33	6	12	28	41	34	31	33	53	18	32	21	30	41	22	39
Selenium (Se)	mg/kg	0.2	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (Th)	mg/kg	0.2	-	<20	<20	<20	20	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	20	<20	20	20	<20	<20	<20	20	20	<20	20
Uranium (U)	mg/kg	0.05	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10
Vanadium (V)	mg/kg	1	-	41	273	42	41	16	13	18	21	28	41	96	5	12	151	4	14	28	23	32	5	31	58	17	33	9	12	16	7	41
Zinc (Zn)	mg/kg	2	30,000	87	106	80	77	54	271	412	264	82	71	144	533	94	208	68	177	166	80	165	36	73	63	60	81	118	131	190	67	157

Notes:

< indicates less than the laboratory limit of reporting. Shaded cells exceed applied guideline limit.

** Guideline level for Cr(VI) = 300 mg/kg. Guideline level for Cr(III) = 24 % of total Cr.

1. National Environmental Protection Council (NEPC) 2013. National Environmental Protection (Assessment of Site Contamination) Measure. Health-Based Investigation Level - HIL(C); public open spaces - recreational use.

Table B4: Multi-Element Test Results for Waste Rock

		RGS Sample ID >	139	117	10	162	144	158	12	151	148	38	47	195	136	94	44	191	73	137	17	6	9	7	149	100	180	107	176	116	146
		Strategic Sample ID-->	38619	38667	38826	38843	38858	38894	39278	39287	39337	39351	39403	39407	39419	39429	39784	39854	40610	40685	40855	40856	40876	40887	40902	40910	40916	40978	41012	41048	41096
		Sample Digestion Method-->	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
Parameters	Unit	Limit of Reporting	NEPC[1] Health-Based Investigation Level (HIL C)	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS
Major Elements																															
Aluminium (Al)	%	0.01	-	0.44	0.67	3.64	2.07	0.44	0.65	1.60	0.60	0.40	2.10	0.65	0.53	1.12	1.19	1.97	0.66	1.89	1.20	4.36	4.27	2.37	3.11	2.04	1.28	1.60	0.44	0.58	1.70	0.96
Calcium (Ca)	%	0.01		1.24	1.33	3.94	1.15	1.23	1.18	3.71	1.19	1.20	2.01	1.90	1.03	1.24	1.44	1.92	1.04	1.59	1.24	2.89	4.54	4.18	4.30	1.19	1.41	1.10	1.36	1.12	1.33	1.21
Iron (Fe)	%	0.01	-	1.61	3.52	7.46	4.66	2.57	2.58	3.59	2.64	3.06	6.11	3.43	1.71	2.88	4.01	3.28	3.13	4.99	3.69	9.65	10.00	4.47	8.96	4.24	2.50	2.78	2.33	2.44	4.38	4.16
Potassium (K)	%	0.01	-	0.27	0.35	0.28	0.33	0.30	0.42	0.35	0.28	0.35	0.28	0.30	0.29	0.28	0.46	0.62	0.29	0.81	0.74	0.78	0.55	0.56	0.58	0.44	0.41	0.49	0.36	0.32	0.29	0.64
Magnesium (Mg)	%	0.01	-	0.36	0.69	2.58	1.09	0.50	0.44	1.06	0.57	0.35	1.69	0.72	0.37	0.80	0.82	1.07	0.62	1.43	0.58	2.24	2.24	1.60	2.83	1.25	0.74	0.79	0.41	0.58	1.03	0.42
Sodium (Na)	%	0.01	-	0.01	0.04	0.03	0.04	0.02	0.02	0.03	0.03	0.01	0.03	0.02	0.04	0.02	0.02	0.07	0.03	0.06	0.01	0.02	0.05	0.04	0.02	0.04	0.05	0.06	0.02	0.03	0.04	0.03
Trace Elements																															
Antimony (Sb)	mg/kg	0.01	-	<2	4	<2	4	2	<2	<2	<2	2	3	<2	<2	<2	<2	2	<2	<2	5	<2	<2	<2	<2	<2	<2	<2	<2	2	<2	16
Arsenic (As)	mg/kg	0.1	300	3	33	8	7	18	42	7	13	85	6	39	8	5	27	<2	33	473	44	8	<2	5	33	<2	10	4	39	16	5	188
Boron (B)	mg/kg	10	20,000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10
Cadmium (Cd)	mg/kg	0.01	100	0.5	1.3	<0.5	<0.5	0.6	2.2	17.1	<0.5	4.1	0.6	<0.5	1.2	1.4	5.5	<0.5	8.0	<0.5	6.6	0.5	0.8	<0.5	3.6	<0.5	<0.5	<0.5	4.1	6.5	<0.5	38.9
Chromium (Cr) - hexavalent	mg/kg	1	240	14	14	59	37	14	12	46	18	9	24	10	13	29	18	54	16	37	13	39	38	59	48	47	30	27	17	19	37	19
Cobalt (Co)	mg/kg	0.1	300	3	15	35	21	7	8	17	7	17	21	12	6	10	13	11	12	24	16	37	39	15	45	14	6	11	11	7	14	12
Copper (Cu)	mg/kg	0.2	20,000	9	47	26	61	10	17	81	10	65	44	23	17	36	57	60	55	44	49	69	55	63	32	4	5	23	56	26	38	155
Lead (Pb)	mg/kg	0.2	600	24	120	29	24	30	102	856	16	174	62	42	74	101	235	9	403	13	387	11	12	24	169	12	29	25	287	434	36	2,710
Manganese (Mn)	mg/kg	5	9,000	815	737	1,170	540	709	802	945	819	868	873	1,600	626	557	1,210	647	462	457	936	1,080	1,560	1,365	2,750	515	387	447	1,255	681	674	1,250
Mercury (Hg)	mg/kg	0.01	400	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1
Molybdenum (Mo)	mg/kg	0.05	-	3	2	1	4	2	1	4	2	5	1	11	1	3	1	2	6	7	2	1	2	6	1	2	2	3	2	2	3	3
Nickel (Ni)	mg/kg	0.2	800	10	35	29	40	15	22	37	21	26	33	35	16	22	28	28	33	38	20	49	49	38	32	37	18	30	13	15	27	34
Selenium (Se)	mg/kg	0.2	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (Th)	mg/kg	0.2	-	<20	20	<20	<20	<20	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	20	20	20	<20	<20	<20	<20
Uranium (U)	mg/kg	0.05	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	10	<10	10
Vanadium (V)	mg/kg	1	-	4	10	93	38	4	7	41	7	4	86	6	4	21	16	43	9	39	14	271	290	61	83	34	24	21	3	5	27	9
Zinc (Zn)	mg/kg	2	30,000	56	96	143	137	58	187	829	54	228	160	46	105	132	365	102	450	67	418	128	155	277	362	99	155	204	240	444	98	2,120

Notes:

< indicates less than the laboratory limit of reporting. Shaded cells exceed applied guideline limit.

** Guideline level for Cr(VI) = 300 mg/kg. Guideline level for Cr(III) = 24 % of total Cr.

1. National Environmental Protection Council (NEPC) 2013. National Environmental Protection (Assessment of Site Contamination) Measure. Health-Based Investigation Level - HIL(C); public open spaces - recreational use.

Table B4: Multi-Element Test Results for Waste Rock

		RGS Sample ID >	188	51	155	35	167	168	192	64	81	8	183	177	111	133	156	29	186	174	50	53	124	71	103	152	72	161
		Strategic Sample ID-->	41162	41998	42045	42252	42256	42285	42302	42471	42658	42716	42977	43141	43142	43323	253742	253970	253978	253990	253991	254009	254015	254187	254206	254207	254208	254235
		Sample Digestion Method-->	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
Parameters	Unit	Limit of Reporting	NEPC[1] Health-Based Investigation Level (HIL C)	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS
Major Elements																													
Aluminium (Al)	%	0.01	-	0.80	3.53	1.92	1.06	0.79	0.71	1.07	0.94	0.47	2.85	0.78	1.03	1.18	0.79	1.47	0.75	1.06	0.75	0.82	1.68	1.69	0.72	0.94	1.68	0.60	0.76
Calcium (Ca)	%	0.01		1.06	1.84	1.18	2.09	1.13	1.13	1.03	1.69	1.55	4.24	1.08	1.12	1.35	1.25	1.18	2.34	1.06	1.12	1.87	1.80	1.30	1.63	1.40	1.19	1.62	1.16
Iron (Fe)	%	0.01	-	3.58	6.51	3.19	2.45	2.42	3.09	3.37	2.42	2.63	8.41	2.31	2.09	2.30	3.17	3.48	2.33	3.73	3.86	3.00	4.00	3.03	2.28	2.02	2.52	3.01	3.94
Potassium (K)	%	0.01	-	0.39	1.16	0.55	0.67	0.53	0.51	0.30	0.61	0.35	0.30	0.53	0.69	0.78	0.57	0.88	0.45	0.40	0.45	0.40	0.72	0.57	0.50	0.60	0.99	0.40	0.48
Magnesium (Mg)	%	0.01	-	0.53	1.96	0.91	0.72	0.39	0.33	0.64	0.57	0.54	1.94	0.38	0.38	0.46	0.56	0.56	0.67	0.69	0.77	0.73	0.96	0.78	0.56	0.42	0.41	0.52	0.79
Sodium (Na)	%	0.01	-	0.03	0.04	0.04	0.04	0.01	0.01	0.04	0.03	0.02	0.13	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.03	0.04	0.05	0.08	0.02	0.01	0.02	0.02	0.02
Trace Elements																													
Antimony (Sb)	mg/kg	0.01	-	<2	<2	<2	<2	3	22	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	8	3	4	4	<2	2	5	27	2	3
Arsenic (As)	mg/kg	0.1	300	32	<2	4	33	58	77	39	15	26	26	39	35	28	43	111	16	18	24	16	32	7	30	35	42	46	27
Boron (B)	mg/kg	10	20,000	<10	<10	<10	<10	10	10	<10	<10	<10	10	10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10
Cadmium (Cd)	mg/kg	0.01	100	2.3	<0.5	<0.5	1.8	4.0	50.1	4.8	1.6	1.5	1.7	2.3	1.9	1.8	4.3	0.9	2.4	0.6	0.6	<0.5	3.4	0.6	3.9	22.7	36.3	7.3	0.7
Chromium (Cr) - hexavalent	mg/kg	1	240	13	57	25	16	19	11	23	14	9	51	9	12	13	11	18	11	24	14	20	30	29	11	10	15	12	14
Cobalt (Co)	mg/kg	0.1	300	10	21	11	8	8	12	12	7	7	93	8	8	8	13	20	5	15	16	8	22	7	6	5	10	10	16
Copper (Cu)	mg/kg	0.2	20,000	32	33	29	18	15	95	42	23	26	346	22	25	21	29	59	6	46	38	12	44	6	13	107	139	43	42
Lead (Pb)	mg/kg	0.2	600	184	9	29	81	239	3,290	348	62	75	4	196	219	80	181	88	137	24	29	25	142	69	135	1,730	4,030	388	26
Manganese (Mn)	mg/kg	5	9,000	779	820	382	598	805	790	662	705	1,250	994	556	588	695	1,360	538	574	482	599	593	837	593	686	637	784	1,050	708
Mercury (Hg)	mg/kg	0.01	400	<1	<1	<1	<1	1	1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Molybdenum (Mo)	mg/kg	0.05	-	2	1	5	1	2	1	2	<1	1	2	1	1	2	<1	1	1	2	3	2	4	2	1	1	1	1	1
Nickel (Ni)	mg/kg	0.2	800	28	47	31	29	20	20	29	16	16	123	20	20	18	21	86	13	21	24	18	39	22	18	15	17	23	28
Selenium (Se)	mg/kg	0.2	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (Th)	mg/kg	0.2	-	<20	<20	<20	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	20	<20	20	<20	20	<20	<20	<20	<20	<20	<20
Uranium (U)	mg/kg	0.05	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10
Vanadium (V)	mg/kg	1	-	6	127	21	12	9	5	17	9	3	161	6	9	11	7	14	8	15	9	9	26	21	7	8	14	6	7
Zinc (Zn)	mg/kg	2	30,000	188	79	69	101	244	2,830	313	94	90	76	154	116	173	211	73	148	67	73	47	227	92	220	1,060	1,570	356	54

Notes:

< indicates less than the laboratory limit of reporting. Shaded cells exceed applied guideline limit.

** Guideline level for Cr(VI) = 300 mg/kg. Guideline level for Cr(III) = 24 % of total Cr.

1. National Environmental Protection Council (NEPC) 2013. National Environmental Protection (Assessment of Site Contamination) Measure. Health-Based Investigation Level - HIL(C); public open spaces - recreational use.

Table B4: Multi-Element Test Results for Waste Rock

			RGS Sample ID >	40	34	74	125	105	54	199	102	43	98	93	130	48	45	68	30	120	187	39	31	67	86
			Strategic Sample ID-->	254242	254369	254383	254401	254416	254761	255049	255174	255189	255405	255602	255712	256327	256328	256387	256449	256454	257903	257919	257926	257928	258144
			Sample Digestion Method-->	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
Parameters	Unit	Limit of Reporting	NEPC[1] Health-Based Investigation Level (HIL C)	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS
Major Elements																									
Aluminium (Al)	%	0.01	-	0.64	2.11	1.26	0.71	1.51	1.51	1.01	2.17	1.57	1.74	1.54	1.43	1.59	0.93	1.01	1.07	0.88	1.02	0.58	1.27	0.53	2.64
Calcium (Ca)	%	0.01		2.01	2.14	1.59	1.30	1.36	1.80	1.00	1.40	1.99	1.42	1.45	1.27	1.89	1.92	1.65	2.30	1.32	1.06	2.01	2.26	1.65	1.52
Iron (Fe)	%	0.01	-	4.09	3.82	3.34	3.03	3.08	2.71	3.08	3.88	4.14	1.44	3.45	3.58	3.19	2.39	2.33	3.01	3.17	2.80	3.93	5.03	3.42	5.27
Potassium (K)	%	0.01	-	0.49	0.74	0.42	0.40	0.54	0.22	0.36	0.40	0.68	0.69	0.48	0.68	0.68	0.56	0.61	0.57	0.45	0.59	0.43	0.79	0.36	0.50
Magnesium (Mg)	%	0.01	-	0.56	1.16	0.98	0.69	0.75	0.83	0.70	1.07	0.76	0.36	0.80	0.53	0.84	0.62	0.54	0.83	0.71	0.64	0.85	1.11	0.67	1.43
Sodium (Na)	%	0.01	-	0.01	0.07	0.03	0.06	0.10	0.05	0.06	0.04	0.02	0.06	0.01	0.03	0.03	0.05	0.05	0.07	0.03	0.04	0.02	0.04	0.02	0.04
Trace Elements																									
Antimony (Sb)	mg/kg	0.01	-	5	<2	<2	3	<2	<2	<2	<2	<2	<2	<2	3	<2	<2	2	5	4	<2	3	5	4	3
Arsenic (As)	mg/kg	0.1	300	153	6	17	22	18	<2	48	4	14	2	3	26	12	15	17	25	27	12	41	42	45	19
Boron (B)	mg/kg	10	20,000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	10	10	<10	10	10	<10	<10	<10	<10	10
Cadmium (Cd)	mg/kg	0.01	100	2.0	<0.5	0.8	0.5	<0.5	<0.5	<0.5	<0.5	3.6	<0.5	6.7	9.8	<0.5	<0.5	1.2	<0.5	0.8	1.0	2.6	<0.5	0.6	0.9
Chromium (Cr) - hexavalent	mg/kg	1	240	18	51	27	15	26	48	26	39	19	29	24	17	23	15	16	20	16	17	16	19	18	38
Cobalt (Co)	mg/kg	0.1	300	14	10	8	9	12	6	11	17	15	3	13	15	8	6	6	7	14	7	16	22	21	18
Copper (Cu)	mg/kg	0.2	20,000	54	7	6	12	28	2	22	60	51	2	56	125	6	3	14	10	20	24	51	74	50	23
Lead (Pb)	mg/kg	0.2	600	127	20	29	35	27	5	36	32	196	6	88	1,570	11	8	45	10	64	78	103	19	30	34
Manganese (Mn)	mg/kg	5	9,000	1,070	503	436	486	470	337	383	562	969	273	607	739	530	417	458	512	483	747	1,110	1,340	838	863
Mercury (Hg)	mg/kg	0.01	400	<1	<1	<1	<1	1	<1	1	<1	<1	<1	<1	1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
Molybdenum (Mo)	mg/kg	0.05	-	2	1	1	5	1	3	2	1	2	1	1	1	2	1	1	1	1	1	1	1	1	<1
Nickel (Ni)	mg/kg	0.2	800	33	32	23	21	25	25	26	31	36	14	24	23	24	16	17	21	30	19	24	33	32	29
Selenium (Se)	mg/kg	0.2	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (Th)	mg/kg	0.2	-	<20	20	<20	<20	<20	<20	<20	<20	<20	20	<20	<20	<20	<20	20	<20	20	<20	<20	<20	<20	<20
Uranium (U)	mg/kg	0.05	-	<10	10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10
Vanadium (V)	mg/kg	1	-	6	39	16	8	14	44	17	37	18	22	19	11	19	11	10	11	11	9	7	16	6	44
Zinc (Zn)	mg/kg	2	30,000	116	131	74	172	62	48	57	59	209	48	299	444	54	39	113	37	100	87	188	27	49	129

Notes:

< indicates less than the laboratory limit of reporting. Shaded cells exceed applied guideline limit.

** Guideline level for Cr(VI) = 300 mg/kg. Guideline level for Cr(III) = 24 % of total Cr.

1. National Environmental Protection Council (NEPC) 2013. National Environmental Protection (Assessment of Site Contamination) Measure. Health-Based Investigation Level - HIL(C); public open spaces - recreatio

Table B4: Multi-Element Test Results for Waste Rock

			RGS Sample ID >	18	49	193	175	112	85	142	23	181	89	69	104	126	70	190	101	143	97	134	92	20	26
			Strategic Sample ID-->	258165	258181	258205	258236	258238	258248	258263	258273	258367	258374	258617	258629	258667	258671	258923	258927	258944	259035	259037	259074	259167	259168
			Sample Digestion Method-->	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
Parameters	Unit	Limit of Reporting	NEPC[1] Health-Based Investigation Level (HIL C)	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS
Major Elements																									
Aluminium (Al)	%	0.01	-	1.51	2.31	0.86	1.15	0.72	0.82	1.14	3.90	1.10	0.55	1.53	1.14	1.09	0.83	0.79	0.71	0.93	1.04	0.66	0.69	1.13	1.03
Calcium (Ca)	%	0.01		2.88	1.88	1.03	1.12	1.35	1.53	1.23	2.68	1.09	1.51	1.64	1.37	1.30	1.63	1.04	1.41	1.23	1.43	1.25	1.50	2.82	2.56
Iron (Fe)	%	0.01	-	5.34	9.26	2.20	4.42	3.81	1.92	3.03	10.10	2.89	3.82	3.65	3.53	2.51	3.25	2.77	2.21	2.72	2.58	2.60	3.78	2.67	2.64
Potassium (K)	%	0.01	-	0.50	0.75	0.45	0.69	0.52	0.60	0.46	0.47	0.50	0.38	0.48	0.42	0.70	0.52	0.38	0.49	0.58	0.66	0.40	0.44	0.71	0.67
Magnesium (Mg)	%	0.01	-	1.50	1.80	0.52	0.64	0.44	0.46	0.73	3.02	0.59	0.58	0.87	0.76	0.49	0.71	0.67	0.52	0.57	0.52	0.53	0.78	0.69	0.62
Sodium (Na)	%	0.01	-	0.02	0.02	0.07	0.08	0.04	0.02	0.06	0.01	0.05	0.02	0.05	0.02	0.03	0.04	0.04	0.03	0.02	0.04	0.04	0.03	0.02	0.02
Trace Elements																									
Antimony (Sb)	mg/kg	0.01	-	3	5	<2	4	6	9	<2	<2	2	10	<2	<2	4	3	<2	<2	<2	14	5	5	<2	<2
Arsenic (As)	mg/kg	0.1	300	42	72	12	68	81	48	10	18	10	57	11	25	33	27	7	14	16	35	20	23	10	17
Boron (B)	mg/kg	10	20,000	<10	10	<10	10	<10	10	<10	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10
Cadmium (Cd)	mg/kg	0.01	100	1.6	35.2	2.9	1.2	1.2	8.0	0.9	1.5	1.5	5.0	<0.5	<0.5	3.4	0.6	<0.5	2.0	1.5	1.1	<0.5	4.6	3.2	2.7
Chromium (Cr) - hexavalent	mg/kg	1	240	34	26	21	21	20	9	24	28	16	8	28	23	19	15	21	14	10	13	13	13	10	11
Cobalt (Co)	mg/kg	0.1	300	31	37	6	22	26	10	8	46	8	20	14	19	7	10	6	5	7	14	8	15	7	11
Copper (Cu)	mg/kg	0.2	20,000	18	134	21	73	58	47	17	77	18	66	36	51	48	17	6	9	11	35	17	35	16	29
Lead (Pb)	mg/kg	0.2	600	199	1,500	393	79	311	266	56	60	75	219	29	15	434	46	23	60	64	66	26	318	96	99
Manganese (Mn)	mg/kg	5	9,000	1,685	1,390	586	916	987	1,125	646	1,730	645	963	535	469	688	763	353	584	800	508	399	643	797	766
Mercury (Hg)	mg/kg	0.01	400	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1
Molybdenum (Mo)	mg/kg	0.05	-	2	1	1	1	1	<1	1	<1	<1	<1	1	1	1	1	1	1	1	<1	1	1	<1	<1
Nickel (Ni)	mg/kg	0.2	800	27	41	18	44	44	20	23	45	14	37	30	40	19	24	23	14	19	25	21	25	24	30
Selenium (Se)	mg/kg	0.2	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (Th)	mg/kg	0.2	-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Uranium (U)	mg/kg	0.05	-	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10
Vanadium (V)	mg/kg	1	-	31	131	9	13	7	7	14	236	8	6	19	17	10	9	10	7	6	7	5	6	9	9
Zinc (Zn)	mg/kg	2	30,000	165	2,230	195	95	79	440	144	214	110	329	72	44	206	56	62	132	135	80	51	202	256	198

Notes:

< indicates less than the laboratory limit of reporting. Shaded cells exceed applied guideline limit.

** Guideline level for Cr(VI) = 300 mg/kg. Guideline level for Cr(III) = 24 % of total Cr.

1. National Environmental Protection Council (NEPC) 2013. National Environmental Protection (Assessment of Site Contamination) Measure. Health-Based Investigation Level - HIL(C); public open spaces - recreatio

Table B4: Multi-Element Test Results for Waste Rock

			RGS Sample ID >	59	153	57	16	33	63	96	76	118	184	135	154	173	99	200	138	27	46	52	79	42	19	66
			Strategic Sample ID-->	259176	259209	259255	259262	259263	259290	259304	259325	259559	259604	259723	259748	259819	259935	260144	260145	260174	260247	260605	260608	260614	260619	260631
			Sample Digestion Method-->	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
Parameters	Unit	Limit of Reporting	NEPC[1] Health-Based Investigation Level (HIL C)	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS
Major Elements																										
Aluminium (Al)	%	0.01	-	0.87	2.06	2.21	2.88	2.87	1.69	0.81	0.73	2.33	0.39	1.87	2.06	1.05	0.76	1.82	0.76	2.31	0.94	0.50	0.91	1.26	2.64	0.80
Calcium (Ca)	%	0.01		1.74	1.18	1.75	3.06	2.15	1.69	1.44	1.58	1.32	1.08	1.24	1.18	1.12	1.41	1.00	1.24	2.43	1.91	1.82	1.56	1.99	2.82	1.66
Iron (Fe)	%	0.01	-	2.81	4.53	3.44	6.48	5.68	2.96	2.55	2.53	3.86	2.19	3.09	3.27	3.93	3.63	2.14	2.44	2.61	2.50	2.18	3.40	3.51	7.32	3.83
Potassium (K)	%	0.01	-	0.63	0.64	0.59	0.79	0.59	0.78	0.56	0.48	0.43	0.26	0.40	0.50	0.45	0.43	0.89	0.43	1.25	0.45	0.28	0.61	0.72	0.58	0.57
Magnesium (Mg)	%	0.01	-	0.56	1.12	0.94	1.81	1.72	0.75	0.62	0.62	1.17	0.35	0.96	0.99	0.79	0.81	0.49	0.54	0.86	0.50	0.57	0.52	0.90	2.17	0.63
Sodium (Na)	%	0.01	-	0.01	0.06	0.06	0.03	0.04	0.03	0.02	0.03	0.05	0.02	0.09	0.05	0.05	0.04	0.04	0.04	0.01	0.03	0.01	0.02	0.02	0.02	0.02
Trace Elements																										
Antimony (Sb)	mg/kg	0.01	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	2	<2	2	<2	2	3	2	5	2	<2	11
Arsenic (As)	mg/kg	0.1	300	28	4	<2	14	2	9	19	48	<2	27	<2	<2	29	43	16	15	13	26	22	91	19	19	91
Boron (B)	mg/kg	10	20,000	<10	<10	<10	20	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	10	<10	20	<10	<10	<10	<10	<10	<10
Cadmium (Cd)	mg/kg	0.01	100	0.9	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	9.4	<0.5	8.1	<0.5	<0.5	1.1	<0.5	0.9	2.3	2.1	15.4	0.6	0.6	2.6	10.5	27.1
Chromium (Cr) - hexavalent	mg/kg	1	240	11	40	46	31	52	21	9	14	47	18	45	44	23	17	9	5	71	9	8	10	10	33	7
Cobalt (Co)	mg/kg	0.1	300	13	29	9	28	23	12	9	10	14	7	8	8	12	10	5	5	6	5	4	16	11	26	12
Copper (Cu)	mg/kg	0.2	20,000	39	77	19	39	47	35	28	45	15	159	5	8	31	26	13	8	22	32	6	18	25	35	147
Lead (Pb)	mg/kg	0.2	600	36	12	35	25	15	65	29	500	9	1,425	17	20	62	22	43	58	321	839	27	68	148	585	779
Manganese (Mn)	mg/kg	5	9,000	696	489	496	1,195	730	556	405	448	326	589	373	356	655	480	366	491	684	606	1,060	1,080	1,140	1,700	1,030
Mercury (Hg)	mg/kg	0.01	400	<1	<1	1	1	<1	1	<1	<1	<1	<1	<1	1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Molybdenum (Mo)	mg/kg	0.05	-	<1	1	2	<1	1	1	1	1	1	2	2	1	2	1	1	<1	1	<1	1	1	1	1	1
Nickel (Ni)	mg/kg	0.2	800	23	66	35	41	44	30	16	23	39	18	28	29	29	22	14	10	17	21	5	15	18	23	23
Selenium (Se)	mg/kg	0.2	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (Th)	mg/kg	0.2	-	<20	<20	<20	<20	<20	<20	<20	<20	20	<20	<20	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Uranium (U)	mg/kg	0.05	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10
Vanadium (V)	mg/kg	1	-	8	31	41	131	100	17	6	4	43	4	39	38	13	11	10	6	24	9	9	14	15	56	11
Zinc (Zn)	mg/kg	2	30,000	67	78	71	84	85	78	73	725	59	379	85	80	137	52	83	169	91	618	39	39	197	750	1,470

Notes:

< indicates less than the laboratory limit of reporting. Shaded cells exceed applied guideline limit.

** Guideline level for Cr(VI) = 300 mg/kg. Guideline level for Cr(III) = 24 % of total Cr.

1. National Environmental Protection Council (NEPC) 2013. National Environmental Protection (Assessment of Site Contamination) Measure. Health-Based Investigation Level - HIL(C); public open spaces - recreational use.

Table B4: Multi-Element Test Results for Waste Rock

		RGS Sample ID >	179	114	87	165	129	60	32	119	164	77	24	41	169	80	106	145	37	91	22	13	78	58	163	28
		Strategic Sample ID-->	260712	260748	260767	30081	30092	30131	30170	30341	30344	30402	30424	30602	30604	30695	30708	30936	30968	32009	32024	32058	32059	32084	32102	32142
		Sample Digestion Method-->	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
Parameters	Unit	Limit of Reporting	NEPC[1] Health-Based Investigation Level (HIL C)	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS	Waste Rock BVS
Major Elements																											
Aluminium (Al)	%	0.01	-	1.02	1.11	0.61	1.57	1.79	0.49	0.56	2.14	1.74	2.96	1.44	2.01	2.78	1.08	0.47	1.87	0.71	2.36	3.41	1.25	1.94	1.03	1.95	1.38
Calcium (Ca)	%	0.01		1.11	1.34	1.52	1.14	1.27	1.74	2.17	1.32	1.15	1.56	2.66	2.00	1.12	1.55	1.36	1.21	2.04	1.50	2.70	3.48	1.56	1.74	1.15	2.41
Iron (Fe)	%	0.01	-	2.59	2.19	3.08	3.18	3.56	2.27	3.42	3.91	3.03	5.34	2.66	2.74	4.51	2.57	2.97	2.72	1.80	3.56	5.11	3.30	3.72	2.25	3.83	3.24
Potassium (K)	%	0.01	-	0.60	0.69	0.33	0.41	0.52	0.39	0.44	0.48	0.42	1.01	0.89	0.52	1.26	0.53	0.31	0.54	0.46	0.61	1.80	0.72	0.61	0.56	0.80	0.81
Magnesium (Mg)	%	0.01	-	0.47	0.40	0.86	0.78	0.86	0.47	0.71	1.05	0.88	1.55	0.71	0.79	1.43	0.56	0.70	0.66	0.30	0.86	2.07	1.09	1.02	0.64	1.07	0.69
Sodium (Na)	%	0.01	-	0.04	<0.01	0.04	0.03	0.03	0.02	0.03	0.04	0.05	0.05	0.03	0.08	0.09	0.04	0.04	0.05	0.03	0.08	0.04	0.04	0.06	0.04	0.05	0.03
Trace Elements																											
Antimony (Sb)	mg/kg	0.01	-	3	3	2	<2	<2	5	8	<2	2	<2	3	<2	2	2	2	<2	<2	<2	<2	<2	<2	<2	2	19
Arsenic (As)	mg/kg	0.1	300	32	67	28	8	15	43	37	8	3	6	19	<2	<2	8	17	3	14	11	<2	17	9	17	7	47
Boron (B)	mg/kg	10	20,000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10
Cadmium (Cd)	mg/kg	0.01	100	24	10.7	<0.5	<0.5	<0.5	13.0	13.6	<0.5	<0.5	<0.5	4.0	<0.5	<0.5	0.7	1.2	<0.5	7.2	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	8.7
Chromium (Cr) - hexavalent	mg/kg	1	240	10	10	11	28	27	13	7	37	34	60	12	42	67	13	19	28	13	37	139	16	38	18	33	14
Cobalt (Co)	mg/kg	0.1	300	6	5	12	11	13	6	14	11	10	21	7	10	21	7	7	10	4	11	14	7	11	6	10	13
Copper (Cu)	mg/kg	0.2	20,000	60	27	11	21	18	24	67	14	10	35	21	7	18	28	13	20	17	24	5	7	26	7	7	67
Lead (Pb)	mg/kg	0.2	600	2,230	228	15	19	20	258	489	12	11	23	144	9	11	91	48	12	258	21	4	21	18	47	20	448
Manganese (Mn)	mg/kg	5	9,000	404	520	544	391	606	765	967	579	397	569	1,210	363	448	766	881	340	530	446	557	833	438	517	467	1,200
Mercury (Hg)	mg/kg	0.01	400	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Molybdenum (Mo)	mg/kg	0.05	-	1	<1	<1	1	<1	1	1	<1	1	2	<1	1	1	<1	9	<1	<1	1	<1	2	6	1	1	1
Nickel (Ni)	mg/kg	0.2	800	13	13	27	32	36	17	27	37	31	40	20	16	37	22	22	20	6	30	44	10	28	22	33	48
Selenium (Se)	mg/kg	0.2	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (Th)	mg/kg	0.2	-	<20	<20	<20	20	20	<20	<20	20	<20	<20	20	20	20	20	<20	20	<20	<20	<20	20	20	<20	20	<20
Uranium (U)	mg/kg	0.05	-	<10	<10	10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	10	10	<10	<10	<10	<10	<10	<10
Vanadium (V)	mg/kg	1	-	9	10	8	20	22	5	5	29	27	68	15	32	77	12	6	21	9	31	166	18	35	9	31	13
Zinc (Zn)	mg/kg	2	30,000	1,530	562	31	53	46	657	673	58	52	96	210	36	67	53	95	41	379	64	93	53	63	64	75	438

Notes:

< indicates less than the laboratory limit of reporting. Shaded cells exceed applied guideline limit.

** Guideline level for Cr(VI) = 300 mg/kg. Guideline level for Cr(III) = 24 % of total Cr.

1. National Environmental Protection Council (NEPC) 2013. National Environmental Protection (Assessment of Site Contamination) Measure. Health-Based Investigation Level - HIL(C); public open spaces - recreational use.

Table B5: Multi-Element Test Results for Tailings

		RGS Sample ID >		1 (2019)	2021057_022	2021057_023
		Strategic Sample ID-->		Strategic Woolgar Tailings	PSM Woolgar Gold-106 slurry tailings	PSM Woolgar Gold-106 cakes tailings
		Sample Description-->		Tailing Sample 1	Tailings Sample 2	Tailings Sample 3
		Sample Digestion Method-->		2-acid	2-acid	2-acid
Parameters	Unit	Limit of Reporting	NEPC[1] Health-Based Investigation Level (HIL C)	Tailings Sample 1	Tailings Sample 2	Tailings Sample 3
Major Elements						
Aluminium (Al)	%	0.01	-	0.63	0.32	0.38
Calcium (Ca)	%	0.01	-	0.54	0.66	0.69
Iron (Fe)	%	0.01	-	1.74	2.94	2.93
Potassium (K)	%	0.01	-	0.34	-	-
Magnesium (Mg)	%	0.01	-	0.22	0.28	0.28
Sodium (Na)	%	0.01	-	0.04		
Trace Elements						
Arsenic (As)	mg/kg	0.1	300	49.2	78.8	79.1
Boron (B)	mg/kg	10	20,000	<10	<10	<10
Cadmium (Cd)	mg/kg	0.01	100	5.55	11.15	10.55
Chromium (Cr) - hexavalent	mg/kg	1	240	410	100	99
Cobalt (Co)	mg/kg	0.1	300	8.7	9.1	9.1
Copper (Cu)	mg/kg	0.2	20,000	68.6	46.4	45.4
Mercury (Hg)	mg/kg	0.01	400	0.05	0.09	0.10
Manganese (Mn)	mg/kg	5	9,000	277	554	548
Molybdenum (Mo)	mg/kg	0.05	-	22.5	10.0	10.3
Nickel (Ni)	mg/kg	0.2	800	206	67	67
Lead (Pb)	mg/kg	0.2	600	431	460	487
Antimony (Sb)	mg/kg	0.05	-	1.91	2.74	2.91
Selenium (Se)	mg/kg	0.2	700	<0.2	0.2	0.2
Thorium (Th)	mg/kg	0.2	-	7.4	10.1	10.3
Uranium (U)	mg/kg	0.05	-	2.39	3.28	3.58
Vanadium (V)	mg/kg	1	-	8	5	6
Zinc (Zn)	mg/kg	2	30,000	312	628	569

Notes:

< indicates less than the laboratory limit of reporting. Shaded cells exceed applied guideline limit.

** Guideline level for Cr(VI) = 300 mg/kg. Guideline level for Cr(III) = 24 % of total Cr.

1. National Environmental Protection Council (NEPC) 2013. National Environmental Protection (Assessment of Site Contamination) Measure. Health-Based Investigation Level - HIL(C); public open spaces - recreational use.

Table B6: Multi-Element Test Results for Water Extracts for PSM Woolgar Tailings

		RGS Sample Number →		2021057_022	2021057_023
		ALS Laboratory ID →		BR22011570_01	BR22011570_02
Parameters	Limit of Reporting	Aquatic Ecosystems (freshwater)[1]	Livestock Drinking Water[2]	PSM Woolgar Gold-106 slurry Tailings Sample 2	PSM Woolgar Gold-106 cakes Tailingds Sample 3
pH	0.01 pH unit	6 to 9	-	8.7	8.8
Electrical Conductivity	1 µS/cm	<1,000#	3,580^	1,040	1,680
Trace Metals/Metalloids	All units mg/L				
Aluminium (Al)	0.02	0.055	5	<0.02	<0.02
Antimony (Sb)	0.002	-	-	0.004	0.004
Arsenic (As) - trivalent	0.002	0.024 **	0.5	<0.002	<0.002
Boron (B)	0.2	0.37	5	<0.2	<0.2
Cadmium (Cd)	0.002	0.0002	0.01	<0.002	<0.002
Chromium (Cr) - total	0.002	0.001 (hex)*	1 (total)	<0.002	<0.002
Cobalt (Co)	0.002	-	1	<0.002	0.004
Copper (Cu)	0.002	0.0014	1	0.002	<0.002
Iron (Fe)	0.2	-	-	<0.2	0.4
Lead (Pb)	0.002	0.0034	0.1	<0.002	<0.002
Manganese (Mn)	0.002	1.90	-	0.008	0.012
Mercury (Hg)	0.0001	0.0006	0.002	<0.0001	<0.0001
Molybdenum (Mo)	0.002	-	0.15	0.006	0.012
Nickel (Ni)	0.002	0.011	1	<0.002	<0.002
Selenium (Se)	0.02	0.011	0.02	<0.02	<0.02
Thorium (Th)	0.002	-	-	<0.002	<0.002
Uranium (U)	0.002	-	0.2	<0.002	<0.002
Vanadium (V)	0.02	-	-	<0.02	<0.02
Zinc (Zn)	0.01	0.008	20	<0.01	<0.01
Cyanide	All units mg/L				
Weak Acid Dissociable Cyanide (WAD CN)	0.2	-	-	<0.2	<0.2

Notes:

* Cr (VI) = hexavalent. ** 0.013 mg/Lfor pentavalent Arsenic (V).

for still water bodies only, moving rivers at low flow rates should not exceed 2,200 µS/cm

^calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water.

Notes: < indicates concentration less than the laboratory limit of reporting. Shaded cells are greater than applied guideline values.

1. ANZG (2018). Trigger values for freshwater aquatic ecosystems (95% species protection level)

2. ANZG (2018). Recommended guideline limits for Livestock Drinking Water.

Table B7: Multi-Element Test Results for Spent Heap Leach Residue

		RGS Sample ID >		2021057_C001	2021057_C002
		Strategic Sample ID-->		HLBRT-1_25mm	HLBRT-2_12.5mm
		Sample Digestion Method-->		2-acid	2-acid
Parameters	Unit	Limit of Reporting	NEPC[1] Health-Based Investigation Level (HIL C)	Spent Heap Leach Residue Sample 1	Spent Heap Leach Residue Sample 2
Major Elements					
Aluminium (Al)	%	0.01	-	0.37	0.36
Calcium (Ca)	%	0.01	-	0.23	0.28
Iron (Fe)	%	0.01	-	2.42	2.32
Potassium (K)	%	0.01	-	0.36	0.29
Magnesium (Mg)	%	0.01	-	0.07	0.09
Sodium (Na)	%	0.01	-	0.03	0.02
Trace Elements					
Arsenic (As)	mg/kg	0.1	300	142	111
Boron (B)	mg/kg	10	20,000	<10	<10
Cadmium (Cd)	mg/kg	0.01	100	2.79	3.39
Chromium (Cr) - hexavalent	mg/kg	1	240	35	27
Cobalt (Co)	mg/kg	0.1	300	11.2	15.5
Copper (Cu)	mg/kg	0.2	20,000	26.1	30.3
Mercury (Hg)	mg/kg	0.01	400	0.04	0.13
Manganese (Mn)	mg/kg	5	9,000	611	1,040
Molybdenum (Mo)	mg/kg	0.05	-	0.9	0.7
Nickel (Ni)	mg/kg	0.2	800	22	29
Lead (Pb)	mg/kg	0.2	600	460	390
Antimony (Sb)	mg/kg	0.05	-	1.51	1.81
Selenium (Se)	mg/kg	0.2	700	0.4	0.2
Thorium (Th)	mg/kg	0.2	-	4.7	5.2
Uranium (U)	mg/kg	0.05	-	1.48	2.07
Vanadium (V)	mg/kg	1	-	4	3
Zinc (Zn)	mg/kg	2	30,000	193	274

Notes:

< indicates less than the laboratory limit of reporting. Shaded cells exceed applied guideline limit.

** Guideline level for Cr(VI) = 300 mg/kg. Guideline level for Cr(III) = 24 % of total Cr.

1. National Environmental Protection Council (NEPC) 2013. National Environmental Protection (Assessment of Site Contamination) Measure. Health-Based Investigation Level - HIL(C); public open spaces - recreational use.

Table B8: Multi-Element Test Results for Low Grade Ore and High Grade Ore

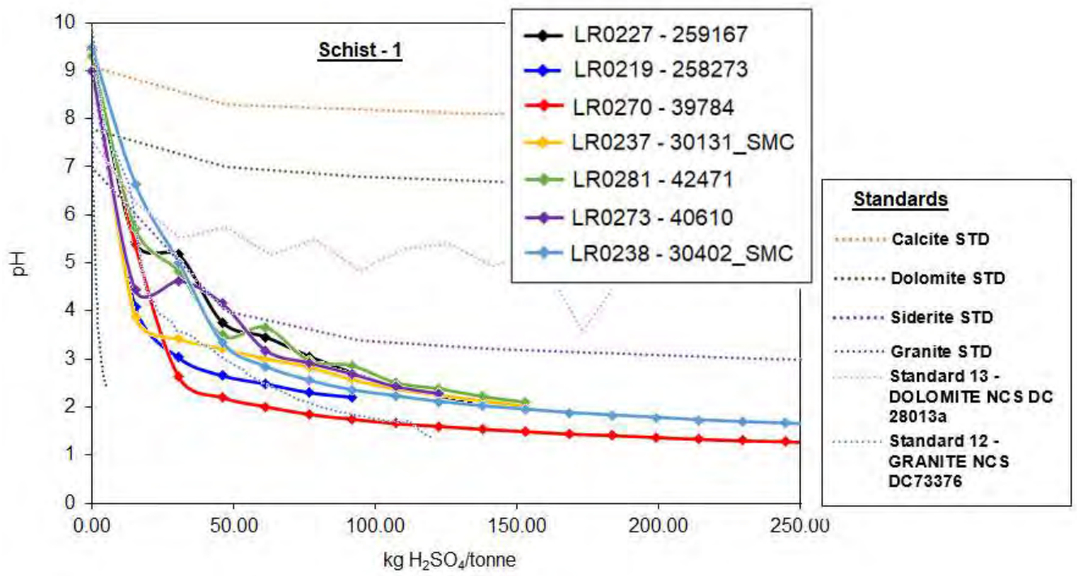
			RGS Sample ID-->	-	2021057_021
			Strategic Sample ID-->	1046C LDO324 34-58.6	1046G LD0324
			Sample Digestion Method-->	2-acid	2-acid
Parameters	Unit	Limit of Reporting	NEPC[1] Health-Based Investigation Level (HIL C)	Low grade ore	High grade ore
Major Elements					
Aluminium (Al)	%	0.01	-	0.50	0.42
Calcium (Ca)	%	0.01	-	0.81	0.41
Iron (Fe)	%	0.01	-	2.72	3.23
Potassium (K)	%	0.01	-	-	0.26
Magnesium (Mg)	%	0.01	-	0.45	0.33
Sodium (Na)	%	0.01	-	0.01	0.01
Major Elements					
Arsenic (As)	ppm	0.1	300	33.6	83.9
Boron (B)	ppm	10	20,000	<10	<10
Cadmium (Cd)	ppm	0.01	100	1.92	4.52
Chromium (Cr) - hexavalent	ppm	1	240	7	9
Cobalt (Co)	ppm	0.1	300	13.3	12.9
Copper (Cu)	ppm	0.2	20,000	59.8	53.8
Mercury (Hg)	ppm	0.01	400	0.02	0.06
Manganese (Mn)	ppm	5	9,000	711	313
Molybdenum (Mo)	ppm	0.05	-	3.63	0.51
Nickel (Ni)	ppm	0.2	800	23.5	27.2
Lead (Pb)	ppm	0.2	600	94.5	203
Antimony (Sb)	ppm	0.05	-	3.78	4.73
Selenium (Se)	ppm	0.2	700	<0.2	<0.2
Thorium (Th)	ppm	0.2	-	10.7	14.6
Uranium (U)	ppm	0.05	-	4.39	5.07
Vanadium (V)	ppm	1	-	6	5
Zinc (Zn)	ppm	2	30,000	151	264

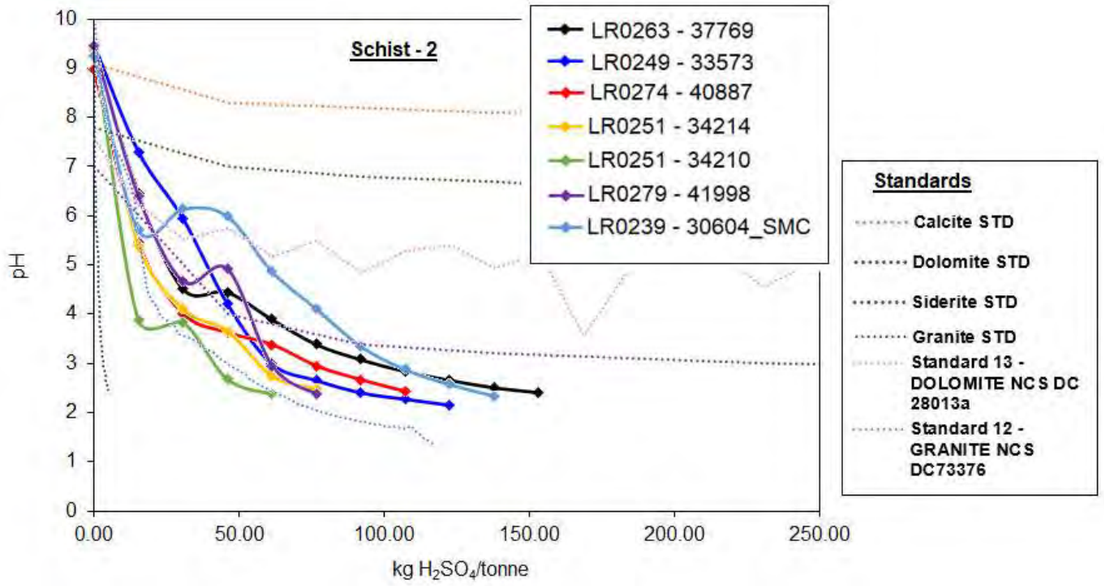
Notes:

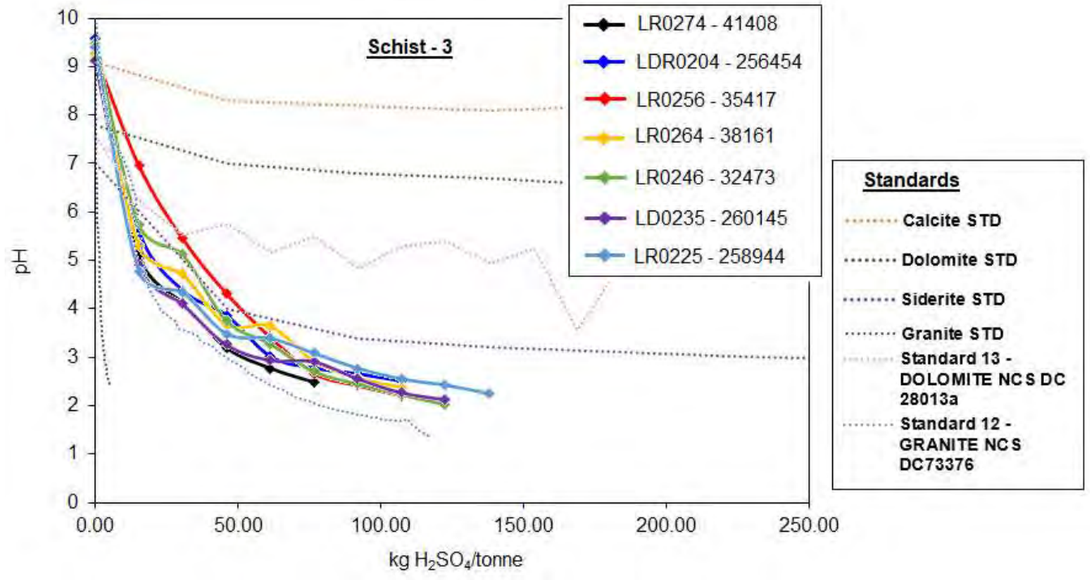
< indicates less than the laboratory limit of reporting. Shaded cells exceed applied guideline limit.

** Guideline level for Cr(VI) = 300 mg/kg. Guideline level for Cr(III) = 24 % of total Cr.

1. National Environmental Protection Council (NEPC) 2013. National Environmental Protection (Assessment of Site Contamination) Measure. Health-Based Investigation Level - HIL(C); public open spaces - recreational use.







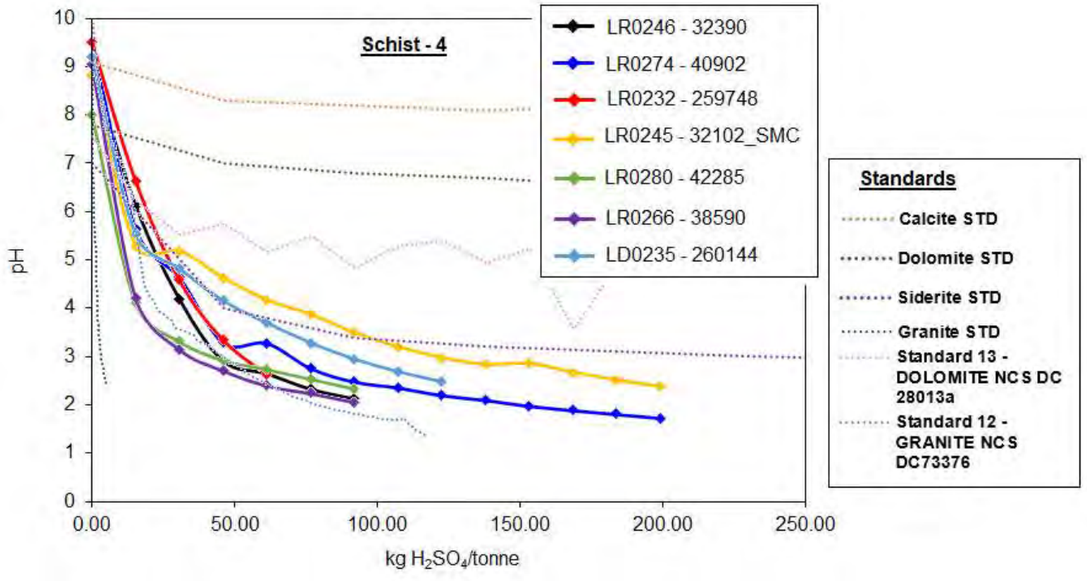


Figure B1: ABCC test results for 28 schist samples, BVS pit

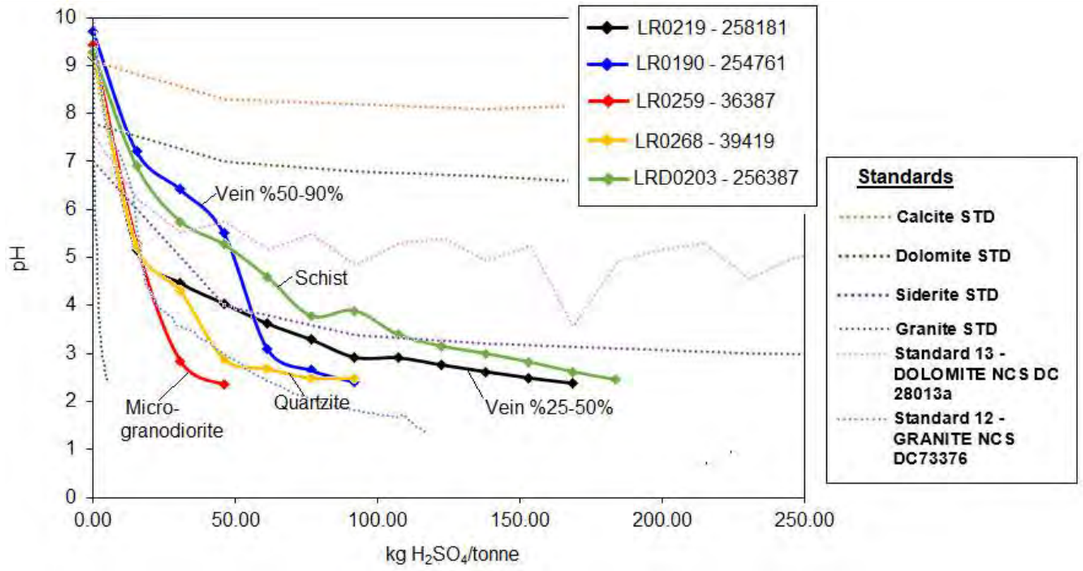


Figure B2: ABCC test results for 5 micro-granodiorite, quartzite, and vein samples from BVS pit

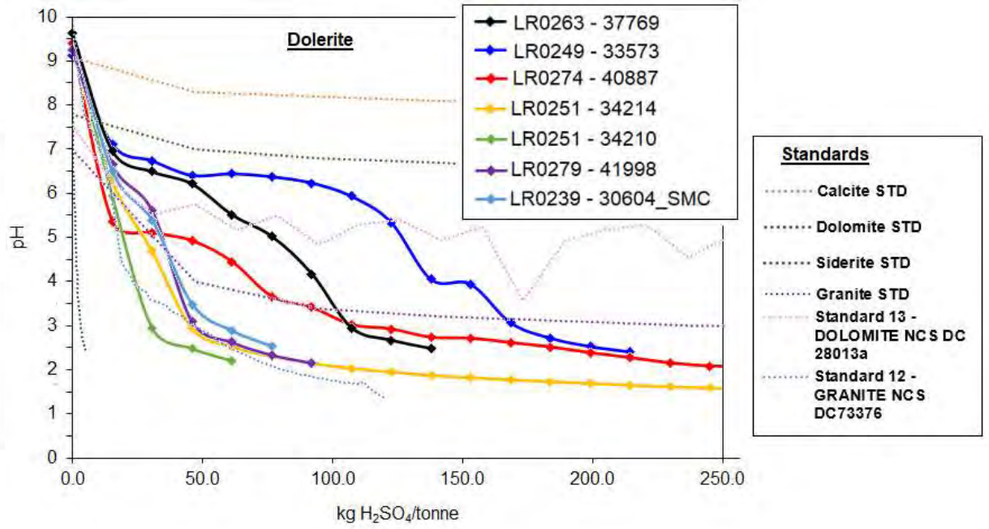


Figure B3: ABCC test results for dolerite samples from BVS pit

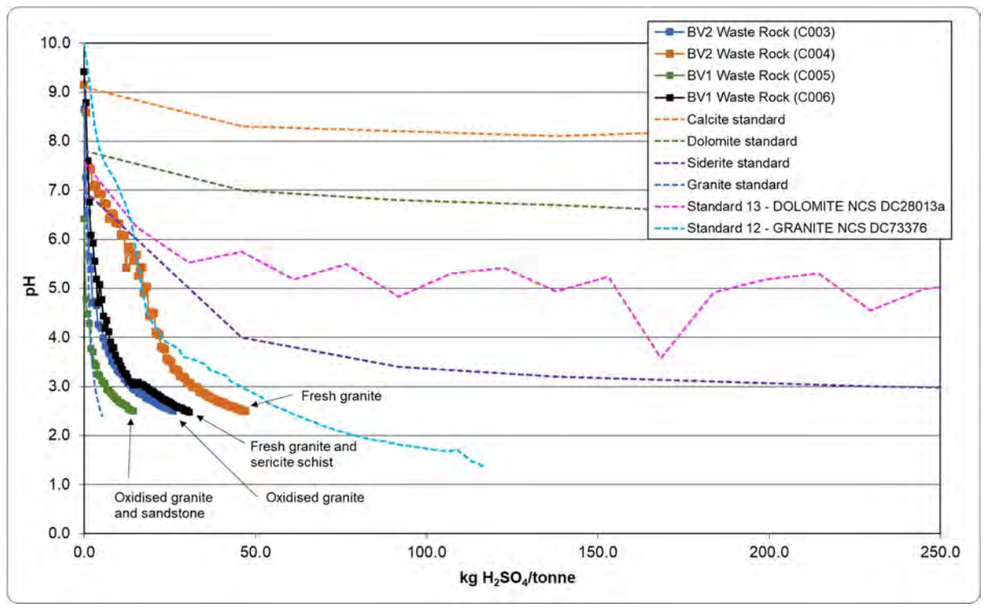


Figure B4: ABCC test results for composite waste rock samples from BV1 and BV2 pits

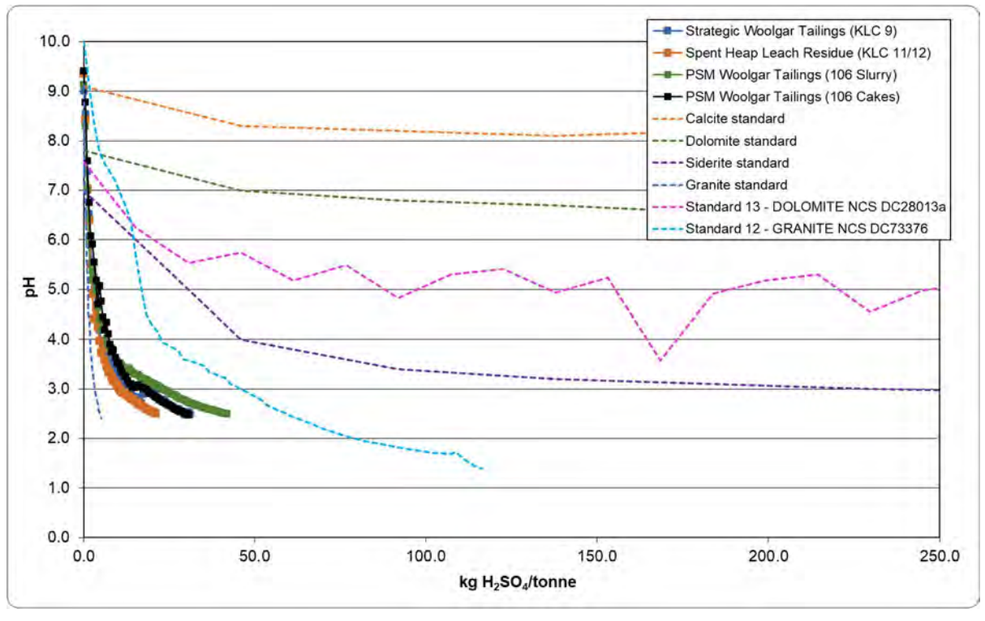


Figure B5: ABCC test results for tailings/spent heap leach residue samples

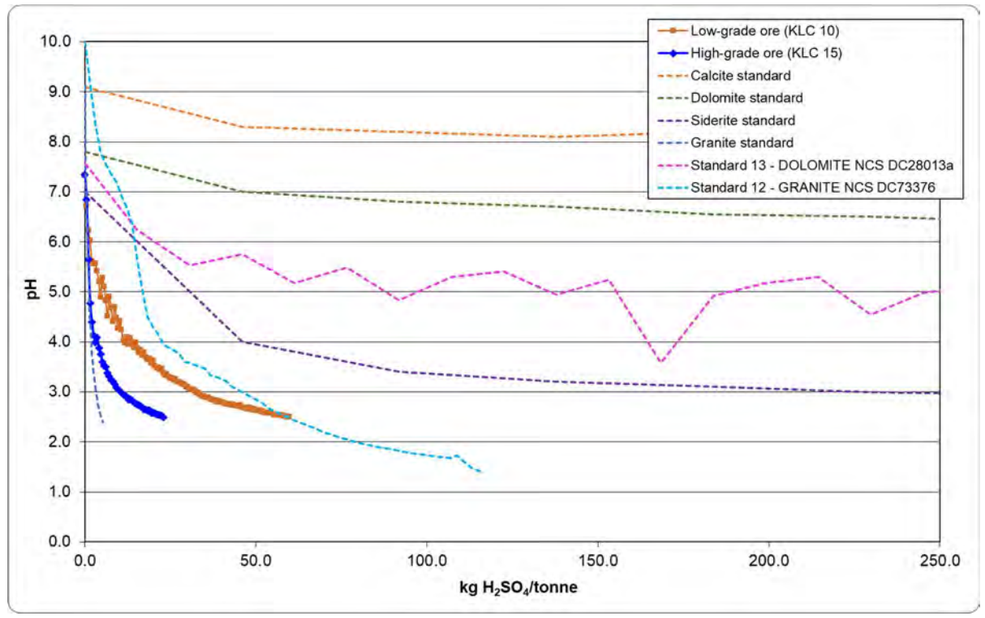


Figure B6: ABCC test results for ore samples

Attachment C

ALS and Trilab static geochemistry and physical data (Certificate of Analyses)

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1931710**	Page	: 1 of 22
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services EB
Address	: PO Box 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61-7-3243 7222
Project	: 2019009	Date Samples Received	: 26-Nov-2019 17:05
Order number	: ----	Date Analysis Commenced	: 04-Dec-2019
C-O-C number	: ----	Issue Date	: 05-Dec-2019 16:23
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 99		
No. of samples analysed	: 99		

ilac-MRA NATA
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. 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*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact 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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- **SPLIT WORK ORDER: It should be noted that ALS has split this work order over the following work orders EB1931710/ EB1931711 due to the size of the sample numbers. For any further information regarding this processing of samples please contact ALS client services division on ALSEnviro.Brisbane@alsglobal.com**
- ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	253742	253970	253978	253990	253991
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931710-001	EB1931710-002	EB1931710-003	EB1931710-004	EB1931710-005
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**55.2**	**83.5**	**45.1**	**55.9**	**73.4**
ANC as CaCO3	----	0.1	% CaCO3	**5.6**	**8.5**	**4.6**	**5.7**	**7.5**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	254009	254015	254187	254206	254207
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931710-006	EB1931710-007	EB1931710-008	EB1931710-009	EB1931710-010
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**72.7**	**53.5**	**63.2**	**51.6**	**48.1**
ANC as CaCO3	----	0.1	% CaCO3	**7.4**	**5.4**	**6.4**	**5.3**	**4.9**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)			Client sample ID	**254208**	**254235**	**254242**	**254369**	**254383**
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB1931710-011**	**EB1931710-012**	**EB1931710-013**	**EB1931710-014**	**EB1931710-015**
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**61.3**	**56.1**	**71.1**	**71.0**	**69.2**
ANC as CaCO3	----	0.1	% CaCO3	**6.2**	**5.7**	**7.2**	**7.2**	**7.0**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	254401	254416	254761	255049	255174
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931710-016	EB1931710-017	EB1931710-018	EB1931710-019	EB1931710-020
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**56.2**	**54.7**	**55.5**	**48.2**	**52.3**
ANC as CaCO3	----	0.1	% CaCO3	**5.7**	**5.6**	**5.6**	**4.9**	**5.3**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)			Client sample ID	**255189**	**255405**	**255602**	**255712**	**256327**
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB1931710-021**	**EB1931710-022**	**EB1931710-023**	**EB1931710-024**	**EB1931710-025**
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**69.2**	**51.6**	**53.7**	**55.6**	**72.2**
ANC as CaCO3	----	0.1	% CaCO3	**7.0**	**5.3**	**5.5**	**5.7**	**7.4**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)			Client sample ID	**256328**	**256387**	**256449**	**256454**	**257903**
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB1931710-026**	**EB1931710-027**	**EB1931710-028**	**EB1931710-029**	**EB1931710-030**
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**73.5**	**62.4**	**90.4**	**61.8**	**52.6**
ANC as CaCO3	----	0.1	% CaCO3	**7.5**	**6.4**	**9.2**	**6.3**	**5.4**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)			Client sample ID	**257919**	**257926**	**257928**	**258144**	**258165**
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB1931710-031**	**EB1931710-032**	**EB1931710-033**	**EB1931710-034**	**EB1931710-035**
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**80.3**	**95.4**	**65.4**	**62.0**	**106**
ANC as CaCO3	----	0.1	% CaCO3	**8.2**	**9.7**	**6.7**	**6.3**	**10.9**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)			Client sample ID	**258181**	**258205**	**258236**	**258238**	**258248**
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB1931710-036**	**EB1931710-037**	**EB1931710-038**	**EB1931710-039**	**EB1931710-040**
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**87.8**	**47.3**	**50.9**	**51.8**	**58.3**
ANC as CaCO3	----	0.1	% CaCO3	**9.0**	**4.8**	**5.2**	**5.3**	**5.9**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)			Client sample ID	**258263**	**258273**	**258367**	**258374**	**258617**
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB1931710-041**	**EB1931710-042**	**EB1931710-043**	**EB1931710-044**	**EB1931710-045**
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**56.6**	**104**	**52.1**	**62.1**	**59.8**
ANC as CaCO3	----	0.1	% CaCO3	**5.8**	**10.6**	**5.3**	**6.3**	**6.1**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)			Client sample ID	**258629**	**258667**	**258671**	**258923**	**258927**
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB1931710-046**	**EB1931710-047**	**EB1931710-048**	**EB1931710-049**	**EB1931710-050**
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**53.4**	**53.7**	**66.4**	**51.4**	**59.8**
ANC as CaCO3	----	0.1	% CaCO3	**5.4**	**5.5**	**6.8**	**5.2**	**6.1**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	258944	259035	259037	259074	259167
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931710-051	EB1931710-052	EB1931710-053	EB1931710-054	EB1931710-055
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**57.4**	**59.9**	**53.1**	**65.5**	**101**
ANC as CaCO3	----	0.1	% CaCO3	**5.8**	**6.1**	**5.4**	**6.7**	**10.3**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	259168	259176	259209	259255	259262
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931710-056	EB1931710-057	EB1931710-058	EB1931710-059	EB1931710-060
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**89.6**	**71.4**	**57.4**	**60.1**	**118**
ANC as CaCO3	----	0.1	% CaCO3	**9.1**	**7.3**	**5.8**	**6.1**	**12.0**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	259263	259290	259304	259325	259559
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931710-061	EB1931710-062	EB1931710-063	EB1931710-064	EB1931710-065
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**76.5**	**64.1**	**57.7**	**68.9**	**51.0**
ANC as CaCO3	----	0.1	% CaCO3	**7.8**	**6.5**	**5.9**	**7.0**	**5.2**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)			Client sample ID	**259604**	**259723**	**259748**	**259819**	**259935**
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB1931710-066**	**EB1931710-067**	**EB1931710-068**	**EB1931710-069**	**EB1931710-070**
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**42.0**	**48.5**	**43.7**	**56.5**	**69.7**
ANC as CaCO3	----	0.1	% CaCO3	**4.3**	**5.0**	**4.5**	**5.8**	**7.1**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	260144	260145	260174	260247	260605
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931710-071	EB1931710-072	EB1931710-073	EB1931710-074	EB1931710-075
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**49.1**	**54.1**	**100**	**61.5**	**72.0**
ANC as CaCO3	----	0.1	% CaCO3	**5.0**	**5.5**	**10.2**	**6.3**	**7.3**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	260608	260614	260619	260631	260712
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931710-076	EB1931710-077	EB1931710-078	EB1931710-079	EB1931710-080
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**62.5**	**82.0**	**104**	**68.4**	**49.8**
ANC as CaCO3	----	0.1	% CaCO3	**6.4**	**8.4**	**10.6**	**7.0**	**5.1**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	260748	260767	30081_SMC	30092_SMC	30131_SMC
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931710-081	EB1931710-082	EB1931710-083	EB1931710-084	EB1931710-085
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**50.6**	**70.7**	**46.1**	**51.4**	**65.8**
ANC as CaCO3	----	0.1	% CaCO3	**5.2**	**7.2**	**4.7**	**5.2**	**6.7**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	30170_SMC	30341_SMC	30344_SMC	30402_SMC	30424_SMC
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931710-086	EB1931710-087	EB1931710-088	EB1931710-089	EB1931710-090
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**76.9**	**49.3**	**43.9**	**59.8**	**92.8**
ANC as CaCO3	----	0.1	% CaCO3	**7.8**	**5.0**	**4.5**	**6.1**	**9.5**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	30602_SMC	30604_SMC	30695_SMC	30708_SMC	30736_SMC
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931710-091	EB1931710-092	EB1931710-093	EB1931710-094	EB1931710-095
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**61.8**	**47.6**	**61.8**	**63.3**	**43.5**
ANC as CaCO3	----	0.1	% CaCO3	**6.3**	**4.8**	**6.3**	**6.4**	**4.4**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	30968_SMC	32009_SMC	32024_SMC	32058_SMC	----
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	----
Compound	CAS Number	LOR	Unit	EB1931710-096	EB1931710-097	EB1931710-098	EB1931710-099	--------
				Result	Result	Result	Result	----
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**65.6**	**54.7**	**86.1**	**121**	**----**
ANC as CaCO3	----	0.1	% CaCO3	**6.7**	**5.6**	**8.8**	**12.4**	**----**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**----**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1931711**	Page	: 1 of 22
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services EB
Address	: PO Box 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61-7-3243 7222
Project	: 2019009	Date Samples Received	: 26-Nov-2019 17:07
Order number	: ----	Date Analysis Commenced	: 06-Dec-2019
C-O-C number	: ----	Issue Date	: 09-Dec-2019 12:33
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 99		
No. of samples analysed	: 97		

ilac-MRA NATA
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. 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*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact 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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- **SPLIT WORK ORDER: It should be noted that ALS has split this work order over the following work orders EB1931710/ EB1931711 due to the size of the sample numbers. For any further information regarding this processing of samples please contact ALS client services division on ALSEnviro.Brisbane@alsglobal.com**
- ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	32059_SMC	32084_SMC	32102_SMC	32142_SMC	32390
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-001	EB1931711-002	EB1931711-003	EB1931711-004	EB1931711-005
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**50.1**	**57.2**	**78.4**	**83.3**	**41.1**
ANC as CaCO3	----	0.1	% CaCO3	**5.1**	**5.8**	**8.0**	**8.5**	**4.2**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	32398	32434	32450	32473	32517
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-006	EB1931711-007	EB1931711-008	EB1931711-009	EB1931711-010
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**55.3**	**47.2**	**51.4**	**40.0**	**66.8**
ANC as CaCO3	----	0.1	% CaCO3	**5.6**	**4.8**	**5.2**	**4.1**	**6.8**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	32523	32706	32842	33143	33266
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-011	EB1931711-012	EB1931711-013	EB1931711-014	EB1931711-015
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**44.3**	**45.9**	**41.1**	**176**	**56.0**
ANC as CaCO3	----	0.1	% CaCO3	**4.5**	**4.7**	**4.2**	**18.0**	**5.7**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**3**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	33567	33571	33573	33863	33967
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-016	EB1931711-017	EB1931711-018	EB1931711-019	EB1931711-020
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**162**	**165**	**148**	**52.0**	**119**
ANC as CaCO3	----	0.1	% CaCO3	**16.5**	**16.8**	**15.1**	**5.3**	**12.1**
Fizz Rating	----	0	Fizz Unit	**3**	**3**	**3**	**2**	**2**

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)			Client sample ID	**34109**	**34119**	**34210**	**34214**	**34256**
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB1931711-021**	**EB1931711-022**	**EB1931711-023**	**EB1931711-024**	**EB1931711-025**
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**42.7**	**51.5**	**55.0**	**139**	**64.7**
ANC as CaCO3	----	0.1	% CaCO3	**4.4**	**5.2**	**5.6**	**14.2**	**6.6**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**3**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	34257	35085	35396	35417	35468
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-026	EB1931711-027	EB1931711-028	EB1931711-029	EB1931711-030
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**51.4**	**134**	**59.3**	**49.4**	**40.9**
ANC as CaCO3	----	0.1	% CaCO3	**5.2**	**13.7**	**6.0**	**5.0**	**4.2**
Fizz Rating	----	0	Fizz Unit	**2**	**3**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)			Client sample ID	**35675**	**35833**	**36264**	**36387**	**36388**
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB1931711-031**	**EB1931711-032**	**EB1931711-033**	**EB1931711-034**	**EB1931711-035**
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**37.8**	**54.4**	**52.7**	**38.7**	**46.4**
ANC as CaCO3	----	0.1	% CaCO3	**3.8**	**5.5**	**5.4**	**3.9**	**4.7**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	36431	36446	37556	37769	37822
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-036	EB1931711-037	EB1931711-038	EB1931711-039	EB1931711-040
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**93.3**	**35.6**	**76.2**	**181**	**36.0**
ANC as CaCO3	----	0.1	% CaCO3	**9.5**	**3.6**	**7.8**	**18.5**	**3.7**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**3**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	37823	37843	37851	37861	38114
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-041	EB1931711-042	EB1931711-043	EB1931711-044	EB1931711-045
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**36.1**	**56.6**	**44.5**	**43.2**	**43.0**
ANC as CaCO3	----	0.1	% CaCO3	**3.7**	**5.8**	**4.5**	**4.4**	**4.4**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	38132	38137	38161	38356	38377
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-046	EB1931711-047	EB1931711-048	EB1931711-049	EB1931711-050
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**62.9**	**45.8**	**52.9**	**46.3**	**62.8**
ANC as CaCO3	----	0.1	% CaCO3	**6.4**	**4.7**	**5.4**	**4.7**	**6.4**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	38389	38399	38424	38590	38619
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-051	EB1931711-052	EB1931711-053	EB1931711-054	EB1931711-055
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**53.7**	**58.1**	**69.7**	**30.4**	**44.0**
ANC as CaCO3	----	0.1	% CaCO3	**5.5**	**5.9**	**7.1**	**3.1**	**4.5**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	38667	38826	38843	38858	38894
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-056	EB1931711-057	EB1931711-058	EB1931711-059	EB1931711-060
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**52.7**	**144**	**47.8**	**48.9**	**45.9**
ANC as CaCO3	----	0.1	% CaCO3	**5.4**	**14.7**	**4.9**	**5.0**	**4.7**
Fizz Rating	----	0	Fizz Unit	**2**	**3**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	39278	39287	39337	39351	39403
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-061	EB1931711-062	EB1931711-063	EB1931711-064	EB1931711-065
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**114**	**49.3**	**36.7**	**74.6**	**68.6**
ANC as CaCO3	----	0.1	% CaCO3	**11.6**	**5.0**	**3.7**	**7.6**	**7.0**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	39407	39419	39429	39784	39854
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-066	EB1931711-067	EB1931711-068	EB1931711-069	EB1931711-070
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**34.6**	**42.2**	**56.6**	**47.2**	**40.5**
ANC as CaCO3	----	0.1	% CaCO3	**3.5**	**4.3**	**5.8**	**4.8**	**4.1**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	40610	40685	40855	40856	40876
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-071	EB1931711-072	EB1931711-075	EB1931711-076	EB1931711-077
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**68.2**	**53.2**	**101**	**134**	**122**
ANC as CaCO3	----	0.1	% CaCO3	**7.0**	**5.4**	**10.3**	**13.7**	**12.4**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**3**	**3**	**3**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	40887	40902	40910	40916	40978
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-078	EB1931711-079	EB1931711-080	EB1931711-081	EB1931711-082
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**156**	**46.3**	**49.0**	**37.9**	**40.5**
ANC as CaCO3	----	0.1	% CaCO3	**16.0**	**4.7**	**5.0**	**3.9**	**4.1**
Fizz Rating	----	0	Fizz Unit	**3**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	41012	41048	41096	41162	41998
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-083	EB1931711-084	EB1931711-085	EB1931711-086	EB1931711-087
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**39.1**	**40.7**	**43.2**	**38.1**	**59.4**
ANC as CaCO3	----	0.1	% CaCO3	**4.0**	**4.2**	**4.4**	**3.9**	**6.0**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	42045	42252	42256	42285	42302
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-088	EB1931711-089	EB1931711-090	EB1931711-091	EB1931711-092
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**44.7**	**76.2**	**39.0**	**35.0**	**34.6**
ANC as CaCO3	----	0.1	% CaCO3	**4.6**	**7.8**	**4.0**	**3.6**	**3.5**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	42471	42658	42716	42977	43141
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00	26-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1931711-093	EB1931711-094	EB1931711-096	EB1931711-097	EB1931711-098
				Result	Result	Result	Result	Result
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**57.8**	**54.8**	**119**	**37.5**	**37.3**
ANC as CaCO3	----	0.1	% CaCO3	**5.9**	**5.6**	**12.1**	**3.8**	**3.8**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**3**	**2**	**2**

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)			Client sample ID	**43142**	**43323**	**----**	**----**	**----**
			Client sampling date / time	26-Nov-2019 00:00	26-Nov-2019 00:00	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB1931711-099**	**EB1931711-100**	**--------**	**--------**	**--------**
				Result	Result	----	----	----
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**46.5**	**44.3**	**----**	**----**	**----**
ANC as CaCO3	----	0.1	% CaCO3	**4.7**	**4.5**	**----**	**----**	**----**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**----**	**----**	**----**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1932792**	Page	: 1 of 5
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG MADDOCKS	Contact	: Customer Services EB
Address	: PO Box 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61-7-3243 7222
Project	: 2019009 Strategic Woolgar	Date Samples Received	: 06-Dec-2019 08:35
Order number	: ----	Date Analysis Commenced	: 10-Dec-2019
C-O-C number	: ----	Issue Date	: 12-Dec-2019 14:24
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 14		
No. of samples analysed	: 14		

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. 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*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact 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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Client sample ID	RGS01 LD0317 39 45	RGS02 LD0317 53.97 58.69	RGS04 LD017 111 117.2	RGS05 LD0318 169 175	RGS06 LD0319 49 54
				Client sampling date / time	05-Dec-2019 00:00	05-Dec-2019 00:00	05-Dec-2019 00:00	05-Dec-2019 00:00	05-Dec-2019 00:00
					EB1932792-001	EB1932792-002	EB1932792-003	EB1932792-004	EB1932792-005
					Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		**9.0**	**9.0**	**9.2**	**9.6**	**9.6**
EA009: Nett Acid Production Potential									
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-45.7**	**-109**	**-37.2**	**-27.8**	**-73.4**
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		**352**	**272**	**262**	**157**	**204**
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**50.0**	**119**	**58.0**	**33.9**	**75.2**
ANC as CaCO3	----	0.1	% CaCO3		**5.1**	**12.1**	**5.9**	**3.4**	**7.7**
Fizz Rating	----	0	Fizz Unit		**2**	**2**	**2**	**2**	**2**
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.14**	**0.32**	**0.68**	**0.20**	**0.06**

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Client sample ID	RGS07 LD0320 43.5 49.59	RGS08 LD0320 170 176.06	RGS09 LD0321 38.73 46	RGS10 LD0317 226 231.42	RGS11 LD0318 42.32 47
				Client sampling date / time	05-Dec-2019 00:00	05-Dec-2019 00:00	05-Dec-2019 00:00	05-Dec-2019 00:00	05-Dec-2019 00:00
					EB1932792-006	EB1932792-007	EB1932792-008	EB1932792-009	EB1932792-010
					Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		**9.5**	**8.8**	**9.4**	**9.5**	**9.2**
EA009: Nett Acid Production Potential									
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-10.0**	**-72.0**	**-25.0**	**-47.0**	**-14.7**
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		**154**	**593**	**214**	**200**	**258**
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**15.5**	**106**	**38.2**	**49.5**	**36.7**
ANC as CaCO3	----	0.1	% CaCO3		**1.6**	**10.8**	**3.9**	**5.0**	**3.7**
Fizz Rating	----	0	Fizz Unit		**1**	**2**	**2**	**2**	**2**
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.18**	**1.11**	**0.43**	**0.08**	**0.72**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	RGS12 LD0318 93.7 96.58	RGS13 LD0320 107.51 113	RGS14 LD0321 179 185.69	RGS16 LD0324 176.43 180.64	----
			Client sampling date / time	05-Dec-2019 00:00	05-Dec-2019 00:00	05-Dec-2019 00:00	05-Dec-2019 00:00	----
Compound	CAS Number	LOR	Unit	EB1932792-011	EB1932792-012	EB1932792-013	EB1932792-014	--------
				Result	Result	Result	Result	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	8.9	9.5	9.4	9.5	----
EA009: Nett Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	11.4	-33.3	-11.6	-52.8	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	415	166	188	209	----
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	43.4	35.1	18.0	55.6	----
ANC as CaCO3	----	0.1	% CaCO3	4.4	3.6	1.8	5.7	----
Fizz Rating	----	0	Fizz Unit	2	2	1	2	----
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	1.79	0.06	0.21	0.09	----

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CERTIFICATE OF ANALYSIS

Work Order	: **EB1934009**	Page	: 1 of 4
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: LAURA JACKSON	Contact	: Carsten Emrich
Address	: PO Box 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61 7 3552 8616
Project	: 2019009 Strategic Woolgar	Date Samples Received	: 17-Dec-2019 17:52
Order number	: ----	Date Analysis Commenced	: 30-Dec-2019
C-O-C number	: ----	Issue Date	: 02-Jan-2020 11:10
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 8		
No. of samples analysed	: 8		

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Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	RGS01	RGS02	RGS06	RGS08	RGS09
			Client sampling date / time	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00
Compound	CAS Number	LOR	Unit	EB1934009-001	EB1934009-002	EB1934009-003	EB1934009-004	EB1934009-005
				Result	Result	Result	Result	Result
EA011A: Net Acid Generation - Sequential								
NAG at pH 4.5 (total)	----	0.1	kg H2SO4/t	<0.1	<0.1	<0.1	<0.1	<0.1
NAG at pH 7.0 (total)	----	0.1	kg H2SO4/t	<0.1	<0.1	<0.1	<0.1	<0.1
EA011S: pH OX (Stage 1)								
pH OX (Stage 1)	----	0.1	pH Unit	**9.9**	**10.4**	**9.9**	**8.9**	**9.3**
NAG at pH 4.5 (Stage 1)	----	0.1	kg H2SO4/t	<0.1	<0.1	<0.1	<0.1	<0.1
NAG at pH 7.0 (Stage 1)	----	0.1	kg H2SO4/t	<0.1	<0.1	<0.1	<0.1	<0.1
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	**0.129**	**0.301**	**0.055**	**0.802**	**0.371**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)				Client sample ID	RGS11	RGS12	RGS16	----	----
				Client sampling date / time	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1934009-006	EB1934009-007	EB1934009-008	--------	--------
					Result	Result	Result	----	----
EA011A: Net Acid Generation - Sequential									
NAG at pH 4.5 (total)	----	0.1	kg H2SO4/t		<0.1	<0.1	<0.1	----	----
NAG at pH 7.0 (total)	----	0.1	kg H2SO4/t		<0.1	<0.1	<0.1	----	----
EA011S: pH OX (Stage 1)									
pH OX (Stage 1)	----	0.1	pH Unit		**9.3**	**8.9**	**10.2**	----	----
NAG at pH 4.5 (Stage 1)	----	0.1	kg H2SO4/t		<0.1	<0.1	<0.1	----	----
NAG at pH 7.0 (Stage 1)	----	0.1	kg H2SO4/t		<0.1	<0.1	<0.1	----	----
EA026 : Chromium Reducible Sulfur									
Chromium Reducible Sulphur	----	0.005	%		**0.554**	**1.36**	**0.037**	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2002955**	Page	: 1 of 3
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG MADDOCKS	Contact	: Carsten Emrich
Address	: PO Box 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009 Strategic	Date Samples Received	: 04-Feb-2020 16:27
Order number	: ----	Date Analysis Commenced	: 11-Feb-2020
C-O-C number	: ----	Issue Date	: 20-Feb-2020 15:41
Sampler	: VERONICA CANALES		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 2		
No. of samples analysed	: 2		

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Signatories

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Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Merrin Avery	Supervisor - Inorganic	Newcastle - Inorganics, Mayfield West, NSW
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

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.

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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.
~ = Indicates an estimated value.

- EA031 (Saturated Paste pH): NATA accreditation does not cover the performance of this service.
- EA032 (Saturated Paste EC): NATA accreditation does not cover the performance of this service.
- ALS is not NATA accredited for the analysis of Exchangeable Aluminium and Exchange Acidity in soils when performed under ALS Method ED005.
- ALS is not NATA accredited for the analysis of Exchangeable Cations on Alkaline Soils when performed under ALS Method ED006.
- ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.
- ED007 and ED008: When Exchangeable Al is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity (H+ + Al3+).

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Strategic Tailings	pH and EC of DI water	----	----	----
			Client sampling date / time	04-Feb-2020 00:00	10-Feb-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2002955-001	EB2002955-002	--------	--------	--------
				Result	Result	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.0**	**6.8**	----	----	----
EA009: Nett Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-6.0**	----	----	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**132**	<1	----	----	----
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**26.8**	----	----	----	----
ANC as CaCO3	----	0.1	% CaCO3	**2.7**	----	----	----	----
Fizz Rating	----	0	Fizz Unit	**1**	----	----	----	----
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	**0.554**	----	----	----	----
EA031: pH (saturated paste)								
ø pH (Saturated Paste)	----	0.1	pH Unit	**8.1**	----	----	----	----
EA032: Electrical Conductivity (saturated paste)								
ø Electrical Conductivity (Saturated Paste)	----	1	µS/cm	**440**	----	----	----	----
ED006: Exchangeable Cations on Alkaline Soils								
ø Exchangeable Calcium	----	0.2	meq/100g	**1.1**	----	----	----	----
ø Exchangeable Magnesium	----	0.2	meq/100g	**0.6**	----	----	----	----
ø Exchangeable Potassium	----	0.2	meq/100g	**0.6**	----	----	----	----
ø Exchangeable Sodium	----	0.2	meq/100g	<0.2	----	----	----	----
ø Cation Exchange Capacity	----	0.2	meq/100g	**2.2**	----	----	----	----
ø Exchangeable Sodium Percent	----	0.2	%	<0.2	----	----	----	----
ø Calcium/Magnesium Ratio	----	0.2	-	**1.9**	----	----	----	----
ø Magnesium/Potassium Ratio	----	0.2	-	**1.0**	----	----	----	----
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.68**	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	**1170**	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2018430**	Page	: 1 of 4
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG MADDOCKS	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009 Strategic Woolgar	Date Samples Received	: 08-Jul-2020 10:24
Order number	: ----	Date Analysis Commenced	: 15-Jul-2020
C-O-C number	: ----	Issue Date	: 28-Jul-2020 12:34
Sampler	: LEXI K NG		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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- Analytical Results

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Signatories

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Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.
- EA046 ABCC: NATA Acreditation does not cover the performance of this service.

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)				Client sample ID	1046C LDO324 34-58.6m Low Grade Ore	----	----	----	----
				Client sampling date / time	22-Jun-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2018430-001	--------	--------	--------	--------
					Result	----	----	----	----
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		**8.0**	----	----	----	----
EA009: Net Acid Production Potential									
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-11.1**	----	----	----	----
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		**187**	----	----	----	----
EA011: Net Acid Generation									
pH (OX)	----	0.1	pH Unit		**8.1**	----	----	----	----
NAG (pH 4.5)	----	0.1	kg H2SO4/t		<0.1	----	----	----	----
NAG (pH 7.0)	----	0.1	kg H2SO4/t		<0.1	----	----	----	----
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**35.6**	----	----	----	----
ANC as CaCO3	----	0.1	% CaCO3		**3.6**	----	----	----	----
Fizz Rating	----	0	Fizz Unit		**2**	----	----	----	----
EA026 : Chromium Reducible Sulfur									
Chromium Reducible Sulphur	----	0.005	%		**0.658**	----	----	----	----
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.80**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	pH and EC of DI Water	----	----	----	----
				Client sampling date / time	22-Jun-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2018430-002	--------	--------	--------	--------
					Result	----	----	----	----
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		**5.6**	----	----	----	----
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		<1	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2127866**	Page	: 1 of 2
Client	: **RGS ENVIRONMENTAL CONSULTANTS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: ALAN ROBERTSON	Contact	: Customer Services EB
Address	: 3/30 LENSWORTH STREET COOPERS PLAINS 4107	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: 07 3344 1222	Telephone	: +61-7-3243 7222
Project	: 2021057 Big Vein South	Date Samples Received	: 30-Sep-2021 16:35
Order number	: ----	Date Analysis Commenced	: 05-Oct-2021
C-O-C number	: ----	Issue Date	: 08-Oct-2021 12:40
Sampler	: PRIYA RAJENDRAN		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		

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Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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~ = Indicates an estimated value.

- ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Sample ID	**2021057_C001 HLBRT-1_25mm**	**2021057_C002 HLBRT-2_12.5mm**	**pH and EC of DI water**	**----**	**----**
			Sampling date / time	30-Sep-2021 00:00	30-Sep-2021 00:00	30-Sep-2021 00:00	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB2127866-001**	**EB2127866-002**	**EB2127866-003**	**--------**	**--------**
				Result	Result	Result	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**8.8**	**9.1**	**5.7**	**----**	**----**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**22.6**	**10.2**	**----**	**----**	**----**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**267**	**158**	<1	**----**	**----**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**11.4**	**13.7**	**----**	**----**	**----**
ANC as CaCO3	----	0.1	% CaCO3	**1.2**	**1.4**	**----**	**----**	**----**
Fizz Rating	----	0	Fizz Unit	**1**	**1**	**----**	**----**	**----**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**1.11**	**0.78**	**----**	**----**	**----**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2128757**	Page	: 1 of 7
Client	: **RGS ENVIRONMENTAL CONSULTANTS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: ALAN ROBERTSON	Contact	: Customer Services EB
Address	: 3/30 LENSWORTH STREET COOPERS PLAINS 4107	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: 07 3344 1222	Telephone	: +61-7-3243 7222
Project	: 2021057 Big Vein South	Date Samples Received	: 11-Oct-2021 14:43
Order number	: ----	Date Analysis Commenced	: 13-Oct-2021
C-O-C number	: ----	Issue Date	: 15-Oct-2021 14:10
Sampler	: ASITHA JAYASINGHE		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 19		
No. of samples analysed	: 19		

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Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

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- ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	2021057_003 521323 LR0428 3	2021057_004 521336 LR0428 16	2021057_005 521362 LR0428 40	2021057_006 521597 LR0434 6	2021057_007 521621 LR0434 28
			Sampling date / time	08-Oct-2021 00:00	08-Oct-2021 00:00	08-Oct-2021 00:00	08-Oct-2021 00:00	08-Oct-2021 00:00
Compound	CAS Number	LOR	Unit	EB2128757-001	EB2128757-002	EB2128757-003	EB2128757-004	EB2128757-005
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.7**	**9.1**	**9.7**	**9.4**	**9.7**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-7.7**	**-9.3**	**-19.3**	**-7.1**	**-46.1**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**145**	**69**	**70**	**236**	**81**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**8.3**	**9.3**	**23.3**	**8.0**	**59.0**
ANC as CaCO3	----	0.1	% CaCO3	**0.8**	**0.9**	**2.4**	**0.8**	**6.0**
Fizz Rating	----	0	Fizz Unit	**0**	**0**	**1**	**0**	**2**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.02**	<0.01	**0.13**	**0.03**	**0.42**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	2021057_008 521638 LR0434 45	2021057_009 521646 LR0434 52	2021057_010 518397 LR0411R 2	2021057_011 518398 LR0411R 3	2021057_012 518417 LR0411R 21
			Sampling date / time	08-Oct-2021 00:00	08-Oct-2021 00:00	08-Oct-2021 00:00	08-Oct-2021 00:00	08-Oct-2021 00:00
Compound	CAS Number	LOR	Unit	EB2128757-006	EB2128757-007	EB2128757-008	EB2128757-009	EB2128757-010
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	9.8	9.8	5.6	5.6	8.1
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	-20.5	-21.9	-3.1	-2.1	-7.1
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	71	70	12	12	19
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	22.3	25.3	3.1	2.1	7.1
ANC as CaCO3	----	0.1	% CaCO3	2.3	2.6	0.3	0.2	0.7
Fizz Rating	----	0	Fizz Unit	1	1	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.06	0.11	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	2021057_013 518430 LR0411R 33	2021057_014 518445 LR0411R 47	2021057_015 518463 LR0411R 64	2021057_016 518608 LR0417 6	2021057_017 518622 LR0417 19
			Sampling date / time	08-Oct-2021 00:00	08-Oct-2021 00:00	08-Oct-2021 00:00	08-Oct-2021 00:00	08-Oct-2021 00:00
Compound	CAS Number	LOR	Unit	EB2128757-011	EB2128757-012	EB2128757-013	EB2128757-014	EB2128757-015
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.5**	**9.6**	**9.5**	**6.3**	**8.4**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-10.2**	**-18.7**	**-174**	**-1.5**	**-9.7**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**65**	**72**	**68**	**19**	**21**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**12.3**	**19.9**	**180**	**1.8**	**9.7**
ANC as CaCO3	----	0.1	% CaCO3	**1.2**	**2.0**	**18.4**	**0.2**	**1.0**
Fizz Rating	----	0	Fizz Unit	**1**	**1**	**3**	**0**	**1**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.07**	**0.04**	**0.20**	**0.01**	<0.01

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	2021057_018 518652 LR0417 48	2021057_019 518669 LR0417 64	2021057_020 518684 LR0417 78	----	----
			Sampling date / time	08-Oct-2021 00:00	08-Oct-2021 00:00	08-Oct-2021 00:00	----	----
Compound	CAS Number	LOR	Unit	EB2128757-016	EB2128757-017	EB2128757-018	--------	--------
				Result	Result	Result	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.6**	**9.5**	**9.7**	**----**	**----**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-21.8**	**-34.2**	**-42.9**	**----**	**----**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**66**	**71**	**66**	**----**	**----**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**23.6**	**41.8**	**46.0**	**----**	**----**
ANC as CaCO3	----	0.1	% CaCO3	**2.4**	**4.3**	**4.7**	**----**	**----**
Fizz Rating	----	0	Fizz Unit	**1**	**2**	**2**	**----**	**----**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.06**	**0.25**	**0.10**	**----**	**----**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **SOIL**)			Sample ID	**DI Water for EC PH**	**----**	**----**	**----**	**----**
			Sampling date / time	11-Oct-2021 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB2128757-019**	**--------**	**--------**	**--------**	**--------**
				Result	----	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**5.9**	**----**	**----**	**----**	**----**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	<1	**----**	**----**	**----**	**----**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2128814**	Page	: 1 of 2
Client	: **RGS ENVIRONMENTAL CONSULTANTS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: ALAN ROBERTSON	Contact	: Customer Services EB
Address	: 3/30 LENSWORTH STREET COOPERS PLAINS 4107	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: 07 3344 1222	Telephone	: +61-7-3243 7222
Project	: 2021057 Big Vein South	Date Samples Received	: 11-Oct-2021 13:49
Order number	: ----	Date Analysis Commenced	: 18-Oct-2021
C-O-C number	: ----	Issue Date	: 18-Oct-2021 15:35
Sampler	: PRIYA RAJENDRAN		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 2		
No. of samples analysed	: 2		

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Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Sample ID	**2021057_C001 HLBRT-1_25mm**	**2021057_C002 HLBRT-2_12.5mm**	**----**	**----**	**----**
			Sampling date / time	11-Oct-2021 00:00	11-Oct-2021 00:00	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB2128814-001**	**EB2128814-002**	**--------**	**--------**	**--------**
				Result	Result	----	----	----
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	**0.752**	**0.629**	**----**	**----**	**----**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2129686**	Page	: 1 of 5
Client	: **RGS ENVIRONMENTAL CONSULTANTS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: ALAN ROBERTSON	Contact	: Customer Services EB
Address	: 3/30 LENSWORTH STREET COOPERS PLAINS 4107	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: 07 3344 1222	Telephone	: +61-7-3243 7222
Project	: 2021057 Big Vein South	Date Samples Received	: 19-Oct-2021 09:00
Order number	: ----	Date Analysis Commenced	: 22-Oct-2021
C-O-C number	: ----	Issue Date	: 25-Oct-2021 11:59
Sampler	: VERONICA CANALES		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 7		
No. of samples analysed	: 7		

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Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

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Analytical Results

Sub-Matrix: **ROCK** (Matrix: **SOIL**)			Sample ID	**2021057_C001**	**----**	**----**	**----**	**----**
			Sampling date / time	18-Oct-2021 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB2129686-001**	**--------**	**--------**	**--------**	**--------**
				Result	----	----	----	----
EA011: Net Acid Generation								
pH (OX)	----	0.1	pH Unit	**2.6**	**----**	**----**	**----**	**----**
NAG (pH 4.5)	----	0.1	kg H2SO4/t	**13.6**	**----**	**----**	**----**	**----**
NAG (pH 7.0)	----	0.1	kg H2SO4/t	**17.1**	**----**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	2021057_C002	2021057_005	2021057_007	2021057_009	2021057_015
			Sampling date / time	18-Oct-2021 00:00	18-Oct-2021 00:00	18-Oct-2021 00:00	18-Oct-2021 00:00	18-Oct-2021 00:00
Compound	CAS Number	LOR	Unit	EB2129686-002	EB2129686-003	EB2129686-004	EB2129686-005	EB2129686-006
				Result	Result	Result	Result	Result
EA011: Net Acid Generation								
pH (OX)	----	0.1	pH Unit	**3.0**	**10.2**	**10.6**	**10.5**	**11.1**
NAG (pH 4.5)	----	0.1	kg H2SO4/t	**6.7**	<0.1	<0.1	<0.1	<0.1
NAG (pH 7.0)	----	0.1	kg H2SO4/t	**10.0**	<0.1	<0.1	<0.1	<0.1
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	**----**	**0.119**	**0.400**	**0.104**	**0.184**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	2021057_019	----	----	----	----
			Sampling date / time	18-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2129686-007	--------	--------	--------	--------
				Result	----	----	----	----
EA011: Net Acid Generation								
pH (OX)	----	0.1	pH Unit	**10.4**	----	----	----	----
NAG (pH 4.5)	----	0.1	kg H2SO4/t	<0.1	----	----	----	----
NAG (pH 7.0)	----	0.1	kg H2SO4/t	<0.1	----	----	----	----
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	**0.214**	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2129569**	Page	: 1 of 3
Client	: **RGS ENVIRONMENTAL CONSULTANTS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: ALAN ROBERTSON	Contact	: Customer Services EB
Address	: 3/30 LENSWORTH STREET COOPERS PLAINS 4107	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: 07 3344 1222	Telephone	: +61-7-3243 7222
Project	: 2021057 Big Vein South	Date Samples Received	: 18-Oct-2021 21:54
Order number	: ----	Date Analysis Commenced	: 21-Oct-2021
C-O-C number	: ----	Issue Date	: 03-Nov-2021 10:09
Sampler	: VERONICA CANALES		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 7		
No. of samples analysed	: 1		

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*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

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

- Particular samples have been crushed prior to preparation and analysis as per client request on the Chain of Custody. Please refer to SRN for further details.
- ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	2021057_021 HGO	----	----	----	----
			Sampling date / time	18-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2129569-001	--------	--------	--------	--------
				Result	----	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**7.0**	----	----	----	----
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**42.0**	----	----	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**799**	----	----	----	----
EA011: Net Acid Generation								
pH (OX)	----	0.1	pH Unit	**2.6**	----	----	----	----
NAG (pH 4.5)	----	0.1	kg H2SO4/t	**30.5**	----	----	----	----
NAG (pH 7.0)	----	0.1	kg H2SO4/t	**35.8**	----	----	----	----
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**18.9**	----	----	----	----
ANC as CaCO3	----	0.1	% CaCO3	**1.9**	----	----	----	----
Fizz Rating	----	0	Fizz Unit	**1**	----	----	----	----
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	**1.66**	----	----	----	----
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**1.99**	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2200723**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL CONSULTANTS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: ALAN ROBERTSON	Contact	: Customer Services EB
Address	: 3/30 LENSWORTH STREET COOPERS PLAINS 4107	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: 07 3344 1222	Telephone	: +61-7-3243 7222
Project	: 2021057 Big Vein South	Date Samples Received	: 12-Jan-2022 14:52
Order number	: ----	Date Analysis Commenced	: 17-Jan-2022
C-O-C number	: ----	Issue Date	: 28-Jan-2022 13:19
Sampler	: VERONICA CANALES		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

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Signatories	*Position*	*Accreditation Category*
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Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

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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.

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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.
~ = Indicates an estimated value.

- Bromine and Iodine results from the EG020 method code should be regarded as semi-quantitative only.
- ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	PSM Woolgar Gold-106 slurry 2021057_022	PSM Woolgar Gold-106 cakes 2021057_023	Spent heap leach residue 2021057_024	Strategic Woolgar Tailings 1	----
				Sampling date / time	12-Jan-2022 00:00	12-Jan-2022 00:00	12-Jan-2022 00:00	12-Jan-2022 00:00	----
					EB2200723-001	EB2200723-002	EB2200723-003	EB2200723-004	--------
					Result	Result	Result	Result	----
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		**8.7**	**8.8**	----	----	----
EA009: Net Acid Production Potential									
Net Acid Production Potential	----	0.5	kg H2SO4/t		**24.7**	**24.9**	----	----	----
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		**1040**	**1680**	----	----	----
EA011: Net Acid Generation									
pH (OX)	----	0.1	pH Unit		**2.6**	**2.7**	----	**8.2**	----
NAG (pH 4.5)	----	0.1	kg H2SO4/t		**14.4**	**11.2**	----	<0.1	----
NAG (pH 7.0)	----	0.1	kg H2SO4/t		**18.2**	**16.0**	----	<0.1	----
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**23.6**	**23.4**	----	----	----
ANC as CaCO3	----	0.1	% CaCO3		**2.4**	**2.4**	----	----	----
Fizz Rating	----	0	Fizz Unit		**1**	**1**	----	----	----
EA026 : Chromium Reducible Sulfur									
Chromium Reducible Sulphur	----	0.005	%		**1.25**	**1.14**	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**0.9**	**0.3**	----	----	----
ED040S: Soluble Major Anions									
Silica	7631-86-9	1	mg/kg		**5**	**6**	----	----	----
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**1.58**	**1.58**	----	----	----
EG005(ED093)S : Soluble Metals by ICPAES									
Boron	7440-42-8	1	mg/kg		<1	<1	----	----	----
Iron	7439-89-6	1	mg/kg		<1	**2**	----	----	----
EG020S: Soluble Metals by ICPMS									
Arsenic	7440-38-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Cerium	7440-45-1	0.01	mg/kg		<0.01	<0.01	----	----	----
Germanium	7440-56-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Selenium	7782-49-2	0.1	mg/kg		<0.1	<0.1	----	----	----
Silver	7440-22-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Barium	7440-39-3	0.01	mg/kg		**0.10**	**0.11**	----	----	----

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	PSM Woolgar Gold-106 slurry 2021057_022	PSM Woolgar Gold-106 cakes 2021057_023	Spent heap leach residue 2021057_024	Strategic Woolgar Tailings 1	----
				Sampling date / time	12-Jan-2022 00:00	12-Jan-2022 00:00	12-Jan-2022 00:00	12-Jan-2022 00:00	----
					EB2200723-001	EB2200723-002	EB2200723-003	EB2200723-004	--------
					Result	Result	Result	Result	----
EG020S: Soluble Metals by ICPMS - Continued									
Caesium	7440-46-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Niobium	7440-03-1	0.01	mg/kg		<0.01	<0.01	----	----	----
Thallium	7440-28-0	0.01	mg/kg		<0.01	<0.01	----	----	----
Beryllium	7440-41-7	0.01	mg/kg		<0.01	<0.01	----	----	----
Bromine	7726-95-6	1	mg/kg		<1	<1	----	----	----
Cadmium	7440-43-9	0.01	mg/kg		<0.01	<0.01	----	----	----
Dysprosium	7429-91-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Palladium	7440-05-3	0.01	mg/kg		<0.01	<0.01	----	----	----
Bismuth	7440-69-9	0.01	mg/kg		<0.01	<0.01	----	----	----
Cobalt	7440-48-4	0.01	mg/kg		<0.01	**0.02**	----	----	----
Erbium	7440-52-0	0.01	mg/kg		<0.01	<0.01	----	----	----
Iodine	7553-56-2	1	mg/kg		<1	<1	----	----	----
Platinum	7440-06-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Chromium	7440-47-3	0.01	mg/kg		<0.01	<0.01	----	----	----
Europium	7440-53-1	0.01	mg/kg		<0.01	<0.01	----	----	----
Rhenium	7440-15-5	0.01	mg/kg		<0.01	<0.01	----	----	----
Thorium	7440-29-1	0.01	mg/kg		<0.01	<0.01	----	----	----
Copper	7440-50-8	0.01	mg/kg		**0.01**	<0.01	----	----	----
Gadolinium	7440-54-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Gallium	7440-55-3	0.01	mg/kg		<0.01	<0.01	----	----	----
Manganese	7439-96-5	0.01	mg/kg		**0.04**	**0.06**	----	----	----
Hafnium	7440-58-6	0.1	mg/kg		<0.1	<0.1	----	----	----
Molybdenum	7439-98-7	0.01	mg/kg		**0.03**	**0.06**	----	----	----
Holmium	7440-60-0	0.01	mg/kg		<0.01	<0.01	----	----	----
Nickel	7440-02-0	0.01	mg/kg		<0.01	<0.01	----	----	----
Indium	7440-74-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Lead	7439-92-1	0.01	mg/kg		<0.01	<0.01	----	----	----
Antimony	7440-36-0	0.01	mg/kg		**0.02**	**0.02**	----	----	----
Lanthanum	7439-91-0	0.01	mg/kg		<0.01	<0.01	----	----	----
Lutetium	7439-94-3	0.01	mg/kg		<0.01	<0.01	----	----	----
Uranium	7440-61-1	0.01	mg/kg		<0.01	<0.01	----	----	----
Neodymium	7440-00-8	0.01	mg/kg		<0.01	<0.01	----	----	----

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	PSM Woolgar Gold-106 slurry 2021057_022	PSM Woolgar Gold-106 cakes 2021057_023	Spent heap leach residue 2021057_024	Strategic Woolgar Tailings 1	----
				Sampling date / time	12-Jan-2022 00:00	12-Jan-2022 00:00	12-Jan-2022 00:00	12-Jan-2022 00:00	----
					EB2200723-001	EB2200723-002	EB2200723-003	EB2200723-004	--------
					Result	Result	Result	Result	----
EG020S: Soluble Metals by ICPMS - Continued									
Zinc	7440-66-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Lithium	7439-93-2	0.01	mg/kg		**122**	**305**	----	----	----
Praseodymium	7440-10-0	0.01	mg/kg		<0.01	<0.01	----	----	----
Rubidium	7440-17-7	0.01	mg/kg		**0.03**	**0.07**	----	----	----
Vanadium	7440-62-2	0.1	mg/kg		<0.1	<0.1	----	----	----
Aluminium	7429-90-5	0.1	mg/kg		<0.1	<0.1	----	----	----
Samarium	7440-19-9	0.01	mg/kg		<0.01	<0.01	----	----	----
Tellurium	22541-49-7	0.05	mg/kg		<0.05	<0.05	----	----	----
Terbium	7440-27-9	0.01	mg/kg		<0.01	<0.01	----	----	----
Thorium	7440-29-1	0.01	mg/kg		<0.01	<0.01	----	----	----
Thulium	7440-30-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Titanium	7440-32-6	0.1	mg/kg		<0.1	<0.1	----	----	----
Ytterbium	7440-64-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Yttrium	7440-65-5	0.01	mg/kg		<0.01	<0.01	----	----	----
Zirconium	7440-67-7	0.05	mg/kg		<0.05	<0.05	----	----	----
EG035S: Soluble Mercury by FIMS									
Mercury	7439-97-6	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	1	mg/kg		<1	<1	<1	<1	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **SOIL**)			Sample ID	**DI Water for pH & EC**	**----**	**----**	**----**	**----**
			Sampling date / time	12-Jan-2022 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB2200723-005**	**--------**	**--------**	**--------**	**--------**
				Result	----	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**5.5**	**----**	**----**	**----**	**----**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	<1	**----**	**----**	**----**	**----**

Trilab
Soil Rock Calibration

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2 Kimmer Place,
Queens Park
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Ph: +61 8 9258 8323

POROSITY & DENSITY TEST REPORT

Test Method: AS 4133 2.1.1, 1.1.1

Client	RGS Environmental Pty Ltd	**Report No.**	22020004-P&D
		Workorder No.	0009495
Address	PO Box 3091, Sunnybank South QLD 4109	**Test Date**	05/02/2022
		Report Date	08/02/2022
Project	2021057 - Big Vein South		

Sample No.	22020004						
Client ID	2 - 2021057_KL C 10						
Depth (m)	Not Supplied						
Moisture Content (%)	0.4						
Dry Density (t/m^3)	2.62						
Porosity (%)	1.8						

Sample No.							
Client ID							
Depth (m)							
Moisture Content (%)							
Dry Density (t/m^3)							
Porosity (%)							

Sample No.							
Client ID							
Depth (m)							
Moisture Content (%)							
Dry Density (t/m^3)							
Porosity (%)							

NOTES/REMARKS:

Sample/s supplied by the client

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to the International System of Units (SI). References are traceable to National Measurement Institutes or laboratories accredited to ISO/IEC 17025 by a signatory to the ILAC MRA.

Tested at Trilab Brisbane Laboratory

Authorised Signatory

C. Channon

NATA ACCREDITED FOR TECHNICAL COMPETENCE

Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

Trilab
Soil Rock Calibration

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WA 6107
Ph: +61 8 9258 8323

SOIL PARTICLE DENSITY TEST REPORT

Test Method: AS 1289 3.5.1

Client	RGS Environmental Pty Ltd	**Report No.**	22020003A-SG
		Workorder No.	0009495
Address	PO Box 3091, Sunnybank South QLD 4109	**Report Date**	17/02/2022

Project 2021057 - Big Vein South

Sample No.	22020003	22020005	22020006	22020007	22020008		
Test Date	3/02/2022	3/02/2022	3/02/2022	3/02/2022	3/02/2022		
Client ID	1 - 2021057_KLC 9	3 - 2021057_KLC 15	4 - 2021057_KLC 11	5 - 2021057_106 Slurry	6 - 2021057_106	-	-
Depth (m)	Not Supplied	Not Supplied	Not Supplied	Not Supplied	Not Supplied	-	-
Soil Particle Density (t/m³) (-2.36mm)	2.71	2.82	2.72	2.83	2.76		
Soil Particle Density (t/m³) (+2.36mm)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable		
Total Soil Particle Density (t/m³)	2.71	2.82	2.72	2.83	2.76		

Sample No.							
Test Date							
Client ID	-	-	-	-	-	-	-
Depth (m)	-	-	-	-	-	-	-
Soil Particle Density (t/m³) (-2.36mm)							
Soil Particle Density (t/m³) (+2.36mm)							
Total Soil Particle Density (t/m³)							

NOTES/REMARKS: This report replaces 22020003-SG issued on the 4/2/2022

Sample/s supplied by the client

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to the International System of Units (SI).References are traceable to National Measurement Institutes or laboratories accredited to ISO/IEC 17025 by a signatory to the ILAC MRA.

Tested at Trilab Brisbane Laboratory

Authorised Signatory

Joshua Hawley

NATA ACCREDITED FOR TECHNICAL COMPETENCE

Laboratory No. 9926

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ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

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To: **ALS ENVIRONMENTAL**
32 SHAND STREET
STAFFORD QLD 4053

Finalized Date: 18-FEB-2020
Account: ALSENV

CERTIFICATE BR20033782

Project: EB2002955

P.O. No.: RGS Environmental 2019009

This report is for 1 Pulp sample submitted to our lab in Brisbane, QLD, Australia on 13-FEB-2020.

The following have access to data associated with this certificate:

SUB RESULTS -BRIS		

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
LOG-22	Sample login - Rcd w/o BarCode
WEI-21b	Weight - Pulp
LEV-01	Waste Disposal Levy

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME-MS41	Ultra Trace Aqua Regia ICP-MS

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:

Shaun Kenny, Brisbane Laboratory Manager

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To: **ALS ENVIRONMENTAL**
32 SHAND STREET
STAFFORD QLD 4053

Finalized Date: 18-FEB-2020
Account: ALSENV

Project: EB2002955

CERTIFICATE OF ANALYSIS BR20033782

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Ag	Al	As	Au	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu
	Units	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
	LOD	0.01	0.01	0.1	0.02	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2
Strategic Tailings		0.66	0.63	49.2	0.17	<10	30	0.86	0.42	0.54	5.55	33.1	8.7	410	0.85	68.6

***** See Appendix Page for comments regarding this certificate *****

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32 SHAND STREET
STAFFORD QLD 4053

Finalized Date: 18-FEB-2020
Account: ALSENV

Project: EB2002955

CERTIFICATE OF ANALYSIS BR20033782

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Fe	Ga	Ge	Hf	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni
	Units	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm
	LOD	0.01	0.05	0.05	0.02	0.01	0.005	0.01	0.2	0.1	0.01	5	0.05	0.01	0.05	0.2
Strategic Tailings		1.74	1.96	0.05	0.07	0.05	0.019	0.34	15.7	2.2	0.22	277	22.5	0.04	0.10	206

***** See Appendix Page for comments regarding this certificate *****

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STAFFORD QLD 4053

Finalized Date: 18-FEB-2020
Account: ALSENV

Project: EB2002955

CERTIFICATE OF ANALYSIS BR20033782

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	P	Pb	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
	LOD	10	0.2	0.1	0.001	0.01	0.05	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02
Strategic Tailings		330	431	24.8	0.005	0.61	1.91	1.2	<0.2	0.7	20.1	<0.01	0.39	7.4	0.008	0.18

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STAFFORD QLD 4053

Finalized Date: 18-FEB-2020
Account: ALSENV

Project: EB2002955

CERTIFICATE OF ANALYSIS BR20033782

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	WEI-21b
	Analyte	U	V	W	Y	Zn	Zr	Pulp Wt
	Units	ppm	ppm	ppm	ppm	ppm	ppm	g
	LOD	0.05	1	0.05	0.05	2	0.5	1
Strategic Tailings		2.39	8	0.95	4.10	312	3.1	9

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To: **ALS ENVIRONMENTAL**
32 SHAND STREET
STAFFORD QLD 4053

Finalized Date: 18-FEB-2020
Account: ALSENV

Project: EB2002955

CERTIFICATE OF ANALYSIS BR20033782

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method: ME-MS41

Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).

ACCREDITATION COMMENTS

Applies to Method: ME-MS41

NATA Accreditation covers the performance of this service but does not cover the performance of ALS Brisbane Sample Preparation. Corporate Accreditation No: 825, Corporate Site No: 818. The Technical Signatory is David Jones,ICPMS Supervising Chemist

LABORATORY ADDRESSES

Applies to Method: LEV-01 LOG-22 ME-MS41 WEI-21b

Processed at ALS Brisbane located at 32 Shand Street, Stafford, Brisbane, QLD, Australia. Processed at ALS Brisbane Sample Preparation at 116 Delta Street, Geebung, QLD 4034, Australia

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To: **ALS ENVIRONMENTAL**
32 SHAND STREET
STAFFORD QLD 4053

Finalized Date: 23-JUL-2020
Account: ALSENV

CERTIFICATE BR20150627

Project: EB2018430

P.O. No.: MS41

This report is for 1 Pulp sample submitted to our lab in Brisbane, QLD, Australia on 17-JUL-2020.

The following have access to data associated with this certificate:

SUB RESULTS -BRIS

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
LOG-22	Sample login - Rcd w/o BarCode
LEV-01	Waste Disposal Levy

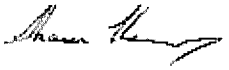
ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME-MS41	Ultra Trace Aqua Regia ICP-MS

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:



Shaun Kenny, Brisbane Laboratory Manager

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To: **ALS ENVIRONMENTAL**
32 SHAND STREET
STAFFORD QLD 4053

Finalized Date: 23-JUL-2020
Account: ALSENV

Project: EB2018430

CERTIFICATE OF ANALYSIS BR20150627

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe
	Units	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%
	LOD	0.01	0.01	0.1	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2	0.01
1046C LD0324 34-58.6m Low		0.85	0.50	33.6	<10	30	0.80	0.30	0.81	1.92	39.9	13.3	7	1.06	59.8	2.72

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
32 SHAND STREET
STAFFORD QLD 4053

Finalized Date: 23-JUL-2020
Account: ALSENV

Project: EB2018430

CERTIFICATE OF ANALYSIS BR20150627

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Ga	Ge	Hf	Hg	In	La	Li	Mg	Mn	Mo	Na	Ni	P	Pb	Rb
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm
	LOD	0.05	0.05	0.02	0.01	0.005	0.2	0.1	0.01	5	0.05	0.01	0.2	10	0.2	0.1
1046C LD0324 34-58.6m Low		1.85	0.07	0.16	0.02	0.019	19.6	3.4	0.45	711	3.63	0.01	23.5	330	94.5	24.2

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
32 SHAND STREET
STAFFORD QLD 4053

Finalized Date: 23-JUL-2020
Account: ALSENV

Project: EB2018430

CERTIFICATE OF ANALYSIS BR20150627

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
	LOD	0.05	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02	0.05	1	0.05	0.05	2
1046C LD0324 34-58.6m Low		3.78	2.0	<0.2	0.2	16.3	0.01	0.04	10.7	<0.005	0.23	4.39	6	0.17	6.78	151

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
32 SHAND STREET
STAFFORD QLD 4053

Page: Appendix 1
Total # Appendix Pages: 1
Finalized Date: 23-JUL-2020
Account: ALSENV

Project: EB2018430

CERTIFICATE OF ANALYSIS BR20150627

CERTIFICATE COMMENTS

ACCREDITATION COMMENTS

NATA Accreditation covers the performance of this service but does not cover the performance of ALS Brisbane Sample Preparation. Corporate Accreditation No: 825, Corporate Site No: 818. The Technical Signatory is David Jones,ICPMS Supervising Chemist

Applies to Method: ME-MS41

LABORATORY ADDRESSES

Processed at ALS Brisbane located at 32 Shand Street, Stafford, Brisbane, QLD, Australia. Processed at ALS Brisbane Sample Preparation at 116 Delta Street, Geebung, QLD 4034, Australia

Applies to Method: LEV-01 LOG-22 ME-MS41

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To: ALS ENVIRONMENTAL
32 SHAND STREET
STAFFORD QLD 4053

Finalized Date: 27-OCT-2021
Account: ALSENV

CERTIFICATE BR21281947

Project: EB2129569
P.O. No.: ME-MS41
This report is for 7 samples of Pulp submitted to our lab in Brisbane, QLD, Australia on 19-OCT-2021.
The following have access to data associated with this certificate:

SUB RESULTS -BRIS		

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
LOG-22	Sample login - Rcd w/o BarCode
LEV-01	Waste Disposal Levy

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME-MS41	Ultra Trace Aqua Regia ICP-MS	

This is the Final Report and supersedes any preliminary report with this certificate number.Results apply to samples as submitted.All pages of this report have been checked and approved for release.
***** See Appendix Page for comments regarding this certificate *****

Signature:

Shaun Kenny, Brisbane Laboratory Manager

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Project: EB2129569

CERTIFICATE OF ANALYSIS BR21281947

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Ag	Al	As	Au	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu
	Units	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
	LOD	0.01	0.01	0.1	0.02	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2
2021057_C003		0.05	2.09	3.9	0.02	<10	110	0.93	0.14	0.15	0.26	78.2	19.2	41	4.03	47.5
2021057_C004		0.12	1.98	37.5	<0.02	<10	70	1.07	0.12	1.03	0.35	78.3	14.5	46	5.37	25.0
2021057_C005		0.01	0.33	1.2	<0.02	<10	20	0.21	0.04	0.03	0.02	16.90	2.3	12	0.81	4.1
2021057_C006		0.05	1.62	48.4	<0.02	<10	50	1.26	0.08	0.70	0.10	81.3	10.6	33	3.48	12.6
2021057_021		1.59	0.42	83.9	0.92	<10	20	1.36	0.09	0.41	4.52	42.0	12.9	9	1.53	53.8
2021057_C001		2.71	0.37	142.0	0.72	<10	20	1.30	0.23	0.23	2.79	33.2	11.2	35	1.11	26.1
2021057_C002		4.15	0.36	111.0	0.38	<10	20	1.72	0.26	0.28	3.39	38.1	15.5	27	1.08	30.3

***** See Appendix Page for comments regarding this certificate *****

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Project: EB2129569

CERTIFICATE OF ANALYSIS BR21281947

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Fe	Ga	Ge	Hf	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni
	Units	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm
	LOD	0.01	0.05	0.05	0.02	0.01	0.005	0.01	0.2	0.1	0.01	5	0.05	0.01	0.05	0.2
2021057_C003		4.33	8.40	0.13	0.40	0.10	0.037	0.83	37.5	22.8	0.99	562	1.39	0.09	0.10	36.3
2021057_C004		4.11	8.75	0.12	0.08	0.11	0.034	0.70	38.3	29.4	1.13	482	1.52	0.03	0.18	31.7
2021057_C005		0.79	1.38	<0.05	0.08	<0.01	0.005	0.07	8.4	2.1	0.07	179	0.96	0.01	0.05	6.8
2021057_C006		3.35	7.17	0.08	0.19	0.09	0.016	0.31	40.3	14.5	0.79	488	3.30	0.03	0.08	22.0
2021057_021		3.23	1.46	0.05	0.09	0.06	0.021	0.26	20.8	2.9	0.33	313	0.51	0.01	<0.05	27.2
2021057_C001		2.42	1.47	0.05	0.15	0.04	0.020	0.36	16.4	2.4	0.07	611	0.90	0.03	<0.05	21.7
2021057_C002		2.32	1.16	0.05	0.16	0.13	0.025	0.29	18.6	2.9	0.09	1040	0.72	0.02	<0.05	29.1

***** See Appendix Page for comments regarding this certificate *****

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Project: EB2129569

CERTIFICATE OF ANALYSIS BR21281947

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	P	Pb	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
	LOD	10	0.2	0.1	0.001	0.01	0.05	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02
2021057_C003		480	17.6	67.0	<0.001	0.01	0.16	5.2	0.3	1.1	9.0	<0.01	0.02	14.2	0.073	0.45
2021057_C004		350	33.5	62.3	0.001	0.24	0.35	4.6	0.2	1.3	16.1	<0.01	0.02	13.7	0.108	0.49
2021057_C005		110	3.6	6.5	<0.001	0.01	0.11	1.1	<0.2	0.3	1.8	<0.01	<0.01	3.5	0.006	0.07
2021057_C006		370	17.3	28.2	0.002	0.09	5.26	3.6	0.2	0.6	12.2	<0.01	0.01	15.9	0.035	0.28
2021057_021		280	203	19.7	<0.001	1.83	4.73	1.9	<0.2	0.2	13.7	<0.01	0.06	14.6	<0.005	0.20
2021057_C001		270	460	22.6	<0.001	1.11	1.51	1.6	0.4	0.6	35.1	<0.01	1.57	4.7	<0.005	0.26
2021057_C002		290	390	19.7	<0.001	0.79	1.81	2.1	0.2	0.5	38.3	<0.01	1.63	5.2	<0.005	0.28

***** See Appendix Page for comments regarding this certificate *****

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To: ALS ENVIRONMENTAL
32 SHAND STREET
STAFFORD QLD 4053

Project: EB2129569

CERTIFICATE OF ANALYSIS BR21281947

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	U	V	W	Y	Zn	Zr
	Units	ppm	ppm	ppm	ppm	ppm	ppm
	LOD	0.05	1	0.05	0.05	2	0.5
2021057_C003		2.33	41	0.12	12.65	166	17.9
2021057_C004		2.93	40	0.15	10.65	232	3.1
2021057_C005		0.39	7	0.24	2.32	11	3.3
2021057_C006		2.59	32	0.19	15.15	62	7.2
2021057_021		5.07	5	0.14	6.62	264	3.7
2021057_C001		1.48	4	0.29	5.58	193	5.8
2021057_C002		2.07	3	0.22	7.51	274	6.4

***** See Appendix Page for comments regarding this certificate *****

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To: ALS ENVIRONMENTAL
32 SHAND STREET
STAFFORD QLD 4053

Finalized Date: 27-OCT-2021
Account: ALSENV

Project: EB2129569

CERTIFICATE OF ANALYSIS BR21281947

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method: ME-MS41

Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).

ACCREDITATION COMMENTS

Applies to Method: ME-MS41

NATA Accreditation covers the performance of this service but does not cover the performance of ALS Brisbane Sample Preparation. Corporate Accreditation No: 825, Corporate Site No: 818. The Technical Signatory is David Jones,ICPMS Supervising Chemist

LABORATORY ADDRESSES

Applies to Method: LEV-01 LOG-22 ME-MS41

Processed at ALS Brisbane located at 32 Shand Street, Stafford, Brisbane, QLD, Australia. Processed at ALS Brisbane Sample Preparation at 23 Pineapple Street, Zillmere, QLD, 4034, Australia

Australian Laboratory Services Pty. Ltd.
32 Shand Street
Stafford
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Phone: +61 7 3243 7222 Fax: +61 7 3243 7218
www.alsglobal.com/geochemistry

ALS Brisbane is a NATA Accredited Testing Laboratory. Corporate Accreditation No: 825, Corporate Site No: 818.

To: ALS ENVIRONMENTAL
32 SHAND STREET
STAFFORD QLD 4053

Finalized Date: 28-JAN-2022
Account: ALSENV

CERTIFICATE BR22011570

Project: EB2200723
P.O. No.: ME-MS41
This report is for 2 samples of Pulp submitted to our lab in Brisbane, QLD, Australia on 17-JAN-2022.
The following have access to data associated with this certificate:

SUB RESULTS -BRIS		

SAMPLE PREPARATION

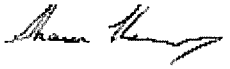
ALS CODE	DESCRIPTION
LOG-22	Sample login - Rcd w/o BarCode
LEV-01	Waste Disposal Levy

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME-MS41	Ultra Trace Aqua Regia ICP-MS	

This is the Final Report and supersedes any preliminary report with this certificate number.Results apply to samples as submitted.All pages of this report have been checked and approved for release.
***** See Appendix Page for comments regarding this certificate *****

Signature:



Shaun Kenny, Brisbane Laboratory Manager

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32 SHAND STREET
STAFFORD QLD 4053

Finalized Date: 28-JAN-2022
Account: ALSENV

Project: EB2200723

CERTIFICATE OF ANALYSIS BR22011570

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Ag	Al	As	Au	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu
	Units	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
	LOD	0.01	0.01	0.1	0.02	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2
PSM Woolgar Gold - 106 Slurr 2021057_022		1.00	0.32	78.8	0.10	<10	20	0.65	0.19	0.66	11.15	29.5	9.1	100	0.87	46.4
PSM Woolgar Gold - 106 Cakes 2021057_023		1.07	0.38	79.1	0.16	<10	20	0.71	0.21	0.69	10.55	32.4	9.1	99	0.98	45.4

***** See Appendix Page for comments regarding this certificate *****

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32 SHAND STREET
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Project: EB2200723

CERTIFICATE OF ANALYSIS BR22011570

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Fe	Ga	Ge	Hf	Hg	In	La	Li	Mg	Mn	Mo	Nb	Ni	P	Pb
	Units	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
	LOD	0.01	0.05	0.05	0.02	0.01	0.005	0.2	0.1	0.01	5	0.05	0.05	0.2	10	0.2
PSM Woolgar Gold - 106 Slurr 2021057_022		2.94	1.09	0.06	0.07	0.09	0.024	14.2	175.5	0.28	554	10.00	<0.05	67.3	320	460
PSM Woolgar Gold - 106 Cakes 2021057_023		2.93	1.23	<0.05	0.08	0.10	0.022	15.7	470	0.28	548	10.25	<0.05	67.3	340	487

***** See Appendix Page for comments regarding this certificate *****

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32 SHAND STREET
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Project: EB2200723

CERTIFICATE OF ANALYSIS BR22011570

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Rb	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W
	Units	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm
	LOD	0.1	0.01	0.05	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02	0.05	1	0.05
PSM Woolgar Gold - 106 Slurr 2021057_022		15.4	1.50	2.74	1.4	0.2	0.3	13.2	<0.01	0.14	10.1	<0.005	0.13	3.28	5	0.24
PSM Woolgar Gold - 106 Cakes 2021057_023		19.2	1.52	2.91	1.5	0.2	0.3	15.5	<0.01	0.15	10.3	<0.005	0.16	3.58	6	0.24

***** See Appendix Page for comments regarding this certificate *****

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Finalized Date: 28-JAN-2022
Account: ALSENV

Project: EB2200723

CERTIFICATE OF ANALYSIS BR22011570

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41
	Analyte	Y	Zn	Zr
	Units	ppm	ppm	ppm
	LOD	0.05	2	0.5
PSM Woolgar Gold - 106 Slurr 2021057_022		4.71	628	2.8
PSM Woolgar Gold - 106 Cakes 2021057_023		5.05	569	3.0

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Finalized Date: 28-JAN-2022
Account: ALSENV

Project: EB2200723

CERTIFICATE OF ANALYSIS BR22011570

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method: ME-MS41

Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).

ACCREDITATION COMMENTS

Applies to Method: ME-MS41

NATA Accreditation covers the performance of this service but does not cover the performance of ALS Brisbane Sample Preparation. Corporate Accreditation No: 825, Corporate Site No: 818. The Technical Signatory is David Jones,ICPMS Supervising Chemist

LABORATORY ADDRESSES

Applies to Method: LEV-01 LOG-22 ME-MS41

Processed at ALS Brisbane located at 32 Shand Street, Stafford, Brisbane, QLD, Australia. Processed at ALS Brisbane Sample Preparation at 23 Pineapple Street, Zillmere, QLD, 4034, Australia

Attachment D

RGS kinetic leach summary tables and trends

KLC 1 Waste Rock (Free Leach)

Weight (kg)	10.00	Total S (%)	0.14	ANC	50.0	Porosity	-	Density (kg/L)	-						
pH (1:5)	9.00	Scr (%)	0.129	NAPP	-46.0	Volume (L)	-	Rock/Water Ratio	7.14						
EC (µS/cm)	352	MPA	4.0	ANC:MPA	12.7	Pore Volume (L)	1.35	Surface Area	-						

Date			04-Feb-20	03-Mar-20	08-Apr-20	06-May-20	02-Jun-20	07-Jul-20	04-Aug-20	01-Sep-20	07-Oct-20	03-Nov-20	01-Dec-20	08-Jan-21	02-Feb-21
Number of Weeks			0	4	9	13	17	22	26	30	35	39	43	48	52
Leach Number			1	2	3	4	5	6	7	8	9	10	11	12	13
ALS Laboratory Number			EB2002870001	EB2005928001	EB2009977001	EB2012199001	EB2014656001	EB2017856001	EB2020387001	EB2022964001	EB2026216001	EB2028814001	EB2031669001	EB2100143011	EB2102717001
Volume On (L)			1.4	1.4	1.9	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Volume Off (L)			0.381	0.754	0.573	0.882	0.906	0.926	0.946	0.467	0.505	0.570	0.605	0.209	0.750
Cum. Volume (L)			0.38	1.14	1.71	2.59	3.50	4.42	5.37	5.84	6.34	6.91	7.52	7.72	8.47
Number of Pore Volumes through the Samples	Water Quality Guidelines		0.3	0.8	1.3	1.9	2.6	3.3	4.0	4.3	4.7	5.1	5.6	5.7	6.3
pH (RGS Measurement)	6 to 9	-	7.67	7.48	7.98	8.03	7.25	7.58	8.15	7.44	7.76	7.73	7.96	8.12	7.37
pH (ALS Measurement)			7.16	6.88	7.41	7.26	7.71	7.05	7.69	7.54	7.21	7.73	7.69	8.06	7.28
pH (deionised water used in test)		-	5.20	5.71	6.01	6.35	6.75	6.73	6.48	6.23	6.59	6.03	6.70	5.86	5.96
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	1,325	1,509	927	945	819	778	620	677	611	674	686	983	499
EC (ALS Measurement) (µS/cm)			1,430	1,560	990	993	901	799	793	812	625	696	687	1,050	554
Acidity (mg/L as $CaCO_3$)*	-	-	1.0	4.0	5.0	1.0	4.0	1.0	1.0	2.0	2.0	2.0	3.0	1.0	5.0
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	30	34	33	41	41	41	42	43	36	64	65	116	36
Total Alkalinity (mg/L as CaCO)*	-	-	30	34	33	41	41	41	42	43	36	64	65	116	36

Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]	(All units mg/L)										
Calcium	Ca	1	-	1000	82	102	47	54	47	40	38	43	31	36	37	66	31
Potassium	K	1	-	-	25	26	17	15	14	13	12	13	11	15	14	21	11
Magnesium	Mg	1	-	-	30	44	23	27	25	25	22	27	19	22	24	42	19
Sodium	Na	1	-	-	152	184	106	107	97	88	75	84	62	64	64	98	45
Chloride	Cl	1	-	-	110	122	53	53	57	42	38	34	26	23	20	29	13
Fluoride	F	0.1	-	2	0.3	0.6	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.7	0.3
Sulfate	SO	1	-	1,000	490	600	349	336	314	256	248	301	224	238	248	397	194
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**	(All units mg/L)										
Aluminium	Al	0.01	0.055	5	0.02	<0.01	0.10	<0.01	<0.01	<0.01	0.01	<0.01	0.01	0.02	0.02	0.04	0.02
Arsenic	As	0.001	0.024 (tri)*	0.5	0.002	0.004	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.003	0.003	0.007	0.002
Boron	B	0.05	0.37	5	0.06	0.13	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	0.08	<0.05
Cadmium	Cd	0.0001	0.0002	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	Co	0.001	-	1	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	Cu	0.001	0.0014	1	0.013	0.002	0.001	<0.001	0.001	<0.001	<0.001	0.001	<0.001	0.001	0.001	0.002	0.001
Iron	Fe	0.05	-	-	0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese	Mn	0.001	1.9	-	0.198	0.063	0.023	0.007	0.002	0.004	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	Mo	0.001	-	0.15	0.011	0.014	0.006	0.004	0.004	0.005	0.005	0.004	0.004	0.006	0.007	0.011	0.004
Nickel	Ni	0.001	0.011	1	0.009	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	Pb	0.001	0.0034	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	Sb	0.001	-	-	0.004	0.016	0.012	0.010	0.009	0.008	0.007	0.010	0.010	0.015	0.013	0.021	0.009
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	U	0.001	-	-	0.001	0.006	0.005	0.008	0.010	0.013	0.012	0.010	0.007	0.011	0.012	0.020	0.006
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	Zn	0.005	0.008	-	0.038	0.020	0.032	<0.005	0.006	0.005	0.007	0.014	0.007	0.009	0.010	0.012	0.009

Calculations**	Elements													
SO_4 Release Rate	SO	19	45	20	30	28	24	23	14	11	14	15	8	15
Cumulative SO Release	Cum SO	19	64	84	114	142	166	189	203	215	228	243	251	266
Ca Release Rate	Ca	3.1	7.7	2.7	4.8	4.3	3.7	3.6	2.0	1.6	2.1	2.2	1.4	2.3
Cumulative Ca Release	Cum Ca	3.1	10.8	13.5	18.3	22.5	26.2	29.8	31.8	33.4	35.5	37.7	39.1	41.4
Mg Release Rate	Mg	1.1	3.3	1.3	2.4	2.3	2.3	2.1	1.3	1.0	1.3	1.5	0.9	1.4
Cumulative Mg Release	Cum Mg	1.1	4.5	5.8	8.2	10.4	12.7	14.8	16.1	17.0	18.3	19.7	20.6	22.1
Residual ANC (%)	Res. ANC	100.0	99.9	99.9	99.8	99.8	99.8	99.7	99.7	99.7	99.7	99.7	99.6	99.6
Residual Sulfur (%)	Res. S	99.6	98.5	98.0	97.3	96.6	96.0	95.5	95.2	94.9	94.6	94.2	94.0	93.7
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)	1.6	1.4	1.7	1.4	1.5	1.3	1.4	1.4	1.5	1.4	1.4	1.2	1.3

Notes:

ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines. Recommended guideline limits for 1. freshwater aquatic ecosystems (95 % species protection) and 2. livestock drinking water.

< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

KLC 2 Waste Rock (Free Leach)

Weight (kg)	10.00	Total S (%)	0.32	ANC	119.0	Porosity	-	Density (kg/L)	-				
pH (1:5)	9.00	Scr (%)	0.301	NAPP	-109.8	Volume (L)	-	Rock/Water Ratio	7.14				
EC (µS/cm)	272	MPA	9.2	ANC:MPA	12.9	Pore Volume (L)	1.35	Surface Area	-				

Date			04-Feb-20	03-Mar-20	08-Apr-20	06-May-20	02-Jun-20	07-Jul-20	04-Aug-20	01-Sep-20	07-Oct-20	03-Nov-20	01-Dec-20	08-Jan-21	02-Feb-21
Number of Weeks			0	4	9	13	17	22	26	30	35	39	43	48	52
Leach Number			1	2	3	4	5	6	7	8	9	10	11	12	13
ALS Laboratory Number			EB2002870002	EB2005928002	EB2009977002	EB2012199002	EB2014656002	EB2017856002	EB2020387002	EB2022964002	EB2026216002	EB2028814002	EB2031669002	EB2100143013	EB2102717002
Volume On (L)			1.4	1.4	1.9	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Volume Off (L)			0.443	0.299	0.573	0.882	0.603	0.467	0.488	0.482	0.946	0.462	0.371	0.314	0.298
Cum. Volume (L)			0.44	0.74	1.32	2.20	2.80	3.27	3.76	4.24	5.18	5.65	6.02	6.33	6.63
Number of Pore Volumes through the Samples	Water Quality Guidelines		0.3	0.5	1.0	1.6	2.1	2.4	2.8	3.1	3.8	4.2	4.5	4.7	4.9
pH (RGS Measurement)	6 to 9	-	7.70	7.72	7.98	8.03	7.81	7.72	8.07	7.60	7.88	7.80	8.05	7.65	7.71
pH (ALS Measurement)			7.83	7.08	7.65	7.69	7.81	7.23	7.72	7.77	7.71	7.74	7.71	7.82	7.72
pH (deionised water used in test)		-	5.20	5.71	6.01	6.35	6.75	6.73	6.48	6.23	6.59	6.03	6.70	5.86	5.96
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	1,385	548	524	390	324	304	269	300	417	331	365	379	381
EC (ALS Measurement) (µS/cm)			1,470	575	557	394	356	305	346	354	430	353	359	396	429
Acidity (mg/L as $CaCO_3$)*	-	-	2.0	3.0	3.0	<1	2.0	1.0	1.0	2.0	1.0	2.0	2.0	2.0	3.0
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	119	35	38	49	47	45	52	44	63	45	44	44	51
Total Alkalinity (mg/L as CaCO)*	-	-	119	35	38	49	47	45	52	44	63	45	44	44	51

Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]											
					(All units mg/L)										
Calcium	Ca	1	-	1000	185	44	45	38	34	30	32	35	44	33	34	39	44
Potassium	K	1	-	-	23	12	10	8	6	5	5	5	6	6	6	4	5
Magnesium	Mg	1	-	-	36	14	15	12	12	12	12	14	18	14	15	18	19
Sodium	Na	1	-	-	81	48	35	22	17	14	11	14	14	11	11	10	9
Chloride	Cl	1	-	-	41	18	11	7	6	4	4	5	4	3	4	3	3
Fluoride	F*	0.1	-	2	0.4	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Sulfate	SO	1	-	1,000	582	193	184	142	110	100	105	119	139	116	124	142	147
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**											
					(All units mg/L)										
Aluminium	Al	0.01	0.055	5	<0.01	0.04	0.02	0.03	0.03	0.04	0.04	0.06	0.05	0.14	0.06	0.07	0.06
Arsenic	As	0.001	0.024 (tri)*	0.5	0.002	0.010	0.009	0.007	0.006	0.005	0.004	0.003	0.003	0.003	0.003	0.006	0.002
Boron	B	0.05	0.37	5	0.10	0.16	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium	Cd	0.0001	0.0002	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	Co	0.001	-	1	0.036	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	Cu	0.001	0.0014	1	0.007	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
Iron	Fe	0.05	-	-	0.30	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese	Mn	0.001	1.9	-	1.020	0.056	0.049	0.048	0.026	0.012	0.003	0.001	0.001	0.031	<0.001	<0.001	<0.001
Molybdenum	Mo	0.001	-	0.15	0.002	0.002	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Nickel	Ni	0.001	0.011	1	0.044	0.002	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	Pb	0.001	0.0034	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	Sb	0.001	-	-	0.004	0.012	0.010	0.006	0.006	0.005	0.004	0.003	0.005	0.004	0.005	0.005	0.004
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	U	0.001	-	-	0.014	0.004	0.005	0.004	0.004	0.005	0.005	0.004	0.006	0.004	0.004	0.004	0.004
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	Zn	0.005	0.008	-	0.017	0.006	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	0.018	0.007	0.011	0.011

Calculations**	Elements													
SO_4 Release Rate	SO*	26	6	11	13	7	5	5	6	13	5	5	4	4
Cumulative SO Release	Cum SO	26	32	42	55	61	66	71	77	90	95	100	104	109
Ca Release Rate	Ca	8.2	1.3	2.6	3.4	2.1	1.4	1.6	1.7	4.2	1.5	1.3	1.2	1.3
Cumulative Ca Release	Cum Ca	8.2	9.5	12.1	15.4	17.5	18.9	20.5	22.1	26.3	27.8	29.1	30.3	31.6
Mg Release Rate	Mg	1.6	0.4	0.9	1.1	0.7	0.6	0.6	0.7	1.7	0.6	0.6	0.6	0.6
Cumulative Mg Release	Cum Mg	1.6	2.0	2.9	3.9	4.7	5.2	5.8	6.5	8.2	8.8	9.4	9.9	10.5
Residual ANC (%)	Res. ANC	100.0	100.0	100.0	100.0	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
Residual Sulfur (%)	Res. S	99.7	99.7	99.6	99.4	99.4	99.3	99.3	99.2	99.1	99.0	99.0	98.9	98.9
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)	1.0	1.2	1.1	1.0	0.9	0.8	0.8	0.9	0.8	0.9	0.9	0.9	0.8

Notes:

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< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

KLC 3 Waste Rock (Free Leach)

Weight (kg)	10.00	Total S (%)	0.06	ANC	75.2	Porosity	-	Density (kg/L)	-						
pH (1:5)	9.60	Scr (%)	0.055	NAPP	-73.5	Volume (L)	-	Rock/Water Ratio	7.14						
EC (µS/cm)	204	MPA	1.7	ANC:MPA	44.6	Pore Volume (L)	1.35	Surface Area	-						

Date			04-Feb-20	03-Mar-20	07-Apr-20	06-May-20	02-Jun-20	07-Jul-20	04-Aug-20	01-Sep-20	07-Oct-20	03-Nov-20	01-Dec-20	05-Jan-21	02-Feb-21
Number of Weeks			0	4	9	13	17	22	26	30	35	39	43	48	52
Leach Number			1	2	3	4	5	6	7	8	9	10	11	12	13
ALS Laboratory Number			EB2002870003	EB2005928003	EB2009977003	EB2012199003	EB2014656003	EB2017856003	EB2020387003	EB2022964003	EB2026216003	EB2028814003	EB2031669003	EB2100143003	EB2102717003
Volume On (L)			1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Volume Off (L)			0.890	0.934	0.960	0.928	0.889	0.904	0.884	0.999	0.449	1.066	1.072	0.964	1.361
Cum. Volume (L)			0.89	1.82	2.78	3.71	4.60	5.51	6.39	7.39	7.84	8.90	9.98	10.94	12.30
Number of Pore Volumes through the Samples	Water Quality Guidelines		0.7	1.4	2.1	2.7	3.4	4.1	4.7	5.5	5.8	6.6	7.4	8.1	9.1
pH (RGS Measurement)	6 to 9	-	9.21	9.09	9.35	9.15	8.88	9.08	9.13	8.48	8.19	8.14	8.42	8.79	8.40
pH (ALS Measurement)			8.73	8.58	9.08	8.68	8.75	8.84	8.31	8.05	7.84	7.99	7.85	8.46	7.87
pH (deionised water used in test)		-	5.20	5.71	6.43	6.35	6.75	6.73	6.48	6.23	6.59	6.03	6.70	6.06	5.96
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	292	232	170	168	157	117	116	137	163	186	189	162	131
EC (ALS Measurement) (µS/cm)			316	240	177	170	173	115	144	162	159	193	182	146	140
Acidity (mg/L as $CaCO_3$)*	-	-	6.0	<1	1.0	<1	<1	<1	<1	<1	<1	1.0	<1	<1	<1
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity (mg/L as CaCO)*	-	-	17	14	18	10	9	20	2	<1	<1	<1	<1	1	<1
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	61	55	42	55	54	38	46	61	57	68	68	46	51
Total Alkalinity (mg/L as CaCO)*	-	-	78	69	59	65	63	58	48	61	57	68	68	47	51

Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]	(All units mg/L)												
Calcium	Ca	1	-	1000	4	3	2	3	3	3	3	4	5	5	5	5	6
Potassium	K	1	-	-	3	2	1	1	1	1	1	2	2	2	2	2	2
Magnesium	Mg	1	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sodium	Na	1	-	-	58	53	35	38	35	25	26	32	30	35	35	26	24
Chloride	Cl	1	-	-	12	6	2	2	3	1	2	2	1	<1	2	<1	<1
Fluoride	F*	0.1	-	2	0.9	0.8	0.6	0.4	0.4	0.3	0.2	0.3	0.3	0.4	0.3	0.2	0.2
Sulfate	SO	1	-	1,000	46	36	25	25	22	15	15	18	20	27	24	20	17
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**	(All units mg/L)												
Aluminium	Al	0.01	0.055	5	0.19	0.10	0.14	0.07	0.06	0.06	0.06	0.04	0.05	0.06	0.06	0.06	0.04
Arsenic	As	0.001	0.024 (tri)*	0.5	0.006	0.017	0.017	0.017	0.017	0.012	0.014	0.016	0.015	0.022	0.022	0.016	0.013
Boron	B	0.05	0.37	5	0.09	0.18	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	0.06
Cadmium	Cd	0.0001	0.0002	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	Co	0.001	-	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Copper	Cu	0.001	0.0014	1	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001
Iron	Fe	0.05	-	-	0.09	<0.05	0.10	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese	Mn	0.001	1.9	-	0.007	0.005	0.008	0.008	0.004	0.007	0.004	0.003	0.007	0.001	0.001	0.002	0.002
Molybdenum	Mo	0.001	-	0.15	0.003	0.004	0.002	0.002	0.003	0.005	0.006	0.005	0.006	0.005	0.006	0.004	0.004
Nickel	Ni	0.001	0.011	1	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	Pb	0.001	0.0034	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	Sb	0.001	-	-	0.002	0.012	0.008	0.008	0.008	0.004	0.005	0.006	0.013	0.008	0.007	0.011	0.013
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	U	0.001	-	-	<0.001	0.005	0.005	0.005	0.007	0.007	0.007	0.006	0.006	0.007	0.007	0.004	0.004
Vanadium	V	0.01	-	-	0.06	0.06	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.02
Zinc	Zn	0.005	0.008	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Calculations**	Elements													
SO_4 Release Rate	SO*	4	3	2	2	2	1	1	2	1	3	3	2	2
Cumulative SO Release	Cum SO	4	7	10	12	14	15	17	19	20	22	25	27	29
Ca Release Rate	Ca	0.4	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.2	0.5	0.5	0.5	0.8
Cumulative Ca Release	Cum Ca	0.4	0.6	0.8	1.1	1.4	1.6	1.9	2.3	2.5	3.1	3.6	4.1	4.9
Mg Release Rate	Mg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1
Cumulative Mg Release	Cum Mg	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6
Residual ANC (%)	Res. ANC	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Residual Sulfur (%)	Res. S	99.8	99.6	99.5	99.3	99.2	99.1	99.1	99.0	98.9	98.8	98.6	98.5	98.4
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)	4.0	3.9	3.7	2.7	2.4	1.6	1.6	1.6	1.4	1.9	1.7	1.4	1.0

Notes:

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< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

KLC 4 Waste Rock (Free Leach)

Weight (kg)	10.00	Total S (%)	1.11	ANC	106.0	Porosity	-	Density (kg/L)	-						
pH (1:5)	8.80	Scr (%)	0.802	NAPP	-81.4	Volume (L)	-	Rock/Water Ratio	7.14						
EC (µS/cm)	593.0	MPA	24.6	ANC:MPA	4.3	Pore Volume (L)	1.35	Surface Area	-						

Date			04-Feb-20	03-Mar-20	07-Apr-20	06-May-20	02-Jun-20	07-Jul-20	08-Jul-20	01-Sep-20	07-Oct-20	03-Nov-20	01-Dec-20	05-Jan-21	02-Feb-21
Number of Weeks			0	4	9	13	17	22	22	30	35	39	43	48	52
Leach Number			1	2	3	4	5	6	7	8	9	10	11	12	13
ALS Laboratory Number			EB2002870004	EB2005928004	EB2009977004	EB2012199004	EB2014656004	EB2017856004	EB2020387004	EB2022964004	EB2026216004	EB2028814004	EB2031669004	EB2100143004	EB2102717004
Volume On (L)			1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Volume Off (L)			0.474	0.888	0.884	0.916	0.920	1.074	1.084	1.071	0.933	1.012	1.025	1.064	1.072
Cum. Volume (L)			0.47	1.36	2.25	3.16	4.08	5.16	6.24	7.31	8.24	9.26	10.28	11.35	12.42
Number of Pore Volumes through the Samples	Water Quality Guidelines		0.4	1.0	1.7	2.3	3.0	3.8	4.6	5.4	6.1	6.9	7.6	8.4	9.2
pH (RGS Measurement)	6 to 9	-	7.80	7.62	7.92	7.99	8.03	8.31	8.36	7.71	7.86	7.83	8.12	8.37	8.13
pH (ALS Measurement)			7.2	6.85	7.42	7.39	7.63	7.00	7.59	7.58	7.12	7.49	7.63	8.31	7.54
pH (deionised water used in test)		-	5.20	5.71	6.43	6.35	6.75	6.73	6.48	6.23	6.59	6.03	6.70	5.86	5.96
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	797	721	393	417	318	296	303	305	265	257	304	410	232
EC (ALS Measurement) (µS/cm)			847	751	411	437	356	293	382	356	265	274	297	401	259
Acidity (mg/L as $CaCO_3$)*	-	-	1.0	2.0	2.0	<1	2.0	<1	<1	1.0	1.0	2.0	2.0	<1	2.0
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	32	28	20	27	26	37	45	30	18	30	35	59	26
Total Alkalinity (mg/L as CaCO)*	-	-	32	28	20	27	26	37	45	30	18	30	35	60	26

Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]											
					(All units mg/L)										
Calcium	Ca	1	-	1000	42	38	20	23	18	16	20	20	13	14	15	22	12
Potassium	K	1	-	-	20	16	10	8	7	6	7	7	5	6	6	8	5
Magnesium	Mg	1	-	-	26	29	15	17	16	15	18	20	14	14	18	27	16
Sodium	Na	1	-	-	71	68	31	27	23	18	20	19	13	12	13	13	10
Chloride	Cl	1	-	-	42	32	11	10	10	6	7	6	4	4	4	3	2
Fluoride	F*	0.1	-	2	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	<0.1
Sulfate	SO	1	-	1,000	275	277	146	162	126	112	128	137	92	87	100	125	84
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**											
					(All units mg/L)										
Aluminium	Al	0.01	0.055	5	0.02	0.01	0.02	0.01	0.01	0.02	0.01	0.04	0.02	0.02	0.02	0.01	0.02
Arsenic	As	0.001	0.024 (tri)*	0.5	0.013	0.050	0.038	0.024	0.020	0.017	0.017	0.015	0.011	0.013	0.014	0.013	0.010
Boron	B	0.05	0.37	5	0.08	0.16	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium	Cd	0.0001	0.0002	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	Co	0.001	-	1	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	Cu	0.001	0.0014	1	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	0.001
Iron	Fe	0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese	Mn	0.001	1.9	-	0.178	0.059	0.018	0.007	0.004	0.002	0.001	0.001	0.001	<0.001	0.001	0.002	<0.001
Molybdenum	Mo	0.001	-	0.15	0.001	0.002	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	Ni	0.001	0.011	1	0.008	0.003	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	Pb	0.001	0.0034	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	Sb	0.001	-	-	0.012	0.020	0.015	0.011	0.009	0.007	0.008	0.007	0.005	0.008	0.008	0.008	0.007
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	U	0.001	-	-	0.005	0.014	0.009	0.013	0.016	0.020	0.024	0.016	0.008	0.012	0.014	0.012	0.012
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	Zn	0.005	0.008	-	0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Calculations**	Elements													
SO_4 Release Rate	SO*	13	25	13	15	12	12	14	15	9	9	10	13	9
Cumulative SO Release	Cum SO	13	38	51	65	77	89	103	118	126	135	145	158	167
Ca Release Rate	Ca	2.0	3.4	1.8	2.1	1.7	1.7	2.2	2.1	1.2	1.4	1.5	2.3	1.3
Cumulative Ca Release	Cum Ca	2.0	5.4	7.1	9.2	10.9	12.6	14.8	16.9	18.1	19.6	21.1	23.4	24.7
Mg Release Rate	Mg	1.2	2.6	1.3	1.6	1.5	1.6	2.0	2.1	1.3	1.4	1.8	2.9	1.7
Cumulative Mg Release	Cum Mg	1.2	3.8	5.1	6.7	8.2	9.8	11.7	13.9	15.2	16.6	18.4	21.3	23.0
Residual ANC (%)	Res. ANC	100.0	100.0	100.0	100.0	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
Residual Sulfur (%)	Res. S	100.0	99.9	99.8	99.8	99.8	99.7	99.7	99.6	99.6	99.6	99.6	99.5	99.5
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)	1.4	1.3	1.4	1.3	1.2	1.1	1.1	1.1	1.1	1.0	0.9	0.8	0.9

Notes:

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< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

KLC 5 Waste Rock (Free Leach)

Weight (kg)	10.00	Total S (%)	0.43	ANC	38.2	Porosity	-	Density (kg/L)	-						
pH (1:5)	9.40	Scr (%)	0.371	NAPP	-26.8	Volume (L)	-	Rock/Water Ratio	7.14						
EC (µS/cm)	214	MPA	11.4	ANC:MPA	3.4	Pore Volume (L)	1.35	Surface Area	-						

Date			04-Feb-20	03-Mar-20	07-Apr-20	06-May-20	02-Jun-20	07-Jul-20	04-Aug-20	01-Sep-20	07-Oct-20	03-Nov-20	01-Dec-20	05-Jan-21	02-Feb-21
Number of Weeks			0	4	9	13	17	22	26	30	35	39	43	48	52
Leach Number			1	2	3	4	5	6	7	8	9	10	11	12	13
ALS Laboratory Number			EB2002870005	EB2005928005	EB2009977005	EB2012199005	EB2014656005	EB2017856005	EB2020387005	EB2022964005	EB2026216005	EB2028814005	EB2031669005	EB2100143005	EB2102717005
Volume On (L)			1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Volume Off (L)			0.383	0.360	0.908	0.664	0.595	0.595	0.989	0.872	0.825	0.895	0.821	0.756	0.858
Cum. Volume (L)			0.38	0.74	1.65	2.32	2.91	3.51	4.49	5.37	6.19	7.09	7.91	8.66	9.52
Number of Pore Volumes through the Samples	Water Quality Guidelines		0.3	0.6	1.2	1.7	2.2	2.6	3.3	4.0	4.6	5.2	5.9	6.4	7.1
pH (RGS Measurement)	6 to 9	-	7.60	7.48	7.76	7.78	7.58	7.58	8.22	7.78	7.91	7.80	8.04	8.06	7.85
pH (ALS Measurement)			7.24	6.87	7.48	7.33	7.62	7.10	7.64	7.65	7.38	7.61	7.64	7.90	7.35
pH (deionised water used in test)		-	5.20	5.71	6.43	6.35	6.75	6.75	6.48	6.23	6.59	6.03	6.70	6.06	5.96
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	695	681	502	608	392	392	333	307	298	279	297	326	277
EC (ALS Measurement) (µS/cm)			754	709	544	646	434	429	423	362	305	290	290	310	308
Acidity (mg/L as $CaCO_3$)*	-	-	1.0	4.0	2.0	1.0	1.0	1.0	1.0	<1	1.0	2.0	2.0	<1	2.0
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	36	26	27	26	27	68	34	34	30	34	35	30	20
Total Alkalinity (mg/L as CaCO)*	-	-	36	26	27	26	27	68	34	34	30	34	35	30	20

Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]											
					(All units mg/L)										
Calcium	Ca	1	-	1000	39	35	24	30	19	20	18	18	15	13	13	15	11
Potassium	K	1	-	-	18	15	11	10	7	8	7	7	6	7	6	6	5
Magnesium	Mg	1	-	-	23	26	19	26	18	22	20	20	16	16	18	20	21
Sodium	Na	1	-	-	62	65	41	48	33	33	26	23	16	14	13	13	10
Chloride	Cl	1	-	-	34	36	21	23	16	12	11	8	4	5	4	3	2
Fluoride	F*	0.1	-	2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	<0.1
Sulfate	SO	1	-	1,000	235	240	174	213	146	153	134	126	99	87	97	104	112
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**											
					(All units mg/L)										
Aluminium	Al	0.01	0.055	5	0.02	<0.01	0.01	<0.01	0.01	0.01	0.02	0.03	0.03	0.03	0.03	0.04	0.02
Arsenic	As	0.001	0.024 (tri)*	0.5	0.014	0.050	0.042	0.029	0.022	0.020	0.017	0.017	0.017	0.015	0.013	0.012	0.006
Boron	B	0.05	0.37	5	0.06	0.06	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium	Cd	0.0001	0.0002	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	Co	0.001	-	1	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	Cu	0.001	0.0014	1	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Iron	Fe	0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese	Mn	0.001	1.9	-	0.156	0.024	0.018	0.009	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	Mo	0.001	-	0.15	<0.001	0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
Nickel	Ni	0.001	0.011	1	0.008	0.002	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	Pb	0.001	0.0034	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	Sb	0.001	-	-	0.013	0.027	0.016	0.012	0.010	0.009	0.008	0.008	0.008	0.008	0.007	0.006	0.004
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	U	0.001	-	-	0.004	0.009	0.010	0.010	0.012	0.026	0.020	0.012	0.009	0.009	0.008	0.006	0.004
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	Zn	0.005	0.008	-	0.010	0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006

Calculations**	Elements													
SO_4 Release Rate	SO*	9	9	16	14	9	9	13	11	8	8	8	8	10
Cumulative SO Release	Cum SO	9	18	33	48	56	65	79	90	98	106	114	121	131
Ca Release Rate	Ca	1.5	1.3	2.2	2.0	1.1	1.2	1.8	1.6	1.2	1.2	1.1	1.1	0.9
Cumulative Ca Release	Cum Ca	1.5	2.8	4.9	6.9	8.1	9.2	11.0	12.6	13.8	15.0	16.1	17.2	18.1
Mg Release Rate	Mg	0.9	0.9	1.7	1.7	1.1	1.3	2.0	1.7	1.3	1.4	1.5	1.5	1.8
Cumulative Mg Release	Cum Mg	0.9	1.8	3.5	5.3	6.3	7.6	9.6	11.4	12.7	14.1	15.6	17.1	18.9
Residual ANC (%)	Res. ANC	100.0	100.0	99.9	99.9	99.9	99.9	99.8	99.8	99.8	99.8	99.7	99.7	99.7
Residual Sulfur (%)	Res. S	99.9	99.9	99.7	99.6	99.6	99.5	99.4	99.3	99.2	99.2	99.1	99.1	99.0
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)	1.3	1.3	1.3	1.2	1.3	1.1	1.1	1.0	1.0	0.9	0.9	0.9	1.0

Notes:

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< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

KLC 6 Waste Rock (Free Leach)

Weight (kg)	8.90	Total S (%)	0.72	ANC	36.7	Porosity	-	Density (kg/L)	-				
pH (1:5)	9.20	Scr (%)	0.554	NAPP	-19.7	Volume (L)	-	Rock/Water Ratio	6.36				
EC (µS/cm)	258	MPA	16.97	ANC:MPA	2.2	Pore Volume (L)	1.35	Surface Area	-				

Date			04-Feb-20	03-Mar-20	07-Apr-20	03-May-20	02-Jun-20	07-Jul-20	04-Aug-20	01-Sep-20	07-Oct-20	03-Nov-20	02-Dec-20	05-Jan-21	02-Feb-21
Number of Weeks			0	4	9	13	17	22	26	30	35	39	43	48	52
Leach Number			1	2	3	4	5	6	7	8	9	10	11	12	13
ALS Laboratory Number			EB2002870006	EB2005928006	EB2009977006	Extrapolated data	EB2014656006	EB2017856006	EB2020387006	EB2022964006	EB2026216006	EB2028814006	EB2031669006	EB2100143006	EB2102717006
Volume On (L)			1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Volume Off (L)			0.927	0.945	0.868	0.951	1.033	1.046	1.052	1.034	1.042	1.016	1.031	1.005	0.989
Cum. Volume (L)			0.93	1.87	2.74	3.65	4.68	5.73	6.78	7.81	8.85	9.87	10.90	11.91	12.89
Number of Pore Volumes through the Samples	Water Quality Guidelines		0.7	1.4	2.0	2.7	3.5	4.2	5.0	5.8	6.6	7.3	8.1	8.8	9.6
pH (RGS Measurement)	6 to 9	-	6.73	7.26	7.44	7.35	7.26	7.81	8.00	7.58	7.56	7.51	7.73	7.82	7.65
pH (ALS Measurement)			6.89	6.68	7.17	7.28	7.38	6.75	7.30	7.30	7.03	7.26	7.33	7.58	7.36
pH (deionised water used in test)		-	5.20	5.71	6.43	6.59	6.75	6.73	6.48	6.23	6.59	6.03	6.70	6.06	5.96
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	940	674	600	534	467	443	340	323	419	381	383	389	324
EC (ALS Measurement) (µS/cm)			1,010	705	649	583	517	437	427	378	428	381	378	378	362
Acidity (mg/L as $CaCO_3$)*	-	-	1.0	2.0	2.0	1.5	1.0	1.0	1.0	1.0	2.0	2.0	2.0	1.0	3.0
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	28	27	17	20	22	17	13	16	16	21	21	16	22
Total Alkalinity (mg/L as CaCO)*	-	-	28	27	17	20	22	17	13	16	16	21	21	16	22

Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]	(All units mg/L)												
Calcium	Ca	1	-	1000	103	78	65	60	55	47	42	43	48	40	38	44	36
Potassium	K	1	-	-	17	10	7	6	5	4	3	4	4	4	4	3	3
Magnesium	Mg	1	-	-	35	29	24	24	23	21	18	18	18	16	18	18	18
Sodium	Na	1	-	-	44	31	19	16	12	10	7	6	5	5	4	4	3
Chloride	Cl	1	-	-	23	14	8	7	6	4	3	2	2	1	1	<1	<1
Fluoride	F*	0.1	-	2	0.10	0.30	0.20	0.20	0.20	0.10	0.10	0.10	0.10	<0.1	<0.1	<0.1	<0.1
Sulfate	SO	1	-	1,000	435	317	280	242	204	198	171	160	181	154	158	156	141
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**	(All units mg/L)												
Aluminium	Al	0.01	0.055	5	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02
Arsenic	As	0.001	0.024 (tri)*	0.5	<0.001	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Boron	B	0.05	0.37	5	0.08	0.09	0.06	0.003	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium	Cd	0.0001	0.0002	0.01	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	Co	0.001	-	1	0.092	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	Cu	0.001	0.0014	1	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	Fe	0.05	-	-	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese	Mn	0.001	1.9	-	1.480	0.148	0.076	0.038	0.004	0.003	0.002	0.003	0.005	0.003	0.003	0.006	0.002
Molybdenum	Mo	0.001	-	0.15	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	Ni	0.001	0.011	1	0.171	0.002	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	Pb	0.001	0.0034	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	Sb	0.001	-	-	0.001	0.009	0.007	0.007	0.007	0.005	0.006	0.005	0.006	0.007	0.007	0.006	0.006
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	U	0.001	-	-	<0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	Zn	0.005	0.008	-	0.059	<0.005	0.018	0.009	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005

Calculations**	Elements													
SO_4 Release Rate	SO*	45	34	27	26	24	23	20	19	21	18	18	18	16
Cumulative SO Release	Cum SO	45	79	106	132	156	179	199	218	239	257	275	293	308
Ca Release Rate	Ca	10.7	8.3	6.3	6.4	6.4	5.5	5.0	5.0	5.6	4.6	4.4	5.0	4.0
Cumulative Ca Release	Cum Ca	10.7	19.0	25.3	31.8	38.1	43.7	48.6	53.6	59.2	63.8	68.2	73.2	77.2
Mg Release Rate	Mg	3.6	3.1	2.3	2.6	2.7	2.5	2.1	2.1	2.1	1.8	2.1	2.0	2.0
Cumulative Mg Release	Cum Mg	3.6	6.7	9.1	11.6	14.3	16.8	18.9	21.0	23.1	24.9	27.0	29.0	31.0
Residual ANC (%)	Res. ANC	99.9	99.8	99.7	99.7	99.6	99.5	99.5	99.4	99.4	99.3	99.2	99.2	99.1
Residual Sulfur (%)	Res. S	99.8	99.6	99.5	99.4	99.3	99.2	99.1	99.0	98.9	98.8	98.7	98.6	98.6
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)	1.1	1.1	1.1	1.0	0.9	1.0	1.0	0.9	1.0	1.0	1.0	0.9	0.9

Notes:

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< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

KLC 7 Waste Rock (Free Leach)

Weight (kg)	2.50	Total S (%)	1.79	ANC	43.4	Porosity	-	Density (kg/L)	-				
pH (1:5)	8.90	Scr (%)	1.36	NAPP	-1.7	Volume (L)	-	Rock/Water Ratio	1.79				
EC (µS/cm)	415	MPA	41.7	ANC:MPA	1.0	Pore Volume (L)	1.35	Surface Area	-				

Date			04-Feb-20	03-Mar-20	07-Apr-20	03-May-20	02-Jun-20	07-Jul-20	04-Aug-20	01-Sep-20	07-Oct-20	03-Nov-20	01-Dec-20	05-Jan-21	02-Feb-21
Number of Weeks			0	4	9	13	17	22	26	30	35	39	43	48	52
Leach Number			1	2	3	4	5	6	7	8	9	10	11	12	13
ALS Laboratory Number			EB2002870007	EB2005928007	EB2009977007	Extrapolated data	EB2014656007	EB2017856007	EB2020387007	EB2022964007	EB2026216007	EB2028814007	EB2031669007	EB2100143007	EB2102717007
Volume On (L)			1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Volume Off (L)			0.627	1.016	1.002	1.016	1.030	1.007	1.021	1.019	0.965	1.027	0.979	0.981	1.007
Cum. Volume (L)			0.63	1.64	2.65	3.66	4.69	5.70	6.72	7.74	8.70	9.73	10.71	11.69	12.70
Number of Pore Volumes through the Samples	Water Quality Guidelines		0.5	1.2	2.0	2.7	3.5	4.2	5.0	5.7	6.4	7.2	7.9	8.7	9.4
pH (RGS Measurement)	6 to 9	-	4.84	7.01	7.14	7.16	7.18	7.58	7.83	8.00	7.47	7.36	7.63	7.61	7.59
pH (ALS Measurement)			4.70	6.61	7.01	7.16	7.30	6.67	7.18	7.27	7.03	7.25	7.31	7.57	7.36
pH (deionised water used in test)		-	5.20	5.71	6.43	6.59	6.75	6.73	6.48	6.23	6.59	6.03	6.70	6.06	5.96
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	898	764	589	496	403	379	266	276	430	374	391	461	379
EC (ALS Measurement) (µS/cm)			991	802	639	546	452	376	332	318	441	385	388	449	423
Acidity (mg/L as $CaCO_3$)*	-	-	72.0	2.0	2.0	2.0	1.0	1.0	2.0	1.0	2.0	2.0	2.0	1.0	3.0
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	<1	14	11	13	14	17	31	15	21	18	23	21	21
Total Alkalinity (mg/L as CaCO)*	-	-	<1	14	11	13	14	17	31	15	21	18	23	21	21

Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]	(All units mg/L)										
Calcium	Ca	1	-	1000	104	122	85	71	57	48	38	38	56	44	43	54	47
Potassium	K	1	-	-	11	6	4	3	2	2	2	2	2	2	2	2	1
Magnesium	Mg	1	-	-	32	29	21	20	18	16	14	14	18	16	18	21	21
Sodium	Na	1	-	-	29	20	10	8	5	4	2	2	2	2	2	2	2
Chloride	Cl	1	-	-	14	8	4	3	2	<1	<1	<1	<1	<1	<1	<1	<1
Fluoride	F*	0.1	-	2	0.1	0.3	0.2	0.2	0.2	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfate	SO	1	-	1,000	468	407	290	240	190	181	137	138	189	161	167	197	177
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**	(All units mg/L)										
Aluminium	Al	0.01	0.055	5	0.18	<0.01	0.16	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	As	0.001	0.024 (tri)*	0.5	<0.001	0.004	<0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Boron	B	0.05	0.37	5	0.06	<0.05	0.10	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium	Cd	0.0001	0.0002	0.01	0.0055	0.0001	0.0003	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Cobalt	Co	0.001	-	1	0.070	0.002	0.006	0.004	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	Cu	0.001	0.0014	1	0.012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	Fe	0.05	-	-	28.20	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese	Mn	0.001	1.9	-	1.940	0.530	0.677	0.490	0.302	0.302	0.302	0.302	0.302	0.302	0.302	0.302	0.302
Molybdenum	Mo	0.001	-	0.15	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	Ni	0.001	0.011	1	0.487	0.020	0.043	0.022	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Lead	Pb	0.001	0.0034	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	Sb	0.001	-	-	0.002	0.021	0.016	0.016	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	U	0.001	-	-	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	Zn	0.005	0.008	-	0.450	0.011	0.056	0.032	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008

Calculations**	Elements													
SO_4 Release Rate	SO*	117	165	116	98	78	73	56	56	73	66	65	77	71
Cumulative SO Release	Cum SO	117	283	399	497	575	648	704	760	833	899	964	1042	1113
Ca Release Rate	Ca	26.1	49.6	34.1	28.9	23.5	19.3	15.5	15.5	21.6	18.1	16.8	21.2	18.9
Cumulative Ca Release	Cum Ca	26.1	75.7	109.7	138.6	162.1	181.4	196.9	212.4	234.0	252.1	268.9	290.1	309.1
Mg Release Rate	Mg	8.0	11.8	8.4	8.1	7.4	6.4	5.7	5.7	6.9	6.6	7.0	8.2	8.5
Cumulative Mg Release	Cum Mg	8.0	19.8	28.2	36.4	43.8	50.2	55.9	61.6	68.6	75.2	82.2	90.5	98.9
Residual ANC (%)	Res. ANC	99.8	99.4	99.1	98.9	98.7	98.5	98.4	98.2	98.0	97.9	97.7	97.5	97.3
Residual Sulfur (%)	Res. S	99.8	99.5	99.3	99.1	98.9	98.8	98.7	98.6	98.4	98.3	98.2	98.1	97.9
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)	1.2	1.0	1.0	1.0	0.9	1.0	0.9	0.9	0.9	1.0	1.0	0.9	0.9

Notes:

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< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

KLC 8 Waste Rock (Free Leach)

Weight (kg)	10.00	Total S (%)	0.09	ANC	55.6	Porosity	-	Density (kg/L)	-						
pH (1:5)	9.50	Scr (%)	0.037	NAPP	-54.5	Volume (L)	-	Rock/Water Ratio	7.15						
EC (µS/cm)	209	MPA	1.1	ANC:MPA	49.1	Pore Volume (L)	1.35	Surface Area	-						

Date			04-Feb-20	03-Mar-20	07-Apr-20	07-May-20	02-Jun-20	07-Jul-20	04-Aug-20	01-Sep-20	07-Oct-20	03-Nov-20	01-Dec-20	05-Jan-21	02-Feb-21
Number of Weeks			0	4	9	13	17	22	26	30	35	39	43	48	52
Leach Number			1	2	3	4	5	6	7	8	9	10	11	12	13
ALS Laboratory Number			EB2002870008	EB2005928008	EB2009977008	EB2012199006	EB2014656008	EB2017856008	EB2020387008	EB2022964008	EB2026216008	EB2028814008	EB2031669008	EB2100143008	EB2102717008
Volume On (L)			1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Volume Off (L)			0.836	0.594	0.638	0.669	0.565	0.441	0.559	0.426	0.779	0.914	0.910	0.455	0.491
Cum. Volume (L)			0.84	1.43	2.07	2.74	3.30	3.74	4.30	4.73	5.51	6.42	7.33	7.79	8.28
Number of Pore Volumes through the Samples	Water Quality Guidelines		0.6	1.1	1.5	2.0	2.4	2.8	3.2	3.5	4.1	4.8	5.4	5.8	6.1
pH (RGS Measurement)	6 to 9	-	7.69	8.05	8.51	8.25	8.32	8.44	8.67	7.98	8.19	7.96	8.15	8.32	8.02
pH (ALS Measurement)			7.15	7.64	8.14	8.03	8.07	7.49	7.82	7.95	7.99	7.99	7.91	8.07	7.86
pH (deionised water used in test)		-	5.20	5.71	6.43	6.10	6.75	6.73	6.48	6.23	6.59	6.03	6.70	6.06	7.86
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	421	691	387	308	284	212	152	177	249	207	207	201	207
EC (ALS Measurement) (µS/cm)			446	719	401	316	319	205	186	210	249	216	200	184	222
Acidity (mg/L as $CaCO_3$)*	-	-	1.0	1.0	1.0	<1	<1	<1	<1	<1	<1	2.0	1.0	<1	2.0
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	33	71	69	77	72	52	38	60	84	77	71	58	76
Total Alkalinity (mg/L as CaCO)*	-	-	33	71	69	77	72	52	38	60	84	77	71	58	76

Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]	(All units mg/L)										
Calcium	Ca	1	-	1000	12	16	9	9	11	6	5	10	14	13	13	14	18
Potassium	K	1	-	-	7	9	6	5	5	3	2	4	5	5	5	4	5
Magnesium	Mg	1	-	-	3	4	2	2	3	1	1	2	4	3	4	3	5
Sodium	Na	1	-	-	67	130	68	51	52	37	28	30	32	24	22	18	20
Chloride	Cl	1	-	-	30	52	18	9	8	4	4	4	4	3	2	2	2
Fluoride	F	0.1	-	2	0.6	1.7	1.5	1.1	0.8	0.6	0.4	0.5	0.6	0.5	0.5	0.4	0.4
Sulfate	SO	1	-	1,000	106	165	88	64	68	48	37	35	33	27	26	24	28
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**	(All units mg/L)										
Aluminium	Al	0.01	0.055	5	0.14	0.04	0.15	0.11	0.06	0.13	0.10	0.06	0.05	0.06	0.07	0.07	0.07
Arsenic	As	0.001	0.024 (tri)*	0.5	0.118	0.360	0.364	0.339	0.201	0.136	0.109	0.132	0.148	0.130	0.110	0.099	0.095
Boron	B	0.05	0.37	5	0.10	0.11	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium	Cd	0.0001	0.0002	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	Co	0.001	-	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	Cu	0.001	0.0014	1	0.002	0.002	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	Fe	0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese	Mn	0.001	1.9	-	0.044	0.004	0.002	<0.001	<0.001	0.002	0.002	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	Mo	0.001	-	0.15	0.004	0.017	0.009	0.005	0.004	0.004	0.003	0.004	0.014	0.011	0.013	0.016	0.020
Nickel	Ni	0.001	0.011	1	0.004	0.005	0.003	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	Pb	0.001	0.0034	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	Sb	0.001	-	-	0.006	0.041	0.036	0.027	0.020	0.010	0.008	0.014	0.020	0.017	0.014	0.017	0.017
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	U	0.001	-	-	0.004	0.043	0.039	0.039	0.043	0.042	0.035	0.034	0.048	0.036	0.036	0.026	0.034
Vanadium	V	0.01	-	-	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	Zn	0.005	0.008	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	0.006	0.006	<0.005	0.005

Calculations**	Elements													
SO_4 Release Rate	SO	9	10	6	4	4	2	2	1	3	2	2	1	1
Cumulative SO Release	Cum SO	9	19	24	29	32	35	37	38	41	43	45	47	48
Ca Release Rate	Ca	1.0	1.0	0.6	0.6	0.6	0.3	0.3	0.4	1.1	1.2	1.2	0.6	0.9
Cumulative Ca Release	Cum Ca	1.0	2.0	2.5	3.1	3.7	4.0	4.3	4.7	5.8	7.0	8.2	8.8	9.7
Mg Release Rate	Mg	0.3	0.2	0.1	0.1	0.2	0.0	0.1	0.1	0.3	0.3	0.4	0.1	0.2
Cumulative Mg Release	Cum Mg	0.3	0.5	0.6	0.7	0.9	1.0	1.0	1.1	1.4	1.7	2.1	2.2	2.4
Residual ANC (%)	Res. ANC	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.9	99.9
Residual Sulfur (%)	Res. S	99.7	99.3	99.1	98.9	98.8	98.7	98.6	98.6	98.5	98.4	98.3	98.3	98.2
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)	2.6	3.0	3.0	2.2	1.8	2.6	2.3	1.1	0.7	0.6	0.6	0.5	0.4

Notes:

ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines. Recommended guideline limits for 1. freshwater aquatic ecosystems (95 % species protection) and 2. livestock drinking water.

< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

KLC 13 BV2 Waste Rock (Free Leach)

Weight (kg)	10.00	Total S (%)	0.07	ANC	22.2	Porosity	-	Density (kg/L)	-				
pH (1:5)	9.75	Scr (%)	0.105	NAPP	-19.0	Volume (L)	-	Rock/Water Ratio	7.15				
EC (µS/cm)	108	MPA	3.2	ANC:MPA	6.9	Pore Volume (L)	2.40	Surface Area	-				

Date			21-Oct-21	09-Dec-21	06-Jan-22	03-Feb-22	03-Mar-22	31-Mar-22	15-Jul-22	17-Oct-22				
Number of Weeks			0	7	11	15	19	23	38	52				
Leach Number			1	2	3	4	5	6	7	8				
ALS Laboratory Number			EB2130149003	EB2135898003	EB2200248003	EB2202793003	EB2205847003	EB2209020003	EB2220718003					
Volume On (L)			2.7	1.0	1.0	1.8	1.4	1.4	2.0					
Volume Off (L)			0.213	0.697	0.411	0.579	0.585	0.581	0.275					
Cum. Volume (L)			0.21	0.91	1.32	1.90	2.49	3.07	3.34					
Number of Pore Volumes through the Samples	Water Quality Guidelines		0.1	0.4	0.6	0.8	1.0	1.3	1.4					
pH (RGS Measurement)	6 to 9	-	8.50	8.79	8.40	8.31	8.38	8.50	8.64					
pH (ALS Measurement)			8.37	8.77	8.16	8.44	8.47	8.62	8.39					
pH (deionised water used in test)		-	7.05	7.27	7.58	5.78	6.55	6.35	6.42					
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	4,000	2,870	2,350	2,380	1,737	1,323	1,662					
EC (ALS Measurement) (µS/cm)			4,610	2,860	2,850	2,410	1,740	1,390	1,630					
Acidity (mg/L as $CaCO_3$)*	-	-	<1	<1	<1	<1	<1	<1	<1					
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1					
Carbonate Alkalinity (mg/L as CaCO)*	-	-	13	65	<1	12	16	45	5					
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	575	521	288	265	293	289	196					
Total Alkalinity (mg/L as CaCO)*	-	-	588	586	288	278	309	334	201					

Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]	(All units mg/L)											
Calcium	Ca	1	-	1000	74	28	30	27	14	12	13					
Potassium	K	1	-	-	14	10	11	9	7	6	7					
Magnesium	Mg	1	-	-	70	36	27	18	9	7	10					
Sodium	Na	1	-	-	917	620	649	517	356	307	340					
Chloride	Cl	1	-	-	354	131	49	11	3	1	6					
Fluoride	F*	0.1	-	2	16.0	25.4	18.7	16.9	18.5	17.5	16.2					
Sulfate	SO	1	-	1,000	1,370	735	1,030	876	519	301	526					
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**	(All units mg/L)											
Aluminium	Al	0.01	0.055	5	<0.01	0.01	<0.01	<0.01	0.01	0.02	0.10					
Arsenic	As	0.001	0.024 (tri)*	0.5	0.038	0.049	0.029	0.022	0.031	0.033	0.033					
Boron	B	0.05	0.37	5	0.07	0.10	0.11	0.10	0.08	0.09	0.08					
Cadmium	Cd	0.0001	0.0002	0.01	0.0004	0.0002	<0.0001	0.0002	0.0002	<0.0001	<0.0001					
Cobalt	Co	0.001	-	1	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
Copper	Cu	0.001	0.0014	1	0.006	0.003	0.002	0.001	0.002	0.001	0.002					
Iron	Fe	0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001					
Manganese	Mn	0.001	1.9	-	0.073	0.003	0.030	0.027	0.010	0.004	0.006					
Molybdenum	Mo	0.001	-	0.15	0.596	0.584	0.627	0.498	0.333	0.208	0.126					
Nickel	Ni	0.001	0.011	1	0.005	0.002	0.002	<0.001	<0.001	<0.001	<0.001					
Lead	Pb	0.001	0.0034	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
Antimony	Sb	0.001	-	-	0.014	0.029	0.024	0.015	0.021	0.017	0.012					
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001					
Uranium	U	0.001	-	-	0.030	0.028	0.066	0.062	0.056	0.044	0.051					
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					
Zinc	Zn	0.005	0.008	-	0.026	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					

Calculations**	Elements												
SO_4 Release Rate	SO*		29	51	42	51	30	17	14				
Cumulative SO Release	Cum SO		29	80	123	173	204	221	236				
Ca Release Rate	Ca		1.6	2.0	1.2	1.6	0.8	0.7	0.4				
Cumulative Ca Release	Cum Ca		1.6	3.5	4.8	6.3	7.1	7.8	8.2				
Mg Release Rate	Mg		1.5	2.5	1.1	1.0	0.5	0.4	0.3				
Cumulative Mg Release	Cum Mg		1.5	4.0	5.1	6.1	6.7	7.1	7.4				
Residual ANC (%)	Res. ANC		100.0	99.9	99.9	99.8	99.8	99.8	99.8				
Residual Sulfur (%)	Res. S		98.6	96.2	94.2	91.7	90.3	89.5	88.8				
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)		3.0	3.5	5.8	6.4	7.5	5.3	7.4				

Notes: ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines. Recommended guideline limits for 1. freshwater aquatic ecosystems (95 % species protection) and 2. livestock drinking water.

< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

KLC 14 BV1 Waste Rock (Free Leach)

Weight (kg)	10.01	Total S (%)	0.07	ANC	30.1	Porosity	-	Density (kg/L)	-				
pH (1:5)	7.70	Scr (%)	0.06	NAPP	-28.2	Volume (L)	-	Rock/Water Ratio	7.15				
EC (µS/cm)	39	MPA	1.9	ANC:MPA	15.6	Pore Volume (L)	2.25	Surface Area	-				

Date			21-Oct-21	09-Dec-21	06-Jan-22	03-Feb-22	03-Mar-22	31-Mar-22	15-Jul-22	17-Oct-22
Number of Weeks			0	7	11	15	19	23	38	52
Leach Number			1	2	3	4	5	6	7	8
ALS Laboratory Number			EB2130149004	EB2135898004	EB2200248004	EB2202793004	EB2205847004	EB2209020004	EB2220718004	
Volume On (L)			2.9	1.4	1.4	1.8	1.4	1.4	2.0	
Volume Off (L)			0.650	0.849	0.416	0.458	0.677	0.404	0.536	
Cum. Volume (L)			0.65	1.50	1.92	2.37	3.05	3.45	3.99	
Number of Pore Volumes through the Samples	Water Quality Guidelines		0.3	0.7	0.9	1.1	1.4	1.5	1.8	
pH (RGS Measurement)	6 to 9	-	7.95	8.69	8.11	7.64	7.97	8.08	8.19	
pH (ALS Measurement)			8.36	8.54	7.77	7.97	7.90	8.08	7.98	
pH (deionised water used in test)		-	7.05	7.27	7.58	5.78	6.55	6.35	6.42	
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	1,291	669	913	1,145	883	585	666	
EC (ALS Measurement) (µS/cm)			1,350	649	1,100	1,170	903	620	685	
Acidity (mg/L as $CaCO_3$)*	-	-	<1	<1	3.0	5.0	2.0	<1	1.0	
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	
Carbonate Alkalinity (mg/L as CaCO)*	-	-	8.0	18.0	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	377	256	85	76	85	101	88	
Total Alkalinity (mg/L as CaCO)*	-	-	385	274	85	76	85	101	88	

Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]	(All units mg/L)						
Calcium	Ca	1	-	1000	70	18	72	76	52	33	36
Potassium	K	1	-	-	15	10	14	14	12	9	9
Magnesium	Mg	1	-	-	67	24	54	54	40	23	29
Sodium	Na	1	-	-	158	102	106	96	68	56	55
Chloride	Cl	1	-	-	107	13	23	4	1	<1	2
Fluoride	F	0.1	-	2	1.5	1.9	2.8	2.7	3.1	4.3	3.0
Sulfate	SO	1	-	1,000	175	76	501	549	382	190	224
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**	**(All units mg/L)**						
Aluminium	Al	0.01	0.055	5	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	As	0.001	0.024 (tri)*	0.5	0.028	0.020	0.015	0.016	0.021	0.025	0.029
Boron	B	0.05	0.37	5	0.07	0.07	0.06	0.06	<0.05	0.05	0.05
Cadmium	Cd	0.0001	0.0002	0.01	0.0001	<0.0001	<0.0001	0.0002	0.0002	0.0001	0.0001
Cobalt	Co	0.001	-	1	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	Cu	0.001	0.0014	1	0.007	0.001	0.001	<0.001	0.001	0.001	0.001
Iron	Fe	0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese	Mn	0.001	1.9	-	0.107	0.005	0.056	0.050	0.022	0.007	0.007
Molybdenum	Mo	0.001	-	0.15	0.184	0.189	0.457	0.411	0.375	0.341	0.236
Nickel	Ni	0.001	0.011	1	0.006	0.001	0.002	<0.001	<0.001	<0.001	<0.001
Lead	Pb	0.001	0.0034	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	Sb	0.001	-	-	0.172	0.137	0.136	0.114	0.184	0.163	0.132
Selenium	Se	0.01	0.011	0.02	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	U	0.001	-	-	0.008	0.002	0.008	0.008	0.008	0.006	0.009
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	Zn	0.005	0.008	-	0.038	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Calculations**	Elements										
SO_4 Release Rate	SO		11	6	21	25	26	8	12		
Cumulative SO Release	Cum SO		11	18	39	64	90	97	109		
Ca Release Rate	Ca		4.5	1.5	3.0	3.5	3.5	1.3	1.9		
Cumulative Ca Release	Cum Ca		4.5	6.1	9.1	12.5	16.1	17.4	19.3		
Mg Release Rate	Mg		4.4	2.0	2.2	2.5	2.7	0.9	1.6		
Cumulative Mg Release	Cum Mg		4.4	6.4	8.6	11.1	13.8	14.7	16.3		
Residual ANC (%)	Res. ANC		99.9	99.9	99.8	99.7	99.7	99.7	99.6		
Residual Sulfur (%)	Res. S		99.4	99.1	98.1	96.9	95.6	95.2	94.6		
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)		0.4	0.6	1.3	1.4	1.4	1.1	1.1		

Notes: ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines. Recommended guideline limits for 1. freshwater aquatic ecosystems (95 % species protection) and 2. livestock drinking water.

< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

KLC 16 PAF/NAF Waste Rock (Free Leach)

Weight (kg)	1.00	Total S (%)	1.60	ANC	56.1	Porosity	-	Density (kg/L)	-				
pH (1:5)	-	Scr (%)	-	NAPP	-7.10	Volume (L)	-	Rock/Water Ratio	0.71				
EC (µS/cm)	-	MPA	49.0	ANC:MPA	1.14	Pore Volume (L)	0.60	Surface Area	-				

Date			21-Oct-21	09-Dec-21	06-Jan-22	03-Feb-22	03-Mar-22	31-Mar-22	15-Jul-22	17-Oct-22				
Number of Weeks			0	7	11	15	19	23	38	52				
Leach Number			1	2	3	4	5	6	7	8				
ALS Laboratory Number			EB2130149006	EB2135898006	EB2200248006	EB2202793006	EB2205847006	EB2209020006	EB2220718006					
Volume On (L)			1.4	1.0	1.0	1.0	1.0	1.0	1.0					
Volume Off (L)			0.879	0.535	0.619	0.553	0.460	0.367	0.396					
Cum. Volume (L)			0.88	1.41	2.03	2.59	3.05	3.41	3.81					
Number of Pore Volumes through the Samples	Water Quality Guidelines		1.5	2.4	3.4	4.3	5.1	5.7	6.4					
pH (RGS Measurement)		-	7.08	8.02	7.37	6.50	7.00	7.99	7.54					
pH (ALS Measurement)	6 to 9		7.7	8.24	6.95	7.26	7.07	7.31	7.32					
pH (deionised water used in test)		-	7.05	7.27	7.58	5.78	6.55	6.35	6.42					
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	1,020	235	276	336	300	254	305					
EC (ALS Measurement) (µS/cm)			1,020	242	338	354	302	292	321					
Acidity (mg/L as $CaCO_3$)*	-	-	3.0	2.0	2.0	2.0	2.0	1.0	1.0					
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1					
Carbonate Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1					
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	98	38	22	22	23	26	21					
Total Alkalinity (mg/L as CaCO)*	-	-	98	38	22	22	23	26	21					

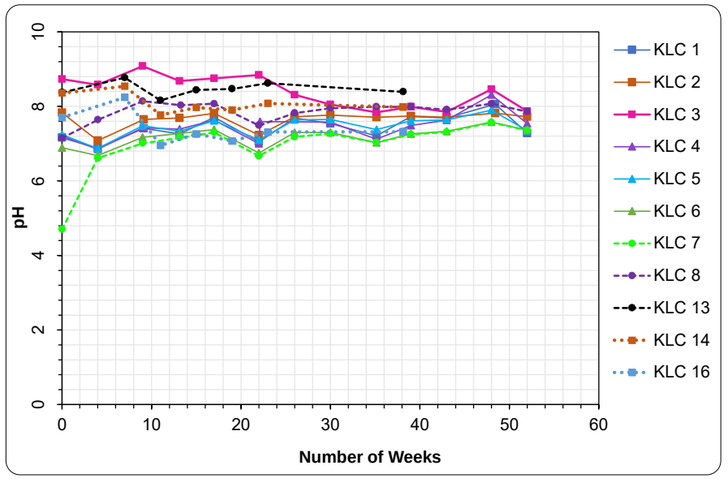
Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]										
					(All units mg/L)									
Calcium	Ca	1	-	1000	80	13	24	23	16	21	18			
Potassium	K	1	-	-	129	19	27	25	26	28	28			
Magnesium	Mg	1	-	-	17	8	11	11	9	11	9			
Sodium	Na	1	-	-	31	9	10	10	9	10	12			
Chloride	Cl	1	-	-	12	8	4	3	2	2	2			
Fluoride	F	0.1	-	2	1.6	0.3	0.5	0.5	0.5	0.5	0.5			
Sulfate	SO	1	-	1,000	334	72	124	124	105	90	106			
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**										
					(All units mg/L)									
Aluminium	Al	0.01	0.055	5	0.01	0.12	0.07	0.09	0.10	0.09	0.04			
Arsenic	As	0.001	0.024 (tri)*	0.5	0.004	0.001	0.002	0.002	0.004	0.001	<0.001			
Boron	B	0.05	0.37	5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			
Cadmium	Cd	0.0001	0.0002	0.01	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001			
Cobalt	Co	0.001	-	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Copper	Cu	0.001	0.0014	1	0.001	0.002	<0.001	<0.001	0.001	<0.001	<0.001			
Iron	Fe	0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
Manganese	Mn	0.001	1.9	-	0.069	0.024	0.028	0.025	0.030	0.025	0.039			
Molybdenum	Mo	0.001	-	0.15	0.019	0.002	0.005	0.005	0.005	0.002	0.002			
Nickel	Ni	0.001	0.011	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Lead	Pb	0.001	0.0034	0.1	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Antimony	Sb	0.001	-	-	0.006	<0.001	0.003	0.002	<0.001	<0.001	0.001			
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Uranium	U	0.001	-	-	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Zinc	Zn	0.005	0.008	-	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			

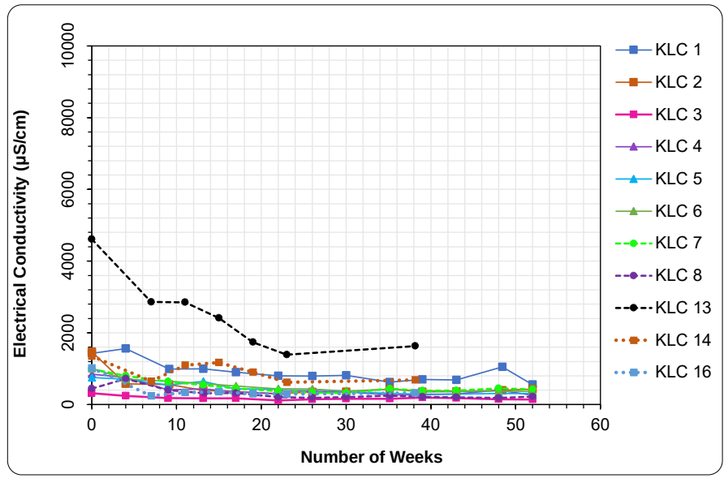
Calculations**	Elements												
SO_4 Release Rate	SO		294	39	77	69	48	33	42				
Cumulative SO Release	Cum SO		294	332	409	478	526	559	601				
Ca Release Rate	Ca		70.4	7.0	14.9	12.7	7.4	7.7	7.1				
Cumulative Ca Release	Cum Ca		70.4	77.4	92.2	105.0	112.3	120.0	127.2				
Mg Release Rate	Mg		15.0	4.3	6.8	6.1	4.1	4.0	3.6				
Cumulative Mg Release	Cum Mg		15.0	19.2	26.1	32.1	36.3	40.3	43.9				
Residual ANC (%)	Res. ANC		99.6	99.5	99.4	99.3	99.2	99.2	99.1				
Residual Sulfur (%)	Res. S		99.4	99.3	99.1	99.0	98.9	98.8	98.7				
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)		1.3	1.1	1.2	1.3	1.4	1.0	1.3				

Notes: ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines. Recommended guideline limits for 1. freshwater aquatic ecosystems (95 % species protection) and 2. livestock drinking water.

< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

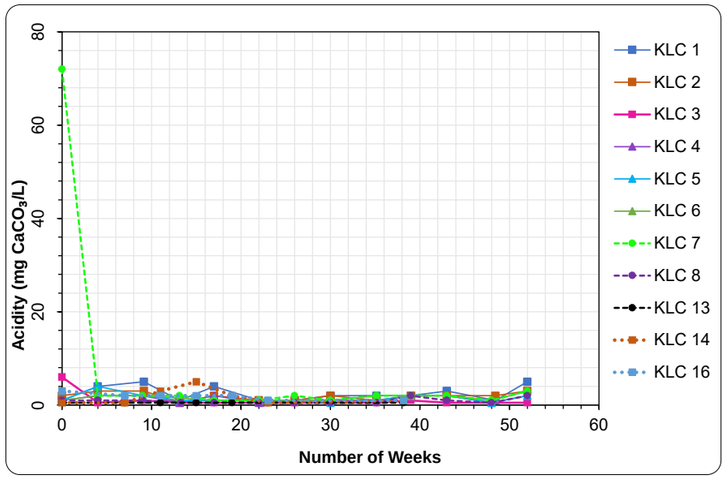
KLC Plots

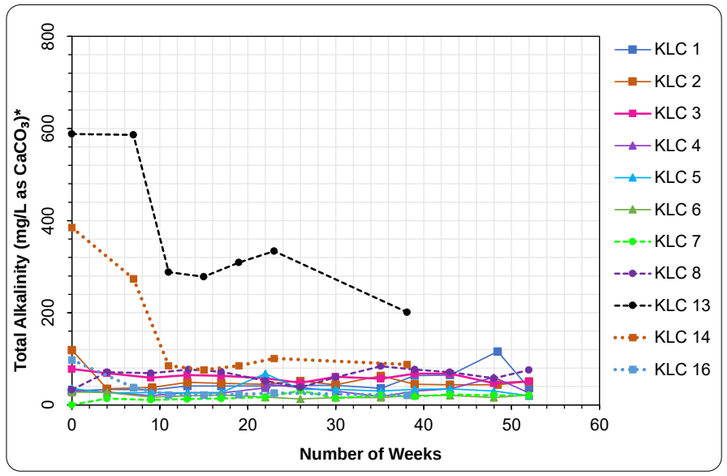


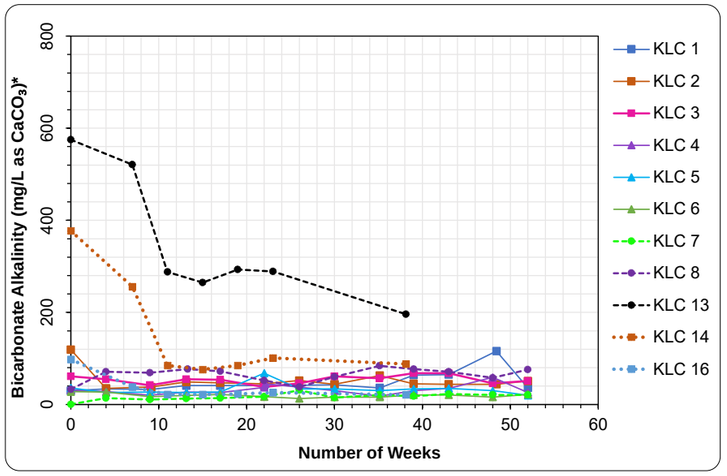


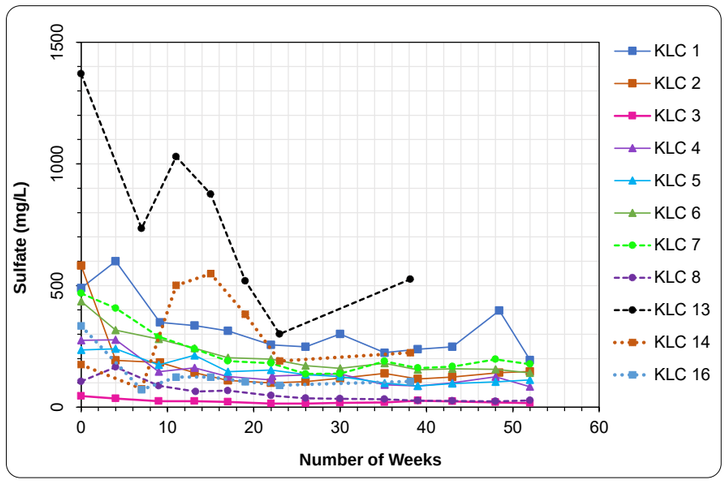
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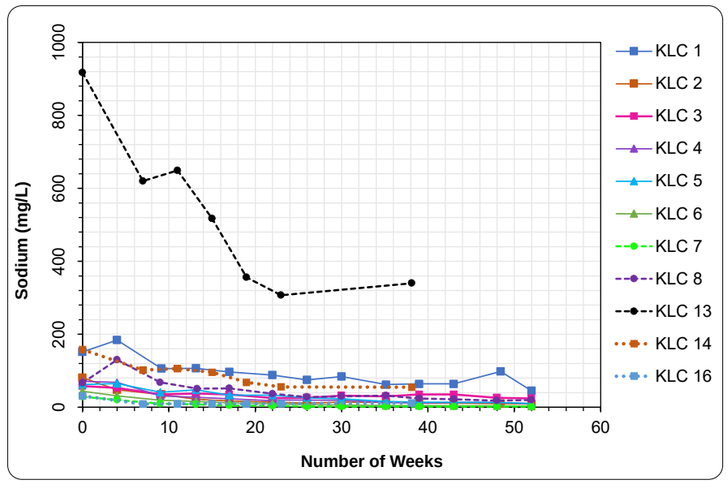
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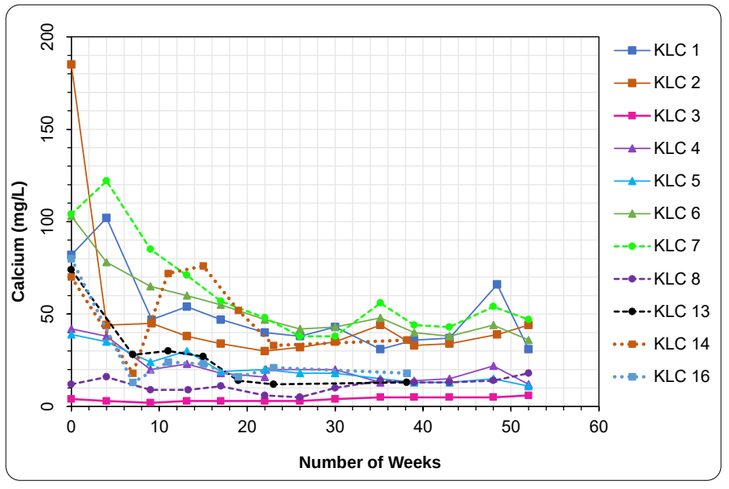




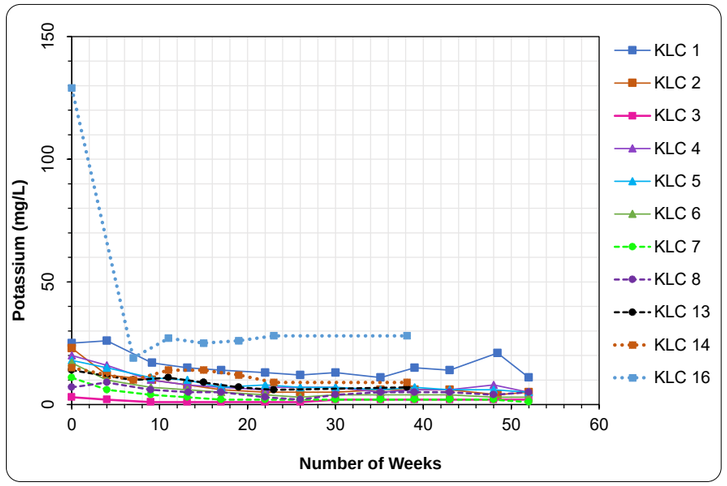


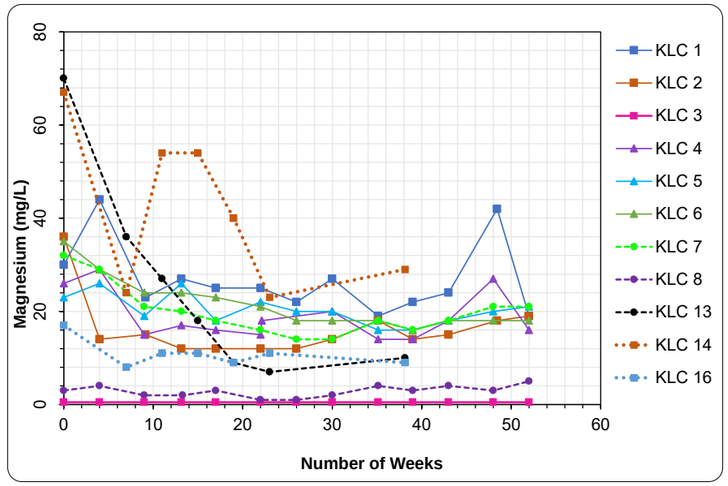






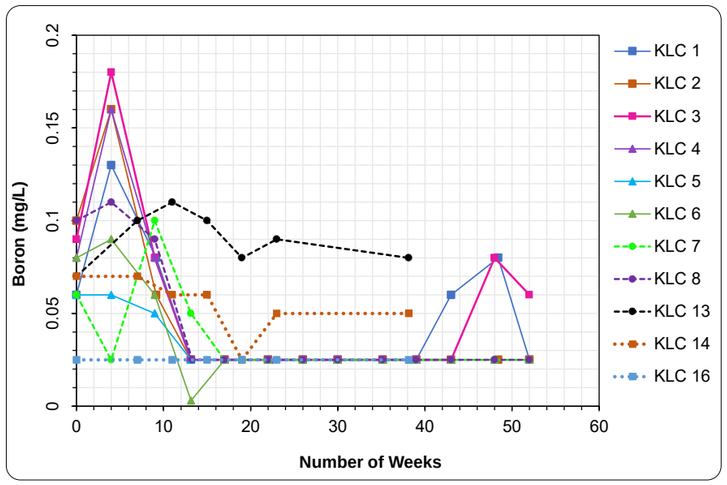
KLC Plots

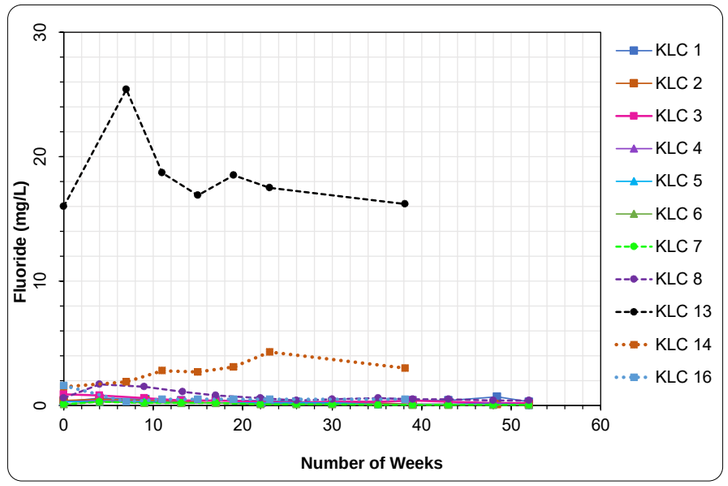


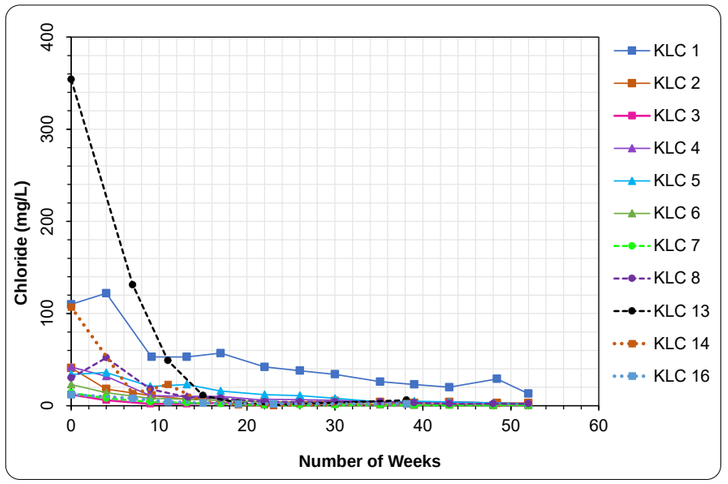


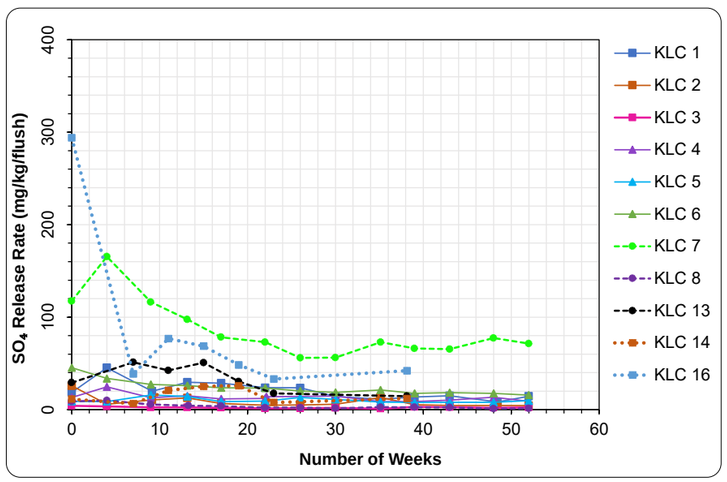
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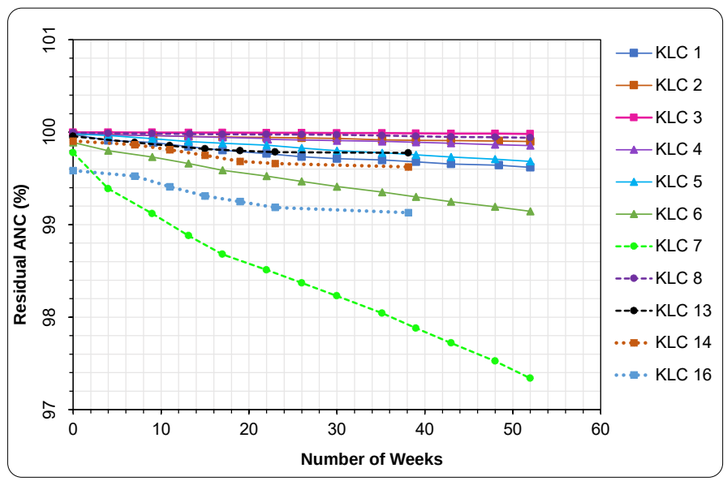
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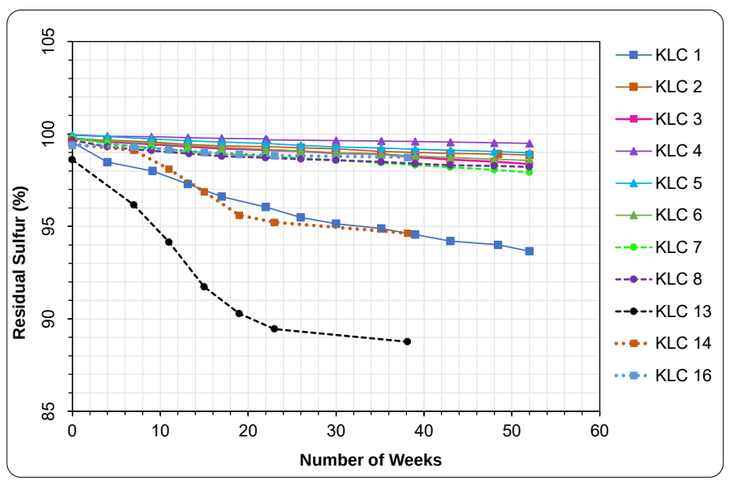




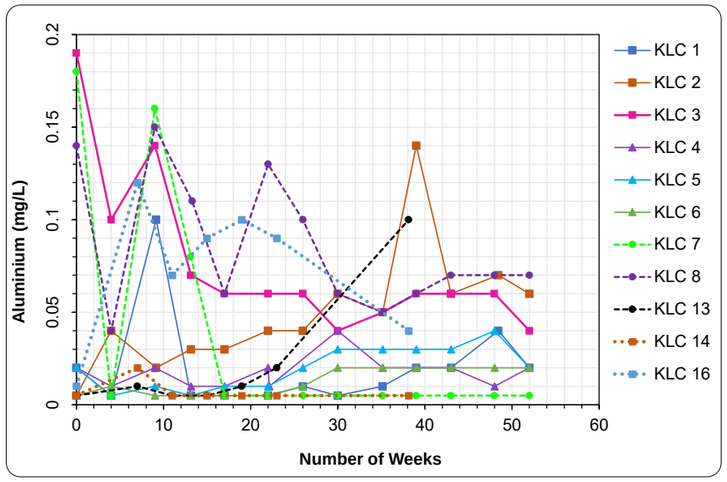


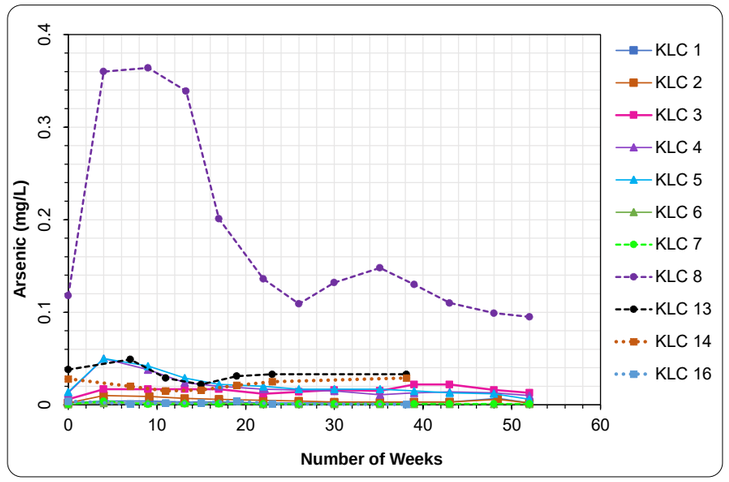






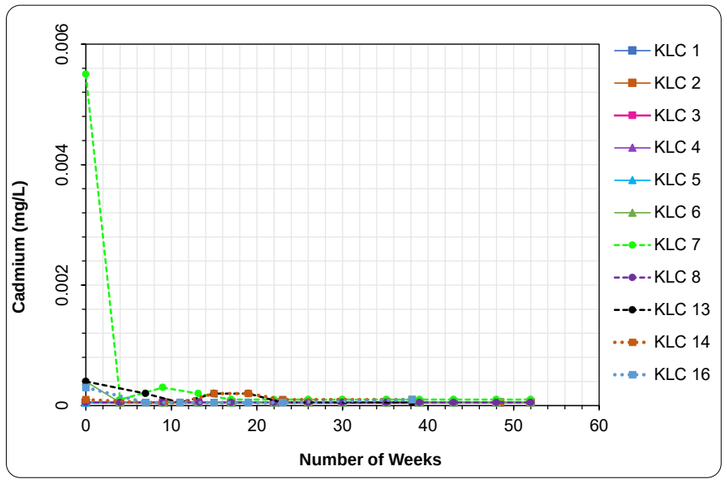
KLC Plots

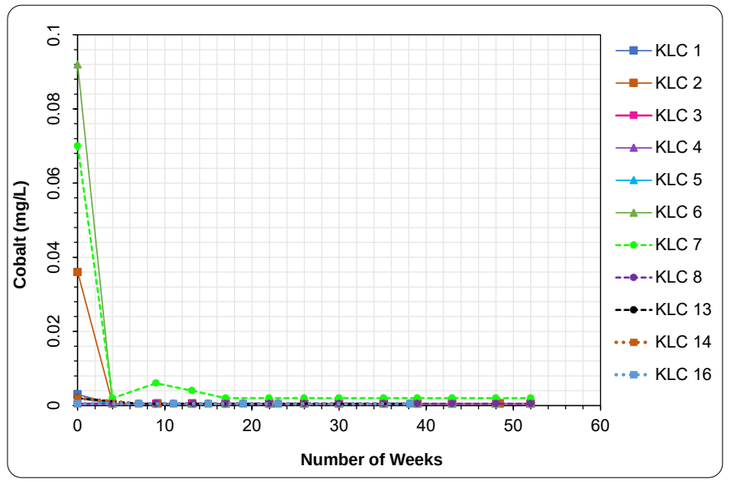


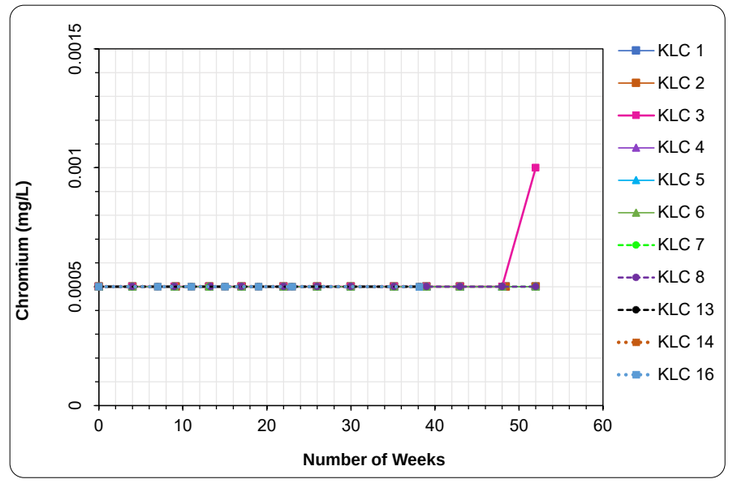


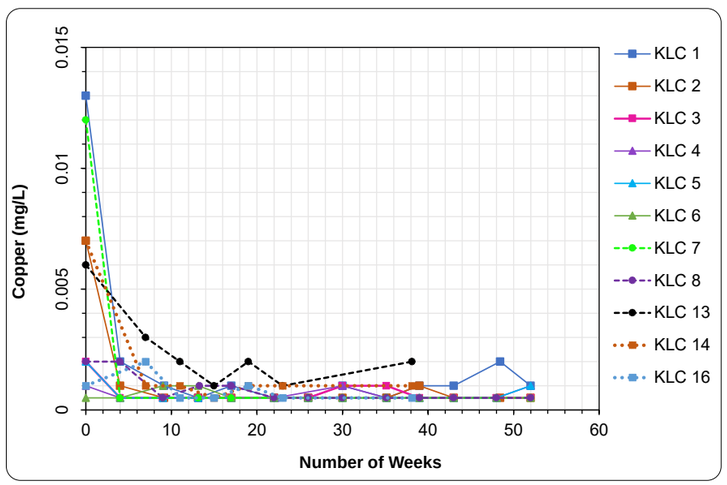
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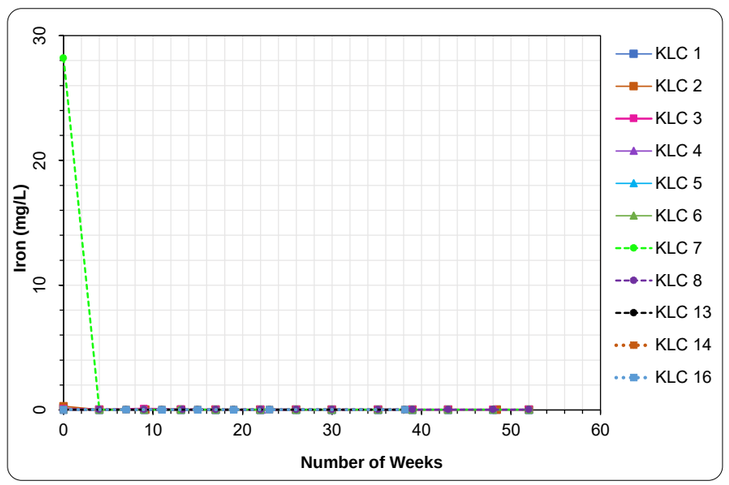
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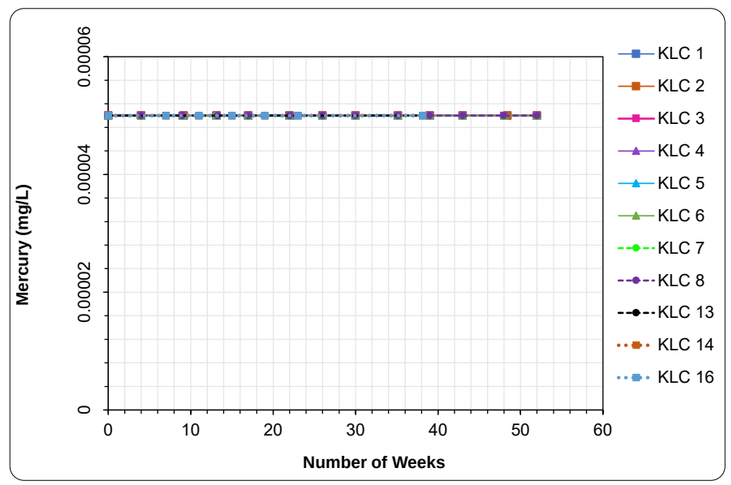




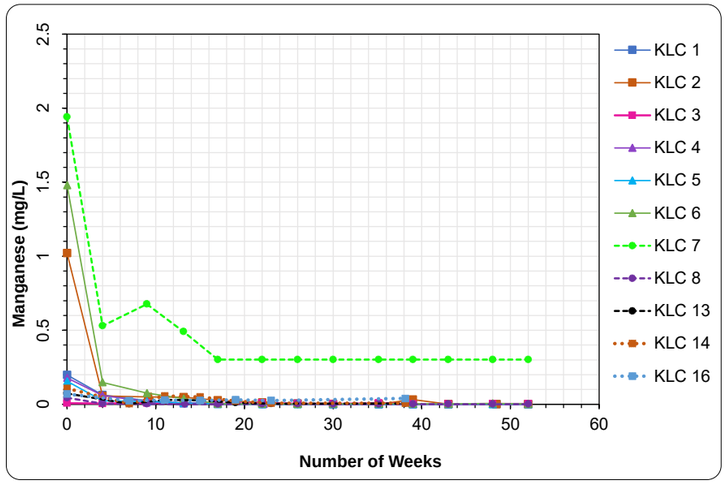


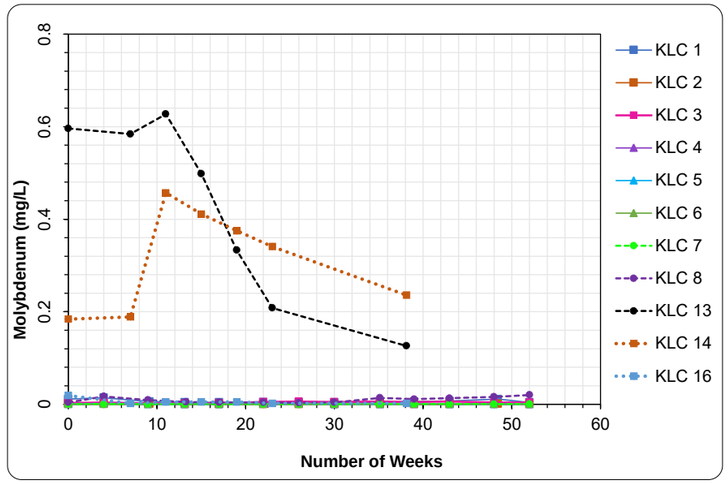






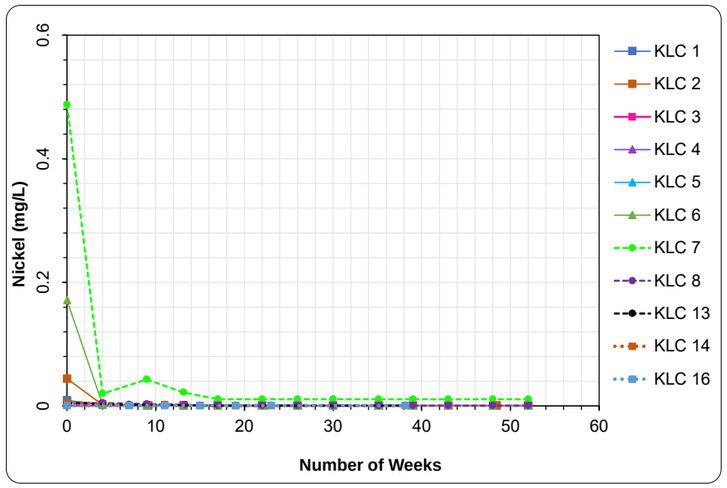
KLC Plots

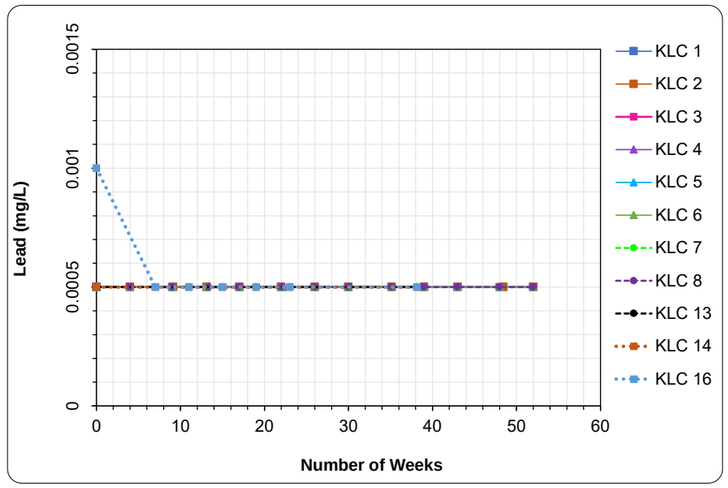


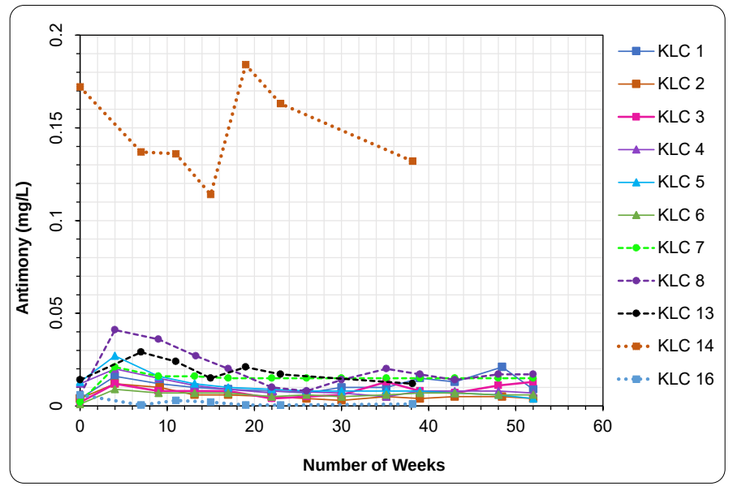


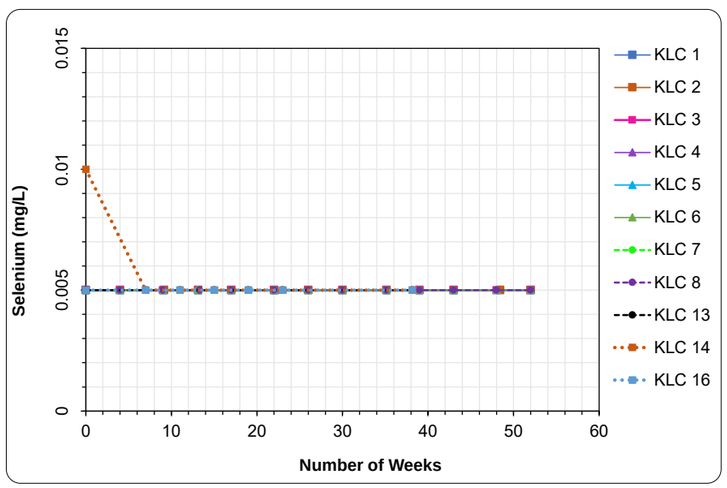
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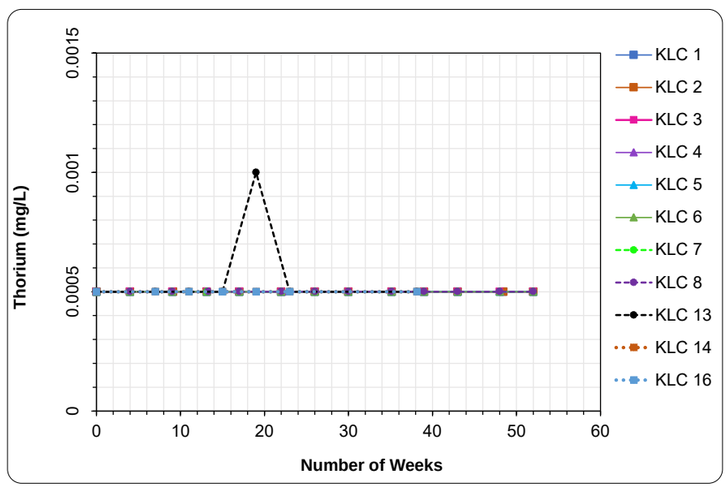
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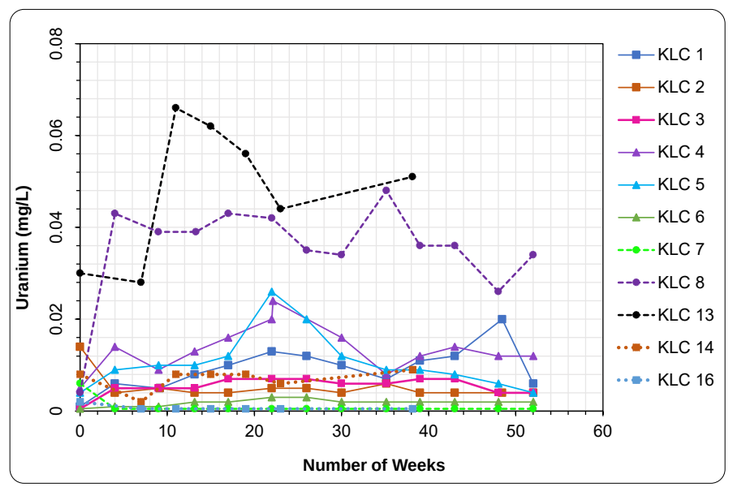




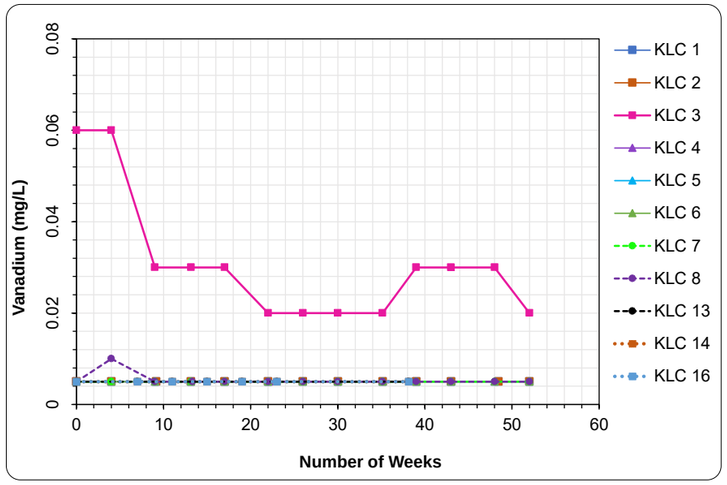


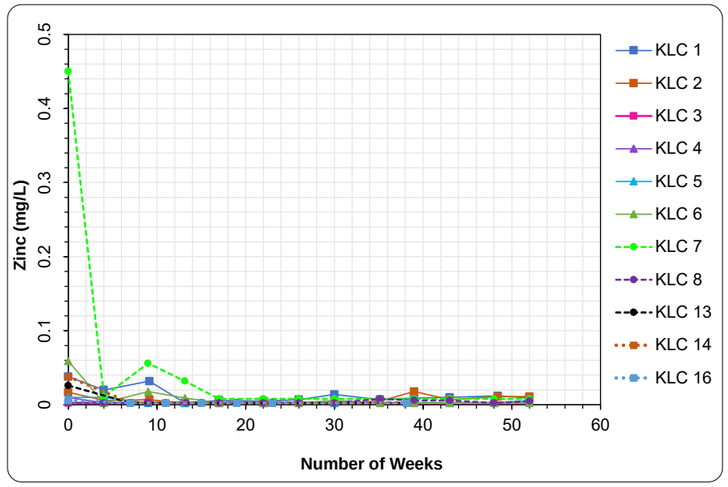






KLC Plots





LEGEND:

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KLC 9 Strategic Woolgar Tailings (Free Leach)

Weight (kg)	1.06	Total S (%)	0.68	ANC	26.8	Porosity	-	Density (kg/L)	-				
pH (1:5)	9.00	Scr (%)	0.550	NAPP	-10.0	Volume (L)	-	Rock/Water Ratio	0.35				
EC (µS/cm)	132	MPA	16.8	ANC:MPA	1.6	Pore Volume (L)	1.35	Surface Area	-				

Date			03-Mar-20	08-Apr-20	06-May-20	09-Jun-20	07-Jul-20	04-Aug-20	01-Sep-20	07-Oct-20	03-Nov-20	01-Dec-20	08-Jan-21	02-Feb-21
Number of Weeks			0	5	9	14	18	22	26	31	35	39	44	48
Leach Number			1	2	3	4	5	6	7	8	9	10	11	12
ALS Laboratory Number			EB2005928009	EB2009977009	EB2012199007	EB2015306001	EB2017856009	EB2020387009	EB2022964009	EB2026216009	EB2028814009	EB2031669009	EB2100143012	EB2102717009
Volume On (L)			3.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4
Volume Off (L)			1.079	0.254	0.469	0.512	0.309	0.322	0.282	0.230	0.207	0.289	0.254	0.264
Cum. Volume (L)			1.08	1.33	1.80	2.31	2.62	2.95	3.23	3.46	3.66	3.95	4.21	4.47
Number of Pore Volumes through the Samples	Water Quality Guidelines		0.8	1.0	1.3	1.7	1.9	2.2	2.4	2.6	2.7	2.9	3.1	3.3
pH (RGS Measurement)	6 to 9	-	8.18	7.84	8.38	8.04	8.13	8.26	7.93	8.03	7.89	8.02	7.74	7.90
pH (ALS Measurement)			7.86	7.69	8.07	7.95	7.78	7.92	7.91	7.76	7.81	6.51	7.82	7.39
pH (deionised water used in test)		-	5.71	6.01	6.35	6.75	6.73	6.48	6.23	6.59	6.03	6.70	5.86	5.96
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	669	838	742	675	630	547	669	813	844	1,084	968	855
EC (ALS Measurement) (µS/cm)			705	899	787	714	662	698	827	858	918	1,010	1,050	1,020
Acidity (mg/L as $CaCO_3$)*	-	-	1	5	<1	2	1	1	1	2	3	4	3	4
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	76	51	92	90	80	69	72	60	61	104	51	54
Total Alkalinity (mg/L as CaCO)*	-	-	76	51	92	90	80	69	72	60	61	104	51	54

Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]	(All units mg/L)											
Calcium	Ca	1	-	1000	49	82	82	78	69	70	103	106	111	158	137	124
Potassium	K	1	-	-	25	21	19	19	17	18	20	21	22	27	24	24
Magnesium	Mg	1	-	-	18	29	28	28	28	27	34	35	34	49	44	40
Sodium	Na	1	-	-	62	45	31	27	22	18	20	20	21	28	27	23
Chloride	Cl	1	-	-	55	15	7	4	4	2	2	2	2	2	2	<1
Fluoride	F[4]	0.1	-	2	2.3	2.0	1.6	1.7	1.7	1.3	1.4	1.6	1.7	1.6	2.5	2.1
Sulfate	SO	1	-	1000	175	370	278	271	264	247	368	384	436	602	539	472
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**	(All units mg/L)											
Aluminium	Al	0.01	0.055	5	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03
Arsenic	As	0.001	0.024(tri)*	0.5	0.024	0.018	0.012	0.010	0.010	0.009	0.009	0.010	0.010	0.011	0.016	0.014
Boron	B	0.05	0.37	5	0.62	0.66	0.42	0.39	0.33	0.26	0.36	0.35	0.41	0.60	0.54	0.48
Cadmium	Cd	0.0001	0.0002	0.01	0.0002	0.0010	0.0018	0.0015	0.0016	0.0022	0.0021	0.0010	0.0021	0.0034	0.0032	0.0023
Cobalt	Co	0.001	-	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	Cu	0.001	0.0014	1	0.004	0.003	0.003	0.002	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.003
Iron	Fe	0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese	Mn	0.001	1.9	-	0.022	0.017	0.019	0.002	0.002	<0.001	<0.001	<0.001	0.019	<0.001	<0.001	<0.001
Molybdenum	Mo	0.001	-	0.15	0.027	0.020	0.021	0.024	0.025	0.022	0.024	0.028	0.030	0.049	0.046	0.047
Nickel	Ni	0.001	0.011	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	Pb	0.001	0.0034	0.1	0.002	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	Sb	0.001	-	-	0.098	0.066	0.047	0.039	0.034	0.028	0.033	0.032	0.037	0.036	0.035	0.031
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	U	0.001	-	-	0.012	0.011	0.015	0.015	0.017	0.015	0.020	0.022	0.020	0.031	0.019	0.023
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	Zn	0.005	0.008	-	<0.005	0.012	0.037	0.032	0.025	0.032	0.035	0.016	0.037	0.042	0.037	0.029
Calculations**	**Elements**															
SO_4 Release Rate	SO_4				178	89	123	131	77	75	98	83	85	164	129	118
Cumulative SO_4 Release	Cum SO				178	267	390	521	598	673	771	854	939	1,103	1,232	1,350
Ca Release Rate	Ca				49.9	19.6	36.3	37.7	20.1	21.3	27.4	23.0	21.7	43.1	32.8	30.9
Cumulative Ca Release	Cum Ca				49.9	69.5	105.8	143.5	163.6	184.9	212.3	235.3	256.9	300.0	332.8	363.7
Mg Release Rate	Mg				18.3	6.9	12.4	13.5	8.2	8.2	9.0	7.6	6.6	13.4	10.5	10.0
Cumulative Mg Release	Cum Mg				18.3	25.3	37.7	51.2	59.3	67.5	76.6	84.2	90.8	104.2	114.7	124.7
Residual ANC (%)	Res. ANC				99.3	99.0	98.5	97.9	97.6	97.3	96.9	96.6	96.3	95.7	95.2	94.8
SO_4 Residual Sulfur (%)	Res. SO_4				99.1	98.7	98.1	97.4	97.1	96.7	96.2	95.8	95.4	94.6	94.0	93.4
SO_4 /(Ca+Mg) molar ratio	SO_4 /(Ca+Mg)				0.9	1.2	0.9	0.9	1.0	0.9	1.0	1.0	1.1	1.1	1.1	1.0

Notes:

ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines. Recommended guideline limits for 1. freshwater aquatic ecosystems (95 % species protection) and 2. livestock drinking water.

< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO_4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

KLC 11 Spent Heap Residue (Free Leach)

Weight (kg)	1.06	Total S (%)	0.95	ANC	12.6	Porosity	-	Density (kg/L)	-
pH (1:5)	9.00	Scr (%)	0.691	NAPP	8.6	Volume (L)	-	Rock/Water Ratio	0.35
EC (µS/cm)	213	MPA	21.2	ANC:MPA	0.6	Pore Volume (L)	0.51	Surface Area	-

Parameter	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]								
Date					21-Oct-21	09-Dec-21	06-Jan-22	03-Feb-22	02-Mar-22	31-Mar-22	15-Jul-22	17-Oct-22
Number of Weeks					0	7	11	15	19	23	38	52
Leach Number					1	2	3	4	5	6	7	8
ALS Laboratory Number					EB2130149001	EB2135898001	EB2200248001	EB2202793001	EB2205847001	EB2209020001	EB2220718001	
Volume On (L)					1.6	1.0	1.0	1.0	1.0	1.0	1.0	
Volume Off (L)					0.834	0.452	0.423	0.404	0.434	0.402	0.457	
Cum. Volume (L)					0.83	1.29	1.71	2.11	2.55	2.95	3.41	
Number of Pore Volumes through the Samples			Water Quality Guidelines		1.6	2.5	3.4	4.2	5.0	5.8	6.7	
pH (RGS Measurement)			6 to 9	-	6.98	7.20	6.21	6.36	6.14	7.30	6.92	
pH (ALS Measurement)			6 to 9	-	7.68	7.03	6.81	6.74	6.56	6.57	6.99	
pH (deionised water used in test)				-	7.05	7.27	7.58	5.78	6.55	6.35	6.42	
EC (RGS Measurement) (µS/cm)			<1,000 #	3,580^	312	247	194	222	161	143	107	
EC (ALS Measurement) (µS/cm)			<1,000 #	3,580^	388	252	251	227	171	153	118	
Acidity (mg/L as $CaCO_3$)*			-	-	3	4	6	5	2	2	1.0	
Hydroxide Alkalinity (mg/L as CaCO)*			-	-	<1	<1	<1	<1	<1	<1	<1	
Carbonate Alkalinity (mg/L as CaCO)*			-	-	<1	<1	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity (mg/L as CaCO)*			-	-	41	13	15	12	12	9	9	
Total Alkalinity (mg/L as CaCO)*			-	-	41	13	15	12	12	9	9	
Major Ions (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**	(All units mg/L)							
Calcium	Ca	1	-	1000	37	16	26	24	15	15	7	
Potassium	K	1	-	-	28	22	7	5	5	8	3	
Magnesium	Mg	1	-	-	6	7	8	5	4	4	2	
Sodium	Na	1	-	-	13	9	8	9	6	7	8	
Chloride	Cl	1	-	-	12	14	2	2	2	1	1	
Fluoride	F [4]	0.1	-	2	0.9	0.1	0.2	0.2	0.1	<0.1	<0.1	
Sulfate	SO	1	-	1000	110	69	95	82	62	52	34	
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**	(All units mg/L)							
Aluminium	Al	0.01	0.055	5	0.02	0.06	0.04	0.03	0.07	0.05	0.02	
Arsenic	As	0.001	0.024 (tri)*	0.5	0.015	0.003	0.005	0.004	0.006	0.005	0.003	
Boron	B	0.05	0.37	5	0.06	<0.05	<0.05	0.11	<0.05	<0.05	<0.05	
Cadmium	Cd	0.0001	0.0002	0.01	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	
Cobalt	Co	0.001	-	1	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Copper	Cu	0.001	0.0014	1	0.003	0.001	0.001	<0.001	0.012	0.001	0.001	
Iron	Fe	0.05	-	-	0.11	<0.05	0.05	<0.05	0.06	<0.05	<0.05	
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Manganese	Mn	0.001	1.9	-	0.022	0.053	0.047	0.032	0.027	0.020	0.010	
Molybdenum	Mo	0.001	-	0.15	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	
Nickel	Ni	0.001	0.011	1	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Lead	Pb	0.001	0.0034	0.1	<0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.001	
Antimony	Sb	0.001	-	-	0.011	<0.001	0.002	0.001	<0.001	<0.001	<0.001	
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Uranium	U	0.001	-	-	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	Zn	0.005	0.008	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Calculations**	**Elements**											
SO_4 Release Rate	SO [4]				87	29	38	31	25	20	15	
Cumulative SO Release	Cum SO				87	116	154	185	211	230	245	
Ca Release Rate	Ca				29.1	6.8	10.4	9.1	6.1	5.7	3.0	
Cumulative Ca Release	Cum Ca				29.1	35.9	46.3	55.5	61.6	67.3	70.3	
Mg Release Rate	Mg				4.7	3.0	3.2	1.9	1.6	1.5	0.9	
Cumulative Mg Release	Cum Mg				4.7	7.7	10.9	12.8	14.4	16.0	16.8	
Residual ANC (%)	Res. ANC				99.3	99.1	98.8	98.5	98.3	98.2	98.1	
Residual Sulfur (%)	Res. S				99.7	99.6	99.5	99.3	99.3	99.2	99.1	
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)				1.0	1.0	1.0	1.1	1.2	1.0	1.4	

Notes: ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines. Recommended guideline limits for 1. freshwater aquatic ecosystems (95 % species protection) and 2. livestock drinking water.

< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

KLC 12 Spent Heap Residue (Saturated)

Weight (kg)	1.02	Total S (%)	0.95	ANC	12.6	Porosity	-	Density (kg/L)	-					
pH (1:5)	9.00	Scr (%)	0.691	NAPP	8.6	Volume (L)	-	Rock/Water Ratio	0.34					
EC (µS/cm)	213	MPA	21.2	ANC:MPA	0.6	Pore Volume (L)	0.51	Surface Area	-					

Date			21-Oct-21	09-Dec-21	06-Jan-22	03-Feb-22	02-Mar-22	31-Mar-22	15-Jul-22	17-Oct-22				
Number of Weeks			0	7	11	15	19	23	38	52				
Leach Number			1	2	3	4	5	6	7	8				
ALS Laboratory Number			EB2130149002	EB2135898002	EB2200248002	EB2202793002	'EB2205847002	EB2209020002	EB2220718002					
Volume On (L)			1.2	1.0	0.6	0.9	0.6	1.0	1.0					
Volume Off (L)			0.923	1.020	0.667	0.843	0.584	0.992	1.079					
Cum. Volume (L)			0.92	1.94	2.61	3.45	4.04	5.03	6.11					
Number of Pore Volumes through the Samples	Water Quality Guidelines		1.8	3.8	5.2	6.8	8.0	9.9	12.1					
pH (RGS Measurement)	6 to 9	-	7.81	7.68	7.49	7.33	7.29	7.36	7.30					
pH (ALS Measurement)			7.58	7.56	7.32	7.72	7.63	7.82	7.93					
pH (deionised water used in test)		-	7.05	7.27	7.58	5.78	6.55	6.35	6.42					
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	170	218	156	199	237	214	287					
EC (ALS Measurement) (µS/cm)			211	202	192	204	236	229	299					
Acidity (mg/L as $CaCO_3$)*	-	-	2	3	4	6	3	1	1.0					
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1					
Carbonate Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1					
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	24	44	55	70	94	90	125					
Total Alkalinity (mg/L as CaCO)*	-	-	24	44	55	70	94	90	125					

Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]										
					(All units mg/L)									
Calcium	Ca	1	-	1000	19	20	18	21	22	25	28			
Potassium	K	1	-	-	16	15	14	14	17	17	21			
Magnesium	Mg	1	-	-	3	5	5	5	6	6	9			
Sodium	Na	1	-	-	7	6	5	6	6	6	8			
Chloride	Cl	1	-	-	7	6	5	5	4	4	4			
Fluoride	F[4]	0.1	-	2	0.5	0.9	0.8	0.6	0.6	0.3	0.5			
Sulfate	SO	1	-	1000	54	45	35	27	17	15	8			
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**										
					(All units mg/L)									
Aluminium	Al	0.01	0.055	5	0.08	0.03	0.01	<0.01	<0.01	<0.01	<0.01			
Arsenic	As	0.001	0.024(tri)*	0.5	0.011	0.010	0.017	0.016	0.011	0.002	0.002			
Boron	B	0.05	0.37	5	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05			
Cadmium	Cd	0.0001	0.0002	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
Cobalt	Co	0.001	-	1	<0.001	0.001	<0.001	<0.001	<0.001	0.001	<0.001			
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Copper	Cu	0.001	0.0014	1	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001			
Iron	Fe	0.05	-	-	0.05	<0.05	0.19	0.20	0.07	<0.05	<0.05			
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
Manganese	Mn	0.001	1.9	-	0.007	1.120	1.600	1.760	2.200	1.910	1.970			
Molybdenum	Mo	0.001	-	0.15	<0.001	0.003	0.003	0.003	0.002	0.002	0.003			
Nickel	Ni	0.001	0.011	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Lead	Pb	0.001	0.0034	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Antimony	Sb	0.001	-	-	0.005	0.007	0.005	0.003	<0.001	<0.001	<0.001			
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Uranium	U	0.001	-	-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Zinc	Zn	0.005	0.008	-	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005			

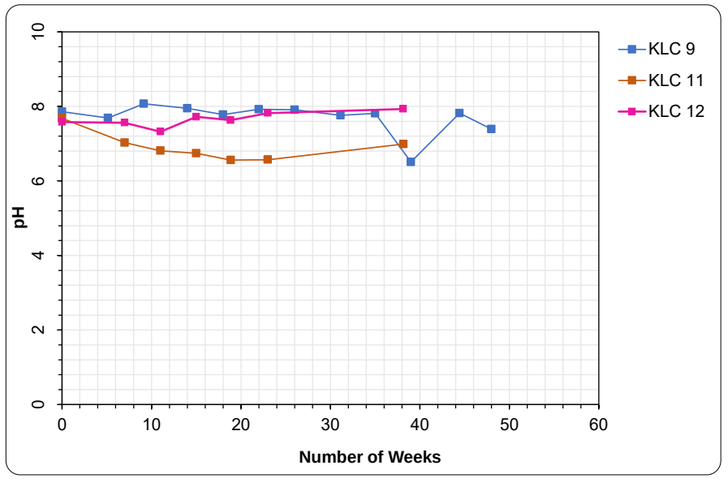
Calculations**	Elements													
SO_4 Release Rate	SO[4]		49	45	23	22	10	15	8					
Cumulative SO Release	Cum SO		49	94	117	140	149	164	173					
Ca Release Rate	Ca		17.3	20.1	11.8	17.4	12.6	24.4	29.7					
Cumulative Ca Release	Cum Ca		17.3	37.3	49.2	66.6	79.2	103.6	133.4					
Mg Release Rate	Mg		2.7	5.0	3.3	4.1	3.4	5.9	9.6					
Cumulative Mg Release	Cum Mg		2.7	7.7	11.0	15.2	18.6	24.5	34.0					
Residual ANC (%)	Res. ANC		99.6	99.0	98.7	98.2	97.9	97.2	96.3					
Residual Sulfur (%)	Res. S		99.8	99.7	99.6	99.5	99.5	99.4	99.4					
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)		0.9	0.7	0.6	0.4	0.2	0.2	0.1					

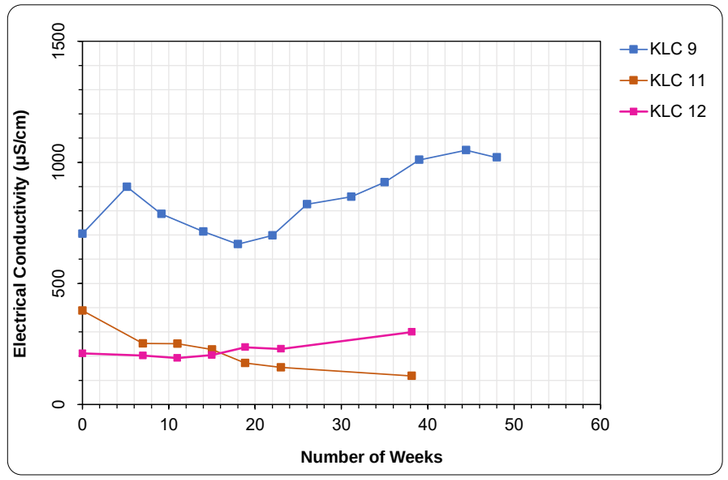
Notes:

ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines. Recommended guideline limits for 1. freshwater aquatic ecosystems (95 % species protection) and 2. livestock drinking water.

< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

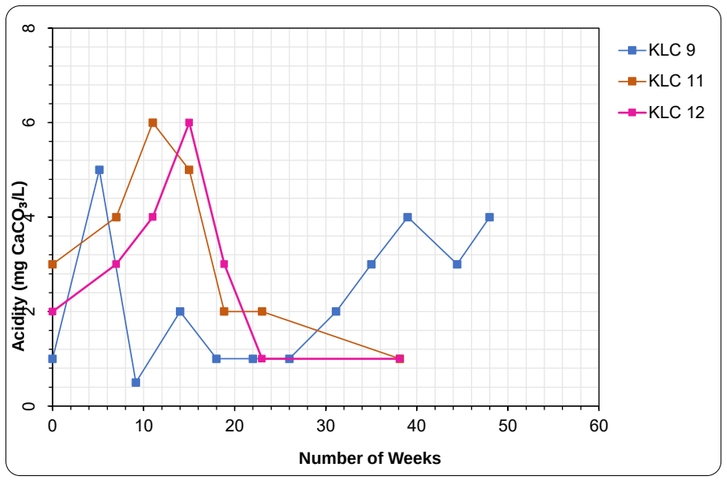
KLC Plots

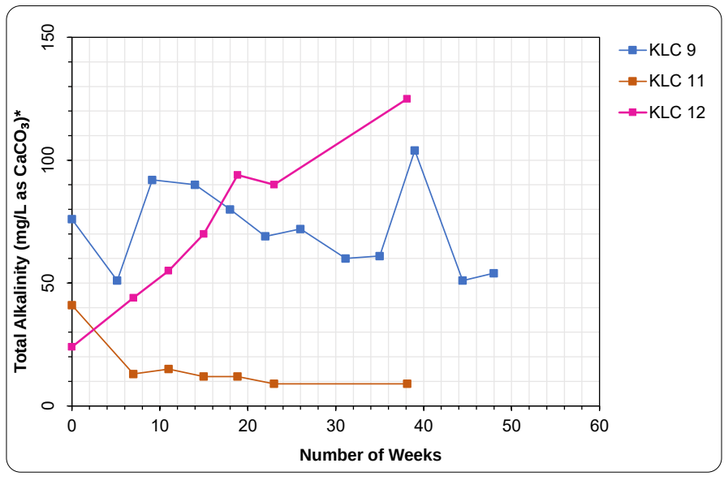


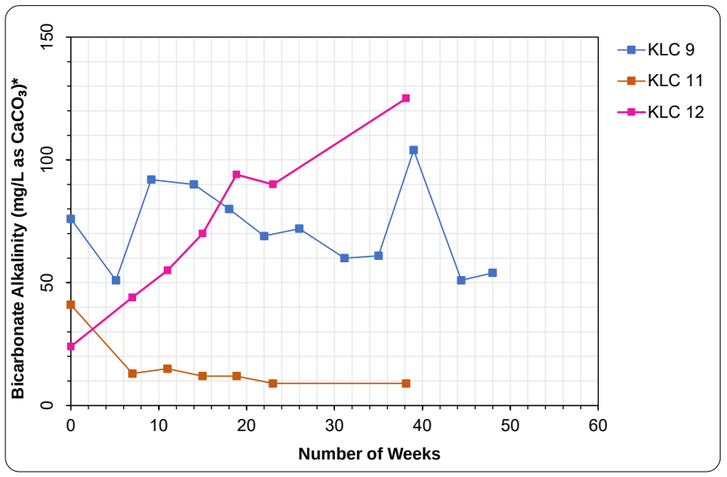


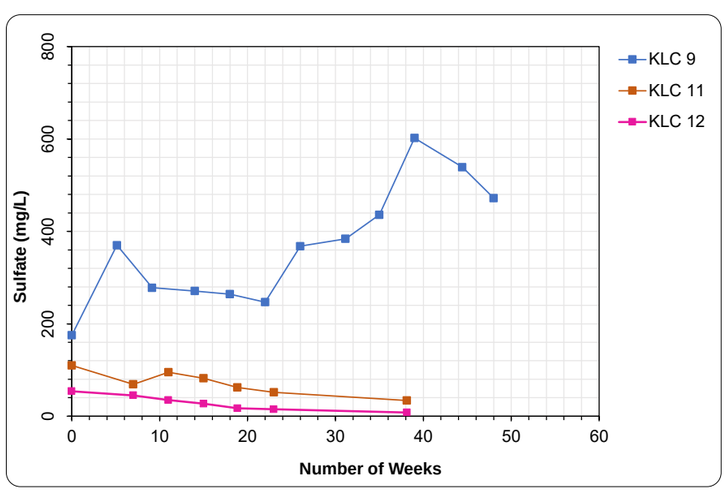
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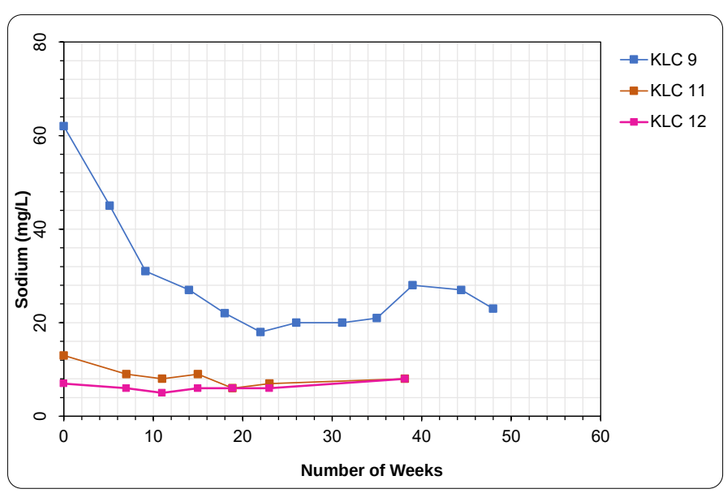
- KLC 9 Strategic Woolgar Tailings (Free Leach)
- KLC 11 Spent Heap Residue (Free Leach)
- KLC 12 Spent Heap Residue (Saturated)

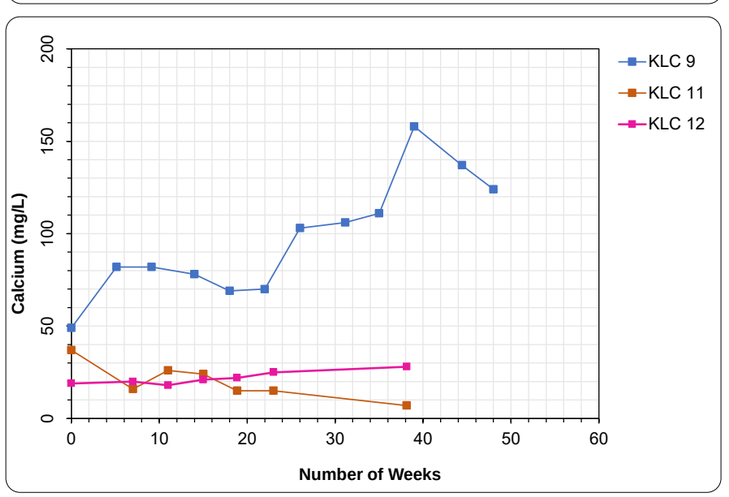




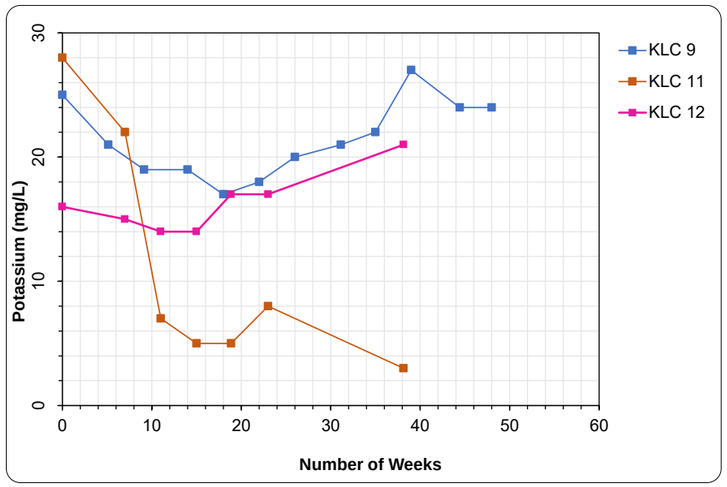


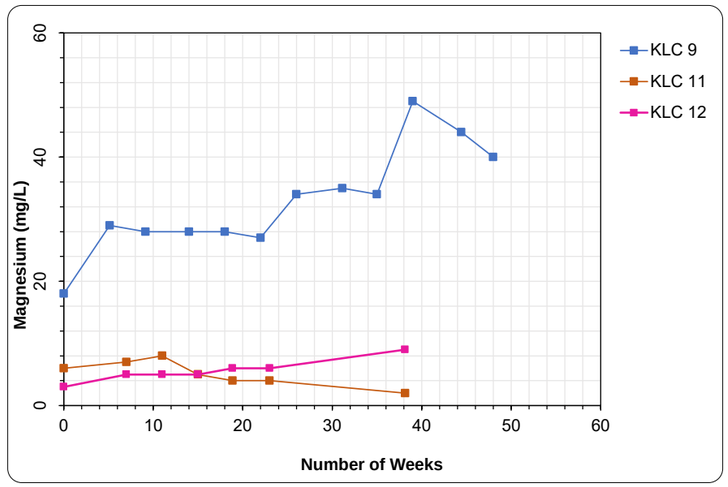






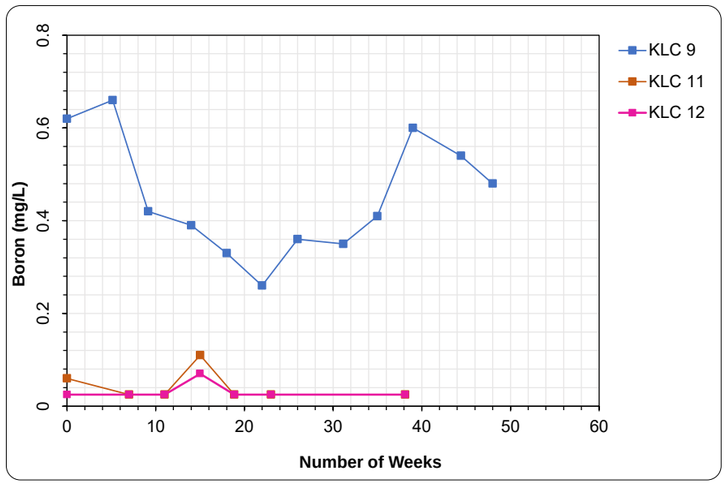
KLC Plots

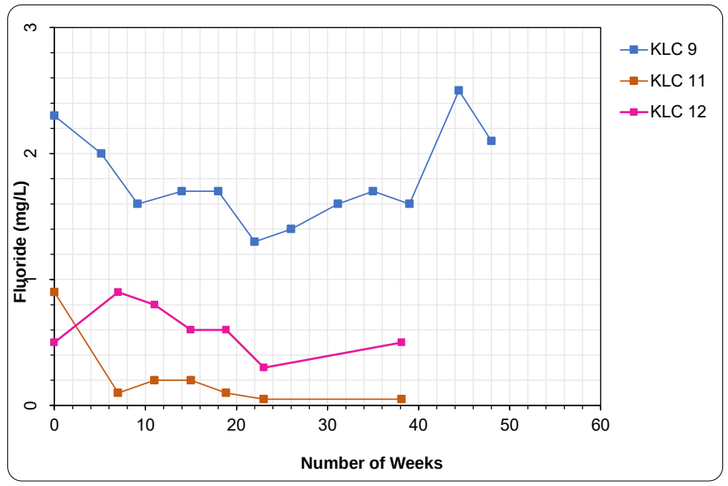


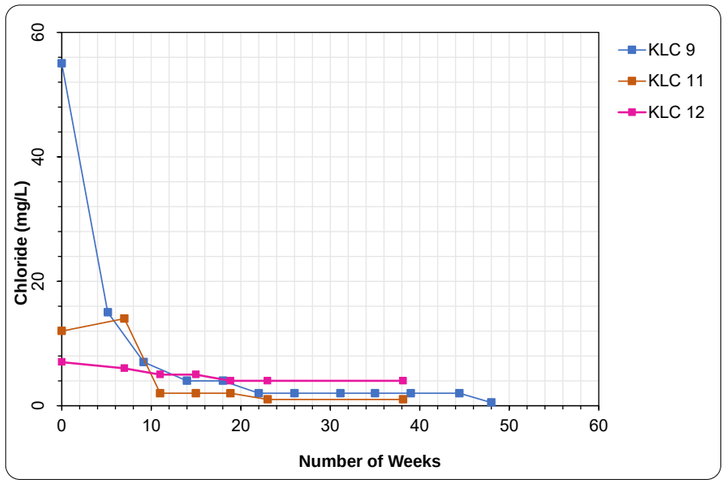


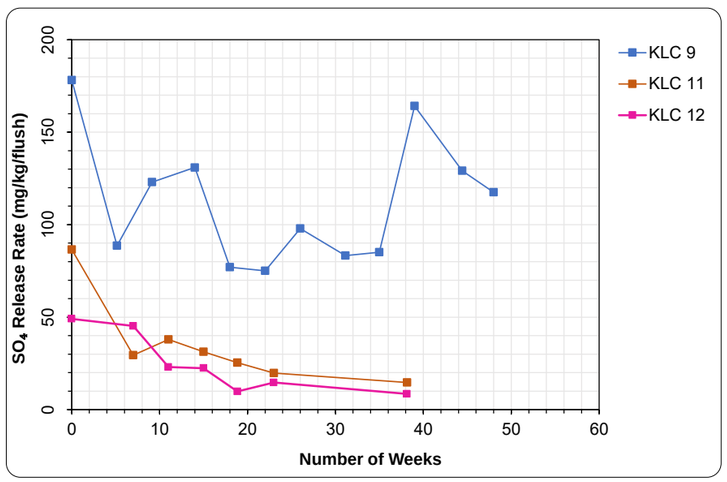
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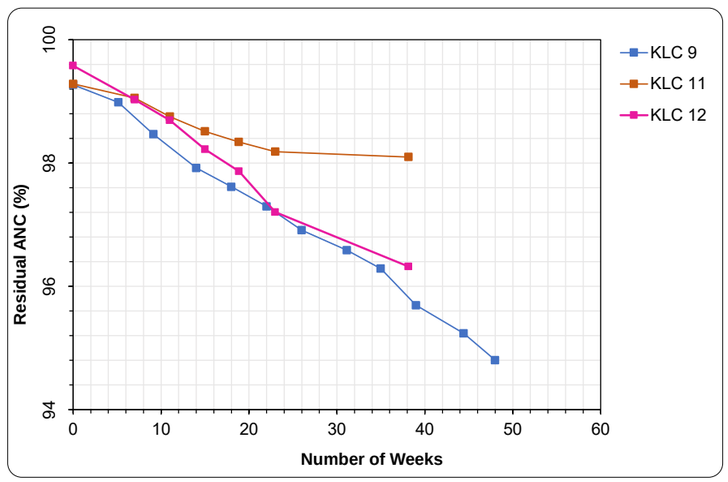
- KLC 9 Strategic Woolgar Tailings (Free Leach)
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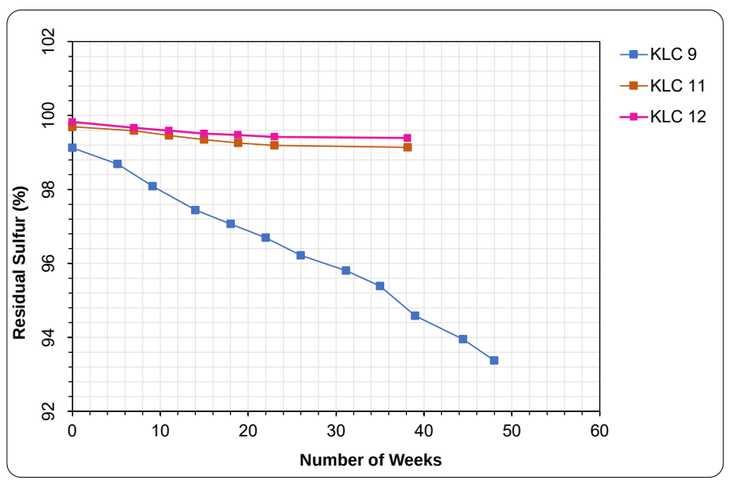




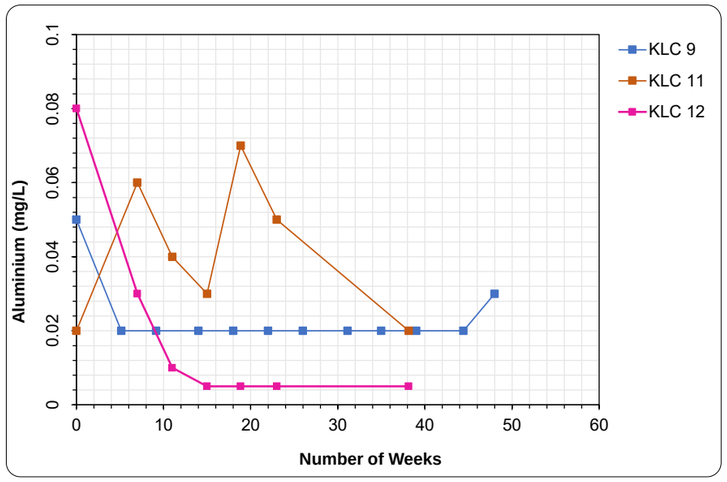


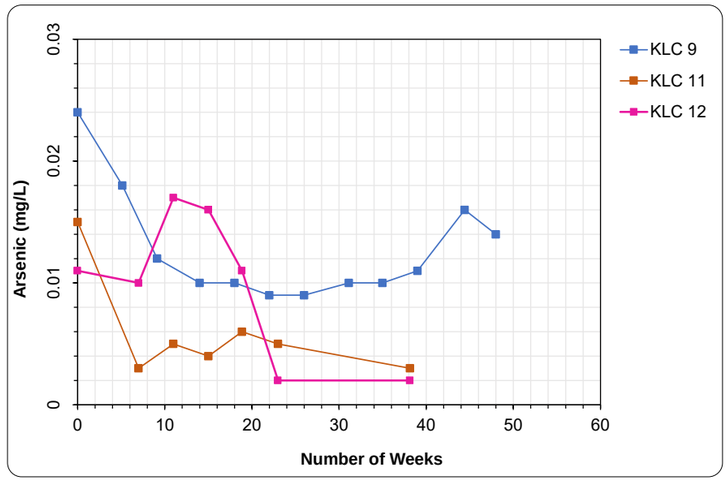






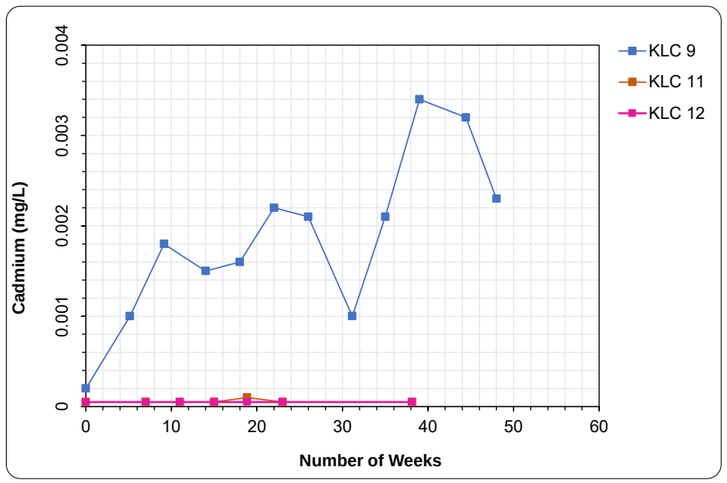
KLC Plots

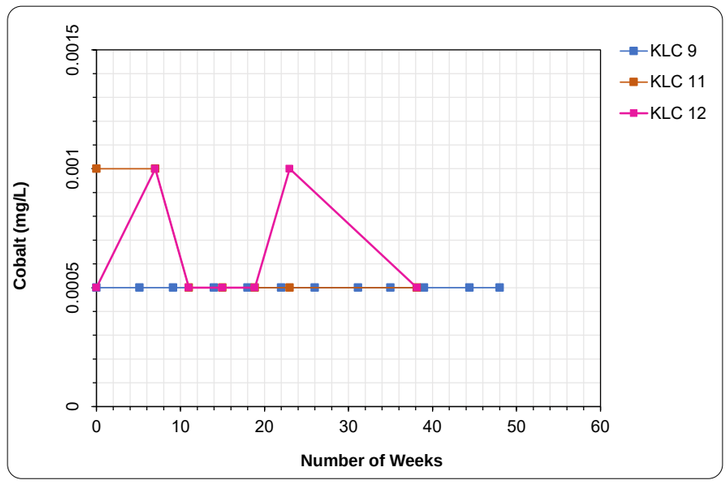


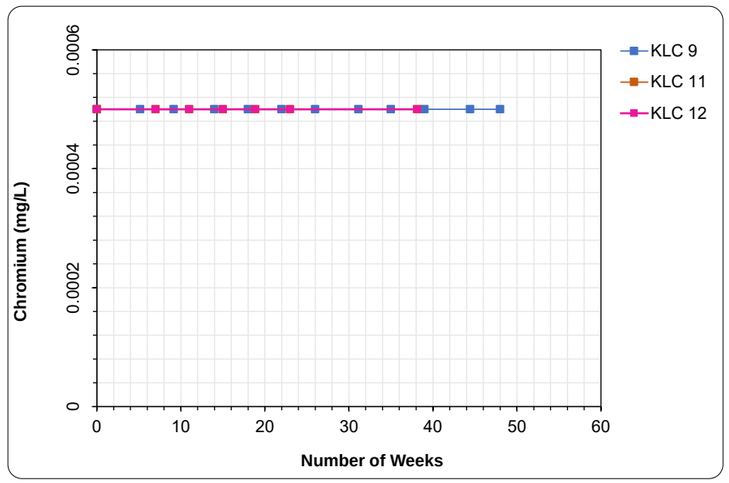


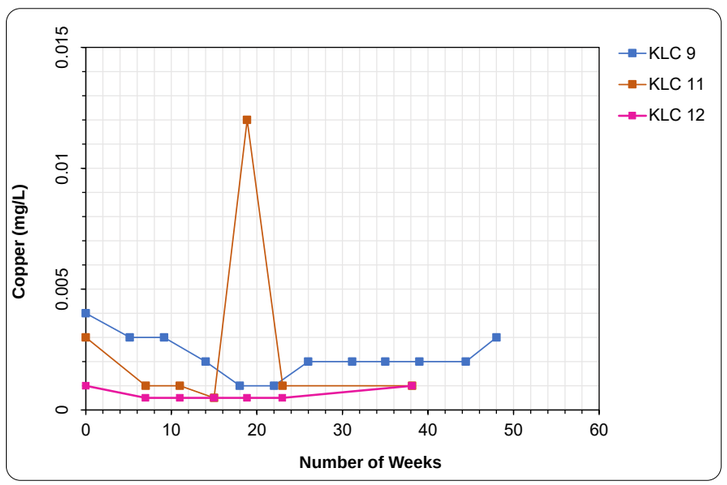
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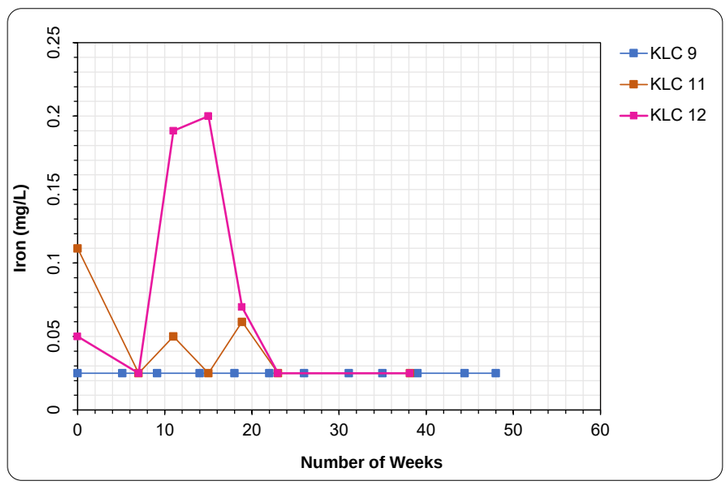
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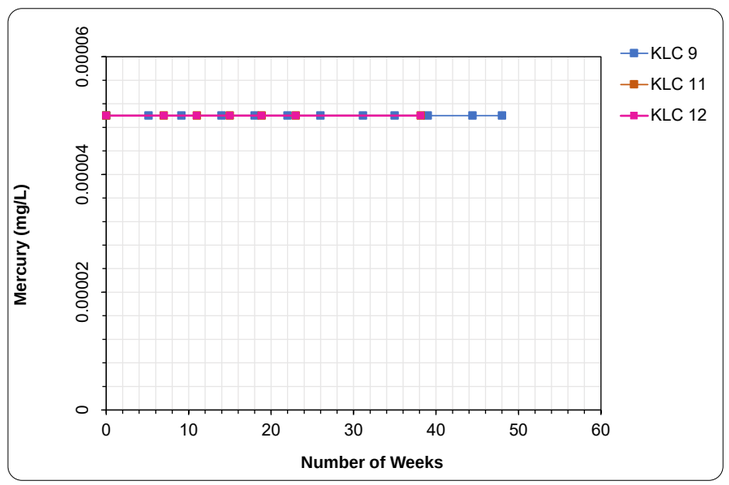




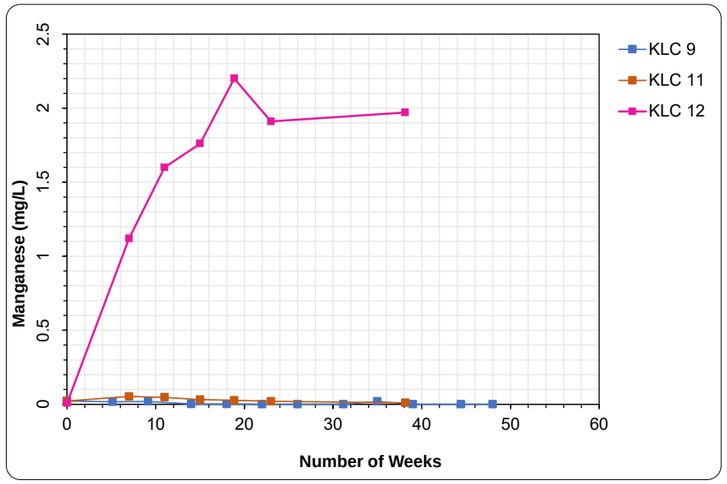


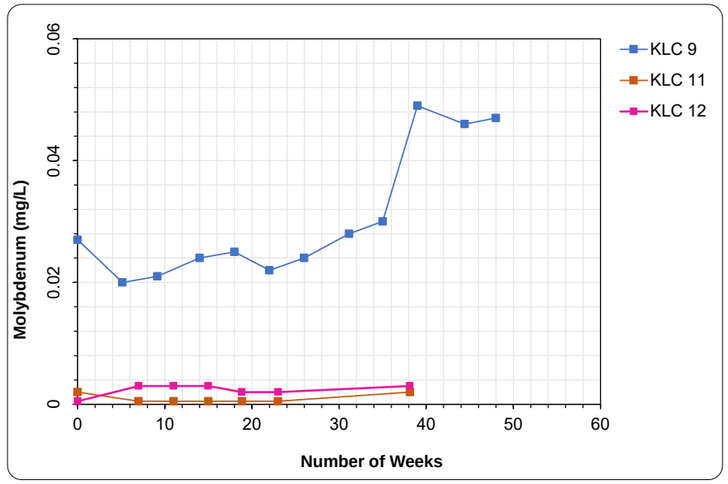






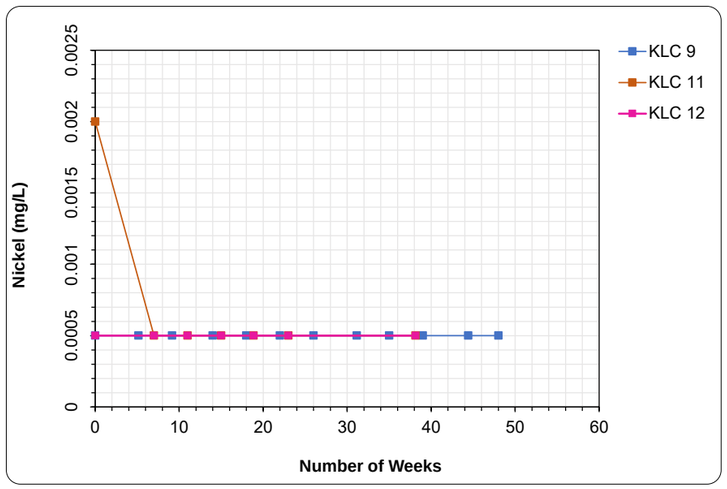
KLC Plots

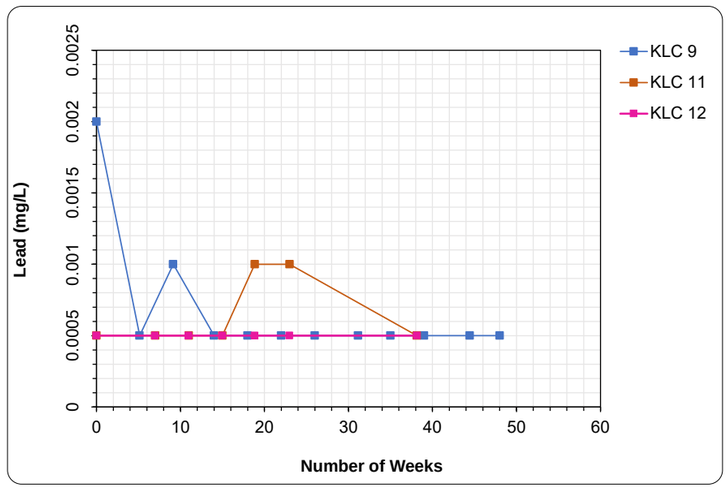


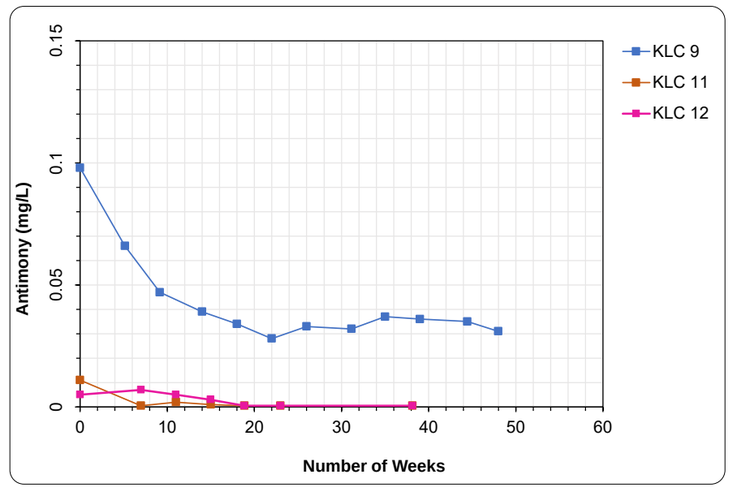


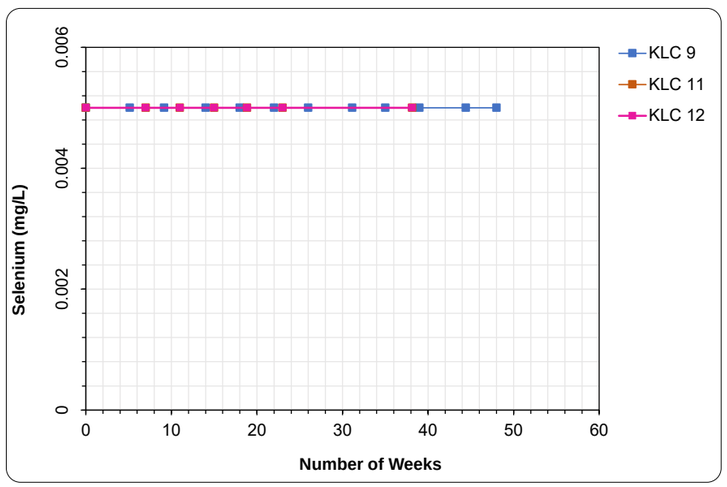
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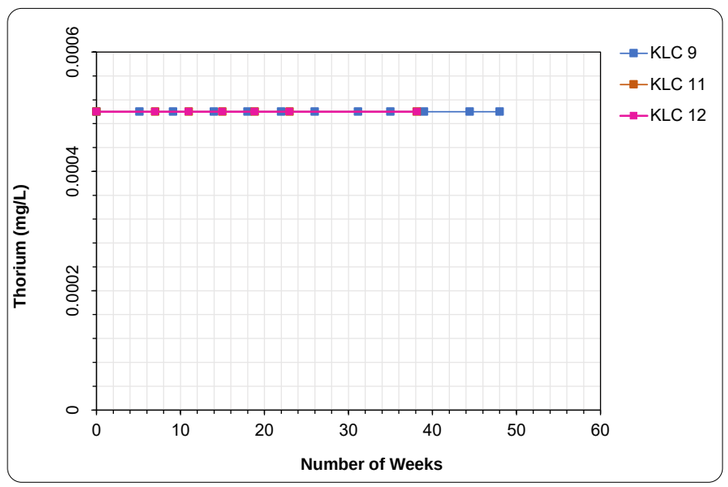
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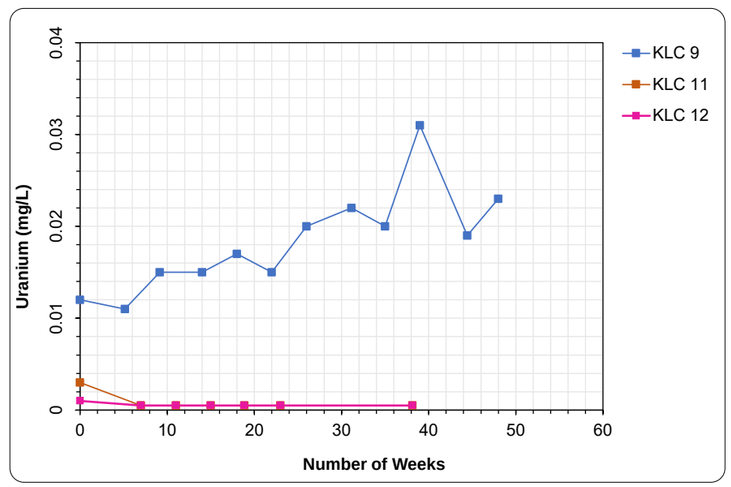




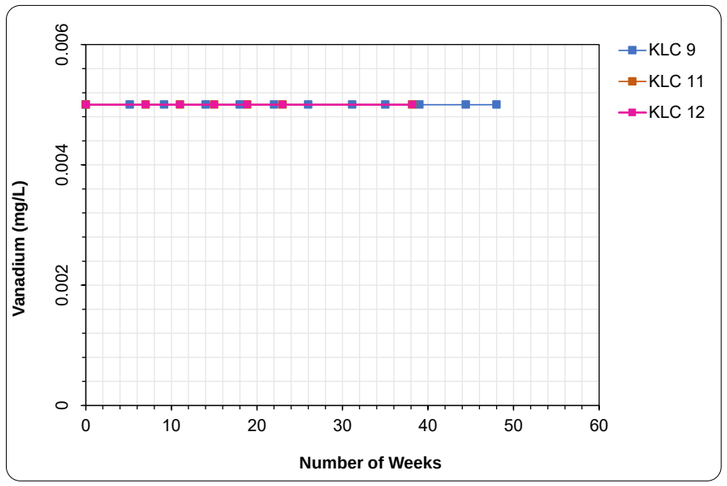


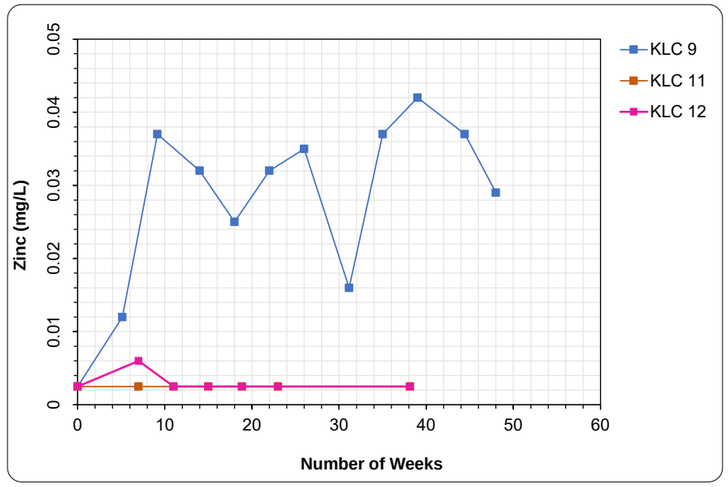






KLC Plots





LEGEND:

- KLC 9 Strategic Woolgar Tailings (Free Leach)
- KLC 11 Spent Heap Residue (Free Leach)
- KLC 12 Spent Heap Residue (Saturated)

KLC 10 Low-Grade Ore (Free Leach)

Weight (kg)	11.31	Total S (%)	0.80	ANC	35.6	Porosity	-	Density (kg/L)	-				
pH (1:5)	8.00	Scr (%)	0.658	NAPP	-15.4	Volume (L)	-	Rock/Water Ratio	8.08				
EC (µS/cm)	187	MPA	20.2	ANC:MPA	1.8	Pore Volume (L)	1.35	Surface Area	-				

Date			04-Aug-20	01-Sep-20	07-Oct-20	03-Nov-20	01-Dec-20	05-Jan-21	02-Feb-21	02-Mar-21	30-Mar-21	28-Apr-21	25-May-21	22-Jun-21
Number of Weeks			0	4	9	13	17	22	26	30	34	38	42	46
Leach Number			1	2	3	4	5	6	7	8	9	10	11	12
ALS Laboratory Number			EB2020387010	EB2022964010	EB2026216010	EB2028814010	EB2031669010	EB2100143010	EB2102717010	EB2105658001	EB2108583001	EB2111461001	EB2120544001	EB2120544002
Volume On (L)			1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Volume Off (L)			0.368	1.079	0.843	0.897	0.692	0.766	0.875	0.821	1.000	0.853	1.066	0.819
Cum. Volume (L)			0.37	1.45	2.29	3.19	3.88	4.65	5.52	6.34	7.34	8.19	9.26	10.08
Number of Pore Volumes through the Samples	Water Quality Guidelines		0.3	1.1	1.7	2.4	2.9	3.4	4.1	4.7	5.4	6.1	6.9	7.5
pH (RGS Measurement)		-	7.77	7.51	7.73	7.57	7.72	7.78	7.52	6.68	6.71	6.90	6.66	6.85
pH (ALS Measurement)	6 to 9		7.13	7.37	7.11	7.29	7.11	7.52	6.52	6.83	6.46	7.31	7.20	7.10
pH (deionised water used in test)		-	6.48	6.23	6.59	6.03	6.70	6.06	5.96	6.69	6.06	6.73	6.25	7.27
EC (RGS Measurement) (µS/cm)	<1,000 #	3,580^	1,017	1,105	1,042	831	768	719	572	591	531	600	544	520
EC (ALS Measurement) (µS/cm)			1310	1400	1140	923	781	732	659	594	537	622	566	488
Acidity (mg/L as $CaCO_3$)*	-	-	2.0	1.0	1.0	2.0	2.0	1.0	3.0	1.0	4.0	4.0	2.0	2.0
Hydroxide Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity (mg/L as CaCO)*	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity (mg/L as CaCO)*	-	-	30	22	16	16	13	14	8	8	12	12	10	11
Total Alkalinity (mg/L as CaCO)*	-	-	30	22	16	16	13	14	8	8	12	12	10	11

Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]									
					(All units mg/L)								
Calcium	Ca	1	-	1000	87	101	75	56	43	47	33	31	34	38	12	9
Potassium	K	1	-	-	23	17	13	12	10	8	8	7	6	7	3	2
Magnesium	Mg	1	-	-	48	67	62	48	46	41	40	38	36	44	14	13
Sodium	Na	1	-	-	97	104	72	51	45	34	30	25	19	20	7	5
Chloride	Cl	1	-	-	66	73	39	28	21	16	14	13	9	10	12	8
Fluoride	F[4]	0.1	-	2	0.2	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1
Sulfate	SO	1	-	1,000	515	617	511	419	363	326	284	258	259	287	255	213
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**									
					(All units mg/L)								
Aluminium	Al	0.01	0.055	5	0.01	0.01	0.01	0.01	0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	As	0.001	0.024 (tri)*	0.5	0.001	0.008	0.005	0.005	0.004	0.004	0.002	0.002	0.003	0.002	<0.001	<0.001
Boron	B	0.05	0.37	5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium	Cd	0.0001	0.0002	0.01	0.0016	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	<0.0001	<0.0001
Cobalt	Co	0.001	-	1	0.028	0.004	0.003	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	Cu	0.001	0.0014	1	0.004	0.002	0.002	0.002	0.001	<0.001	0.001	<0.001	0.001	0.001	<0.001	<0.001
Iron	Fe	0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese	Mn	0.001	1.9	-	0.742	0.224	0.110	0.030	0.019	0.010	0.018	0.015	0.007	0.005	0.003	0.002
Molybdenum	Mo	0.001	-	0.15	0.003	0.005	0.007	0.008	0.008	0.009	0.006	0.004	0.007	0.008	0.002	0.002
Nickel	Ni	0.001	0.011	1	0.076	0.012	0.007	0.004	0.003	0.002	0.002	0.001	0.001	0.001	<0.001	<0.001
Lead	Pb	0.001	0.0034	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	Sb	0.001	-	-	0.003	0.006	0.006	0.005	0.003	0.003	0.002	0.002	0.002	0.003	<0.001	<0.001
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	U	0.001	-	-	0.001	0.005	0.002	0.002	0.001	0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	Zn	0.005	0.008	-	0.067	0.008	0.014	0.011	0.012	0.010	0.011	0.011	0.007	0.008	<0.005	<0.005
Calculations**	**Elements**															
SO_4 Release Rate	SO[4]				17	59	38	33	22	22	22	19	23	22	24	15
Cumulative SO Release	Cum SO				17	76	114	147	169	191	213	232	255	276	300	316
Ca Release Rate	Ca				2.8	9.6	5.6	4.4	2.6	3.2	2.6	2.2	3.0	2.9	1.1	0.7
Cumulative Ca Release	Cum Ca				2.8	12.5	18.1	22.5	25.1	28.3	30.9	33.1	36.1	39.0	40.1	40.8
Mg Release Rate	Mg				1.6	6.4	4.6	3.8	2.8	2.8	3.1	2.8	3.2	3.3	1.3	0.9
Cumulative Mg Release	Cum Mg				1.6	8.0	12.6	16.4	19.2	22.0	25.1	27.8	31.0	34.3	35.6	36.6
Residual ANC (%)	Res. ANC				100.0	99.8	99.7	99.7	99.6	99.6	99.5	99.5	99.4	99.3	99.3	99.3
Residual Sulfur (%)[4]	Res. S				99.9	99.7	99.5	99.4	99.3	99.2	99.1	99.0	98.9	98.8	98.7	98.7
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)				1.3	1.2	1.2	1.3	1.3	1.2	1.2	1.1	1.2	1.1	3.0	2.9

Notes:

ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines. Recommended guideline limits for 1. freshwater aquatic ecosystems (95 % species protection) and 2. livestock drinking water.

< indicates less than the analytical detection limit. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm * Acidity and alkalinity data calculated in mg CaCO3/L. Shaded cells exceed applied guideline values. (tri)* 0.024 g/L for trivalent Arsenic (III). (hex)* Cr (VI) = hexavalent. # for still water bodies only, moving rivers at low flow rates should not exceed 2,200µS/cm. ^ calculated based on total dissolved solids (TDS) conversion rate of 0.67% of EC. TDS is an approximate measure of inorganic dissolved salts and should not exceed 2,400mg/L for livestock drinking water. ** SO4, Ca and Mg release rates calculated in mg/kg/flush. Residual ANC assumes that all leached Mg and Ca is due to dissolution of calcite or dolomite. Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity. MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

KLC 15 High-Grade Ore (Free Leach)

				Weight (kg)	2.00	Total S (%)	1.99	ANC	18.9	Porosity	-	Density (kg/L)	-			
				pH (1:5)	7.00	Scr (%)	1.660	NAPP	31.9	Volume (L)	-	Rock/Water Ratio	1.43			
				EC (µS/cm)	799	MPA	50.8	ANC:MPA	0.4	Pore Volume (L)	0.65	Surface Area	-			

Date				21-Oct-21	09-Dec-21	06-Jan-22	03-Feb-22	02-Mar-22	31-Mar-22	15-Jul-22	17-Oct-22					
Number of Weeks				0	7	11	15	19	23	38	52					
Leach Number				1	2	3	4	5	6	7	8					
ALS Laboratory Number				EB2130149005	EB2135898005	EB2200248005	EB2202793005	EB2205847005	EB2209020005	EB2220718005						
Volume On (L)				1.4	1.0	1.0	1.0	1.0	1.0	1.0						
Volume Off (L)				0.774	0.484	0.478	0.479	0.511	0.412	0.419						
Cum. Volume (L)				0.77	1.26	1.74	2.22	2.73	3.14	3.56						
Number of Pore Volumes through the Samples	Water Quality Guidelines			1.2	1.9	2.7	3.4	4.2	4.9	5.5						
pH (RGS Measurement)			-	4.66	5.94	5.38	6.69	6.76	7.12	7.48						
pH (ALS Measurement)	6 to 9			4.47	5.6	5.77	6.18	6.15	5.99	6.30						
pH (deionised water used in test)			-	7.05	7.27	7.58	5.74	6.55	6.35	6.42						
EC (RGS Measurement) (µS/cm)	<1,000 #		3,580^	1,797	784	624	780	704	697	774						
EC (ALS Measurement) (µS/cm)				2,070	728	778	787	714	680	778						
Acidity (mg/L as $CaCO_3$)*	-		-	200	4	5	5	4	1	2						
Hydroxide Alkalinity (mg/L as CaCO)*	-		-	<1	<1	<1	<1	<1	<1	<1						
Carbonate Alkalinity (mg/L as CaCO)*	-		-	<1	<1	<1	<1	<1	<1	<1						
Bicarbonate Alkalinity (mg/L as CaCO)*	-		-	<1	2	4	4	5	2	2						
Total Alkalinity (mg/L as CaCO)*	-		-	<1	2	4	4	5	2	2						

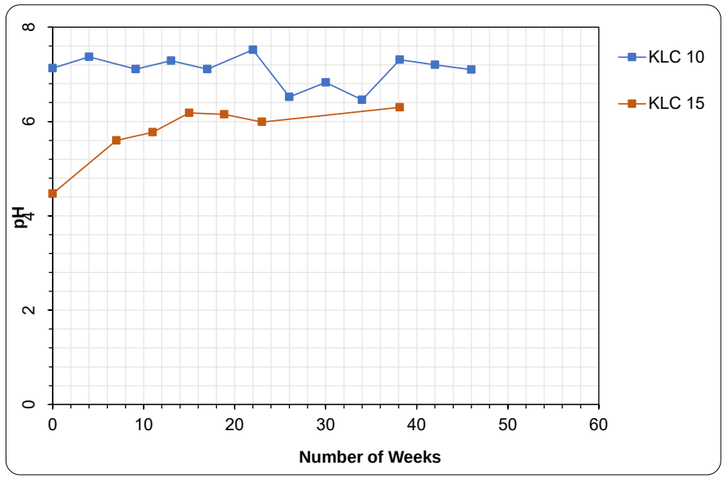
Major Ions (mg/L)	Elements	LoR	Aquatic Ecosystems (Freshwater)[1]	Livestock Drinking Water[2]												
Calcium	Ca	1	-	1000	217	45	35	38	26	31	24					
Potassium	K	1	-	-	19	4	3	3	2	5	3					
Magnesium	Mg	1	-	-	132	63	83	75	72	72	84					
Sodium	Na	1	-	-	34	9	8	8	6	6	9					
Chloride	Cl	1	-	-	16	5	4	4	3	3	3					
Fluoride	F[4]	0.1	-	2	0.8	<0.1	0.1	0.1	0.2	0.2	0.2					
Sulfate	SO	1	-	1,000	1,160	364	443	423	367	367	398					
Trace metals/ metalloids (mg/L)	**Elements**	**LoR**	**Aquatic Ecosystems (Freshwater)[1]**	**Livestock Drinking Water[2]**												
Aluminium	Al	0.01	0.055	5	4.19	0.11	<0.01	<0.01	<0.01	<0.01	<0.01					
Arsenic	As	0.001	0.024 (tri)*	0.5	0.002	<0.001	0.001	0.001	0.002	0.001	0.001					
Boron	B	0.05	0.37	5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					
Cadmium	Cd	0.0001	0.0002	0.01	0.2050	0.0144	0.0049	0.0035	0.0028	0.0022	0.0029					
Cobalt	Co	0.001	-	1	0.598	0.061	0.018	0.011	0.009	0.007	0.008					
Chromium	Cr	0.001	0.001 (hex)*	1 (total)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
Copper	Cu	0.001	0.0014	1	0.416	0.029	0.007	0.003	0.004	0.003	0.005					
Iron	Fe	0.05	-	-	55.40	0.12	0.08	<0.05	<0.05	<0.05	<0.05					
Mercury	Hg	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001					
Manganese	Mn	0.001	1.9	-	13.300	2.490	1.730	1.500	1.490	1.360	1.410					
Molybdenum	Mo	0.001	-	0.15	0.001	<0.001	0.007	0.003	0.009	<0.001	<0.001					
Nickel	Ni	0.001	0.011	1	1.720	0.153	0.047	0.028	0.022	0.018	0.020					
Lead	Pb	0.001	0.0034	0.1	0.092	0.013	0.006	0.004	0.003	0.002	0.001					
Antimony	Sb	0.001	-	-	0.005	<0.001	0.001	0.001	<0.001	<0.001	<0.001					
Selenium	Se	0.01	0.011	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					
Thorium	Th	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
Uranium	U	0.001	-	-	0.145	0.005	<0.001	<0.001	<0.001	<0.001	<0.001					
Vanadium	V	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					
Zinc	Zn	0.005	0.008	-	11.000	0.863	0.203	0.119	0.100	0.066	0.082					
Calculations**	**Elements**															
SO_4 Release Rate	SO[4]				448	88	106	101	94	76	83					
Cumulative SO Release	Cum SO				448	536	642	743	837	913	996					
Ca Release Rate	Ca				83.9	10.9	8.4	9.1	6.6	6.4	5.0					
Cumulative Ca Release	Cum Ca				83.9	94.8	103.1	112.2	118.9	125.2	130.3					
Mg Release Rate	Mg				51.0	15.2	19.8	17.9	18.4	14.8	17.6					
Cumulative Mg Release	Cum Mg				51.0	66.3	86.1	104.0	122.4	137.2	154.8					
Residual ANC (%)	Res. ANC				97.8	97.4	96.8	96.3	95.8	95.5	95.0					
Residual Sulfur (%)	Res. S				99.2	99.1	98.9	98.8	98.6	98.5	98.3					
SO /(Ca+Mg) molar ratio	SO /(Ca+Mg)				1.1	1.0	1.1	1.1	1.1	1.0	1.0					

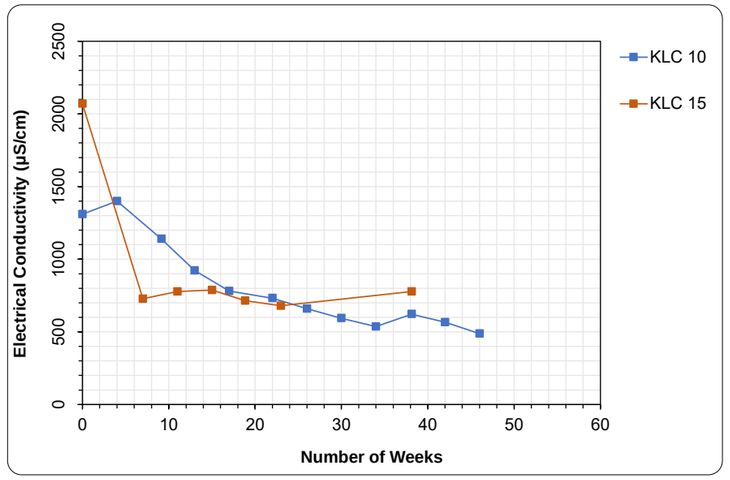
Notes:

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KLC Plots

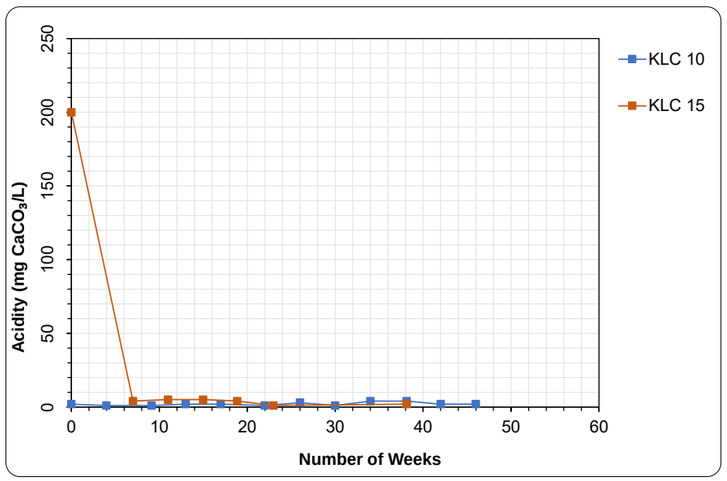


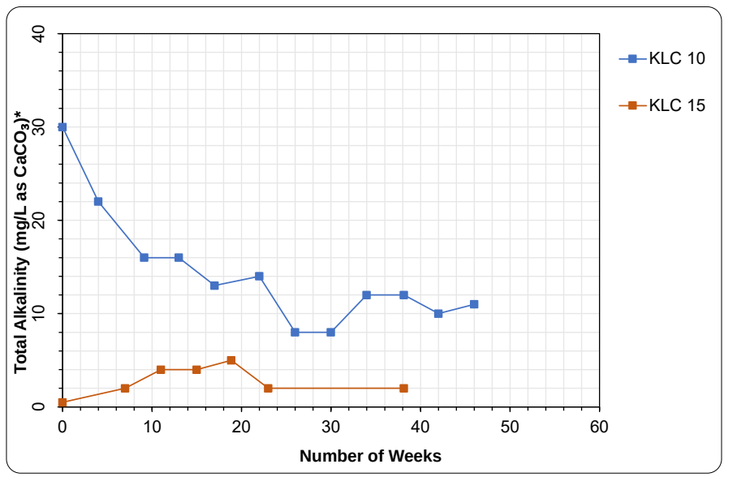


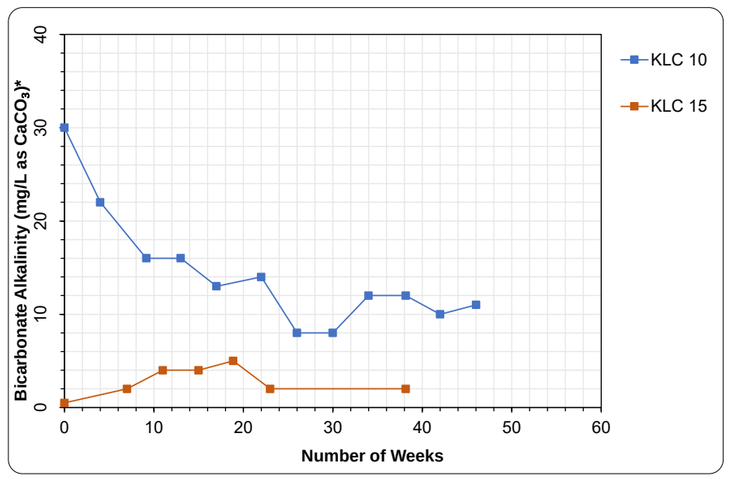
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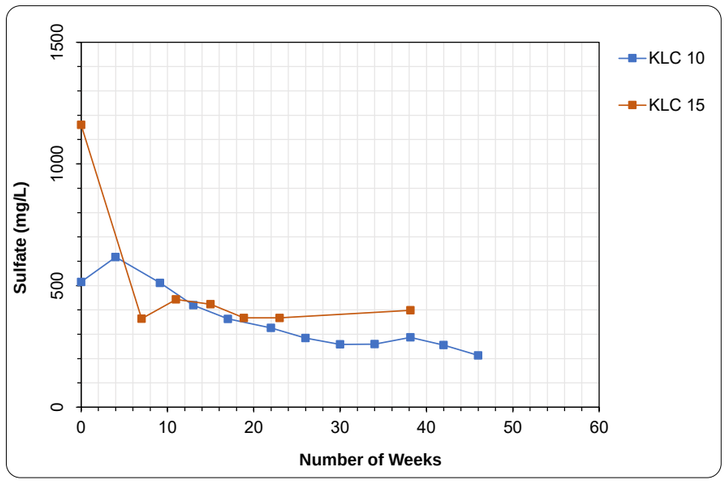
KLC 10 Low-Grade Ore (Free Leach)

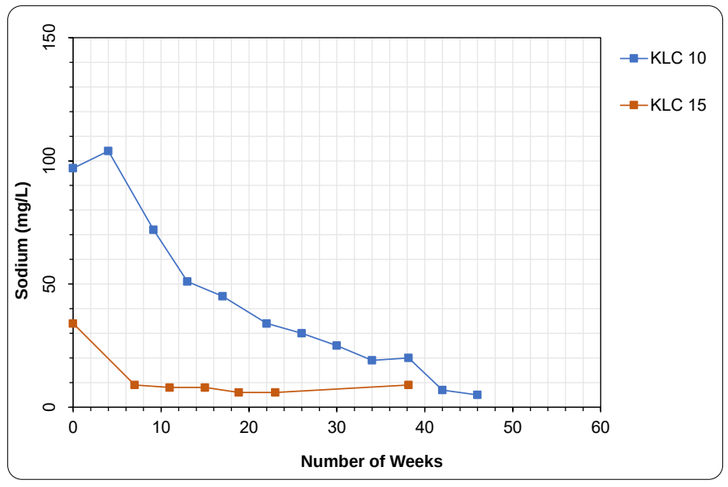
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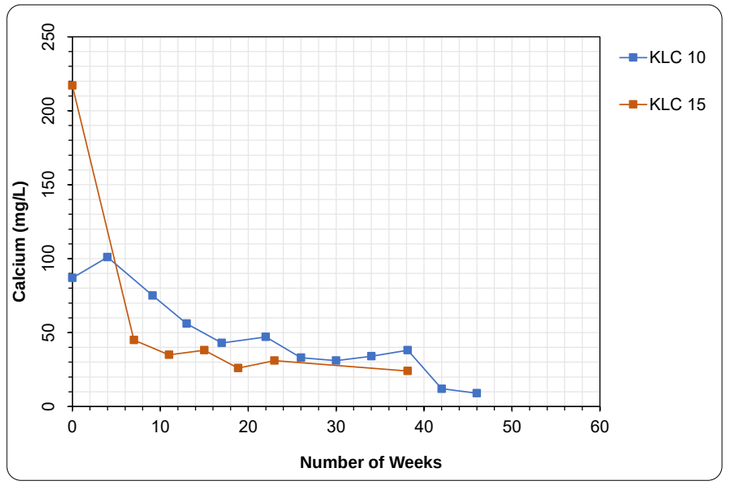




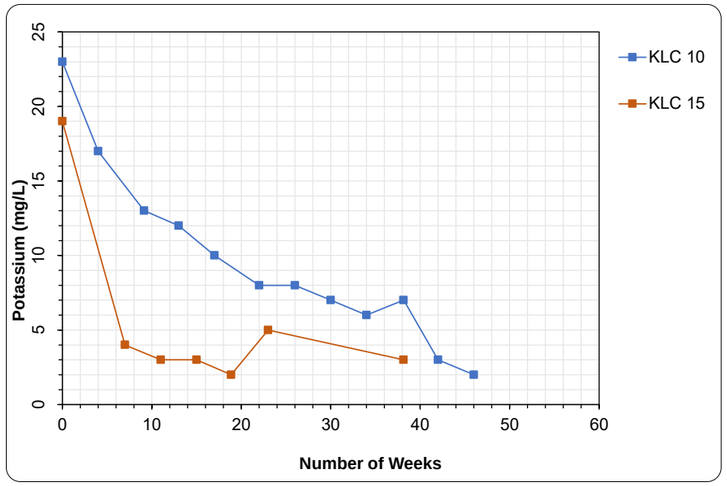


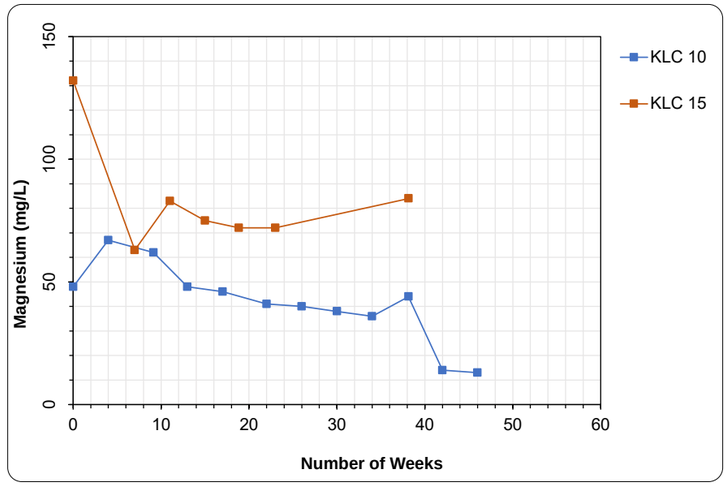






KLC Plots

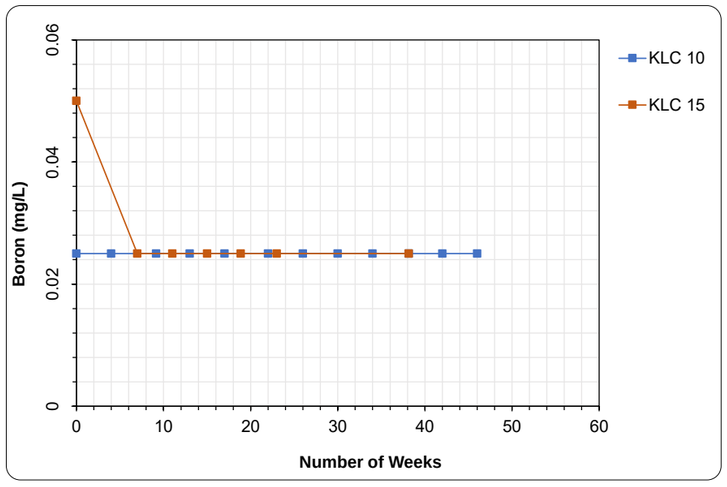


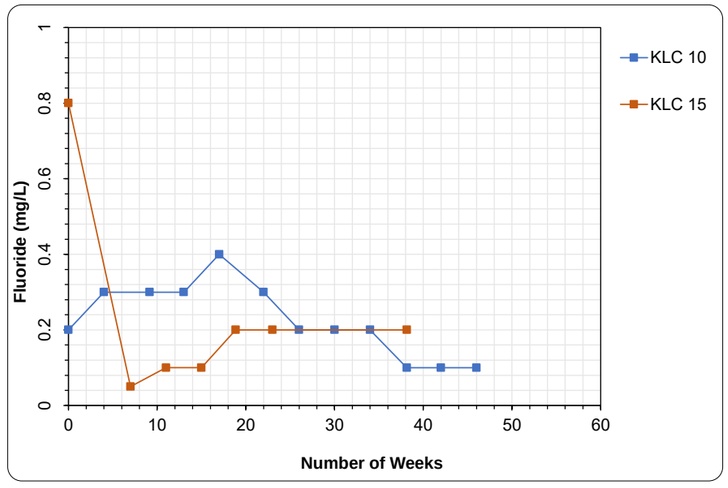


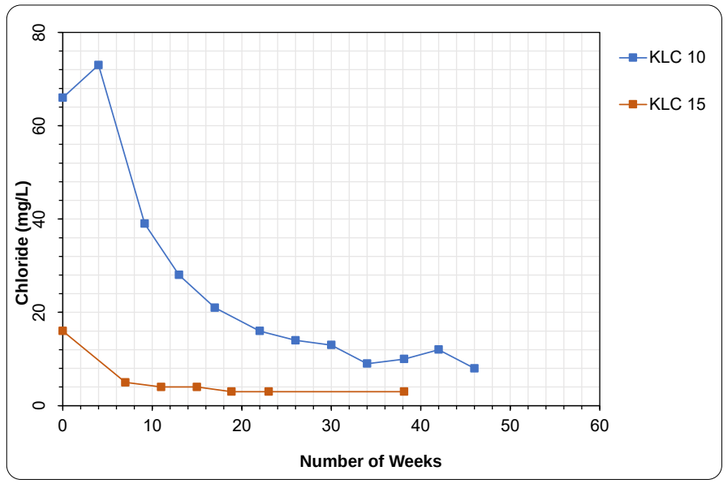
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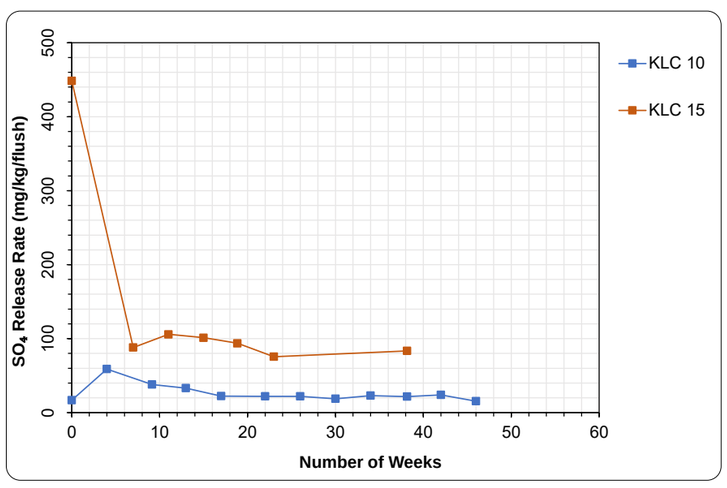
KLC 10 Low-Grade Ore (Free Leach)

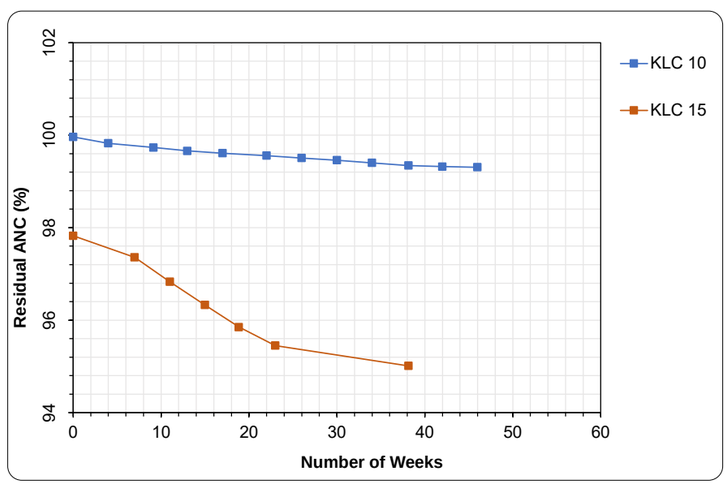
KLC 15 High-Grade Ore (Free Leach)

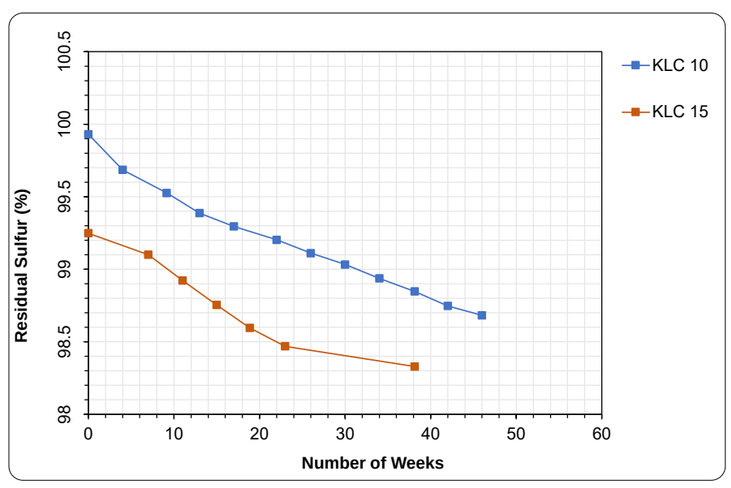




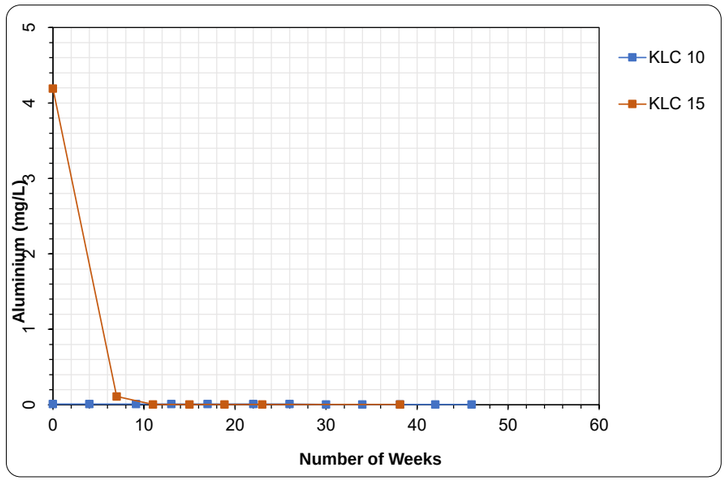


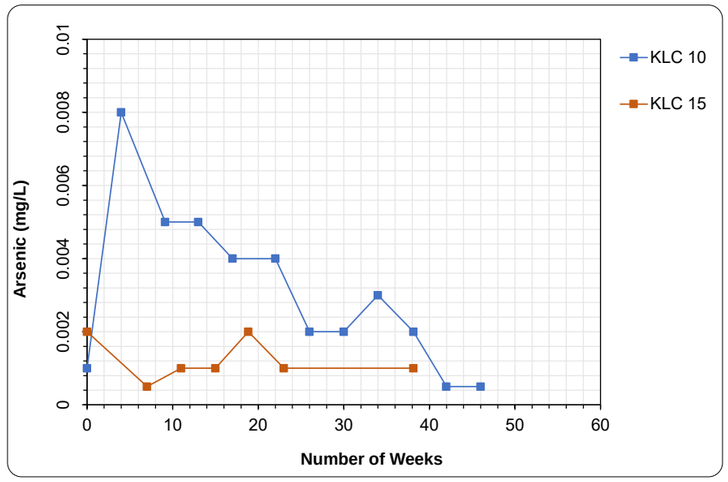






KLC Plots

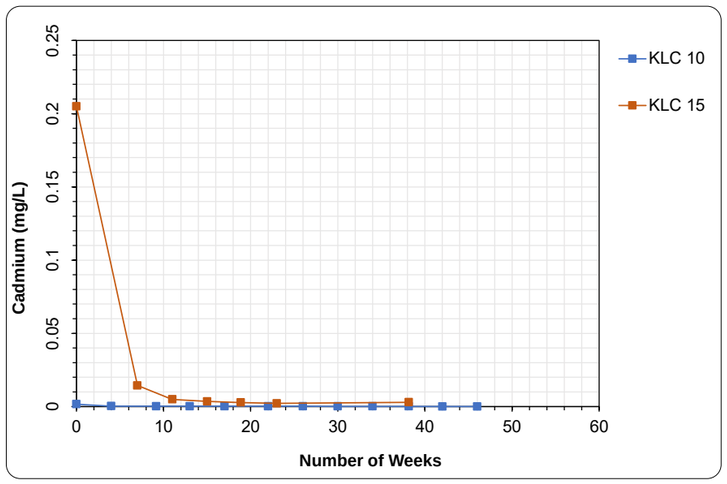


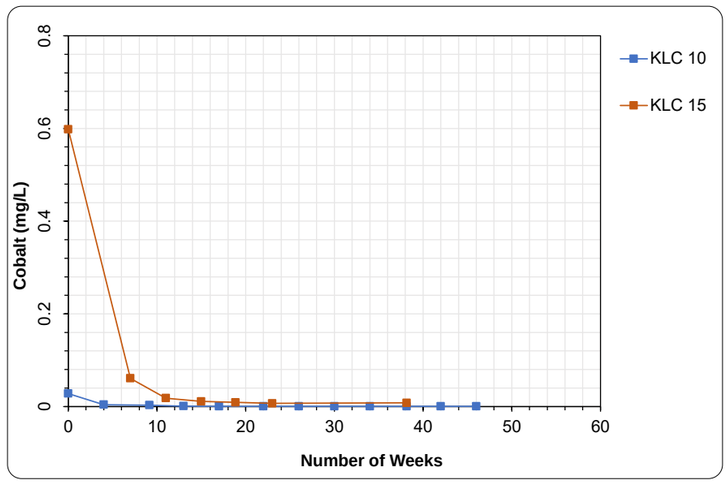


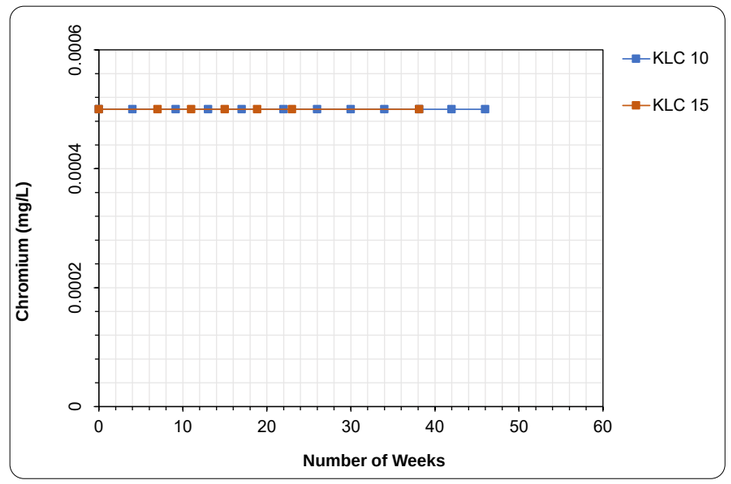
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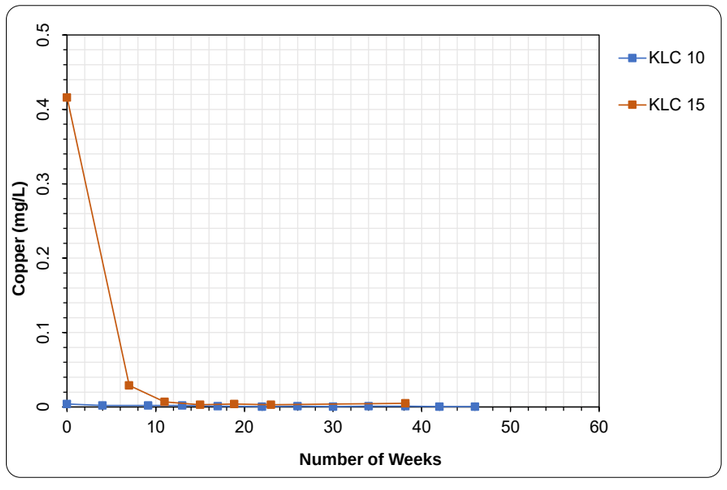
KLC 10 Low-Grade Ore (Free Leach)

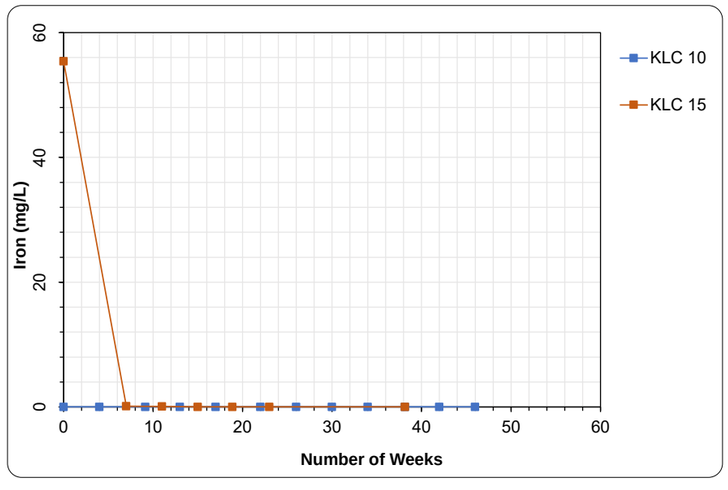
KLC 15 High-Grade Ore (Free Leach)

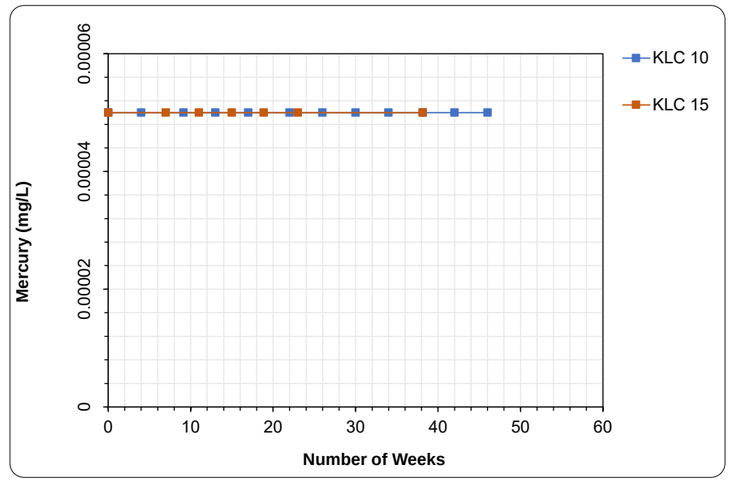




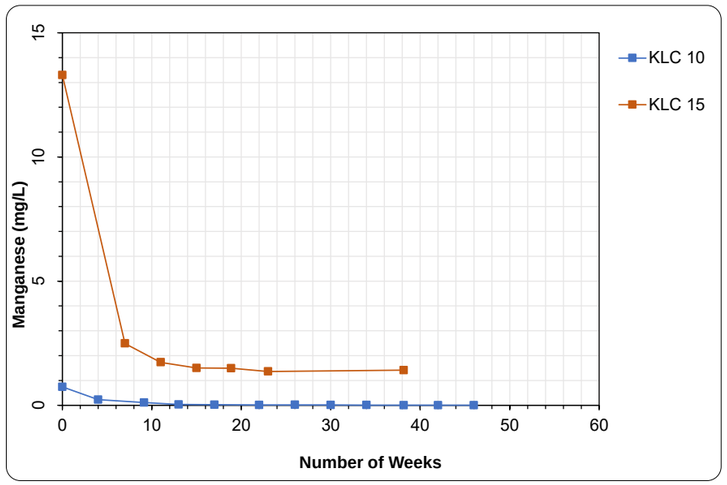


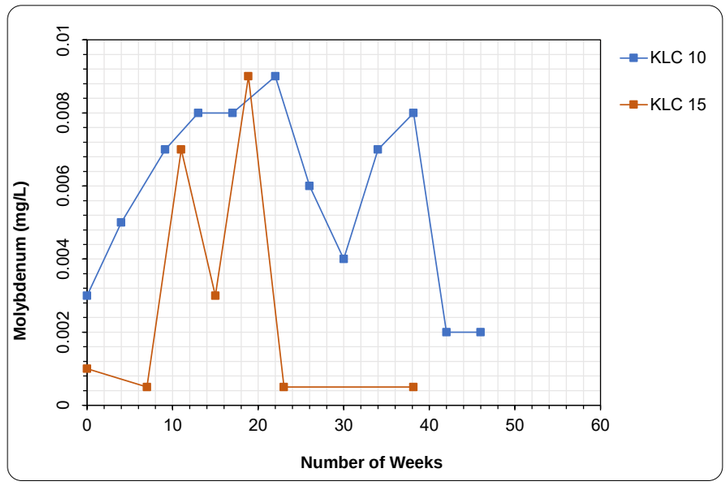






KLC Plots

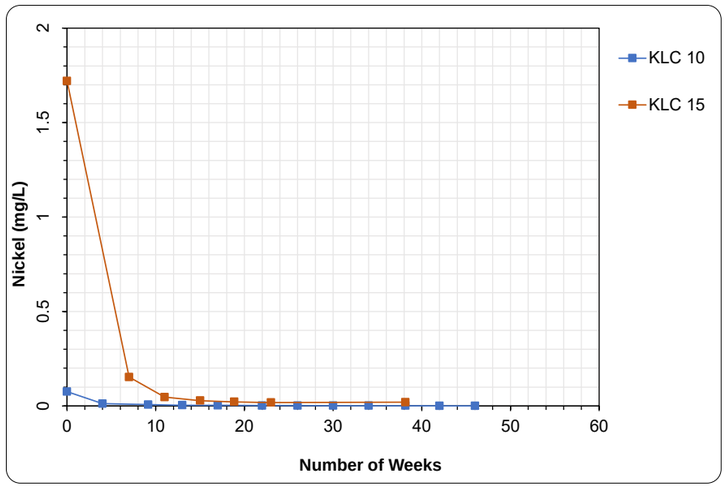


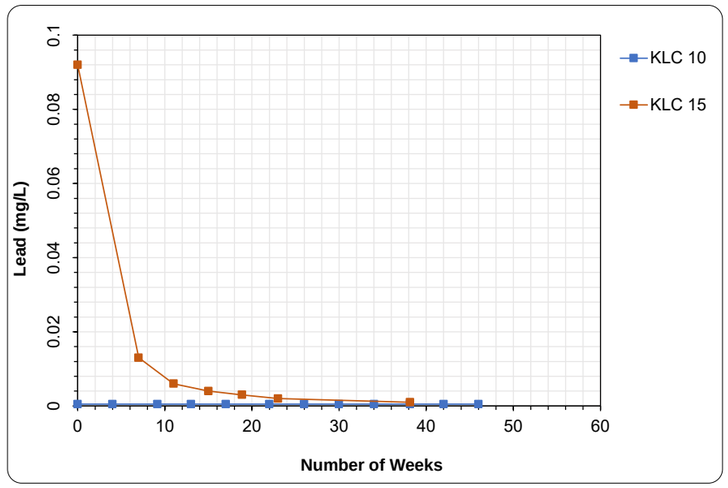


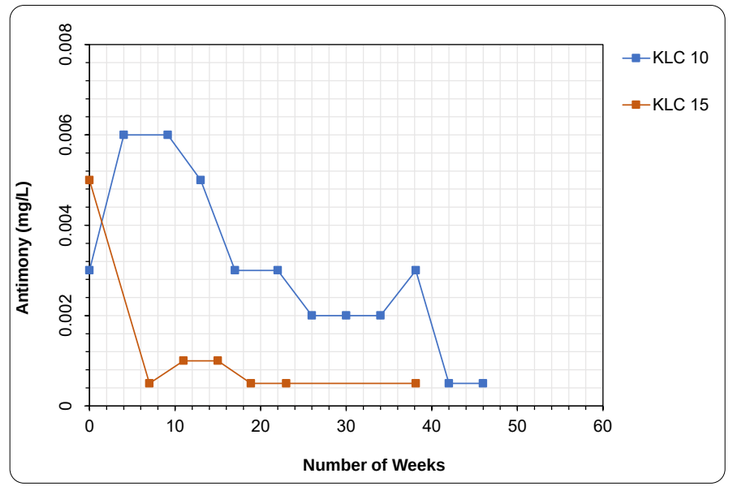
LEGEND:

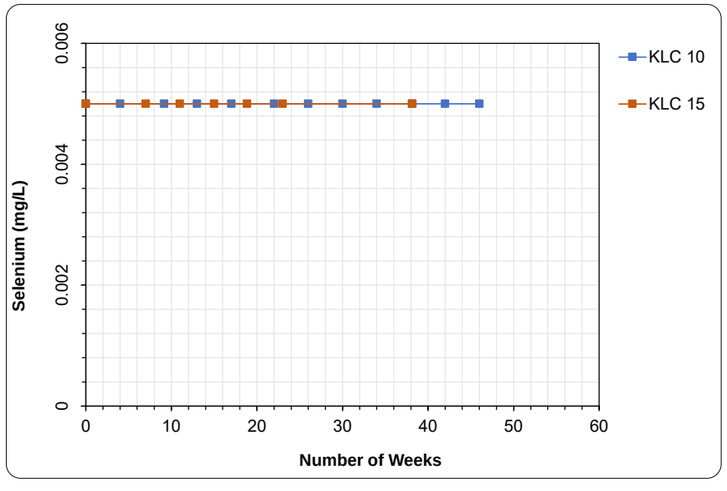
KLC 10 Low-Grade Ore (Free Leach)

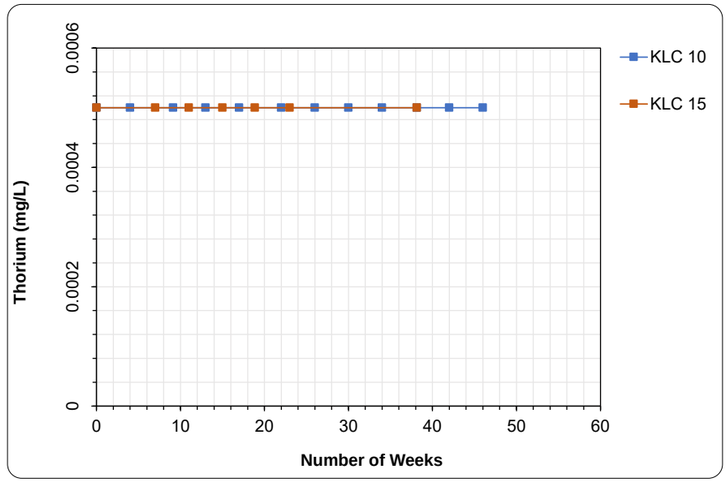
KLC 15 High-Grade Ore (Free Leach)

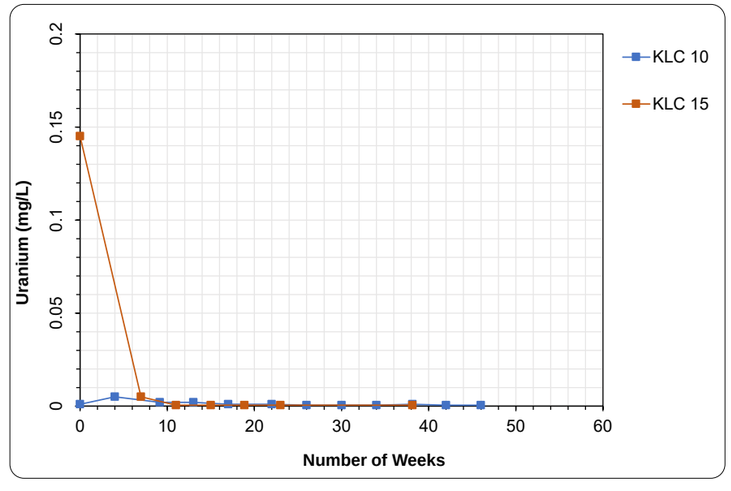




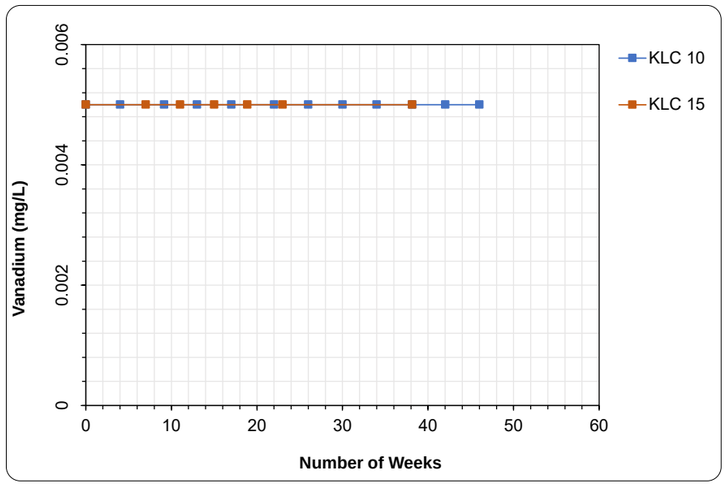


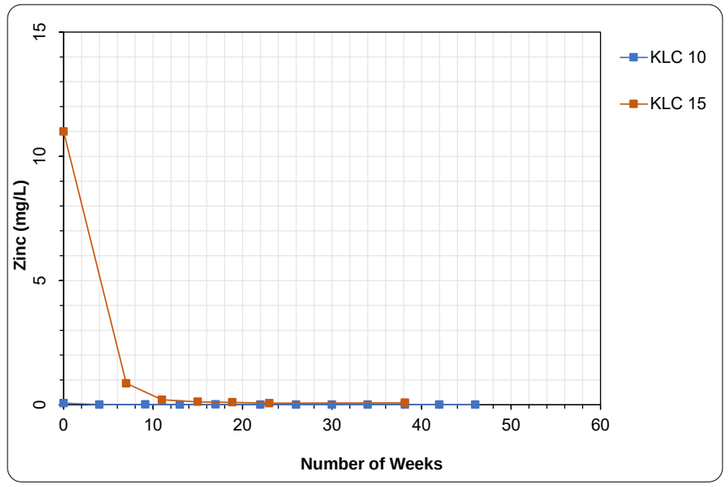






KLC Plots





LEGEND:

KLC 10 Low-Grade Ore (Free Leach)

KLC 15 High-Grade Ore (Free Leach)

Attachment E

ALS kinetic leach data (Certificate of Analyses)

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2002870**	Page	: 1 of 8
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO Box 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 04-Feb-2020 16:27
Order number	: -	Date Analysis Commenced	: 05-Feb-2020
C-O-C number	: 7926	Issue Date	: 12-Feb-2020 14:47
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar L-1		
Quote number	: BN/1234/19		
No. of samples received	: 8		
No. of samples analysed	: 8		

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. 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*
Dave Gitsham	Metals Instrument Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact 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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- 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: WATER (Matrix: WATER)			Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Client sampling date / time	04-Feb-2020 13:19	04-Feb-2020 13:20	04-Feb-2020 13:20	04-Feb-2020 13:21	04-Feb-2020 13:21
Compound	CAS Number	LOR	Unit	EB2002870-001	EB2002870-002	EB2002870-003	EB2002870-004	EB2002870-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.16**	**7.83**	**8.73**	**7.20**	**7.24**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1430**	**1470**	**316**	**847**	**754**
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	**17**	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**30**	**119**	**61**	**32**	**36**
Total Alkalinity as CaCO3	----	1	mg/L	**30**	**119**	**78**	**32**	**36**
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**1**	**2**	**6**	**1**	**1**
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**490**	**582**	**46**	**275**	**235**
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**110**	**41**	**12**	**42**	**34**
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**82**	**185**	**4**	**42**	**39**
Magnesium	7439-95-4	1	mg/L	**30**	**36**	<1	**26**	**23**
Sodium	7440-23-5	1	mg/L	**152**	**81**	**58**	**71**	**62**
Potassium	7440-09-7	1	mg/L	**25**	**23**	**3**	**20**	**18**
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	<0.01	**0.19**	**0.02**	**0.02**
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	**0.004**	**0.004**	**0.002**	**0.012**	**0.013**
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.002**	**0.006**	**0.013**	**0.014**
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	**0.033**	**0.120**	**0.005**	**0.026**	**0.026**
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	04-Feb-2020 13:19	04-Feb-2020 13:20	04-Feb-2020 13:20	04-Feb-2020 13:21	04-Feb-2020 13:21
Compound	CAS Number	LOR	Unit		EB2002870-001	EB2002870-002	EB2002870-003	EB2002870-004	EB2002870-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L		**0.003**	**0.002**	<0.001	**0.002**	**0.002**
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L		**0.003**	**0.036**	<0.001	**0.002**	**0.002**
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.013**	**0.007**	**0.002**	**0.001**	**0.002**
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L		**0.013**	**0.016**	**0.001**	**0.014**	**0.012**
Manganese	7439-96-5	0.001	mg/L		**0.198**	**1.02**	**0.007**	**0.178**	**0.156**
Molybdenum	7439-98-7	0.001	mg/L		**0.011**	**0.002**	**0.003**	**0.001**	<0.001
Nickel	7440-02-0	0.001	mg/L		**0.009**	**0.044**	<0.001	**0.008**	**0.008**
Rubidium	7440-17-7	0.001	mg/L		**0.081**	**0.068**	**0.006**	**0.060**	**0.052**
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L		**0.543**	**1.13**	**0.040**	**0.258**	**0.225**
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L		**0.001**	**0.014**	<0.001	**0.005**	**0.004**
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	**0.06**	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		**0.038**	**0.017**	<0.005	**0.010**	**0.010**
Boron	7440-42-8	0.05	mg/L		**0.06**	**0.10**	**0.09**	**0.08**	**0.06**
Iron	7439-89-6	0.05	mg/L		**0.15**	**0.30**	**0.09**	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	04-Feb-2020 13:19	04-Feb-2020 13:20	04-Feb-2020 13:20	04-Feb-2020 13:21	04-Feb-2020 13:21
Compound	CAS Number	LOR	Unit		EB2002870-001	EB2002870-002	EB2002870-003	EB2002870-004	EB2002870-005
					Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.3**	**0.4**	**0.9**	**0.3**	**0.3**
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**13.9**	**15.6**	**2.85**	**7.55**	**6.57**
ø **Total Cations**	----	0.01	meq/L		**13.8**	**16.3**	**2.80**	**7.84**	**7.00**
ø **Ionic Balance**	----	0.01	%		**0.33**	**2.05**	**----**	**1.86**	**3.13**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	----	----
			Client sampling date / time	04-Feb-2020 13:22	04-Feb-2020 13:22	04-Feb-2020 13:23	----	----
Compound	CAS Number	LOR	Unit	EB2002870-006	EB2002870-007	EB2002870-008	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**6.89**	**4.70**	**7.15**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1010**	**991**	**446**	----	----
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	**28**	<1	**33**	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**28**	<1	**33**	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**1**	**72**	**1**	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**435**	**468**	**106**	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**23**	**14**	**30**	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**103**	**104**	**12**	----	----
Magnesium	7439-95-4	1	mg/L	**35**	**32**	**3**	----	----
Sodium	7440-23-5	1	mg/L	**44**	**29**	**67**	----	----
Potassium	7440-09-7	1	mg/L	**17**	**11**	**7**	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	**0.18**	**0.14**	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Antimony	7440-36-0	0.001	mg/L	**0.001**	**0.002**	**0.006**	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	**0.118**	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	**0.002**	<0.001	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Barium	7440-39-3	0.001	mg/L	**0.035**	**0.055**	**0.020**	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0004**	**0.0055**	<0.0001	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	----	----
			Client sampling date / time	04-Feb-2020 13:22	04-Feb-2020 13:22	04-Feb-2020 13:23	----	----
Compound	CAS Number	LOR	Unit	EB2002870-006	EB2002870-007	EB2002870-008	--------	--------
				Result	Result	Result	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	**0.005**	<0.001	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	**0.002**	<0.001	----	----
Caesium	7440-46-2	0.001	mg/L	**0.002**	**0.001**	**0.001**	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	**0.002**	<0.001	----	----
Cobalt	7440-48-4	0.001	mg/L	**0.092**	**0.070**	<0.001	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	**0.012**	**0.002**	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	**0.004**	<0.001	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Lithium	7439-93-2	0.001	mg/L	**0.015**	**0.015**	**0.004**	----	----
Manganese	7439-96-5	0.001	mg/L	**1.48**	**1.94**	**0.044**	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	**0.004**	----	----
Nickel	7440-02-0	0.001	mg/L	**0.171**	**0.487**	**0.004**	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.053**	**0.032**	**0.015**	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	**0.574**	**0.744**	**0.242**	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	**0.006**	**0.004**	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	**0.059**	**0.450**	<0.005	----	----
Boron	7440-42-8	0.05	mg/L	**0.08**	**0.06**	**0.10**	----	----
Iron	7439-89-6	0.05	mg/L	**0.07**	**28.2**	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-6	KLC-7	KLC-8	----	----
				Client sampling date / time	04-Feb-2020 13:22	04-Feb-2020 13:22	04-Feb-2020 13:23	----	----
Compound	CAS Number	LOR	Unit		EB2002870-006	EB2002870-007	EB2002870-008	--------	--------
					Result	Result	Result	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.1**	**0.1**	**0.6**	----	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**10.3**	**10.1**	**3.71**	----	----
ø **Total Cations**	----	0.01	meq/L		**10.4**	**9.37**	**3.94**	----	----
ø **Ionic Balance**	----	0.01	%		**0.50**	**3.96**	**2.96**	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2005928**	Page	: 1 of 8
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 03-Mar-2020 16:59
Order number	: -	Date Analysis Commenced	: 05-Mar-2020
C-O-C number	: 8810	Issue Date	: 11-Mar-2020 10:06
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar L-2		
Quote number	: BN/1234/19		
No. of samples received	: 9		
No. of samples analysed	: 9		

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. 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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Santusha Pandra	Senior Chemist	Brisbane Inorganics, Stafford, QLD

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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact 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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- 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: WATER (Matrix: WATER)			Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Client sampling date / time	03-Mar-2020 13:48	03-Mar-2020 13:48	03-Mar-2020 13:49	03-Mar-2020 13:49	03-Mar-2020 13:50
Compound	CAS Number	LOR	Unit	EB2005928-001	EB2005928-002	EB2005928-003	EB2005928-004	EB2005928-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.88	7.08	8.58	6.85	6.87
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1560	575	240	751	709
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	14	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	34	35	55	28	26
Total Alkalinity as CaCO3	----	1	mg/L	34	35	69	28	26
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	4	3	<1	2	4
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	600	193	36	277	240
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	122	18	6	32	36
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	102	44	3	38	35
Magnesium	7439-95-4	1	mg/L	44	14	<1	29	26
Sodium	7440-23-5	1	mg/L	184	48	53	68	65
Potassium	7440-09-7	1	mg/L	26	12	2	16	15
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.04	0.10	0.01	<0.01
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	0.016	0.012	0.012	0.020	0.027
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.004	0.010	0.017	0.050	0.050
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.015	0.046	0.006	0.010	0.018
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	03-Mar-2020 13:48	03-Mar-2020 13:48	03-Mar-2020 13:49	03-Mar-2020 13:49	03-Mar-2020 13:50
Compound	CAS Number	LOR	Unit		EB2005928-001	EB2005928-002	EB2005928-003	EB2005928-004	EB2005928-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L		**0.003**	**0.001**	<0.001	**0.001**	**0.001**
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.002**	**0.001**	<0.001	<0.001	<0.001
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L		**0.015**	**0.008**	**0.001**	**0.014**	**0.012**
Manganese	7439-96-5	0.001	mg/L		**0.063**	**0.056**	**0.005**	**0.059**	**0.024**
Molybdenum	7439-98-7	0.001	mg/L		**0.014**	**0.002**	**0.004**	**0.002**	**0.001**
Nickel	7440-02-0	0.001	mg/L		**0.002**	**0.002**	<0.001	**0.003**	**0.002**
Rubidium	7440-17-7	0.001	mg/L		**0.071**	**0.028**	**0.004**	**0.039**	**0.036**
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L		**0.763**	**0.340**	**0.045**	**0.251**	**0.214**
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L		**0.006**	**0.004**	**0.005**	**0.014**	**0.009**
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	**0.06**	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		**0.020**	**0.006**	<0.005	<0.005	**0.010**
Boron	7440-42-8	0.05	mg/L		**0.13**	**0.16**	**0.18**	**0.16**	**0.06**
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Client sampling date / time	03-Mar-2020 13:48	03-Mar-2020 13:48	03-Mar-2020 13:49	03-Mar-2020 13:49	03-Mar-2020 13:50
Compound	CAS Number	LOR	Unit	EB2005928-001	EB2005928-002	EB2005928-003	EB2005928-004	EB2005928-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.6**	**0.5**	**0.8**	**0.4**	**0.3**
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**16.6**	**5.22**	**2.30**	**7.23**	**6.53**
ø **Total Cations**	----	0.01	meq/L	**----**	**----**	**2.50**	**----**	**----**
ø **Total Cations**	----	0.01	meq/L	**17.4**	**5.74**	**----**	**7.65**	**7.10**
ø **Ionic Balance**	----	0.01	%	**2.26**	**4.72**	**----**	**2.83**	**4.15**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	KLC-9	----
			Client sampling date / time	03-Mar-2020 13:50	03-Mar-2020 13:50	03-Mar-2020 13:51	03-Mar-2020 13:51	----
Compound	CAS Number	LOR	Unit	EB2005928-006	EB2005928-007	EB2005928-008	EB2005928-009	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**6.68**	**6.61**	**7.64**	**7.86**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**705**	**802**	**719**	**705**	----
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	**27**	**14**	**71**	**76**	----
Total Alkalinity as CaCO3	----	1	mg/L	**27**	**14**	**71**	**76**	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**2**	**2**	**1**	**1**	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**317**	**407**	**165**	**175**	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**14**	**8**	**52**	**55**	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**78**	**122**	**16**	**49**	----
Magnesium	7439-95-4	1	mg/L	**29**	**29**	**4**	**18**	----
Sodium	7440-23-5	1	mg/L	**31**	**20**	**130**	**62**	----
Potassium	7440-09-7	1	mg/L	**10**	**6**	**9**	**25**	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.01**	<0.01	**0.04**	**0.05**	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Antimony	7440-36-0	0.001	mg/L	**0.009**	**0.021**	**0.041**	**0.098**	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.004**	**0.360**	**0.024**	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	**0.012**	**0.019**	**0.032**	**0.012**	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	**0.0001**	<0.0001	**0.0002**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-6	KLC-7	KLC-8	KLC-9	----
				Client sampling date / time	03-Mar-2020 13:50	03-Mar-2020 13:50	03-Mar-2020 13:51	03-Mar-2020 13:51	----
Compound	CAS Number	LOR	Unit		EB2005928-006	EB2005928-007	EB2005928-008	EB2005928-009	--------
					Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Caesium	7440-46-2	0.001	mg/L		<0.001	<0.001	**0.001**	<0.001	----
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	**0.002**	<0.001	<0.001	----
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	**0.002**	**0.004**	----
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	**0.002**	----
Lithium	7439-93-2	0.001	mg/L		**0.008**	**0.005**	**0.010**	**0.003**	----
Manganese	7439-96-5	0.001	mg/L		**0.148**	**0.530**	**0.004**	**0.022**	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	**0.017**	**0.027**	----
Nickel	7440-02-0	0.001	mg/L		**0.002**	**0.020**	**0.005**	<0.001	----
Rubidium	7440-17-7	0.001	mg/L		**0.022**	**0.014**	**0.021**	**0.053**	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L		**0.379**	**0.855**	**0.563**	**0.209**	----
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	----
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Uranium	7440-61-1	0.001	mg/L		**0.001**	<0.001	**0.043**	**0.012**	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	**0.01**	<0.01	----
Zinc	7440-66-6	0.005	mg/L		<0.005	**0.011**	<0.005	<0.005	----
Boron	7440-42-8	0.05	mg/L		**0.09**	<0.05	**0.11**	**0.62**	----
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-6	KLC-7	KLC-8	KLC-9	----
				Client sampling date / time	03-Mar-2020 13:50	03-Mar-2020 13:50	03-Mar-2020 13:51	03-Mar-2020 13:51	----
Compound	CAS Number	LOR	Unit		EB2005928-006	EB2005928-007	EB2005928-008	EB2005928-009	--------
					Result	Result	Result	Result	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.3**	**0.3**	**1.7**	**2.3**	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		----	----	**6.41**	----	----
ø **Total Anions**	----	0.01	meq/L		**7.53**	**8.98**	----	**6.71**	----
ø **Total Cations**	----	0.01	meq/L		**7.88**	**9.50**	**7.01**	**7.26**	----
ø **Ionic Balance**	----	0.01	%		----	----	**4.48**	----	----
ø **Ionic Balance**	----	0.01	%		**2.26**	**2.81**	----	**3.93**	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2009977**	Page	: 1 of 8
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 09-Apr-2020 16:15
Order number	: -	Date Analysis Commenced	: 14-Apr-2020
C-O-C number	: 10113	Issue Date	: 20-Apr-2020 17:44
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar_L3		
Quote number	: BN/1234/19		
No. of samples received	: 9		
No. of samples analysed	: 9		

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. 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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Santusha Pandra	Senior Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WATER (Matrix: WATER)			Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Client sampling date / time	09-Apr-2020 12:04	09-Apr-2020 12:08	09-Apr-2020 12:08	09-Apr-2020 12:09	09-Apr-2020 12:10
Compound	CAS Number	LOR	Unit	EB2009977-001	EB2009977-002	EB2009977-003	EB2009977-004	EB2009977-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.41	7.65	9.08	7.42	7.48
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	990	557	177	411	544
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	18	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	33	38	42	20	27
Total Alkalinity as CaCO3	----	1	mg/L	33	38	59	20	27
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	5	3	1	2	2
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	349	184	25	146	174
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	53	11	2	11	21
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	47	45	2	20	24
Magnesium	7439-95-4	1	mg/L	23	15	<1	15	19
Sodium	7440-23-5	1	mg/L	106	35	35	31	41
Potassium	7440-09-7	1	mg/L	17	10	1	10	11
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.10	0.02	0.14	0.02	0.01
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	0.012	0.010	0.008	0.015	0.016
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.004	0.009	0.017	0.038	0.042
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.014	0.022	0.004	0.007	0.008
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	09-Apr-2020 12:04	09-Apr-2020 12:08	09-Apr-2020 12:08	09-Apr-2020 12:09	09-Apr-2020 12:10
Compound	CAS Number	LOR	Unit		EB2009977-001	EB2009977-002	EB2009977-003	EB2009977-004	EB2009977-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L		**0.002**	<0.001	<0.001	<0.001	<0.001
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.001**	<0.001	<0.001	<0.001	<0.001
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L		**0.009**	**0.007**	<0.001	**0.008**	**0.009**
Manganese	7439-96-5	0.001	mg/L		**0.023**	**0.049**	**0.008**	**0.018**	**0.018**
Molybdenum	7439-98-7	0.001	mg/L		**0.006**	**0.001**	**0.002**	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	**0.001**	<0.001
Rubidium	7440-17-7	0.001	mg/L		**0.046**	**0.023**	**0.004**	**0.022**	**0.025**
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L		**0.376**	**0.383**	**0.040**	**0.135**	**0.153**
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L		**0.005**	**0.005**	**0.005**	**0.009**	**0.010**
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	**0.03**	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		**0.032**	**0.007**	<0.005	<0.005	<0.005
Boron	7440-42-8	0.05	mg/L		**0.08**	**0.06**	**0.08**	**0.08**	**0.05**
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	**0.10**	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	09-Apr-2020 12:04	09-Apr-2020 12:08	09-Apr-2020 12:08	09-Apr-2020 12:09	09-Apr-2020 12:10
Compound	CAS Number	LOR	Unit		EB2009977-001	EB2009977-002	EB2009977-003	EB2009977-004	EB2009977-005
					Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.5**	**0.4**	**0.6**	**0.3**	**0.3**
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**9.42**	**4.90**	**1.76**	**3.75**	**4.75**
ø **Total Cations**	----	0.01	meq/L		**9.28**	**5.26**	**1.65**	**3.84**	**4.83**
ø **Ionic Balance**	----	0.01	%		**0.73**	**3.52**	**----**	**1.15**	**0.75**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	KLC-9	----
			Client sampling date / time	09-Apr-2020 12:10	09-Apr-2020 12:11	09-Apr-2020 12:12	09-Apr-2020 12:14	----
Compound	CAS Number	LOR	Unit	EB2009977-006	EB2009977-007	EB2009977-008	EB2009977-009	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.17**	**7.01**	**8.14**	**7.69**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**649**	**639**	**401**	**899**	----
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	**17**	**11**	**69**	**51**	----
Total Alkalinity as CaCO3	----	1	mg/L	**17**	**11**	**69**	**51**	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**2**	**2**	**1**	**5**	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**280**	**290**	**88**	**370**	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**8**	**4**	**18**	**15**	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**65**	**85**	**9**	**82**	----
Magnesium	7439-95-4	1	mg/L	**24**	**21**	**2**	**29**	----
Sodium	7440-23-5	1	mg/L	**19**	**10**	**68**	**45**	----
Potassium	7440-09-7	1	mg/L	**7**	**4**	**6**	**21**	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	**0.16**	**0.15**	**0.02**	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Antimony	7440-36-0	0.001	mg/L	**0.007**	**0.016**	**0.036**	**0.066**	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	**0.002**	<0.001	**0.364**	**0.018**	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	**0.010**	**0.018**	**0.027**	**0.019**	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	**0.0003**	<0.0001	**0.0010**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-6	KLC-7	KLC-8	KLC-9	----
				Client sampling date / time	09-Apr-2020 12:10	09-Apr-2020 12:11	09-Apr-2020 12:12	09-Apr-2020 12:14	----
Compound	CAS Number	LOR	Unit		EB2009977-006	EB2009977-007	EB2009977-008	EB2009977-009	--------
					Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Caesium	7440-46-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	**0.006**	<0.001	<0.001	----
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		**0.001**	<0.001	<0.001	**0.003**	----
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Lithium	7439-93-2	0.001	mg/L		**0.006**	**0.005**	**0.006**	**0.004**	----
Manganese	7439-96-5	0.001	mg/L		**0.076**	**0.677**	**0.002**	**0.017**	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	**0.009**	**0.020**	----
Nickel	7440-02-0	0.001	mg/L		**0.001**	**0.043**	**0.003**	<0.001	----
Rubidium	7440-17-7	0.001	mg/L		**0.016**	**0.010**	**0.013**	**0.046**	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L		**0.306**	**0.518**	**0.262**	**0.325**	----
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	----
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Uranium	7440-61-1	0.001	mg/L		**0.001**	<0.001	**0.039**	**0.011**	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L		**0.018**	**0.056**	<0.005	**0.012**	----
Boron	7440-42-8	0.05	mg/L		**0.06**	**0.10**	**0.09**	**0.66**	----
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-6	KLC-7	KLC-8	KLC-9	----
				Client sampling date / time	09-Apr-2020 12:10	09-Apr-2020 12:11	09-Apr-2020 12:12	09-Apr-2020 12:14	----
Compound	CAS Number	LOR	Unit		EB2009977-006	EB2009977-007	EB2009977-008	EB2009977-009	--------
					Result	Result	Result	Result	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.2**	**0.2**	**1.5**	**2.0**	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**6.40**	**6.37**	**3.72**	**9.14**	----
ø **Total Cations**	----	0.01	meq/L		**6.22**	**6.51**	**3.72**	**8.97**	----
ø **Ionic Balance**	----	0.01	%		**1.35**	**1.06**	**0.09**	**0.95**	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2012199**	Page	: 1 of 8
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 07-May-2020 16:20
Order number	: -	Date Analysis Commenced	: 08-May-2020
C-O-C number	: 10852	Issue Date	: 12-May-2020 10:56
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar_L4		
Quote number	: BN/1234/19		
No. of samples received	: 7		
No. of samples analysed	: 7		

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. 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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WATER (Matrix: WATER)			Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Client sampling date / time	07-May-2020 12:13	07-May-2020 12:13	07-May-2020 12:14	07-May-2020 12:14	07-May-2020 12:15
Compound	CAS Number	LOR	Unit	EB2012199-001	EB2012199-002	EB2012199-003	EB2012199-004	EB2012199-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.26	7.69	8.68	7.39	7.33
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	993	394	170	437	646
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	10	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	41	49	55	27	26
Total Alkalinity as CaCO3	----	1	mg/L	41	49	65	27	26
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	1	<1	<1	<1	1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	336	142	25	162	213
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	53	7	2	10	23
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	54	38	3	23	30
Magnesium	7439-95-4	1	mg/L	27	12	<1	17	26
Sodium	7440-23-5	1	mg/L	107	22	38	27	48
Potassium	7440-09-7	1	mg/L	15	8	1	8	10
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.03	0.07	0.01	<0.01
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	0.010	0.006	0.008	0.011	0.012
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.003	0.007	0.017	0.024	0.029
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.014	0.010	0.006	0.007	0.012
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	07-May-2020 12:13	07-May-2020 12:13	07-May-2020 12:14	07-May-2020 12:14	07-May-2020 12:15
Compound	CAS Number	LOR	Unit		EB2012199-001	EB2012199-002	EB2012199-003	EB2012199-004	EB2012199-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L		**0.001**	<0.001	<0.001	<0.001	<0.001
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L		**0.009**	**0.006**	<0.001	**0.008**	**0.010**
Manganese	7439-96-5	0.001	mg/L		**0.007**	**0.048**	**0.008**	**0.007**	**0.009**
Molybdenum	7439-98-7	0.001	mg/L		**0.004**	<0.001	**0.002**	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	**0.001**	**0.001**	**0.001**
Rubidium	7440-17-7	0.001	mg/L		**0.039**	**0.016**	**0.003**	**0.018**	**0.023**
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L		**0.381**	**0.292**	**0.050**	**0.142**	**0.201**
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L		**0.008**	**0.004**	**0.005**	**0.013**	**0.010**
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	**0.03**	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	**0.05**	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	07-May-2020 12:13	07-May-2020 12:13	07-May-2020 12:14	07-May-2020 12:14	07-May-2020 12:15
Compound	CAS Number	LOR	Unit		EB2012199-001	EB2012199-002	EB2012199-003	EB2012199-004	EB2012199-005
					Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.4**	**0.3**	**0.4**	**0.2**	**0.2**
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**9.31**	**4.13**	**1.88**	**4.19**	**5.60**
ø **Total Cations**	----	0.01	meq/L		**9.95**	**4.04**	**1.83**	**3.92**	**5.98**
ø **Ionic Balance**	----	0.01	%		**3.35**	**1.07**	**----**	**3.31**	**3.26**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-8	KLC-9	----	----	----
			Client sampling date / time	07-May-2020 12:15	07-May-2020 12:16	----	----	----
Compound	CAS Number	LOR	Unit	EB2012199-006	EB2012199-007	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.03**	**8.07**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**316**	**787**	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**77**	**92**	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**77**	**92**	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	<1	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**64**	**278**	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**9**	**7**	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**9**	**82**	----	----	----
Magnesium	7439-95-4	1	mg/L	**2**	**28**	----	----	----
Sodium	7440-23-5	1	mg/L	**51**	**31**	----	----	----
Potassium	7440-09-7	1	mg/L	**5**	**19**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.11**	**0.02**	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.027**	**0.047**	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.339**	**0.012**	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.019**	**0.012**	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	**0.0018**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-8	KLC-9	----	----	----
			Client sampling date / time	07-May-2020 12:15	07-May-2020 12:16	----	----	----
Compound	CAS Number	LOR	Unit	EB2012199-006	EB2012199-007	--------	--------	--------
				Result	Result	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	----	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	**0.003**	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	**0.001**	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.006**	**0.005**	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	**0.019**	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.005**	**0.021**	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	<0.001	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.012**	**0.044**	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.279**	**0.356**	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	----	----	----
Uranium	7440-61-1	0.001	mg/L	**0.039**	**0.015**	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	**0.037**	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	**0.42**	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-8	KLC-9	----	----	----
				Client sampling date / time	07-May-2020 12:15	07-May-2020 12:16	----	----	----
Compound	CAS Number	LOR	Unit		EB2012199-006	EB2012199-007	--------	--------	--------
					Result	Result	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**1.1**	**1.6**	----	----	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**3.12**	**7.82**	----	----	----
ø **Total Cations**	----	0.01	meq/L		**2.96**	**8.23**	----	----	----
ø **Ionic Balance**	----	0.01	%		**2.71**	**2.54**	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2014656**	Page	: 1 of 8
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 02-Jun-2020 16:45
Order number	: -	Date Analysis Commenced	: 03-Jun-2020
C-O-C number	: 11575	Issue Date	: 09-Jun-2020 09:36
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar_L5		
Quote number	: BN/1234/19		
No. of samples received	: 8		
No. of samples analysed	: 8		

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. 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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WATER (Matrix: WATER)			Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Client sampling date / time	02-Jun-2020 14:09	02-Jun-2020 14:10	02-Jun-2020 14:10	02-Jun-2020 14:11	02-Jun-2020 14:11
Compound	CAS Number	LOR	Unit	EB2014656-001	EB2014656-002	EB2014656-003	EB2014656-004	EB2014656-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.71	7.81	8.75	7.63	7.62
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	901	356	173	356	434
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	9	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	41	47	54	26	27
Total Alkalinity as CaCO3	----	1	mg/L	41	47	63	26	27
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	4	2	<1	2	1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	314	110	22	126	146
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	57	6	3	10	16
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	47	34	3	18	19
Magnesium	7439-95-4	1	mg/L	25	12	<1	16	18
Sodium	7440-23-5	1	mg/L	97	17	35	23	33
Potassium	7440-09-7	1	mg/L	14	6	1	7	7
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.03	0.06	0.01	0.01
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	0.009	0.006	0.008	0.009	0.010
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.003	0.006	0.017	0.020	0.022
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.013	0.011	0.005	0.005	0.007
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	02-Jun-2020 14:09	02-Jun-2020 14:10	02-Jun-2020 14:10	02-Jun-2020 14:11	02-Jun-2020 14:11
Compound	CAS Number	LOR	Unit		EB2014656-001	EB2014656-002	EB2014656-003	EB2014656-004	EB2014656-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L		**0.001**	<0.001	<0.001	<0.001	<0.001
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.001**	<0.001	<0.001	<0.001	<0.001
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L		**0.008**	**0.005**	<0.001	**0.006**	**0.007**
Manganese	7439-96-5	0.001	mg/L		**0.002**	**0.026**	**0.004**	**0.004**	**0.002**
Molybdenum	7439-98-7	0.001	mg/L		**0.004**	<0.001	**0.003**	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	**0.001**	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L		**0.036**	**0.015**	**0.003**	**0.015**	**0.016**
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L		**0.356**	**0.276**	**0.054**	**0.116**	**0.126**
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L		**0.010**	**0.004**	**0.007**	**0.016**	**0.012**
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	**0.03**	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		**0.006**	<0.005	<0.005	<0.005	<0.005
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	02-Jun-2020 14:09	02-Jun-2020 14:10	02-Jun-2020 14:10	02-Jun-2020 14:11	02-Jun-2020 14:11
Compound	CAS Number	LOR	Unit		EB2014656-001	EB2014656-002	EB2014656-003	EB2014656-004	EB2014656-005
					Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.4**	**0.2**	**0.4**	**0.2**	**0.2**
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**8.96**	**3.40**	**1.80**	**3.42**	**4.03**
ø **Total Cations**	----	0.01	meq/L		**8.98**	**3.58**	**1.70**	**3.39**	**4.04**
ø **Ionic Balance**	----	0.01	%		**0.09**	**2.56**	**----**	**0.44**	**0.17**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	----	----
			Client sampling date / time	02-Jun-2020 14:12	02-Jun-2020 14:12	02-Jun-2020 14:13	----	----
Compound	CAS Number	LOR	Unit	EB2014656-006	EB2014656-007	EB2014656-008	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.38**	**7.30**	**8.07**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**517**	**452**	**319**	----	----
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	**22**	**14**	**72**	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**22**	**14**	**72**	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**1**	**1**	<1	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**204**	**190**	**68**	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**6**	**2**	**8**	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**55**	**57**	**11**	----	----
Magnesium	7439-95-4	1	mg/L	**23**	**18**	**3**	----	----
Sodium	7440-23-5	1	mg/L	**12**	**5**	**52**	----	----
Potassium	7440-09-7	1	mg/L	**5**	**2**	**5**	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	**0.06**	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Antimony	7440-36-0	0.001	mg/L	**0.007**	**0.015**	**0.020**	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.001**	**0.201**	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Barium	7440-39-3	0.001	mg/L	**0.009**	**0.012**	**0.019**	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	**0.0001**	<0.0001	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	----	----
			Client sampling date / time	02-Jun-2020 14:12	02-Jun-2020 14:12	02-Jun-2020 14:13	----	----
Compound	CAS Number	LOR	Unit	EB2014656-006	EB2014656-007	EB2014656-008	--------	--------
				Result	Result	Result	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	**0.002**	<0.001	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	**0.001**	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Lithium	7439-93-2	0.001	mg/L	**0.005**	**0.003**	**0.006**	----	----
Manganese	7439-96-5	0.001	mg/L	**0.004**	**0.302**	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	**0.004**	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	**0.011**	<0.001	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.010**	**0.005**	**0.011**	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	**0.236**	**0.255**	**0.340**	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Uranium	7440-61-1	0.001	mg/L	**0.002**	<0.001	**0.043**	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	**0.008**	<0.005	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	<0.05	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-6	KLC-7	KLC-8	----	----
				Client sampling date / time	02-Jun-2020 14:12	02-Jun-2020 14:12	02-Jun-2020 14:13	----	----
Compound	CAS Number	LOR	Unit		EB2014656-006	EB2014656-007	EB2014656-008	--------	--------
					Result	Result	Result	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.2**	**0.2**	**0.8**	----	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**4.86**	**4.29**	**3.08**	----	----
ø **Total Cations**	----	0.01	meq/L		**5.29**	**4.59**	**3.18**	----	----
ø **Ionic Balance**	----	0.01	%		**4.25**	**3.40**	**1.68**	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2015306**	Page	: 1 of 5
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 09-Jun-2020 17:30
Order number	: -	Date Analysis Commenced	: 10-Jun-2020
C-O-C number	: 11701	Issue Date	: 15-Jun-2020 08:59
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar_L4-1		
Quote number	: BN/1234/19		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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Signatories	*Position*	*Accreditation Category*
Dave Gitsham	Metals Instrument Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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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.
~ = Indicates an estimated value.

- 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: WATER (Matrix: WATER)				Client sample ID	KLC-9	----	----	----	----
				Client sampling date / time	09-Jun-2020 15:01	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2015306-001	--------	--------	--------	--------
					Result	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**7.95**	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**714**	----	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		**90**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		**90**	----	----	----	----
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L		**2**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		**271**	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		**4**	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		**78**	----	----	----	----
Magnesium	7439-95-4	1	mg/L		**28**	----	----	----	----
Sodium	7440-23-5	1	mg/L		**27**	----	----	----	----
Potassium	7440-09-7	1	mg/L		**19**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		**0.02**	----	----	----	----
Dysprosium	7429-91-6	0.001	mg/L		<0.001	----	----	----	----
Antimony	7440-36-0	0.001	mg/L		**0.039**	----	----	----	----
Erbium	7440-52-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		**0.010**	----	----	----	----
Europium	7440-53-1	0.001	mg/L		<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L		<0.001	----	----	----	----
Gadolinium	7440-54-2	0.001	mg/L		<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L		**0.010**	----	----	----	----
Gallium	7440-55-3	0.001	mg/L		<0.001	----	----	----	----
Bismuth	7440-69-9	0.001	mg/L		<0.001	----	----	----	----
Hafnium	7440-58-6	0.01	mg/L		<0.01	----	----	----	----
Holmium	7440-60-0	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0015**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-9	----	----	----	----
			Client sampling date / time	09-Jun-2020 15:01	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2015306-001	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	----	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	----	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	----	----	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	----	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	----	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	----	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	----	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	----	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	----	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	----	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.006**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.002**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.024**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.041**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.342**	----	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	----	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	----	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	----	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	**0.015**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.032**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.39**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**KLC-9**	----	----	----	----
				Client sampling date / time	09-Jun-2020 15:01	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EB2015306-001**	--------	--------	--------	--------
					Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	**----**	**----**	**----**	**----**
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**1.7**	**----**	**----**	**----**	**----**
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**7.55**	**----**	**----**	**----**	**----**
ø **Total Cations**	----	0.01	meq/L		**7.86**	**----**	**----**	**----**	**----**
ø **Ionic Balance**	----	0.01	%		**1.97**	**----**	**----**	**----**	**----**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2017856**	Page	: 1 of 11
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 07-Jul-2020 16:09
Order number	: -	Date Analysis Commenced	: 08-Jul-2020
C-O-C number	: 12405	Issue Date	: 13-Jul-2020 09:53
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar_L6		
Quote number	: BN/1234/19		
No. of samples received	: 9		
No. of samples analysed	: 9		

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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. 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*
Dave Gitsham	Metals Instrument Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- Ionic Balance out of acceptable limits due to analytes not quantified in this report.
- 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: WASTEWATER (Matrix: WATER)			Client sample ID	KLC-9	----	----	----	----
			Client sampling date / time	07-Jul-2020 14:22	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2017856-009	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.78**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**662**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**80**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**80**	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**1**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**264**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**4**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**69**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**28**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**22**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**17**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	----	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.034**	----	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.010**	----	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.010**	----	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	----	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	----	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0016**	----	----	----	----

Analytical Results

Sub-Matrix: WASTEWATER (Matrix: WATER)			Client sample ID	KLC-9	----	----	----	----
			Client sampling date / time	07-Jul-2020 14:22	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2017856-009	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	----	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	----	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	----	----	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	----	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	----	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	----	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	----	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	----	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	----	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	----	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.004**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.002**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.025**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.035**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.322**	----	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	----	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	----	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	----	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	**0.017**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.025**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.33**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: **WASTEWATER** (Matrix: **WATER**)				Client sample ID	**KLC-9**	----	----	----	----
				Client sampling date / time	07-Jul-2020 14:22	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EB2017856-009**	--------	--------	--------	--------
					Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**1.7**	----	----	----	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**7.21**	----	----	----	----
ø **Total Cations**	----	0.01	meq/L		**7.14**	----	----	----	----
ø **Ionic Balance**	----	0.01	%		**0.48**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Client sampling date / time	07-Jul-2020 14:16	07-Jul-2020 14:16	07-Jul-2020 14:17	07-Jul-2020 14:18	07-Jul-2020 14:19
Compound	CAS Number	LOR	Unit	EB2017856-001	EB2017856-002	EB2017856-003	EB2017856-004	EB2017856-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.05	7.23	8.84	7.00	7.10
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	799	305	115	293	429
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	20	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	41	45	38	37	68
Total Alkalinity as CaCO3	----	1	mg/L	41	45	58	37	68
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	1	1	<1	<1	1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	256	100	15	112	153
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	42	4	1	6	12
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	40	30	3	16	20
Magnesium	7439-95-4	1	mg/L	25	12	<1	15	22
Sodium	7440-23-5	1	mg/L	88	14	25	18	33
Potassium	7440-09-7	1	mg/L	13	5	1	6	8
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.04	0.06	0.02	0.01
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	0.008	0.005	0.004	0.007	0.009
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.002	0.005	0.012	0.017	0.020
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.011	0.010	0.003	0.004	0.008
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	07-Jul-2020 14:16	07-Jul-2020 14:16	07-Jul-2020 14:17	07-Jul-2020 14:18	07-Jul-2020 14:19
Compound	CAS Number	LOR	Unit		EB2017856-001	EB2017856-002	EB2017856-003	EB2017856-004	EB2017856-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L		**0.007**	**0.004**	<0.001	**0.005**	**0.007**
Manganese	7439-96-5	0.001	mg/L		**0.004**	**0.012**	**0.007**	**0.002**	<0.001
Molybdenum	7439-98-7	0.001	mg/L		**0.005**	<0.001	**0.005**	**0.001**	**0.001**
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L		**0.031**	**0.012**	**0.002**	**0.012**	**0.016**
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L		**0.340**	**0.268**	**0.047**	**0.114**	**0.149**
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L		**0.013**	**0.005**	**0.007**	**0.020**	**0.026**
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	**0.02**	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		**0.005**	<0.005	<0.005	<0.005	<0.005
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	07-Jul-2020 14:16	07-Jul-2020 14:16	07-Jul-2020 14:17	07-Jul-2020 14:18	07-Jul-2020 14:19
Compound	CAS Number	LOR	Unit		EB2017856-001	EB2017856-002	EB2017856-003	EB2017856-004	EB2017856-005
					Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.4**	**0.2**	**0.3**	**0.2**	**0.2**
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**7.33**	**3.09**	**1.50**	**3.24**	**4.88**
ø **Total Cations**	----	0.01	meq/L		**8.21**	**3.22**	**1.26**	**2.97**	**4.45**
ø **Ionic Balance**	----	0.01	%		**5.66**	**2.02**	**----**	**4.36**	**4.65**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	----	----
			Client sampling date / time	07-Jul-2020 14:20	07-Jul-2020 14:21	07-Jul-2020 14:21	----	----
Compound	CAS Number	LOR	Unit	EB2017856-006	EB2017856-007	EB2017856-008	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**6.75**	**6.67**	**7.49**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**437**	**376**	**205**	----	----
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	**17**	**17**	**52**	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**17**	**17**	**52**	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**1**	**1**	<1	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**198**	**181**	**48**	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**4**	<1	**4**	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**47**	**48**	**6**	----	----
Magnesium	7439-95-4	1	mg/L	**21**	**16**	**1**	----	----
Sodium	7440-23-5	1	mg/L	**10**	**4**	**37**	----	----
Potassium	7440-09-7	1	mg/L	**4**	**2**	**3**	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	**0.13**	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Antimony	7440-36-0	0.001	mg/L	**0.005**	**0.012**	**0.010**	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.001**	<0.001	**0.136**	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Barium	7440-39-3	0.001	mg/L	**0.008**	**0.011**	**0.010**	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	**0.0001**	<0.0001	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	----	----
			Client sampling date / time	07-Jul-2020 14:20	07-Jul-2020 14:21	07-Jul-2020 14:21	----	----
Compound	CAS Number	LOR	Unit	EB2017856-006	EB2017856-007	EB2017856-008	--------	--------
				Result	Result	Result	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	**0.003**	<0.001	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Lithium	7439-93-2	0.001	mg/L	**0.004**	**0.002**	**0.003**	----	----
Manganese	7439-96-5	0.001	mg/L	**0.003**	**0.303**	**0.002**	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	**0.004**	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	**0.014**	<0.001	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.008**	**0.004**	**0.007**	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	**0.225**	**0.225**	**0.204**	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Uranium	7440-61-1	0.001	mg/L	**0.003**	<0.001	**0.042**	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	**0.014**	<0.005	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	<0.05	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-6	KLC-7	KLC-8	----	----
				Client sampling date / time	07-Jul-2020 14:20	07-Jul-2020 14:21	07-Jul-2020 14:21	----	----
Compound	CAS Number	LOR	Unit		EB2017856-006	EB2017856-007	EB2017856-008	--------	--------
					Result	Result	Result	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.1**	**0.1**	**0.6**	----	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**4.57**	**4.11**	**2.15**	----	----
ø **Total Cations**	----	0.01	meq/L		**4.61**	**3.94**	**2.07**	----	----
ø **Ionic Balance**	----	0.01	%		**0.39**	**2.12**	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2020387**	Page	: 1 of 11
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 04-Aug-2020 17:23
Order number	:	Date Analysis Commenced	: 04-Aug-2020
C-O-C number	: 13057	Issue Date	: 11-Aug-2020 12:58
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar L7		
Quote number	: BN/1234/19		
No. of samples received	: 10		
No. of samples analysed	: 10		

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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. 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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WASTEWATER (Matrix: WATER)			Client sample ID	KLC-9	----	----	----	----
			Client sampling date / time	04-Aug-2020 10:28	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2020387-009	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.92**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**698**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**69**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**69**	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**1**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**247**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**2**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**70**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**27**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**18**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**18**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	----	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.028**	----	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.009**	----	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.008**	----	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	----	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	----	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0022**	----	----	----	----

Analytical Results

Sub-Matrix: **WASTEWATER** (Matrix: **WATER**)			Client sample ID	**KLC-9**	----	----	----	----
			Client sampling date / time	04-Aug-2020 10:28	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB2020387-009**	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	----	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	----	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	----	----	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	----	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	----	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	----	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	----	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	----	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	----	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	----	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.004**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.022**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.036**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.313**	----	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	----	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	----	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	----	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	**0.015**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.032**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.26**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: **WASTEWATER** (Matrix: **WATER**)				Client sample ID	**KLC-9**	----	----	----	----
				Client sampling date / time	04-Aug-2020 10:28	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EB2020387-009**	--------	--------	--------	--------
					Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**1.3**	----	----	----	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**6.58**	----	----	----	----
ø **Total Cations**	----	0.01	meq/L		**6.96**	----	----	----	----
ø **Ionic Balance**	----	0.01	%		**2.81**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Client sampling date / time	04-Aug-2020 10:24	04-Aug-2020 10:25	04-Aug-2020 10:25	04-Aug-2020 10:26	04-Aug-2020 10:26
Compound	CAS Number	LOR	Unit	EB2020387-001	EB2020387-002	EB2020387-003	EB2020387-004	EB2020387-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.69	7.72	8.31	7.59	7.64
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	793	346	144	382	423
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	2	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	42	52	46	45	34
Total Alkalinity as CaCO3	----	1	mg/L	42	52	48	45	34
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	1	1	<1	<1	1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	248	105	15	128	134
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	38	4	2	7	11
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	38	32	3	20	18
Magnesium	7439-95-4	1	mg/L	22	12	<1	18	20
Sodium	7440-23-5	1	mg/L	75	11	26	20	26
Potassium	7440-09-7	1	mg/L	12	5	1	7	7
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.01	0.04	0.06	0.01	0.02
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	0.007	0.004	0.005	0.008	0.008
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.002	0.004	0.014	0.017	0.017
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.011	0.009	0.003	0.006	0.007
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	04-Aug-2020 10:24	04-Aug-2020 10:25	04-Aug-2020 10:25	04-Aug-2020 10:26	04-Aug-2020 10:26
Compound	CAS Number	LOR	Unit		EB2020387-001	EB2020387-002	EB2020387-003	EB2020387-004	EB2020387-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L		**0.001**	<0.001	<0.001	<0.001	<0.001
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L		**0.007**	**0.004**	<0.001	**0.006**	**0.007**
Manganese	7439-96-5	0.001	mg/L		**0.003**	**0.003**	**0.004**	**0.001**	<0.001
Molybdenum	7439-98-7	0.001	mg/L		**0.005**	<0.001	**0.006**	**0.001**	**0.001**
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L		**0.030**	**0.011**	**0.003**	**0.015**	**0.015**
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L		**0.297**	**0.256**	**0.055**	**0.128**	**0.126**
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L		**0.012**	**0.005**	**0.007**	**0.024**	**0.020**
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	**0.02**	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		**0.007**	<0.005	<0.005	<0.005	<0.005
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	04-Aug-2020 10:24	04-Aug-2020 10:25	04-Aug-2020 10:25	04-Aug-2020 10:26	04-Aug-2020 10:26
Compound	CAS Number	LOR	Unit		EB2020387-001	EB2020387-002	EB2020387-003	EB2020387-004	EB2020387-005
					Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.3**	**0.2**	**0.2**	**0.2**	**0.2**
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**7.07**	**3.34**	**1.33**	**3.76**	**3.78**
ø **Total Cations**	----	0.01	meq/L		**7.28**	**3.19**	**1.31**	**3.53**	**3.85**
ø **Ionic Balance**	----	0.01	%		**1.40**	**2.25**	**----**	**3.20**	**0.98**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
			Client sampling date / time	04-Aug-2020 10:27	04-Aug-2020 10:27	04-Aug-2020 10:28	04-Aug-2020 10:30	----
Compound	CAS Number	LOR	Unit	EB2020387-006	EB2020387-007	EB2020387-008	EB2020387-010	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.30**	**7.18**	**7.82**	**7.13**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**427**	**332**	**186**	**1310**	----
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	**13**	**31**	**38**	**30**	----
Total Alkalinity as CaCO3	----	1	mg/L	**13**	**31**	**38**	**30**	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**1**	**2**	<1	**2**	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**171**	**137**	**37**	**515**	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**3**	<1	**4**	**66**	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**42**	**38**	**5**	**87**	----
Magnesium	7439-95-4	1	mg/L	**18**	**14**	**1**	**48**	----
Sodium	7440-23-5	1	mg/L	**7**	**2**	**28**	**97**	----
Potassium	7440-09-7	1	mg/L	**3**	**2**	**2**	**23**	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.01**	<0.01	**0.10**	**0.01**	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Antimony	7440-36-0	0.001	mg/L	**0.006**	**0.012**	**0.008**	**0.003**	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	**0.001**	<0.001	**0.109**	**0.001**	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	**0.008**	**0.009**	**0.007**	**0.021**	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	**0.0001**	<0.0001	**0.0016**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
				Client sampling date / time	04-Aug-2020 10:27	04-Aug-2020 10:27	04-Aug-2020 10:28	04-Aug-2020 10:30	----
Compound	CAS Number	LOR	Unit		EB2020387-006	EB2020387-007	EB2020387-008	EB2020387-010	--------
					Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Caesium	7440-46-2	0.001	mg/L		<0.001	<0.001	<0.001	**0.001**	----
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	**0.002**	<0.001	**0.028**	----
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	**0.004**	----
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Lithium	7439-93-2	0.001	mg/L		**0.004**	**0.002**	**0.003**	**0.012**	----
Manganese	7439-96-5	0.001	mg/L		**0.002**	**0.207**	**0.002**	**0.742**	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	**0.003**	**0.003**	----
Nickel	7440-02-0	0.001	mg/L		<0.001	**0.008**	<0.001	**0.076**	----
Rubidium	7440-17-7	0.001	mg/L		**0.008**	**0.004**	**0.006**	**0.045**	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L		**0.187**	**0.153**	**0.176**	**0.495**	----
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	----
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Uranium	7440-61-1	0.001	mg/L		**0.003**	<0.001	**0.035**	**0.001**	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L		<0.005	**0.008**	<0.005	**0.067**	----
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
				Client sampling date / time	04-Aug-2020 10:27	04-Aug-2020 10:27	04-Aug-2020 10:28	04-Aug-2020 10:30	----
Compound	CAS Number	LOR	Unit		EB2020387-006	EB2020387-007	EB2020387-008	EB2020387-010	--------
					Result	Result	Result	Result	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.1**	**0.1**	**0.4**	**0.2**	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**3.90**	**3.47**	**1.64**	**13.2**	----
ø **Total Cations**	----	0.01	meq/L		**3.96**	**3.19**	**1.60**	**13.1**	----
ø **Ionic Balance**	----	0.01	%		**0.68**	**4.28**	**----**	**0.32**	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2022964**	Page	: 1 of 11
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 01-Sep-2020 17:19
Order number	:	Date Analysis Commenced	: 04-Sep-2020
C-O-C number	: 13677	Issue Date	: 10-Sep-2020 09:40
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar L8		
Quote number	: BN/1234/19		
No. of samples received	: 10		
No. of samples analysed	: 10		

ilac-MRA NATA
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. 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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WASTEWATER (Matrix: WATER)			Client sample ID	KLC-9	----	----	----	----
			Client sampling date / time	01-Sep-2020 13:01	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2022964-009	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.91**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**827**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**72**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**72**	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**1**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**368**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**2**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**103**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**34**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**20**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**20**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	----	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.033**	----	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.009**	----	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.012**	----	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	----	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	----	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0021**	----	----	----	----

Analytical Results

Sub-Matrix: **WASTEWATER** (Matrix: **WATER**)			Client sample ID	**KLC-9**	----	----	----	----
			Client sampling date / time	01-Sep-2020 13:01	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB2022964-009**	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	----	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	----	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	----	----	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	----	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	----	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	----	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	----	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	----	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	----	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	----	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.005**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.024**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.043**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.404**	----	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	----	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	----	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	----	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	**0.020**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.035**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.36**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: **WASTEWATER** (Matrix: **WATER**)				Client sample ID	**KLC-9**	----	----	----	----
				Client sampling date / time	01-Sep-2020 13:01	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EB2022964-009**	--------	--------	--------	--------
					Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	**----**	**----**	**----**	**----**
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**1.4**	**----**	**----**	**----**	**----**
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**9.16**	**----**	**----**	**----**	**----**
ø **Total Cations**	----	0.01	meq/L		**9.32**	**----**	**----**	**----**	**----**
ø **Ionic Balance**	----	0.01	%		**0.88**	**----**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Client sampling date / time	01-Sep-2020 12:58	01-Sep-2020 12:58	01-Sep-2020 12:59	01-Sep-2020 12:59	01-Sep-2020 13:00
Compound	CAS Number	LOR	Unit	EB2022964-001	EB2022964-002	EB2022964-003	EB2022964-004	EB2022964-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.54**	**7.77**	**8.05**	**7.58**	**7.65**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**812**	**354**	**162**	**356**	**362**
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	**43**	**44**	**61**	**30**	**34**
Total Alkalinity as CaCO3	----	1	mg/L	**43**	**44**	**61**	**30**	**34**
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**2**	**2**	<1	**1**	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**301**	**119**	**18**	**137**	**126**
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**34**	**5**	**2**	**6**	**8**
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**43**	**35**	**4**	**20**	**18**
Magnesium	7439-95-4	1	mg/L	**27**	**14**	<1	**20**	**20**
Sodium	7440-23-5	1	mg/L	**84**	**14**	**32**	**19**	**23**
Potassium	7440-09-7	1	mg/L	**13**	**5**	**2**	**7**	**7**
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	**0.06**	**0.04**	**0.04**	**0.03**
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	**0.010**	**0.003**	**0.006**	**0.007**	**0.008**
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.003**	**0.016**	**0.015**	**0.017**
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	**0.015**	**0.010**	**0.005**	**0.006**	**0.009**
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	01-Sep-2020 12:58	01-Sep-2020 12:58	01-Sep-2020 12:59	01-Sep-2020 12:59	01-Sep-2020 13:00
Compound	CAS Number	LOR	Unit		EB2022964-001	EB2022964-002	EB2022964-003	EB2022964-004	EB2022964-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L		**0.001**	<0.001	<0.001	<0.001	<0.001
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.001**	<0.001	**0.001**	**0.001**	<0.001
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L		**0.007**	**0.004**	<0.001	**0.006**	**0.006**
Manganese	7439-96-5	0.001	mg/L		<0.001	**0.001**	**0.003**	**0.001**	<0.001
Molybdenum	7439-98-7	0.001	mg/L		**0.004**	<0.001	**0.005**	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L		**0.034**	**0.012**	**0.004**	**0.016**	**0.016**
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L		**0.324**	**0.278**	**0.077**	**0.131**	**0.120**
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L		**0.010**	**0.004**	**0.006**	**0.016**	**0.012**
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	**0.02**	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		**0.014**	<0.005	<0.005	<0.005	<0.005
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	01-Sep-2020 12:58	01-Sep-2020 12:58	01-Sep-2020 12:59	01-Sep-2020 12:59	01-Sep-2020 13:00
Compound	CAS Number	LOR	Unit		EB2022964-001	EB2022964-002	EB2022964-003	EB2022964-004	EB2022964-005
					Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.3**	**0.2**	**0.3**	**0.2**	**0.2**
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**8.08**	**3.50**	**1.65**	**3.62**	**3.53**
ø **Total Cations**	----	0.01	meq/L		**8.35**	**3.64**	**1.64**	**3.65**	**3.72**
ø **Ionic Balance**	----	0.01	%		**1.64**	**1.93**	**----**	**0.39**	**2.69**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
			Client sampling date / time	01-Sep-2020 13:00	01-Sep-2020 13:00	01-Sep-2020 13:01	01-Sep-2020 13:02	----
Compound	CAS Number	LOR	Unit	EB2022964-006	EB2022964-007	EB2022964-008	EB2022964-010	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.30**	**7.27**	**7.95**	**7.37**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**378**	**318**	**210**	**1400**	----
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	**16**	**15**	**60**	**22**	----
Total Alkalinity as CaCO3	----	1	mg/L	**16**	**15**	**60**	**22**	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**1**	**1**	<1	**1**	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**160**	**138**	**35**	**617**	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**2**	<1	**4**	**73**	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**43**	**38**	**10**	**101**	----
Magnesium	7439-95-4	1	mg/L	**18**	**14**	**2**	**67**	----
Sodium	7440-23-5	1	mg/L	**6**	**2**	**30**	**104**	----
Potassium	7440-09-7	1	mg/L	**4**	**2**	**4**	**17**	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	<0.01	**0.06**	**0.01**	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Antimony	7440-36-0	0.001	mg/L	**0.005**	**0.012**	**0.014**	**0.006**	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	**0.001**	**0.001**	**0.132**	**0.008**	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	**0.008**	**0.010**	**0.012**	**0.016**	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	**0.0001**	<0.0001	**0.0003**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
			Client sampling date / time	01-Sep-2020 13:00	01-Sep-2020 13:00	01-Sep-2020 13:01	01-Sep-2020 13:02	----
Compound	CAS Number	LOR	Unit	EB2022964-006	EB2022964-007	EB2022964-008	EB2022964-010	--------
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	**0.002**	<0.001	**0.004**	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	**0.002**	----
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Lithium	7439-93-2	0.001	mg/L	**0.004**	**0.002**	**0.004**	**0.012**	----
Manganese	7439-96-5	0.001	mg/L	**0.003**	**0.221**	**0.001**	**0.224**	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	**0.004**	**0.005**	----
Nickel	7440-02-0	0.001	mg/L	<0.001	**0.009**	<0.001	**0.012**	----
Rubidium	7440-17-7	0.001	mg/L	**0.008**	**0.005**	**0.009**	**0.029**	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L	**0.169**	**0.142**	**0.300**	**0.580**	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Tin	7440-31-5	0.001	mg/L	<0.001	**0.002**	<0.001	<0.001	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Uranium	7440-61-1	0.001	mg/L	**0.002**	<0.001	**0.034**	**0.005**	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	**0.006**	**0.012**	<0.005	**0.008**	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
				Client sampling date / time	01-Sep-2020 13:00	01-Sep-2020 13:00	01-Sep-2020 13:01	01-Sep-2020 13:02	----
Compound	CAS Number	LOR	Unit		EB2022964-006	EB2022964-007	EB2022964-008	EB2022964-010	--------
					Result	Result	Result	Result	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.1**	**0.1**	**0.5**	**0.3**	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**3.71**	**3.17**	**2.04**	**15.3**	----
ø **Total Cations**	----	0.01	meq/L		**3.99**	**3.19**	**2.07**	**15.5**	----
ø **Ionic Balance**	----	0.01	%		**3.68**	**0.22**	**----**	**0.54**	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2026216**	Page	: 1 of 11
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 07-Oct-2020 16:39
Order number	:	Date Analysis Commenced	: 08-Oct-2020
C-O-C number	: 14579	Issue Date	: 13-Oct-2020 09:25
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar_L9		
Quote number	: BN/1234/19		
No. of samples received	: 10		
No. of samples analysed	: 10		

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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. 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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WASTEWATER (Matrix: WATER)			Client sample ID	KLC-9	----	----	----	----
			Client sampling date / time	07-Oct-2020 10:53	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2026216-009	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.76**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**858**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**60**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**60**	----	----	----	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**2**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**384**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**2**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**106**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**35**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**20**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**21**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	----	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.032**	----	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.010**	----	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.013**	----	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	----	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	----	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0010**	----	----	----	----

Analytical Results

Sub-Matrix: WASTEWATER (Matrix: WATER)				Client sample ID	KLC-9	----	----	----	----
				Client sampling date / time	07-Oct-2020 10:53	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2026216-009	--------	--------	--------	--------
					Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	----	----	----	----
Cerium	7440-45-1	0.001	mg/L		<0.001	----	----	----	----
Lanthanum	7439-91-0	0.001	mg/L		<0.001	----	----	----	----
Caesium	7440-46-2	0.001	mg/L		<0.001	----	----	----	----
Lutetium	7439-94-3	0.001	mg/L		<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Neodymium	7440-00-8	0.001	mg/L		<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	----	----	----	----
Praseodymium	7440-10-0	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		**0.002**	----	----	----	----
Samarium	7440-19-9	0.001	mg/L		<0.001	----	----	----	----
Terbium	7440-27-9	0.001	mg/L		<0.001	----	----	----	----
Thulium	7440-30-4	0.001	mg/L		<0.001	----	----	----	----
Ytterbium	7440-64-4	0.001	mg/L		<0.001	----	----	----	----
Yttrium	7440-65-5	0.001	mg/L		<0.001	----	----	----	----
Zirconium	7440-67-7	0.005	mg/L		<0.005	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Lithium	7439-93-2	0.001	mg/L		**0.004**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		<0.001	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		**0.028**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Rubidium	7440-17-7	0.001	mg/L		**0.045**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L		**0.436**	----	----	----	----
Tellurium	22541-49-7	0.005	mg/L		<0.005	----	----	----	----
Thallium	7440-28-0	0.001	mg/L		<0.001	----	----	----	----
Thorium	7440-29-1	0.001	mg/L		<0.001	----	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	----	----	----	----
Titanium	7440-32-6	0.01	mg/L		<0.01	----	----	----	----
Uranium	7440-61-1	0.001	mg/L		**0.022**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.016**	----	----	----	----
Boron	7440-42-8	0.05	mg/L		**0.35**	----	----	----	----
Iron	7439-89-6	0.05	mg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: **WASTEWATER** (Matrix: **WATER**)				Client sample ID	**KLC-9**	----	----	----	----
				Client sampling date / time	07-Oct-2020 10:53	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EB2026216-009**	--------	--------	--------	--------
					Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	**----**	**----**	**----**	**----**
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**1.6**	**----**	**----**	**----**	**----**
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**9.25**	**----**	**----**	**----**	**----**
ø **Total Cations**	----	0.01	meq/L		**9.58**	**----**	**----**	**----**	**----**
ø **Ionic Balance**	----	0.01	%		**1.74**	**----**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Client sampling date / time	07-Oct-2020 10:50	07-Oct-2020 10:51	07-Oct-2020 10:51	07-Oct-2020 10:52	07-Oct-2020 10:52
Compound	CAS Number	LOR	Unit	EB2026216-001	EB2026216-002	EB2026216-003	EB2026216-004	EB2026216-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.21	7.71	7.84	7.12	7.38
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	625	430	159	265	305
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	36	63	57	18	30
Total Alkalinity as CaCO3	----	1	mg/L	36	63	57	18	30
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	2	1	<1	1	1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	224	139	20	92	99
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	26	4	1	4	4
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	31	44	5	13	15
Magnesium	7439-95-4	1	mg/L	19	18	<1	14	16
Sodium	7440-23-5	1	mg/L	62	14	30	13	16
Potassium	7440-09-7	1	mg/L	11	6	2	5	6
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.01	0.05	0.05	0.02	0.03
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	0.010	0.005	0.013	0.005	0.008
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.002	0.003	0.015	0.011	0.017
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.011	0.013	0.008	0.004	0.008
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	07-Oct-2020 10:50	07-Oct-2020 10:51	07-Oct-2020 10:51	07-Oct-2020 10:52	07-Oct-2020 10:52
Compound	CAS Number	LOR	Unit		EB2026216-001	EB2026216-002	EB2026216-003	EB2026216-004	EB2026216-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L		**0.001**	<0.001	<0.001	<0.001	<0.001
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	**0.001**	<0.001	<0.001
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L		**0.006**	**0.005**	<0.001	**0.004**	**0.005**
Manganese	7439-96-5	0.001	mg/L		<0.001	**0.001**	**0.007**	**0.001**	<0.001
Molybdenum	7439-98-7	0.001	mg/L		**0.004**	<0.001	**0.006**	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L		**0.031**	**0.016**	**0.005**	**0.013**	**0.015**
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L		**0.245**	**0.357**	**0.089**	**0.093**	**0.100**
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L		**0.007**	**0.006**	**0.006**	**0.008**	**0.009**
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	**0.02**	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		**0.007**	**0.005**	<0.005	<0.005	<0.005
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	07-Oct-2020 10:50	07-Oct-2020 10:51	07-Oct-2020 10:51	07-Oct-2020 10:52	07-Oct-2020 10:52
Compound	CAS Number	LOR	Unit		EB2026216-001	EB2026216-002	EB2026216-003	EB2026216-004	EB2026216-005
					Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.3**	**0.2**	**0.3**	**0.1**	**0.1**
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**6.12**	**4.26**	**1.58**	**2.39**	**2.77**
ø **Total Cations**	----	0.01	meq/L		**6.09**	**4.44**	**1.60**	**2.49**	**2.91**
ø **Ionic Balance**	----	0.01	%		**0.23**	**2.00**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
			Client sampling date / time	07-Oct-2020 10:52	07-Oct-2020 10:53	07-Oct-2020 10:53	07-Oct-2020 10:54	----
Compound	CAS Number	LOR	Unit	EB2026216-006	EB2026216-007	EB2026216-008	EB2026216-010	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.03**	**7.03**	**7.99**	**7.11**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**428**	**441**	**249**	**1140**	----
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	**16**	**21**	**84**	**16**	----
Total Alkalinity as CaCO3	----	1	mg/L	**16**	**21**	**84**	**16**	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**2**	**2**	<1	**1**	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**181**	**189**	**33**	**511**	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**2**	<1	**4**	**39**	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**48**	**56**	**14**	**75**	----
Magnesium	7439-95-4	1	mg/L	**18**	**18**	**4**	**62**	----
Sodium	7440-23-5	1	mg/L	**5**	**2**	**32**	**72**	----
Potassium	7440-09-7	1	mg/L	**4**	**2**	**5**	**13**	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	<0.01	**0.05**	**0.01**	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Antimony	7440-36-0	0.001	mg/L	**0.006**	**0.012**	**0.020**	**0.006**	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	**0.001**	<0.001	**0.148**	**0.005**	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	**0.010**	**0.016**	**0.022**	**0.010**	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	**0.0001**	<0.0001	**0.0002**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
				Client sampling date / time	07-Oct-2020 10:52	07-Oct-2020 10:53	07-Oct-2020 10:53	07-Oct-2020 10:54	----
Compound	CAS Number	LOR	Unit		EB2026216-006	EB2026216-007	EB2026216-008	EB2026216-010	--------
					Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Caesium	7440-46-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	**0.003**	<0.001	**0.003**	----
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	**0.002**	----
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Lithium	7439-93-2	0.001	mg/L		**0.004**	**0.002**	**0.006**	**0.008**	----
Manganese	7439-96-5	0.001	mg/L		**0.005**	**0.311**	<0.001	**0.110**	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	**0.014**	**0.007**	----
Nickel	7440-02-0	0.001	mg/L		<0.001	**0.014**	<0.001	**0.007**	----
Rubidium	7440-17-7	0.001	mg/L		**0.009**	**0.006**	**0.012**	**0.024**	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L		**0.194**	**0.205**	**0.478**	**0.406**	----
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	----
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Uranium	7440-61-1	0.001	mg/L		**0.002**	<0.001	**0.048**	**0.002**	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L		<0.005	**0.025**	**0.008**	**0.014**	----
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
			Client sampling date / time	07-Oct-2020 10:52	07-Oct-2020 10:53	07-Oct-2020 10:53	07-Oct-2020 10:54	----
Compound	CAS Number	LOR	Unit	EB2026216-006	EB2026216-007	EB2026216-008	EB2026216-010	--------
				Result	Result	Result	Result	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.1**	<0.1	**0.6**	**0.3**	----
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**4.14**	**4.35**	**2.48**	**12.0**	----
ø **Total Cations**	----	0.01	meq/L	**4.20**	**4.41**	**2.55**	**12.3**	----
ø **Ionic Balance**	----	0.01	%	**0.62**	**0.68**	**----**	**1.03**	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2028814**	Page	: 1 of 11
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 03-Nov-2020 17:10
Order number	:	Date Analysis Commenced	: 04-Nov-2020
C-O-C number	: 15503	Issue Date	: 12-Nov-2020 10:44
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar L10		
Quote number	: BN/1234/19		
No. of samples received	: 10		
No. of samples analysed	: 10		

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. 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*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WASTEWATER (Matrix: WATER)			Client sample ID	KLC-9	----	----	----	----
			Client sampling date / time	03-Nov-2020 13:31	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2028814-009	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.81**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**918**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**61**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**61**	----	----	----	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**3**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**436**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**2**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**111**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**34**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**21**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**22**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	----	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.037**	----	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.010**	----	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.015**	----	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	----	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	----	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0021**	----	----	----	----

Analytical Results

Sub-Matrix: **WASTEWATER** (Matrix: **WATER**)			Client sample ID	**KLC-9**	----	----	----	----
			Client sampling date / time	03-Nov-2020 13:31	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB2028814-009**	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	----	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	----	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	----	----	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	----	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	----	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	----	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	----	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	----	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	----	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	----	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.004**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.019**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.030**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.048**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.436**	----	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	----	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	----	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	----	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	**0.020**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.037**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.41**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: **WASTEWATER** (Matrix: **WATER**)				Client sample ID	**KLC-9**	----	----	----	----
				Client sampling date / time	03-Nov-2020 13:31	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EB2028814-009**	--------	--------	--------	--------
					Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**1.7**	----	----	----	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**10.4**	----	----	----	----
ø **Total Cations**	----	0.01	meq/L		**9.81**	----	----	----	----
ø **Ionic Balance**	----	0.01	%		**2.68**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Client sampling date / time	03-Nov-2020 13:27	03-Nov-2020 13:28	03-Nov-2020 13:28	03-Nov-2020 13:29	03-Nov-2020 13:29
Compound	CAS Number	LOR	Unit	EB2028814-001	EB2028814-002	EB2028814-003	EB2028814-004	EB2028814-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.73	7.74	7.99	7.49	7.61
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	696	353	193	274	290
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	64	45	68	30	34
Total Alkalinity as CaCO3	----	1	mg/L	64	45	68	30	34
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	2	2	1	2	2
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	238	116	27	87	87
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	23	3	<1	4	5
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	36	33	5	14	13
Magnesium	7439-95-4	1	mg/L	22	14	<1	14	16
Sodium	7440-23-5	1	mg/L	64	11	35	12	14
Potassium	7440-09-7	1	mg/L	15	6	2	6	7
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.02	0.14	0.06	0.02	0.03
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	0.015	0.004	0.008	0.008	0.008
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.003	0.003	0.022	0.013	0.015
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.015	0.010	0.006	0.005	0.008
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	03-Nov-2020 13:27	03-Nov-2020 13:28	03-Nov-2020 13:28	03-Nov-2020 13:29	03-Nov-2020 13:29
Compound	CAS Number	LOR	Unit		EB2028814-001	EB2028814-002	EB2028814-003	EB2028814-004	EB2028814-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L		**0.001**	<0.001	<0.001	<0.001	<0.001
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.001**	**0.001**	<0.001	<0.001	<0.001
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L		**0.009**	**0.004**	**0.001**	**0.005**	**0.005**
Manganese	7439-96-5	0.001	mg/L		<0.001	**0.031**	**0.001**	<0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L		**0.006**	<0.001	**0.005**	<0.001	**0.001**
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L		**0.037**	**0.013**	**0.005**	**0.013**	**0.014**
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L		**0.271**	**0.248**	**0.100**	**0.092**	**0.090**
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L		**0.011**	**0.004**	**0.007**	**0.012**	**0.009**
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	**0.03**	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		**0.009**	**0.018**	<0.005	<0.005	<0.005
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
				Client sampling date / time	03-Nov-2020 13:27	03-Nov-2020 13:28	03-Nov-2020 13:28	03-Nov-2020 13:29	03-Nov-2020 13:29
Compound	CAS Number	LOR	Unit		EB2028814-001	EB2028814-002	EB2028814-003	EB2028814-004	EB2028814-005
					Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.4**	**0.1**	**0.4**	**0.1**	**0.1**
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**6.88**	**3.40**	**1.92**	**2.52**	**2.63**
ø **Total Cations**	----	0.01	meq/L		**6.77**	**3.43**	**1.82**	**2.53**	**2.75**
ø **Ionic Balance**	----	0.01	%		**0.79**	**0.47**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
			Client sampling date / time	03-Nov-2020 13:29	03-Nov-2020 13:30	03-Nov-2020 13:30	03-Nov-2020 13:31	----
Compound	CAS Number	LOR	Unit	EB2028814-006	EB2028814-007	EB2028814-008	EB2028814-010	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.26**	**7.25**	**7.99**	**7.29**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**381**	**385**	**216**	**923**	----
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	**21**	**18**	**77**	**16**	----
Total Alkalinity as CaCO3	----	1	mg/L	**21**	**18**	**77**	**16**	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**2**	**2**	**2**	**2**	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**154**	**161**	**27**	**419**	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**1**	<1	**3**	**28**	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**40**	**44**	**13**	**56**	----
Magnesium	7439-95-4	1	mg/L	**16**	**16**	**3**	**48**	----
Sodium	7440-23-5	1	mg/L	**5**	**2**	**24**	**51**	----
Potassium	7440-09-7	1	mg/L	**4**	**2**	**5**	**12**	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	<0.01	**0.06**	**0.01**	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Antimony	7440-36-0	0.001	mg/L	**0.007**	**0.013**	**0.017**	**0.005**	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	**0.001**	<0.001	**0.130**	**0.005**	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	**0.010**	**0.012**	**0.020**	**0.007**	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	**0.0002**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
				Client sampling date / time	03-Nov-2020 13:29	03-Nov-2020 13:30	03-Nov-2020 13:30	03-Nov-2020 13:31	----
Compound	CAS Number	LOR	Unit		EB2028814-006	EB2028814-007	EB2028814-008	EB2028814-010	--------
					Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Caesium	7440-46-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	**0.002**	<0.001	**0.001**	----
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	**0.002**	----
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Lithium	7439-93-2	0.001	mg/L		**0.004**	**0.002**	**0.005**	**0.008**	----
Manganese	7439-96-5	0.001	mg/L		**0.003**	**0.192**	<0.001	**0.030**	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	**0.011**	**0.008**	----
Nickel	7440-02-0	0.001	mg/L		<0.001	**0.009**	<0.001	**0.004**	----
Rubidium	7440-17-7	0.001	mg/L		**0.008**	**0.006**	**0.012**	**0.020**	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L		**0.154**	**0.146**	**0.411**	**0.287**	----
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	----
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Uranium	7440-61-1	0.001	mg/L		**0.002**	<0.001	**0.036**	**0.002**	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L		<0.005	**0.015**	**0.006**	**0.011**	----
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
			Client sampling date / time	03-Nov-2020 13:29	03-Nov-2020 13:30	03-Nov-2020 13:30	03-Nov-2020 13:31	----
Compound	CAS Number	LOR	Unit	EB2028814-006	EB2028814-007	EB2028814-008	EB2028814-010	--------
				Result	Result	Result	Result	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	**0.5**	**0.3**	----
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**3.65**	**3.71**	**2.18**	**9.83**	----
ø **Total Cations**	----	0.01	meq/L	**3.63**	**3.65**	**2.07**	**9.27**	----
ø **Ionic Balance**	----	0.01	%	**0.29**	**0.83**	**----**	**2.95**	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2031669**	Page	: 1 of 11
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 01-Dec-2020 16:56
Order number	:	Date Analysis Commenced	: 02-Dec-2020
C-O-C number	: 16600	Issue Date	: 07-Dec-2020 10:45
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar L11		
Quote number	: BN/1234/19		
No. of samples received	: 10		
No. of samples analysed	: 10		

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WASTEWATER (Matrix: WATER)			Sample ID	KLC-9	----	----	----	----
			Sampling date / time	01-Dec-2020 14:06	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2031669-009	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**6.51**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1010**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**104**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**104**	----	----	----	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**4**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**602**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**2**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**158**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**49**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**28**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**27**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	----	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.036**	----	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.011**	----	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.018**	----	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	----	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	----	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0034**	----	----	----	----

Analytical Results

Sub-Matrix: WASTEWATER (Matrix: WATER)			Sample ID	KLC-9	----	----	----	----
			Sampling date / time	01-Dec-2020 14:06	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2031669-009	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	----	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	----	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	----	----	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	----	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	----	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	----	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	----	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	----	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	----	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	----	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.006**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.049**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.057**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.658**	----	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	----	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	----	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	----	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	**0.031**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.042**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.60**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: **WASTEWATER** (Matrix: **WATER**)			Sample ID	**KLC-9**	**----**	**----**	**----**	**----**
			Sampling date / time	01-Dec-2020 14:06	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB2031669-009**	**--------**	**--------**	**--------**	**--------**
				Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	**----**	**----**	**----**	**----**
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**1.6**	**----**	**----**	**----**	**----**
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**14.7**	**----**	**----**	**----**	**----**
ø **Total Cations**	----	0.01	meq/L	**13.8**	**----**	**----**	**----**	**----**
ø **Ionic Balance**	----	0.01	%	**2.96**	**----**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Sampling date / time	01-Dec-2020 14:03	01-Dec-2020 14:03	01-Dec-2020 14:04	01-Dec-2020 14:04	01-Dec-2020 14:05
Compound	CAS Number	LOR	Unit	EB2031669-001	EB2031669-002	EB2031669-003	EB2031669-004	EB2031669-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.69	7.71	7.85	7.63	7.64
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	687	359	182	297	290
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	65	44	68	35	35
Total Alkalinity as CaCO3	----	1	mg/L	65	44	68	35	35
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	3	2	<1	2	2
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	248	124	24	100	97
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	20	4	2	4	4
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	37	34	5	15	13
Magnesium	7439-95-4	1	mg/L	24	15	<1	18	18
Sodium	7440-23-5	1	mg/L	64	11	35	13	13
Potassium	7440-09-7	1	mg/L	14	6	2	6	6
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.02	0.06	0.06	0.02	0.03
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	0.013	0.005	0.007	0.008	0.007
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.003	0.003	0.022	0.014	0.013
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.015	0.010	0.005	0.006	0.008
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Sampling date / time	01-Dec-2020 14:03	01-Dec-2020 14:03	01-Dec-2020 14:04	01-Dec-2020 14:04	01-Dec-2020 14:05
Compound	CAS Number	LOR	Unit	EB2031669-001	EB2031669-002	EB2031669-003	EB2031669-004	EB2031669-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L	**0.001**	<0.001	<0.001	<0.001	<0.001
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	**0.001**	<0.001	<0.001	<0.001	<0.001
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L	**0.009**	**0.005**	**0.001**	**0.006**	**0.006**
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	**0.001**	**0.001**	<0.001
Molybdenum	7439-98-7	0.001	mg/L	**0.007**	<0.001	**0.006**	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L	**0.037**	**0.012**	**0.005**	**0.014**	**0.014**
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	**0.280**	**0.253**	**0.100**	**0.100**	**0.088**
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L	**0.012**	**0.004**	**0.007**	**0.014**	**0.008**
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	**0.03**	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	**0.010**	**0.007**	<0.005	<0.005	<0.005
Boron	7440-42-8	0.05	mg/L	**0.06**	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Sampling date / time	01-Dec-2020 14:03	01-Dec-2020 14:03	01-Dec-2020 14:04	01-Dec-2020 14:04	01-Dec-2020 14:05
Compound	CAS Number	LOR	Unit	EB2031669-001	EB2031669-002	EB2031669-003	EB2031669-004	EB2031669-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.4**	**0.1**	**0.3**	**0.1**	**0.1**
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**7.03**	**3.57**	**1.91**	**2.89**	**2.83**
ø **Total Cations**	----	0.01	meq/L	**6.96**	**3.56**	**1.82**	**2.95**	**2.85**
ø **Ionic Balance**	----	0.01	%	**0.45**	**0.15**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
			Sampling date / time	01-Dec-2020 14:05	01-Dec-2020 14:06	01-Dec-2020 14:06	01-Dec-2020 14:07	----
Compound	CAS Number	LOR	Unit	EB2031669-006	EB2031669-007	EB2031669-008	EB2031669-010	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.33**	**7.31**	**7.91**	**7.11**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**378**	**388**	**200**	**781**	----
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	**21**	**23**	**71**	**13**	----
Total Alkalinity as CaCO3	----	1	mg/L	**21**	**23**	**71**	**13**	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**2**	**2**	**1**	**2**	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**158**	**167**	**26**	**363**	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**1**	<1	**2**	**21**	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**38**	**43**	**13**	**43**	----
Magnesium	7439-95-4	1	mg/L	**18**	**18**	**4**	**46**	----
Sodium	7440-23-5	1	mg/L	**4**	**2**	**22**	**45**	----
Potassium	7440-09-7	1	mg/L	**4**	**2**	**5**	**10**	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	<0.01	**0.07**	**0.01**	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Antimony	7440-36-0	0.001	mg/L	**0.007**	**0.011**	**0.014**	**0.003**	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	**0.001**	<0.001	**0.110**	**0.004**	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	**0.009**	**0.013**	**0.019**	**0.005**	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	**0.0001**	<0.0001	**0.0002**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
			Sampling date / time	01-Dec-2020 14:05	01-Dec-2020 14:06	01-Dec-2020 14:06	01-Dec-2020 14:07	----
Compound	CAS Number	LOR	Unit	EB2031669-006	EB2031669-007	EB2031669-008	EB2031669-010	--------
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	**0.002**	<0.001	<0.001	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	**0.001**	----
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Lithium	7439-93-2	0.001	mg/L	**0.004**	**0.002**	**0.006**	**0.009**	----
Manganese	7439-96-5	0.001	mg/L	**0.003**	**0.194**	<0.001	**0.019**	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	**0.013**	**0.008**	----
Nickel	7440-02-0	0.001	mg/L	<0.001	**0.010**	<0.001	**0.003**	----
Rubidium	7440-17-7	0.001	mg/L	**0.009**	**0.006**	**0.012**	**0.018**	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L	**0.149**	**0.136**	**0.493**	**0.214**	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Uranium	7440-61-1	0.001	mg/L	**0.002**	<0.001	**0.036**	**0.001**	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	<0.005	**0.028**	**0.006**	**0.012**	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
			Sampling date / time	01-Dec-2020 14:05	01-Dec-2020 14:06	01-Dec-2020 14:06	01-Dec-2020 14:07	----
Compound	CAS Number	LOR	Unit	EB2031669-006	EB2031669-007	EB2031669-008	EB2031669-010	--------
				Result	Result	Result	Result	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	**0.5**	**0.4**	----
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**3.74**	**3.94**	**2.02**	**8.41**	----
ø **Total Cations**	----	0.01	meq/L	**3.65**	**3.76**	**2.06**	**8.14**	----
ø **Ionic Balance**	----	0.01	%	**1.13**	**2.22**	**----**	**1.60**	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2100143**	Page	: 1 of 8
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 05-Jan-2021 17:50
Order number	:	Date Analysis Commenced	: 05-Jan-2021
C-O-C number	: 17460	Issue Date	: 15-Jan-2021 09:54
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar L12		
Quote number	: BN/1234/19		
No. of samples received	: 10		
No. of samples analysed	: 10		

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- Ionic Balance out of acceptable limits due to analytes not quantified in this report.
- 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: WATER (Matrix: WATER)			Sample ID	KLC-3	KLC-4	KLC-5	KLC-6	KLC-7
			Sampling date / time	05-Jan-2021 10:13	05-Jan-2021 10:13	05-Jan-2021 10:14	05-Jan-2021 10:14	05-Jan-2021 10:15
Compound	CAS Number	LOR	Unit	EB2100143-003	EB2100143-004	EB2100143-005	EB2100143-006	EB2100143-007
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.46	8.31	7.90	7.58	7.57
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	146	401	310	378	449
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	46	59	30	16	21
Total Alkalinity as CaCO3	----	1	mg/L	47	60	30	16	21
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	<1	<1	1	1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	20	125	104	156	197
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	<1	3	3	<1	<1
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	5	22	15	44	54
Magnesium	7439-95-4	1	mg/L	<1	27	20	18	21
Sodium	7440-23-5	1	mg/L	26	13	13	4	2
Potassium	7440-09-7	1	mg/L	2	8	6	3	2
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.06	0.01	0.04	0.02	<0.01
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	0.011	0.008	0.006	0.006	0.011
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.016	0.013	0.012	0.001	<0.001
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.006	0.006	0.009	0.011	0.018
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-3	KLC-4	KLC-5	KLC-6	KLC-7
			Sampling date / time	05-Jan-2021 10:13	05-Jan-2021 10:13	05-Jan-2021 10:14	05-Jan-2021 10:14	05-Jan-2021 10:15
Compound	CAS Number	LOR	Unit	EB2100143-003	EB2100143-004	EB2100143-005	EB2100143-006	EB2100143-007
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	**0.003**
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L	**0.001**	**0.007**	**0.005**	**0.004**	**0.003**
Manganese	7439-96-5	0.001	mg/L	**0.002**	**0.002**	<0.001	**0.006**	**0.344**
Molybdenum	7439-98-7	0.001	mg/L	**0.004**	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	**0.014**
Rubidium	7440-17-7	0.001	mg/L	**0.005**	**0.021**	**0.016**	**0.008**	**0.006**
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	**0.093**	**0.145**	**0.094**	**0.149**	**0.157**
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L	**0.004**	**0.012**	**0.006**	**0.002**	<0.001
Vanadium	7440-62-2	0.01	mg/L	**0.03**	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	**0.015**
Boron	7440-42-8	0.05	mg/L	**0.08**	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-3	KLC-4	KLC-5	KLC-6	KLC-7
			Sampling date / time	05-Jan-2021 10:13	05-Jan-2021 10:13	05-Jan-2021 10:14	05-Jan-2021 10:14	05-Jan-2021 10:15
Compound	CAS Number	LOR	Unit	EB2100143-003	EB2100143-004	EB2100143-005	EB2100143-006	EB2100143-007
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.2**	**0.2**	**0.1**	<0.1	<0.1
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**1.36**	**3.88**	**2.85**	**3.57**	**4.52**
ø **Total Cations**	----	0.01	meq/L	**1.43**	**4.09**	**3.11**	**3.93**	**4.56**
ø **Ionic Balance**	----	0.01	%	**----**	**2.56**	**----**	**4.80**	**0.44**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-8	KLC-10	KLC-1	KLC-9	KLC-2
			Sampling date / time	05-Jan-2021 10:15	05-Jan-2021 10:15	08-Jan-2021 10:15	08-Jan-2021 10:15	08-Jan-2021 10:15
Compound	CAS Number	LOR	Unit	EB2100143-008	EB2100143-010	EB2100143-011	EB2100143-012	EB2100143-013
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.07	7.52	8.06	7.82	7.82
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	184	732	1050	1050	396
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	58	14	116	51	44
Total Alkalinity as CaCO3	----	1	mg/L	58	14	116	51	44
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	1	1	3	2
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	24	326	397	539	142
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	2	16	29	2	3
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	14	47	66	137	39
Magnesium	7439-95-4	1	mg/L	3	41	42	44	18
Sodium	7440-23-5	1	mg/L	18	34	98	27	10
Potassium	7440-09-7	1	mg/L	4	8	21	24	4
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.07	0.01	0.04	0.02	0.07
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	0.017	0.003	0.021	0.035	0.005
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.099	0.004	0.007	0.016	0.006
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.021	0.006	0.025	0.018	0.011
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	<0.0001	0.0032	<0.0001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-8	KLC-10	KLC-1	KLC-9	KLC-2
			Sampling date / time	05-Jan-2021 10:15	05-Jan-2021 10:15	08-Jan-2021 10:15	08-Jan-2021 10:15	08-Jan-2021 10:15
Compound	CAS Number	LOR	Unit	EB2100143-008	EB2100143-010	EB2100143-011	EB2100143-012	EB2100143-013
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	**0.002**	<0.001	<0.001
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	**0.002**	**0.002**	<0.001
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L	**0.005**	**0.008**	**0.014**	**0.004**	**0.004**
Manganese	7439-96-5	0.001	mg/L	<0.001	**0.010**	<0.001	<0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L	**0.016**	**0.009**	**0.011**	**0.046**	**0.001**
Nickel	7440-02-0	0.001	mg/L	<0.001	**0.002**	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L	**0.011**	**0.018**	**0.060**	**0.054**	**0.012**
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	**0.395**	**0.209**	**0.442**	**0.450**	**0.254**
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L	**0.026**	**0.001**	**0.020**	**0.019**	**0.004**
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	**0.010**	**0.012**	**0.037**	**0.011**
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	**0.08**	**0.54**	<0.05
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-8	KLC-10	KLC-1	KLC-9	KLC-2
			Sampling date / time	05-Jan-2021 10:15	05-Jan-2021 10:15	08-Jan-2021 10:15	08-Jan-2021 10:15	08-Jan-2021 10:15
Compound	CAS Number	LOR	Unit	EB2100143-008	EB2100143-010	EB2100143-011	EB2100143-012	EB2100143-013
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.4**	**0.3**	**0.7**	**2.5**	**0.1**
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**1.71**	**7.52**	**11.4**	**12.3**	**3.92**
ø **Total Cations**	----	0.01	meq/L	**1.83**	**7.40**	**11.6**	**12.2**	**3.96**
ø **Ionic Balance**	----	0.01	%	**----**	**0.77**	**0.65**	**0.21**	**0.57**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2102717**	Page	: 1 of 11
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 02-Feb-2021 16:45
Order number	: -	Date Analysis Commenced	: 03-Feb-2021
C-O-C number	: 18481	Issue Date	: 08-Feb-2021 10:05
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar L13		
Quote number	: BN/1234/19		
No. of samples received	: 10		
No. of samples analysed	: 10		

ilac-MRA NATA
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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WASTEWATER (Matrix: WATER)			Sample ID	KLC-9	----	----	----	----
			Sampling date / time	02-Feb-2021 12:47	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2102717-009	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.39**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1020**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**54**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**54**	----	----	----	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**4**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**472**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	<1	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**124**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**40**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**23**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**24**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.03**	----	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.031**	----	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.014**	----	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.017**	----	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	----	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	----	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0023**	----	----	----	----

Analytical Results

Sub-Matrix: **WASTEWATER** (Matrix: **WATER**)			Sample ID	KLC-9	----	----	----	----
			Sampling date / time	02-Feb-2021 12:47	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2102717-009	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	----	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	----	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	----	----	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	----	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.003**	----	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	----	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	----	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	----	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	----	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	----	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.004**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.047**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.055**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.463**	----	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	----	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	----	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	----	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	**0.023**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.029**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.48**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: **WASTEWATER** (Matrix: **WATER**)			Sample ID	**KLC-9**	**----**	**----**	**----**	**----**
			Sampling date / time	02-Feb-2021 12:47	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB2102717-009**	**--------**	**--------**	**--------**	**--------**
				Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	**----**	**----**	**----**	**----**
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**2.1**	**----**	**----**	**----**	**----**
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**10.9**	**----**	**----**	**----**	**----**
ø **Total Cations**	----	0.01	meq/L	**11.1**	**----**	**----**	**----**	**----**
ø **Ionic Balance**	----	0.01	%	**0.85**	**----**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Sampling date / time	02-Feb-2021 12:44	02-Feb-2021 12:44	02-Feb-2021 12:45	02-Feb-2021 12:45	02-Feb-2021 12:46
Compound	CAS Number	LOR	Unit	EB2102717-001	EB2102717-002	EB2102717-003	EB2102717-004	EB2102717-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.28	7.72	7.87	7.54	7.35
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	554	429	140	259	308
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	36	51	51	26	20
Total Alkalinity as CaCO3	----	1	mg/L	36	51	51	26	20
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	5	3	<1	2	2
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	194	147	17	84	112
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	13	3	<1	2	2
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	31	44	6	12	11
Magnesium	7439-95-4	1	mg/L	19	19	<1	16	21
Sodium	7440-23-5	1	mg/L	45	9	24	10	10
Potassium	7440-09-7	1	mg/L	11	5	2	5	5
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.02	0.06	0.04	0.02	0.02
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	0.009	0.004	0.013	0.007	0.004
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.013	0.010	0.006
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.012	0.011	0.009	0.006	0.005
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Holmium	7440-60-0	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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Sampling date / time	02-Feb-2021 12:44	02-Feb-2021 12:44	02-Feb-2021 12:45	02-Feb-2021 12:45	02-Feb-2021 12:46
Compound	CAS Number	LOR	Unit	EB2102717-001	EB2102717-002	EB2102717-003	EB2102717-004	EB2102717-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Caesium	7440-46-2	0.001	mg/L	**0.001**	<0.001	<0.001	<0.001	<0.001
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	**0.001**	<0.001	<0.001
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	**0.001**	<0.001	<0.001	**0.001**	**0.001**
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	7439-93-2	0.001	mg/L	**0.006**	**0.005**	**0.001**	**0.004**	**0.004**
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	**0.002**	<0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L	**0.004**	<0.001	**0.004**	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L	**0.028**	**0.013**	**0.005**	**0.012**	**0.013**
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	**0.216**	**0.300**	**0.106**	**0.078**	**0.081**
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	7440-61-1	0.001	mg/L	**0.006**	**0.004**	**0.004**	**0.012**	**0.004**
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	**0.02**	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	**0.009**	**0.011**	<0.005	<0.005	**0.006**
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	**0.06**	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-1	KLC-2	KLC-3	KLC-4	KLC-5
			Sampling date / time	02-Feb-2021 12:44	02-Feb-2021 12:44	02-Feb-2021 12:45	02-Feb-2021 12:45	02-Feb-2021 12:46
Compound	CAS Number	LOR	Unit	EB2102717-001	EB2102717-002	EB2102717-003	EB2102717-004	EB2102717-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.3**	**0.1**	**0.2**	<0.1	<0.1
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**5.12**	**4.16**	**1.37**	**2.32**	**2.79**
ø **Total Cations**	----	0.01	meq/L	**5.35**	**4.28**	**1.39**	**2.48**	**2.84**
ø **Ionic Balance**	----	0.01	%	**2.14**	**1.36**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
			Sampling date / time	02-Feb-2021 12:46	02-Feb-2021 12:46	02-Feb-2021 12:47	02-Feb-2021 12:48	----
Compound	CAS Number	LOR	Unit	EB2102717-006	EB2102717-007	EB2102717-008	EB2102717-010	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.36**	**7.36**	**7.86**	**6.52**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**362**	**423**	**222**	**659**	----
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	**22**	**21**	**76**	**8**	----
Total Alkalinity as CaCO3	----	1	mg/L	**22**	**21**	**76**	**8**	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**3**	**3**	**2**	**3**	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**141**	**177**	**28**	**284**	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	<1	<1	**2**	**14**	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**36**	**47**	**18**	**33**	----
Magnesium	7439-95-4	1	mg/L	**18**	**21**	**5**	**40**	----
Sodium	7440-23-5	1	mg/L	**3**	**2**	**20**	**30**	----
Potassium	7440-09-7	1	mg/L	**3**	**1**	**5**	**8**	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	<0.01	**0.07**	**0.01**	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Antimony	7440-36-0	0.001	mg/L	**0.006**	**0.010**	**0.017**	**0.002**	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	**0.001**	<0.001	**0.095**	**0.002**	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	**0.010**	**0.014**	**0.026**	**0.004**	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	**0.0002**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
			Sampling date / time	02-Feb-2021 12:46	02-Feb-2021 12:46	02-Feb-2021 12:47	02-Feb-2021 12:48	----
Compound	CAS Number	LOR	Unit	EB2102717-006	EB2102717-007	EB2102717-008	EB2102717-010	--------
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	**0.001**	<0.001	<0.001	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	**0.001**	----
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Lithium	7439-93-2	0.001	mg/L	**0.004**	**0.002**	**0.006**	**0.007**	----
Manganese	7439-96-5	0.001	mg/L	**0.002**	**0.163**	<0.001	**0.018**	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	**0.020**	**0.006**	----
Nickel	7440-02-0	0.001	mg/L	<0.001	**0.008**	<0.001	**0.002**	----
Rubidium	7440-17-7	0.001	mg/L	**0.007**	**0.005**	**0.012**	**0.014**	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L	**0.129**	**0.124**	**0.512**	**0.146**	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Uranium	7440-61-1	0.001	mg/L	**0.002**	<0.001	**0.034**	<0.001	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	<0.005	**0.012**	**0.005**	**0.011**	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-6	KLC-7	KLC-8	KLC-10	----
			Sampling date / time	02-Feb-2021 12:46	02-Feb-2021 12:46	02-Feb-2021 12:47	02-Feb-2021 12:48	----
Compound	CAS Number	LOR	Unit	EB2102717-006	EB2102717-007	EB2102717-008	EB2102717-010	--------
				Result	Result	Result	Result	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	**0.4**	**0.2**	----
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**3.38**	**4.10**	**2.16**	**6.47**	----
ø **Total Cations**	----	0.01	meq/L	**3.48**	**4.19**	**2.31**	**6.45**	----
ø **Ionic Balance**	----	0.01	%	**1.60**	**0.98**	**----**	**0.15**	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2105658**	Page	: 1 of 5
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 02-Mar-2021 17:05
Order number	:	Date Analysis Commenced	: 03-Mar-2021
C-O-C number	: 19767	Issue Date	: 08-Mar-2021 15:00
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar L8		
Quote number	: BN/1234/19		
No. of samples received	: 1		
No. of samples analysed	: 1		

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WATER (Matrix: WATER)			Sample ID	KLC-10	----	----	----	----
			Sampling date / time	02-Mar-2021 14:17	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2105658-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**6.83**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**594**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**8**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**8**	----	----	----	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**1**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**258**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**13**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**31**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**38**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**25**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**7**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.002**	----	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.002**	----	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.004**	----	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	----	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	----	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0001**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KLC-10	----	----	----	----
				Sampling date / time	02-Mar-2021 14:17	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2105658-001	--------	--------	--------	--------	
				Result	----	----	----	----	
EG020F: Dissolved Metals by ICP-MS - Continued									
Indium	7440-74-6	0.001	mg/L	<0.001	----	----	----	----	
Cerium	7440-45-1	0.001	mg/L	<0.001	----	----	----	----	
Lanthanum	7439-91-0	0.001	mg/L	<0.001	----	----	----	----	
Caesium	7440-46-2	0.001	mg/L	<0.001	----	----	----	----	
Lutetium	7439-94-3	0.001	mg/L	<0.001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Neodymium	7440-00-8	0.001	mg/L	<0.001	----	----	----	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----	
Praseodymium	7440-10-0	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	
Samarium	7440-19-9	0.001	mg/L	<0.001	----	----	----	----	
Terbium	7440-27-9	0.001	mg/L	<0.001	----	----	----	----	
Thulium	7440-30-4	0.001	mg/L	<0.001	----	----	----	----	
Ytterbium	7440-64-4	0.001	mg/L	<0.001	----	----	----	----	
Yttrium	7440-65-5	0.001	mg/L	<0.001	----	----	----	----	
Zirconium	7440-67-7	0.005	mg/L	<0.005	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Lithium	7439-93-2	0.001	mg/L	**0.006**	----	----	----	----	
Manganese	7439-96-5	0.001	mg/L	**0.015**	----	----	----	----	
Molybdenum	7439-98-7	0.001	mg/L	**0.004**	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	**0.001**	----	----	----	----	
Rubidium	7440-17-7	0.001	mg/L	**0.013**	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----	
Strontium	7440-24-6	0.001	mg/L	**0.118**	----	----	----	----	
Tellurium	22541-49-7	0.005	mg/L	<0.005	----	----	----	----	
Thallium	7440-28-0	0.001	mg/L	<0.001	----	----	----	----	
Thorium	7440-29-1	0.001	mg/L	<0.001	----	----	----	----	
Tin	7440-31-5	0.001	mg/L	<0.001	----	----	----	----	
Titanium	7440-32-6	0.01	mg/L	<0.01	----	----	----	----	
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----	
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	**0.011**	----	----	----	----	
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----	

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KLC-10	----	----	----	----
				Sampling date / time	02-Mar-2021 14:17	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2105658-001	--------	--------	--------	--------
					Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.2**	----	----	----	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**5.90**	----	----	----	----
ø **Total Cations**	----	0.01	meq/L		**5.94**	----	----	----	----
ø **Ionic Balance**	----	0.01	%		**0.36**	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2108583**	Page	: 1 of 5
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 30-Mar-2021 15:53
Order number	:	Date Analysis Commenced	: 31-Mar-2021
C-O-C number	: 20856	Issue Date	: 07-Apr-2021 15:00
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar L9		
Quote number	: BN/1234/19		
No. of samples received	: 1		
No. of samples analysed	: 1		

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WATER (Matrix: WATER)			Sample ID	KLC-10	----	----	----	----
			Sampling date / time	30-Mar-2021 14:12	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2108583-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**6.46**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**537**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**12**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**12**	----	----	----	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**4**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**259**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**9**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**34**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**36**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**19**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**6**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.002**	----	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.003**	----	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.004**	----	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	----	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	----	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0001**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-10	----	----	----	----
			Sampling date / time	30-Mar-2021 14:12	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2108583-001	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	----	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	----	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	----	----	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	----	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	----	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	----	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	----	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	----	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	----	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	----	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.006**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.007**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.007**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.001**	----	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.012**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.121**	----	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	----	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	----	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	----	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.007**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KLC-10	----	----	----	----
				Sampling date / time	30-Mar-2021 14:12	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2108583-001	--------	--------	--------	--------
					Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.2**	----	----	----	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**5.89**	----	----	----	----
ø **Total Cations**	----	0.01	meq/L		**5.64**	----	----	----	----
ø **Ionic Balance**	----	0.01	%		**2.14**	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2111461**	Page	: 1 of 5
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: PO BOX 3091 SUNNYBANK SOUTH QLD, AUSTRALIA 4109	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 28-Apr-2021 17:17
Order number	:	Date Analysis Commenced	: 30-Apr-2021
C-O-C number	: 22105	Issue Date	: 07-May-2021 11:31
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar L10		
Quote number	: BN/1234/19		
No. of samples received	: 1		
No. of samples analysed	: 1		

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*
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WATER (Matrix: WATER)			Sample ID	KLC-10	----	----	----	----
			Sampling date / time	28-Apr-2021 09:57	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2111461-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.31**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**622**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**12**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**12**	----	----	----	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**4**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**287**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**10**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**38**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**44**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**20**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**7**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.003**	----	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.002**	----	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.004**	----	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	----	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	----	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0001**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-10	----	----	----	----
			Sampling date / time	28-Apr-2021 09:57	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2111461-001	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	----	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	----	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	----	----	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	----	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	----	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	----	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	----	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	----	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	----	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	----	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.005**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.005**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.008**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.001**	----	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.012**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.128**	----	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	----	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	----	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	----	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	**0.001**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.008**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KLC-10	----	----	----	----
				Sampling date / time	28-Apr-2021 09:57	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2111461-001	--------	--------	--------	--------
					Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.1**	----	----	----	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		**6.50**	----	----	----	----
ø **Total Cations**	----	0.01	meq/L		**6.57**	----	----	----	----
ø **Ionic Balance**	----	0.01	%		**0.53**	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2120544**	Page	: 1 of 5
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: 3/30 LENSWORTH STREET COOPERS PLAINS 4107	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2019009_Strategic Woolgar	Date Samples Received	: 22-Jul-2021 17:26
Order number	: -	Date Analysis Commenced	: 24-Jul-2021
C-O-C number	: 20855	Issue Date	: 29-Jul-2021 14:27
Sampler	: ALAN ROBERTSON, VERONICA CANALES		
Site	: 2019009_Strategic Woolgar L11 and L12		
Quote number	: BN/1234/19		
No. of samples received	: 2		
No. of samples analysed	: 2		

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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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WATER (Matrix: WATER)			Sample ID	KLC-10 L11	KLC 10 L12	----	----	----
			Sampling date / time	22-Jul-2021 10:44	22-Jul-2021 10:44	----	----	----
Compound	CAS Number	LOR	Unit	EB2120544-001	EB2120544-002	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.20**	**7.10**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**566**	**488**	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**10**	**11**	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**10**	**11**	----	----	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**2**	**2**	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**255**	**213**	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**12**	**8**	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**12**	**9**	----	----	----
Magnesium	7439-95-4	1	mg/L	**14**	**13**	----	----	----
Sodium	7440-23-5	1	mg/L	**7**	**5**	----	----	----
Potassium	7440-09-7	1	mg/L	**3**	**2**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.001**	<0.001	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-10 L11	KLC 10 L12	----	----	----
			Sampling date / time	22-Jul-2021 10:44	22-Jul-2021 10:44	----	----	----
Compound	CAS Number	LOR	Unit	EB2120544-001	EB2120544-002	--------	--------	--------
				Result	Result	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	----	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.002**	**0.001**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.003**	**0.002**	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.002**	**0.002**	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.004**	**0.003**	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.045**	**0.033**	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC-10 L11	KLC 10 L12	----	----	----
			Sampling date / time	22-Jul-2021 10:44	22-Jul-2021 10:44	----	----	----
Compound	CAS Number	LOR	Unit	EB2120544-001	EB2120544-002	--------	--------	--------
				Result	Result	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.1**	**0.1**	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2130149**	Page	: 1 of 8
Client	: **RGS ENVIRONMENTAL CONSULTANTS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: 3/30 LENSWORTH STREET COOPERS PLAINS 4107	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2021057_Big Vein South	Date Samples Received	: 22-Oct-2021 16:04
Order number	:	Date Analysis Commenced	: 22-Oct-2021
C-O-C number	: 29074	Issue Date	: 02-Nov-2021 09:58
Sampler	: ALAN ROBERTSON		
Site	: 2021057_Big Vein South L		
Quote number	: BN/1234/19		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WATER (Matrix: WATER)			Sample ID	KLC 11	KLC 12	KLC 13	KLC 14	KLC 15
			Sampling date / time	21-Oct-2021 12:00	21-Oct-2021 12:01	21-Oct-2021 12:02	21-Oct-2021 12:04	21-Oct-2021 12:06
Compound	CAS Number	LOR	Unit	EB2130149-001	EB2130149-002	EB2130149-003	EB2130149-004	EB2130149-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.68	7.58	8.37	8.36	4.47
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	388	211	4610	1350	2070
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	13	8	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	41	24	575	377	<1
Total Alkalinity as CaCO3	----	1	mg/L	41	24	588	385	<1
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	3	2	<1	<1	200
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	110	54	1370	175	1160
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	12	7	354	107	16
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	37	19	74	70	217
Magnesium	7439-95-4	1	mg/L	6	3	70	67	132
Sodium	7440-23-5	1	mg/L	13	7	917	158	34
Potassium	7440-09-7	1	mg/L	28	16	14	15	19
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.02	0.08	<0.01	<0.01	4.19
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.016
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.015	0.011	0.038	0.028	0.002
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.010
Boron	7440-42-8	0.05	mg/L	0.06	<0.05	0.07	0.07	0.05
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002
Strontium	7440-24-6	0.001	mg/L	0.061	0.031	0.480	0.289	1.90
Barium	7440-39-3	0.001	mg/L	0.003	0.003	0.034	0.050	0.038
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.014
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.046
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KLC 11	KLC 12	KLC 13	KLC 14	KLC 15
				Sampling date / time	21-Oct-2021 12:00	21-Oct-2021 12:01	21-Oct-2021 12:02	21-Oct-2021 12:04	21-Oct-2021 12:06
Compound	CAS Number	LOR	Unit		EB2130149-001	EB2130149-002	EB2130149-003	EB2130149-004	EB2130149-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	**0.0004**	**0.0001**	**0.205**
Hafnium	7440-58-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	7440-48-4	0.001	mg/L		**0.001**	<0.001	**0.002**	**0.002**	**0.598**
Holmium	7440-60-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.003**
Uranium	7440-61-1	0.001	mg/L		**0.003**	**0.001**	**0.030**	**0.008**	**0.145**
Caesium	7440-46-2	0.001	mg/L		<0.001	**0.002**	**0.002**	<0.001	**0.003**
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.003**	**0.001**	**0.006**	**0.007**	**0.416**
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.014**
Rubidium	7440-17-7	0.001	mg/L		**0.042**	**0.023**	**0.009**	**0.015**	**0.071**
Lithium	7439-93-2	0.001	mg/L		**0.005**	**0.002**	**0.017**	**0.011**	**0.043**
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.001**
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.039**
Manganese	7439-96-5	0.001	mg/L		**0.022**	**0.007**	**0.073**	**0.107**	**13.3**
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.027**
Molybdenum	7439-98-7	0.001	mg/L		**0.002**	<0.001	**0.596**	**0.184**	**0.001**
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.006**
Nickel	7440-02-0	0.001	mg/L		**0.002**	<0.001	**0.005**	**0.006**	**1.72**
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.009**
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.092**
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.002**
Antimony	7440-36-0	0.001	mg/L		**0.011**	**0.005**	**0.014**	**0.172**	**0.005**
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.001**
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	**0.01**	<0.01
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.008**
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	**0.007**	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.086**
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
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	<0.005	**0.026**	**0.038**	**11.0**
Iron	7439-89-6	0.05	mg/L		**0.11**	**0.05**	<0.05	<0.05	**55.4**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC 11	KLC 12	KLC 13	KLC 14	KLC 15
			Sampling date / time	21-Oct-2021 12:00	21-Oct-2021 12:01	21-Oct-2021 12:02	21-Oct-2021 12:04	21-Oct-2021 12:06
Compound	CAS Number	LOR	Unit	EB2130149-001	EB2130149-002	EB2130149-003	EB2130149-004	EB2130149-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.9**	**0.5**	**16.0**	**1.5**	**0.8**
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**3.45**	**1.80**	**50.2**	**14.4**	**24.6**
ø **Total Cations**	----	0.01	meq/L	**3.62**	**1.91**	**49.7**	**16.3**	**23.6**
ø **Ionic Balance**	----	0.01	%	**2.46**	**----**	**0.56**	**6.24**	**1.96**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC 16	KLC 17	----	----	----
			Sampling date / time	21-Oct-2021 12:08	21-Oct-2021 12:09	----	----	----
Compound	CAS Number	LOR	Unit	EB2130149-006	EB2130149-007	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.70**	**7.88**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1020**	**659**	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**98**	**76**	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**98**	**76**	----	----	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**3**	**2**	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**334**	**199**	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**12**	**11**	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**80**	**55**	----	----	----
Magnesium	7439-95-4	1	mg/L	**17**	**11**	----	----	----
Sodium	7440-23-5	1	mg/L	**31**	**20**	----	----	----
Potassium	7440-09-7	1	mg/L	**129**	**73**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.01**	**0.01**	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.004**	**0.005**	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.394**	**0.198**	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.033**	**0.013**	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC 16	KLC 17	----	----	----
			Sampling date / time	21-Oct-2021 12:08	21-Oct-2021 12:09	----	----	----
Compound	CAS Number	LOR	Unit	EB2130149-006	EB2130149-007	--------	--------	--------
				Result	Result	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Cadmium	7440-43-9	0.0001	mg/L	**0.0003**	**0.0001**	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	----	----	----
Uranium	7440-61-1	0.001	mg/L	**0.002**	**0.003**	----	----	----
Caesium	7440-46-2	0.001	mg/L	**0.004**	**0.002**	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	**0.005**	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.314**	**0.156**	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.011**	**0.007**	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.069**	**0.038**	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.019**	**0.007**	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	**0.001**	<0.001	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.006**	**0.006**	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.006**	<0.005	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	**0.06**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC 16	KLC 17	----	----	----
			Sampling date / time	21-Oct-2021 12:08	21-Oct-2021 12:09	----	----	----
Compound	CAS Number	LOR	Unit	EB2130149-006	EB2130149-007	--------	--------	--------
				Result	Result	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**1.6**	**1.0**	----	----	----
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**9.25**	**5.97**	----	----	----
ø **Total Cations**	----	0.01	meq/L	**10.0**	**6.39**	----	----	----
ø **Ionic Balance**	----	0.01	%	**4.09**	**3.36**	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2135898**	Page	: 1 of 8
Client	: **RGS ENVIRONMENTAL CONSULTANTS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: 3/30 LENSWORTH STREET COOPERS PLAINS 4107	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2021057 Big Vein South	Date Samples Received	: 09-Dec-2021 16:49
Order number	: ----	Date Analysis Commenced	: 15-Dec-2021
C-O-C number	: ----	Issue Date	: 21-Dec-2021 10:18
Sampler	: PRIYA RAJENDRAN		
Site	: ----		
Quote number	: BN/1234/19		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WATER (Matrix: WATER)			Sample ID	KLC 11	KLC 12	KLC 13	KLC 14	KLC 15
			Sampling date / time	09-Dec-2021 00:00	09-Dec-2021 00:00	09-Dec-2021 00:00	09-Dec-2021 00:00	09-Dec-2021 00:00
Compound	CAS Number	LOR	Unit	EB2135898-001	EB2135898-002	EB2135898-003	EB2135898-004	EB2135898-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.03	7.56	8.77	8.54	5.60
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	252	202	2860	649	728
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	65	18	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	13	44	521	256	2
Total Alkalinity as CaCO3	----	1	mg/L	13	44	586	274	2
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	4	3	<1	<1	4
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	69	45	735	76	364
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	14	6	131	13	5
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	16	20	28	18	45
Magnesium	7439-95-4	1	mg/L	7	5	36	24	63
Sodium	7440-23-5	1	mg/L	9	6	620	102	9
Potassium	7440-09-7	1	mg/L	22	15	10	10	4
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.06	0.03	0.01	0.02	0.11
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.003	0.010	0.049	0.020	<0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.10	0.07	<0.05
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.024	0.034	0.200	0.097	0.319
Barium	7440-39-3	0.001	mg/L	0.001	0.002	0.019	0.023	0.005
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KLC 11	KLC 12	KLC 13	KLC 14	KLC 15
				Sampling date / time	09-Dec-2021 00:00	09-Dec-2021 00:00	09-Dec-2021 00:00	09-Dec-2021 00:00	09-Dec-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135898-001	EB2135898-002	EB2135898-003	EB2135898-004	EB2135898-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	**0.0002**	<0.0001	**0.0144**
Hafnium	7440-58-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	7440-48-4	0.001	mg/L		**0.001**	**0.001**	<0.001	<0.001	**0.061**
Holmium	7440-60-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L		<0.001	<0.001	**0.028**	**0.002**	**0.005**
Caesium	7440-46-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.001**	<0.001	**0.003**	**0.001**	**0.029**
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L		**0.008**	**0.018**	**0.004**	**0.008**	**0.011**
Lithium	7439-93-2	0.001	mg/L		**0.002**	**0.016**	**0.013**	**0.006**	**0.006**
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.001**
Manganese	7439-96-5	0.001	mg/L		**0.053**	**1.12**	**0.003**	**0.005**	**2.49**
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L		<0.001	**0.003**	**0.584**	**0.189**	<0.001
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	**0.002**	**0.001**	**0.153**
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.013**
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L		<0.001	**0.007**	**0.029**	**0.137**	<0.001
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.003**
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
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	**0.006**	<0.005	<0.005	**0.863**
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	**0.12**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC 11	KLC 12	KLC 13	KLC 14	KLC 15
			Sampling date / time	09-Dec-2021 00:00	09-Dec-2021 00:00	09-Dec-2021 00:00	09-Dec-2021 00:00	09-Dec-2021 00:00
Compound	CAS Number	LOR	Unit	EB2135898-001	EB2135898-002	EB2135898-003	EB2135898-004	EB2135898-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.1**	**0.9**	**25.4**	**1.9**	<0.1

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC 16	KLC 17	----	----	----
			Sampling date / time	09-Dec-2021 00:00	09-Dec-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2135898-006	EB2135898-007	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.24**	**7.62**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**242**	**167**	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**38**	**17**	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**38**	**17**	----	----	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**2**	**2**	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**72**	**53**	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**8**	**2**	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**13**	**9**	----	----	----
Magnesium	7439-95-4	1	mg/L	**8**	**5**	----	----	----
Sodium	7440-23-5	1	mg/L	**9**	**8**	----	----	----
Potassium	7440-09-7	1	mg/L	**19**	**12**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.12**	**0.10**	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.001**	**0.002**	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.047**	**0.030**	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.002**	**0.001**	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC 16	KLC 17	----	----	----
			Sampling date / time	09-Dec-2021 00:00	09-Dec-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2135898-006	EB2135898-007	--------	--------	--------
				Result	Result	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	----	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	<0.001	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.045**	**0.023**	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.002**	**0.002**	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.024**	**0.033**	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.002**	**0.001**	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Sample ID	**KLC 16**	**KLC 17**	**----**	**----**	**----**
			Sampling date / time	09-Dec-2021 00:00	09-Dec-2021 00:00	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB2135898-006**	**EB2135898-007**	**--------**	**--------**	**--------**
				Result	Result	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	**----**	**----**	**----**
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.3**	**0.1**	**----**	**----**	**----**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2200248**	Page	: 1 of 8
Client	: **RGS ENVIRONMENTAL CONSULTANTS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: 3/30 LENSWORTH STREET COOPERS PLAINS 4107	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2021057 Big Vein South	Date Samples Received	: 06-Jan-2022 16:09
Order number	: ----	Date Analysis Commenced	: 08-Jan-2022
C-O-C number	: ----	Issue Date	: 13-Jan-2022 14:54
Sampler	: PRIYA RAJENDRAN		
Site	:		
Quote number	: BN/1234/19		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WATER (Matrix: WATER)			Sample ID	KLC 11	KLC 12	KLC 13	KLC 14	KLC 15
			Sampling date / time	06-Jan-2022 00:00	06-Jan-2022 00:00	06-Jan-2022 00:00	06-Jan-2022 00:00	06-Jan-2022 00:00
Compound	CAS Number	LOR	Unit	EB2200248-001	EB2200248-002	EB2200248-003	EB2200248-004	EB2200248-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**6.81**	**7.32**	**8.16**	**7.77**	**5.77**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**251**	**192**	**2850**	**1100**	**778**
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	**15**	**55**	**288**	**85**	**4**
Total Alkalinity as CaCO3	----	1	mg/L	**15**	**55**	**288**	**85**	**4**
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**6**	**4**	<1	**3**	**5**
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**95**	**35**	**1030**	**501**	**443**
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**2**	**5**	**49**	**23**	**4**
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**26**	**18**	**30**	**72**	**35**
Magnesium	7439-95-4	1	mg/L	**8**	**5**	**27**	**54**	**83**
Sodium	7440-23-5	1	mg/L	**8**	**5**	**649**	**106**	**8**
Potassium	7440-09-7	1	mg/L	**7**	**14**	**11**	**14**	**3**
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.04**	**0.01**	<0.01	<0.01	<0.01
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	**0.005**	**0.017**	**0.029**	**0.015**	**0.001**
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	**0.11**	**0.06**	<0.05
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	**0.039**	**0.042**	**0.180**	**0.242**	**0.237**
Barium	7440-39-3	0.001	mg/L	**0.001**	**0.003**	**0.029**	**0.048**	**0.005**
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KLC 11	KLC 12	KLC 13	KLC 14	KLC 15
				Sampling date / time	06-Jan-2022 00:00	06-Jan-2022 00:00	06-Jan-2022 00:00	06-Jan-2022 00:00	06-Jan-2022 00:00
Compound	CAS Number	LOR	Unit		EB2200248-001	EB2200248-002	EB2200248-003	EB2200248-004	EB2200248-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	**0.0049**
Hafnium	7440-58-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.018**
Holmium	7440-60-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L		<0.001	<0.001	**0.066**	**0.008**	<0.001
Caesium	7440-46-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.001**	<0.001	**0.002**	**0.001**	**0.007**
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L		**0.008**	**0.021**	**0.004**	**0.012**	**0.008**
Lithium	7439-93-2	0.001	mg/L		**0.001**	**0.025**	**0.016**	**0.004**	**0.002**
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L		**0.047**	**1.60**	**0.030**	**0.056**	**1.73**
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L		<0.001	**0.003**	**0.627**	**0.457**	**0.007**
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	**0.002**	**0.002**	**0.047**
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.006**
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L		**0.002**	**0.005**	**0.024**	**0.136**	**0.001**
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
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	<0.005	<0.005	<0.005	**0.203**
Iron	7439-89-6	0.05	mg/L		**0.05**	**0.19**	<0.05	<0.05	**0.08**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC 11	KLC 12	KLC 13	KLC 14	KLC 15
			Sampling date / time	06-Jan-2022 00:00	06-Jan-2022 00:00	06-Jan-2022 00:00	06-Jan-2022 00:00	06-Jan-2022 00:00
Compound	CAS Number	LOR	Unit	EB2200248-001	EB2200248-002	EB2200248-003	EB2200248-004	EB2200248-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.2**	**0.8**	**18.7**	**2.8**	**0.1**
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**2.33**	**1.97**	**28.6**	**12.8**	**9.42**
ø **Total Cations**	----	0.01	meq/L	**2.48**	**1.88**	**32.2**	**13.0**	**9.00**
ø **Ionic Balance**	----	0.01	%	**----**	**----**	**6.00**	**0.88**	**2.24**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC 16	KLC 17	----	----	----
			Sampling date / time	06-Jan-2022 00:00	06-Jan-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2200248-006	EB2200248-007	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**6.95**	**7.08**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**338**	**239**	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**22**	**24**	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**22**	**24**	----	----	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**2**	**2**	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**124**	**86**	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**4**	**2**	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**24**	**14**	----	----	----
Magnesium	7439-95-4	1	mg/L	**11**	**10**	----	----	----
Sodium	7440-23-5	1	mg/L	**10**	**8**	----	----	----
Potassium	7440-09-7	1	mg/L	**27**	**14**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.07**	**0.06**	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.003**	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.092**	**0.048**	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.004**	**0.002**	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KLC 16	KLC 17	----	----	----
				Sampling date / time	06-Jan-2022 00:00	06-Jan-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EB2200248-006	EB2200248-007	--------	--------	--------
					Result	Result	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Hafnium	7440-58-6	0.01	mg/L		<0.01	<0.01	----	----	----
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	----	----	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	----	----	----
Holmium	7440-60-0	0.001	mg/L		<0.001	<0.001	----	----	----
Uranium	7440-61-1	0.001	mg/L		<0.001	<0.001	----	----	----
Caesium	7440-46-2	0.001	mg/L		<0.001	<0.001	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	----	----	----
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	----	----	----
Rubidium	7440-17-7	0.001	mg/L		**0.067**	**0.029**	----	----	----
Lithium	7439-93-2	0.001	mg/L		**0.003**	**0.004**	----	----	----
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	----	----	----
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	----	----	----
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L		**0.028**	**0.113**	----	----	----
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		**0.005**	**0.002**	----	----	----
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	----	----	----
Antimony	7440-36-0	0.001	mg/L		**0.003**	**0.008**	----	----	----
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	----	----	----
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	----	----
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	----	----	----
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	----	----	----
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	----	----	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC 16	KLC 17	----	----	----
			Sampling date / time	06-Jan-2022 00:00	06-Jan-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2200248-006	EB2200248-007	--------	--------	--------
				Result	Result	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.5**	**0.3**	----	----	----
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**3.13**	**2.33**	----	----	----
ø **Total Cations**	----	0.01	meq/L	**3.23**	**2.23**	----	----	----
ø **Ionic Balance**	----	0.01	%	**1.48**	**----**	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2202793**	Page	: 1 of 8
Client	: **RGS ENVIRONMENTAL CONSULTANTS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: 3/30 LENSWORTH STREET COOPERS PLAINS 4107	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2021057 Big Vein South	Date Samples Received	: 03-Feb-2022 15:48
Order number	: ----	Date Analysis Commenced	: 04-Feb-2022
C-O-C number	: ----	Issue Date	: 11-Feb-2022 09:48
Sampler	: PRIYA RAJENDRAN		
Site	: ----		
Quote number	: BN/1234/19		
No. of samples received	: 7		
No. of samples analysed	: 7		

ilac-MRA NATA
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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: WATER (Matrix: WATER)			Sample ID	KLC 11	KLC 12	KLC 13	KLC 14	KLC 15
			Sampling date / time	03-Feb-2022 00:00	03-Feb-2022 00:00	03-Feb-2022 00:00	03-Feb-2022 00:00	03-Feb-2022 00:00
Compound	CAS Number	LOR	Unit	EB2202793-001	EB2202793-002	EB2202793-003	EB2202793-004	EB2202793-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.74	7.72	8.44	7.97	6.18
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	227	204	2410	1170	787
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	12	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	12	70	265	76	4
Total Alkalinity as CaCO3	----	1	mg/L	12	70	278	76	4
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	5	6	<1	5	5
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	82	27	876	549	423
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	2	5	11	4	4
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	24	21	27	76	38
Magnesium	7439-95-4	1	mg/L	5	5	18	54	75
Sodium	7440-23-5	1	mg/L	9	6	517	96	8
Potassium	7440-09-7	1	mg/L	5	14	9	14	3
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.03	<0.01	<0.01	<0.01	<0.01
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.004	0.016	0.022	0.016	0.001
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	7440-42-8	0.05	mg/L	0.11	0.07	0.10	0.06	<0.05
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.031	0.046	0.130	0.232	0.171
Barium	7440-39-3	0.001	mg/L	<0.001	0.004	0.021	0.042	0.004
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KLC 11	KLC 12	KLC 13	KLC 14	KLC 15
				Sampling date / time	03-Feb-2022 00:00	03-Feb-2022 00:00	03-Feb-2022 00:00	03-Feb-2022 00:00	03-Feb-2022 00:00
Compound	CAS Number	LOR	Unit		EB2202793-001	EB2202793-002	EB2202793-003	EB2202793-004	EB2202793-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	**0.0002**	**0.0002**	**0.0035**
Hafnium	7440-58-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.011**
Holmium	7440-60-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L		<0.001	<0.001	**0.062**	**0.008**	<0.001
Caesium	7440-46-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	**0.001**	<0.001	**0.003**
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L		**0.006**	**0.021**	**0.003**	**0.011**	**0.007**
Lithium	7439-93-2	0.001	mg/L		**0.001**	**0.039**	**0.016**	**0.004**	**0.002**
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L		**0.032**	**1.76**	**0.027**	**0.050**	**1.50**
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L		<0.001	**0.003**	**0.498**	**0.411**	**0.003**
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.028**
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.004**
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L		**0.001**	**0.003**	**0.015**	**0.114**	**0.001**
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
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	<0.005	<0.005	<0.005	**0.119**
Iron	7439-89-6	0.05	mg/L		<0.05	**0.20**	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC 11	KLC 12	KLC 13	KLC 14	KLC 15
			Sampling date / time	03-Feb-2022 00:00	03-Feb-2022 00:00	03-Feb-2022 00:00	03-Feb-2022 00:00	03-Feb-2022 00:00
Compound	CAS Number	LOR	Unit	EB2202793-001	EB2202793-002	EB2202793-003	EB2202793-004	EB2202793-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.2**	**0.6**	**16.9**	**2.7**	**0.1**
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**2.00**	**2.10**	**24.1**	**13.1**	**9.00**
ø **Total Cations**	----	0.01	meq/L	**2.13**	**2.08**	**25.5**	**12.8**	**8.49**
ø **Ionic Balance**	----	0.01	%	**----**	**----**	**2.91**	**1.13**	**2.89**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC 16	KLC 17	----	----	----
			Sampling date / time	03-Feb-2022 00:00	03-Feb-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2202793-006	EB2202793-007	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.26**	**7.43**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**354**	**171**	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**22**	**23**	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**22**	**23**	----	----	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**2**	<1	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**124**	**54**	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**3**	<1	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**23**	**11**	----	----	----
Magnesium	7439-95-4	1	mg/L	**11**	**5**	----	----	----
Sodium	7440-23-5	1	mg/L	**10**	**6**	----	----	----
Potassium	7440-09-7	1	mg/L	**25**	**9**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.09**	**0.14**	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.002**	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.077**	**0.032**	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.002**	<0.001	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KLC 16	KLC 17	----	----	----
				Sampling date / time	03-Feb-2022 00:00	03-Feb-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EB2202793-006	EB2202793-007	--------	--------	--------
					Result	Result	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Hafnium	7440-58-6	0.01	mg/L		<0.01	<0.01	----	----	----
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	----	----	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	----	----	----
Holmium	7440-60-0	0.001	mg/L		<0.001	<0.001	----	----	----
Uranium	7440-61-1	0.001	mg/L		<0.001	<0.001	----	----	----
Caesium	7440-46-2	0.001	mg/L		<0.001	<0.001	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	----	----	----
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	----	----	----
Rubidium	7440-17-7	0.001	mg/L		**0.064**	**0.019**	----	----	----
Lithium	7439-93-2	0.001	mg/L		**0.003**	**0.004**	----	----	----
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	----	----	----
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	----	----	----
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L		**0.025**	**0.040**	----	----	----
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		**0.005**	**0.002**	----	----	----
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	----	----	----
Antimony	7440-36-0	0.001	mg/L		**0.002**	<0.001	----	----	----
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	----	----	----
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	----	----
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	----	----	----
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	----	----	----
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	----	----	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KLC 16	KLC 17	----	----	----
			Sampling date / time	03-Feb-2022 00:00	03-Feb-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2202793-006	EB2202793-007	--------	--------	--------
				Result	Result	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.5**	**0.2**	----	----	----
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**3.10**	**1.58**	----	----	----
ø **Total Cations**	----	0.01	meq/L	**3.13**	**1.45**	----	----	----
ø **Ionic Balance**	----	0.01	%	**0.34**	**----**	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2205847**	Page	: 1 of 8
Client	: **RGS ENVIRONMENTAL CONSULTANTS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: 3/30 LENSWORTH STREET COOPERS PLAINS 4107	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: 07 3344 1222	Telephone	: +61 7 3552 8616
Project	: 2021057 Big Vein South	Date Samples Received	: 03-Mar-2022 14:05
Order number	: ----	Date Analysis Commenced	: 08-Mar-2022
C-O-C number	: ----	Issue Date	: 11-Mar-2022 09:16
Sampler	: PRIYA RAJENDRAN		
Site	:		
Quote number	: BN/1234/19		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

- 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: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	WKLC 11	WKLC 12	WKLC 13	WKLC 14	WKLC 15
				Sampling date / time	03-Mar-2022 00:00	03-Mar-2022 00:00	03-Mar-2022 00:00	03-Mar-2022 00:00	03-Mar-2022 00:00
					EB2205847-001	EB2205847-002	EB2205847-003	EB2205847-004	EB2205847-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**6.56**	**7.63**	**8.47**	**7.90**	**6.15**
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**171**	**236**	**1740**	**903**	**714**
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	**16**	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		**12**	**94**	**293**	**85**	**5**
Total Alkalinity as CaCO3	----	1	mg/L		**12**	**94**	**309**	**85**	**5**
ED038: Acidity									
Acidity as CaCO3	----	1	mg/L		**2**	**3**	<1	**2**	**4**
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		**62**	**17**	**519**	**382**	**376**
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		**2**	**4**	**3**	**1**	**3**
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		**15**	**22**	**14**	**52**	**26**
Magnesium	7439-95-4	1	mg/L		**4**	**6**	**9**	**40**	**72**
Sodium	7440-23-5	1	mg/L		**6**	**6**	**356**	**68**	**6**
Potassium	7440-09-7	1	mg/L		**5**	**17**	**7**	**12**	**2**
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		**0.07**	<0.01	**0.01**	<0.01	<0.01
Dysprosium	7429-91-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L		**0.006**	**0.011**	**0.031**	**0.021**	**0.002**
Bismuth	7440-69-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Erbium	7440-52-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	**0.08**	<0.05	<0.05
Europium	7440-53-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L		**0.023**	**0.069**	**0.070**	**0.182**	**0.138**
Barium	7440-39-3	0.001	mg/L		**0.001**	**0.006**	**0.014**	**0.030**	**0.004**
Gadolinium	7440-54-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	7440-32-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Beryllium	7440-41-7	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Gallium	7440-55-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	WKLC 11	WKLC 12	WKLC 13	WKLC 14	WKLC 15
				Sampling date / time	03-Mar-2022 00:00	03-Mar-2022 00:00	03-Mar-2022 00:00	03-Mar-2022 00:00	03-Mar-2022 00:00
Compound	CAS Number	LOR	Unit		EB2205847-001	EB2205847-002	EB2205847-003	EB2205847-004	EB2205847-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L		**0.0001**	<0.0001	**0.0002**	**0.0002**	**0.0028**
Hafnium	7440-58-6	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.009**
Holmium	7440-60-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L		<0.001	<0.001	**0.056**	**0.008**	<0.001
Caesium	7440-46-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.012**	<0.001	**0.002**	**0.001**	**0.004**
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L		**0.005**	**0.025**	**0.002**	**0.010**	**0.006**
Lithium	7439-93-2	0.001	mg/L		<0.001	**0.068**	**0.012**	**0.004**	**0.002**
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	**0.001**	<0.001	<0.001
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L		**0.027**	**2.20**	**0.010**	**0.022**	**1.49**
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L		<0.001	**0.002**	**0.333**	**0.375**	**0.009**
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.022**
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		**0.001**	<0.001	<0.001	<0.001	**0.003**
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L		<0.001	<0.001	**0.021**	**0.184**	<0.001
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	**0.006**	<0.005	<0.005
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	<0.005	<0.005	<0.005	**0.100**
Iron	7439-89-6	0.05	mg/L		**0.06**	**0.07**	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WKLC 11	WKLC 12	WKLC 13	WKLC 14	WKLC 15
			Sampling date / time	03-Mar-2022 00:00	03-Mar-2022 00:00	03-Mar-2022 00:00	03-Mar-2022 00:00	03-Mar-2022 00:00
Compound	CAS Number	LOR	Unit	EB2205847-001	EB2205847-002	EB2205847-003	EB2205847-004	EB2205847-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.1**	**0.6**	**18.5**	**3.1**	**0.2**
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**1.59**	**2.34**	**17.1**	**9.68**	**8.01**
ø **Total Cations**	----	0.01	meq/L	**1.47**	**2.29**	**17.1**	**9.15**	**7.54**
ø **Ionic Balance**	----	0.01	%	**----**	**----**	**0.11**	**2.80**	**3.07**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WKLC 16	WKLC 17	----	----	----
			Sampling date / time	03-Mar-2022 00:00	03-Mar-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2205847-006	EB2205847-007	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.07**	**6.98**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**302**	**167**	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**23**	**14**	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**23**	**14**	----	----	----
ED038: Acidity								
Acidity as CaCO3	----	1	mg/L	**2**	**2**	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**105**	**58**	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**2**	<1	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**16**	**9**	----	----	----
Magnesium	7439-95-4	1	mg/L	**9**	**6**	----	----	----
Sodium	7440-23-5	1	mg/L	**9**	**5**	----	----	----
Potassium	7440-09-7	1	mg/L	**26**	**8**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.10**	**0.10**	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.004**	**0.002**	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.065**	**0.036**	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.002**	**0.001**	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	----	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	WKLC 16	WKLC 17	----	----	----
				Sampling date / time	03-Mar-2022 00:00	03-Mar-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EB2205847-006	EB2205847-007	--------	--------	--------
					Result	Result	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Hafnium	7440-58-6	0.01	mg/L		<0.01	<0.01	----	----	----
Tellurium	22541-49-7	0.005	mg/L		<0.005	<0.005	----	----	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	----	----	----
Holmium	7440-60-0	0.001	mg/L		<0.001	<0.001	----	----	----
Uranium	7440-61-1	0.001	mg/L		<0.001	<0.001	----	----	----
Caesium	7440-46-2	0.001	mg/L		<0.001	<0.001	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	----	----	----
Indium	7440-74-6	0.001	mg/L		<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		**0.001**	<0.001	----	----	----
Lanthanum	7439-91-0	0.001	mg/L		<0.001	<0.001	----	----	----
Rubidium	7440-17-7	0.001	mg/L		**0.064**	**0.018**	----	----	----
Lithium	7439-93-2	0.001	mg/L		**0.003**	**0.004**	----	----	----
Lutetium	7439-94-3	0.001	mg/L		<0.001	<0.001	----	----	----
Thorium	7440-29-1	0.001	mg/L		<0.001	<0.001	----	----	----
Cerium	7440-45-1	0.001	mg/L		<0.001	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L		**0.030**	**0.061**	----	----	----
Neodymium	7440-00-8	0.001	mg/L		<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		**0.005**	**0.002**	----	----	----
Praseodymium	7440-10-0	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Samarium	7440-19-9	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Terbium	7440-27-9	0.001	mg/L		<0.001	<0.001	----	----	----
Antimony	7440-36-0	0.001	mg/L		<0.001	<0.001	----	----	----
Thulium	7440-30-4	0.001	mg/L		<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	----	----	----
Ytterbium	7440-64-4	0.001	mg/L		<0.001	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	----	----
Yttrium	7440-65-5	0.001	mg/L		<0.001	<0.001	----	----	----
Thallium	7440-28-0	0.001	mg/L		<0.001	<0.001	----	----	----
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	----	----	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WKLC 16	WKLC 17	----	----	----
			Sampling date / time	03-Mar-2022 00:00	03-Mar-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2205847-006	EB2205847-007	--------	--------	--------
				Result	Result	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.5**	**0.2**	----	----	----
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**2.70**	**1.49**	----	----	----
ø **Total Cations**	----	0.01	meq/L	**2.60**	**1.36**	----	----	----

Attachment F

BV1 and BV2 Supplementary Information

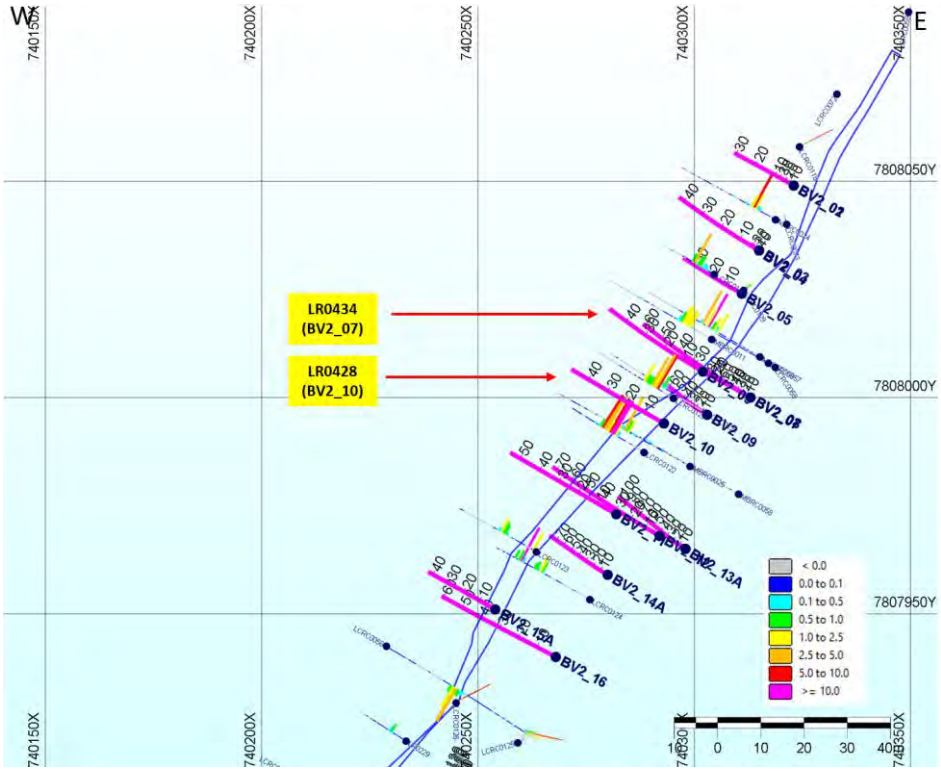


Figure 1: Plan view of the Big Vein 2 prospect showing recent drilling and location of selected holes.

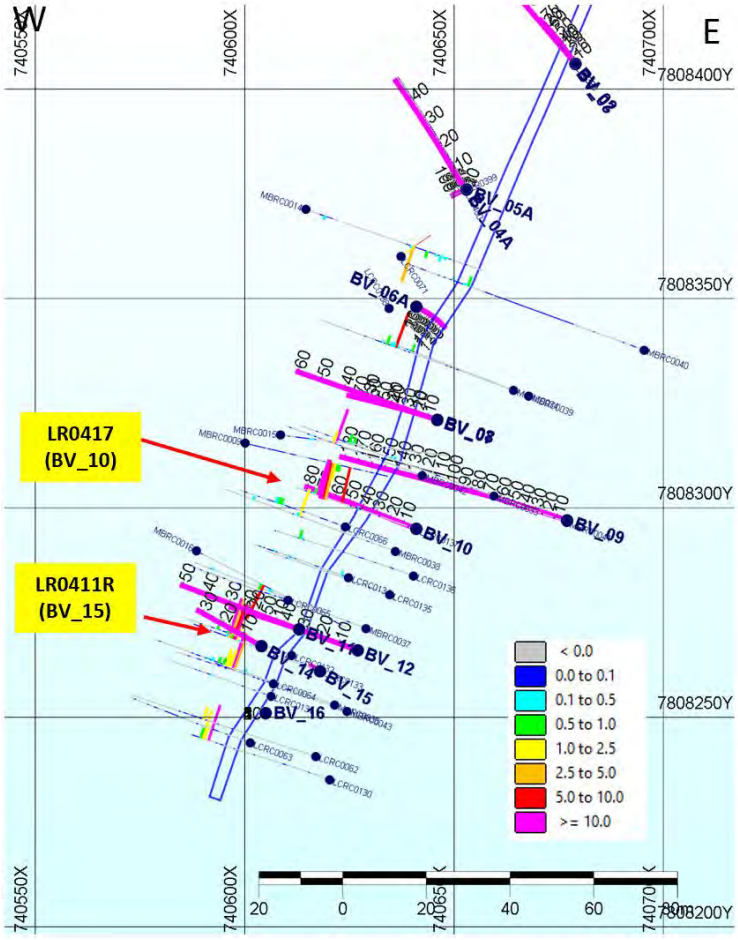


Figure 2: Plan view of the Big Vein 1 prospect showing recent drilling and location of selected holes.

PROSPECT: Big Vein 2

HOLEID: LR0428

PLAN ID: BV2_10

PLAN AZI/DIP: 293/-61

DEPTH: 49m

COMPLETED: 19/09/2021

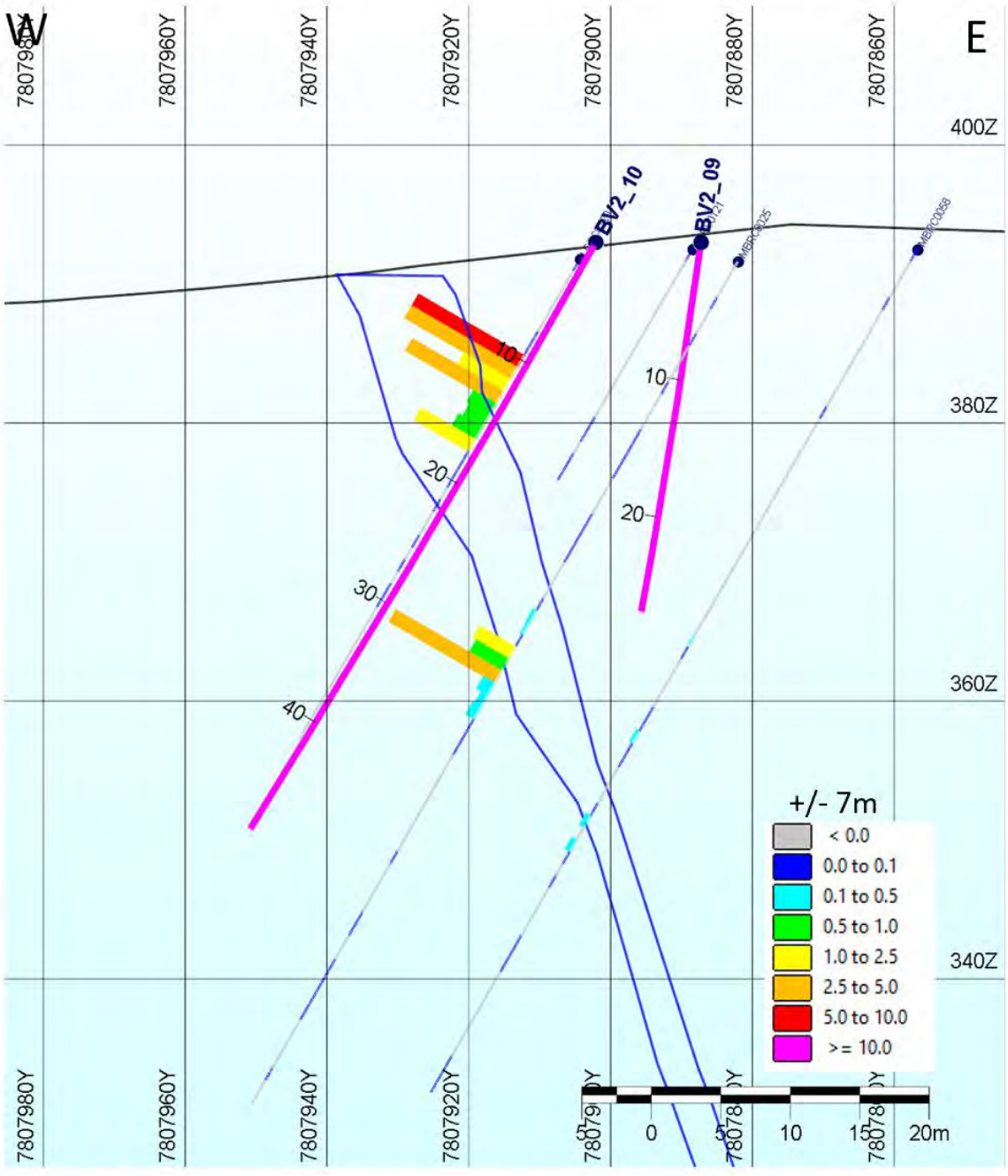


Figure 3: Vertical section (looking north) of selected hole LR0428 (BV2_10)

PROSPECT: Big Vein 2

HOLEID: LR0434

PLAN ID: BV2_07

PLAN AZI/DIP: 293/-61

DEPTH: 61m

COMPLETED: 20/09/21

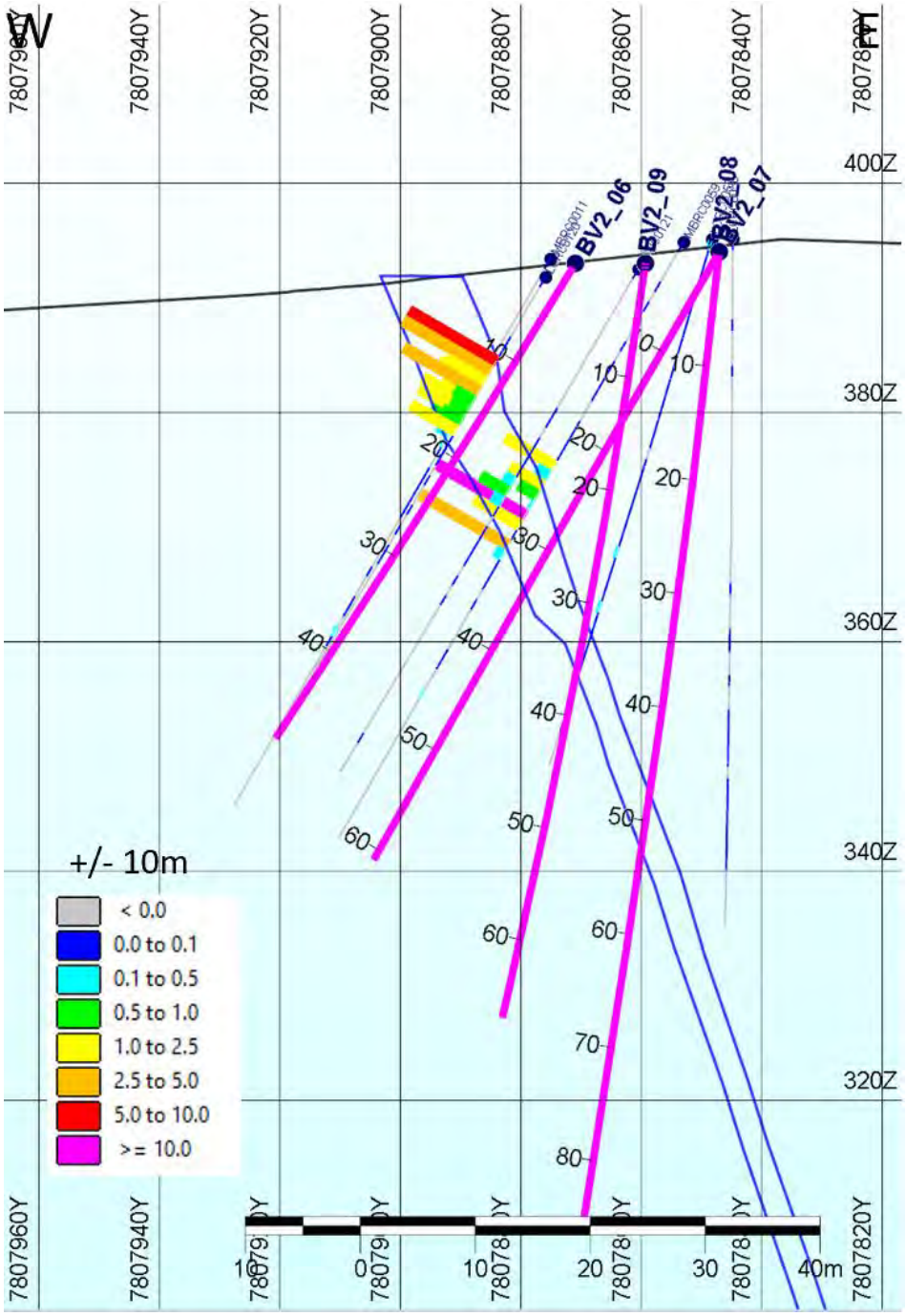


Figure 4: Vertical section (looking north) of selected hole LR0434 (BV2_07)

PROSPECT: Big Vein 1

HOLEID: LR0411R

PLAN ID: BV_15

PLAN AZI/DIP: 290/-70

DEPTH: 70m

COMPLETED: 23/09/21

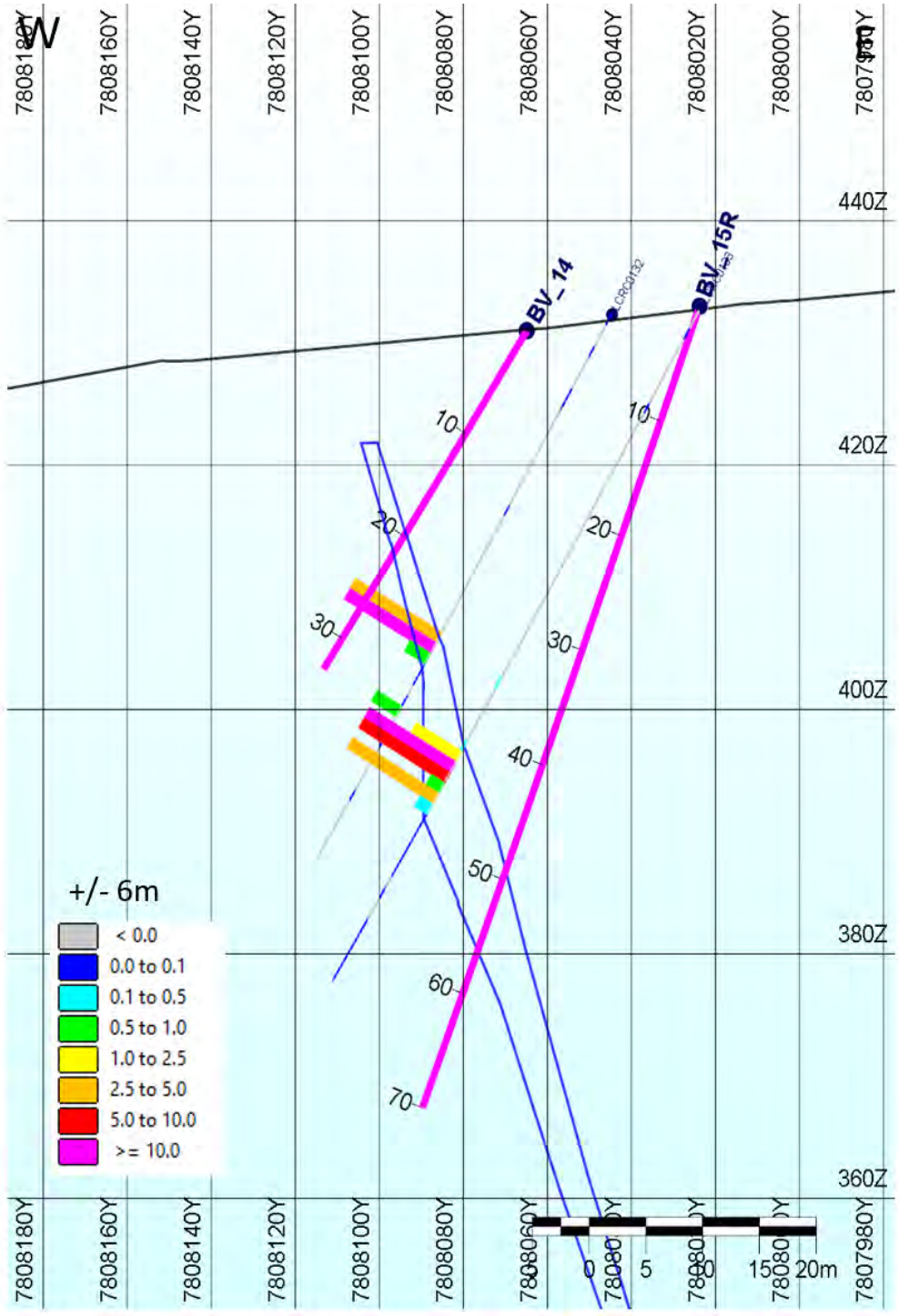


Figure 5: Vertical section (looking north) of selected hole LR0411R (BV_15)

PROSPECT: Big Vein 1

HOLEID: LR0417

PLAN ID: BV_10

PLAN AZI/DIP: 290/-70

DEPTH: 82m

COMPLETED: 25/09/2021

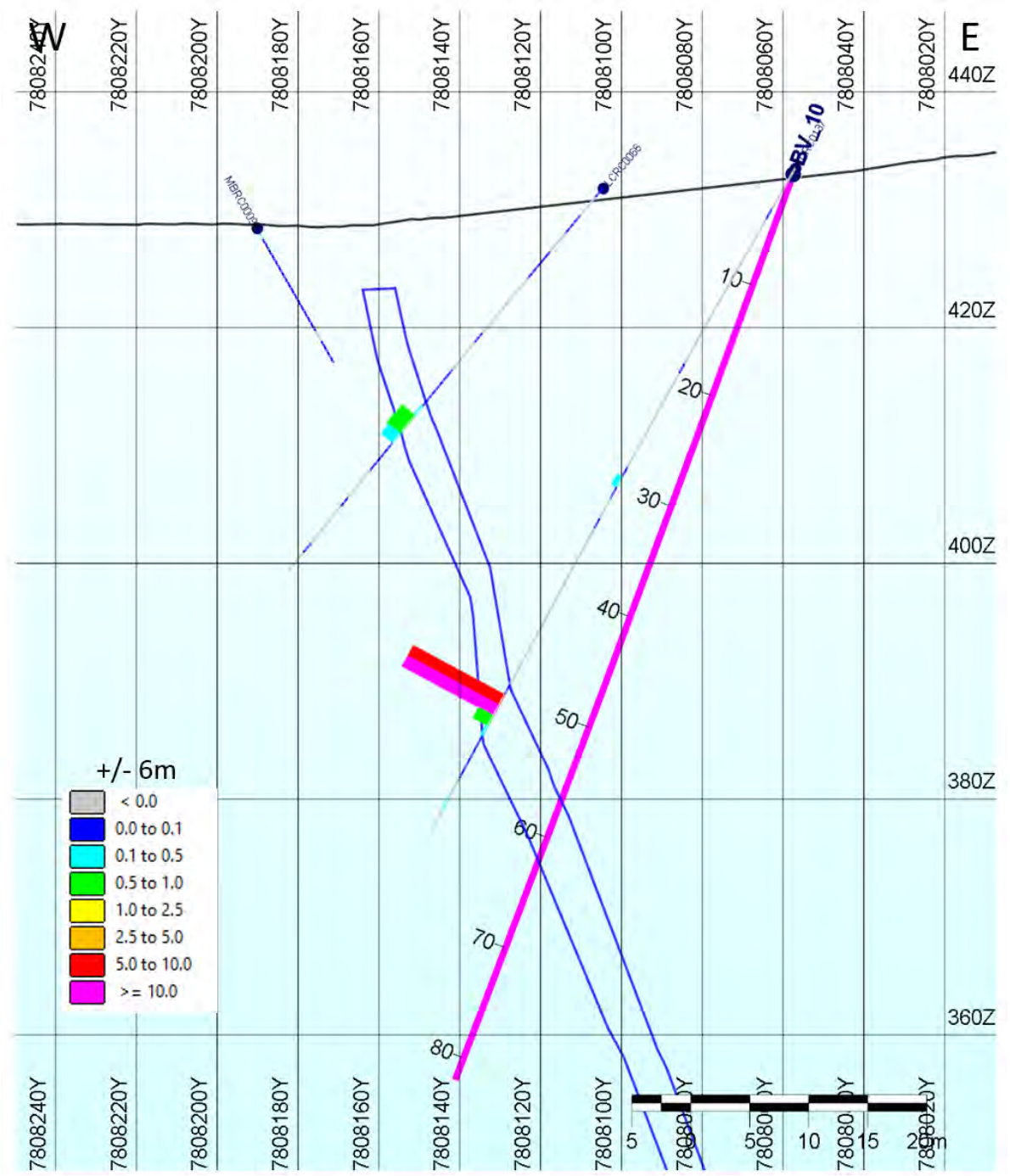
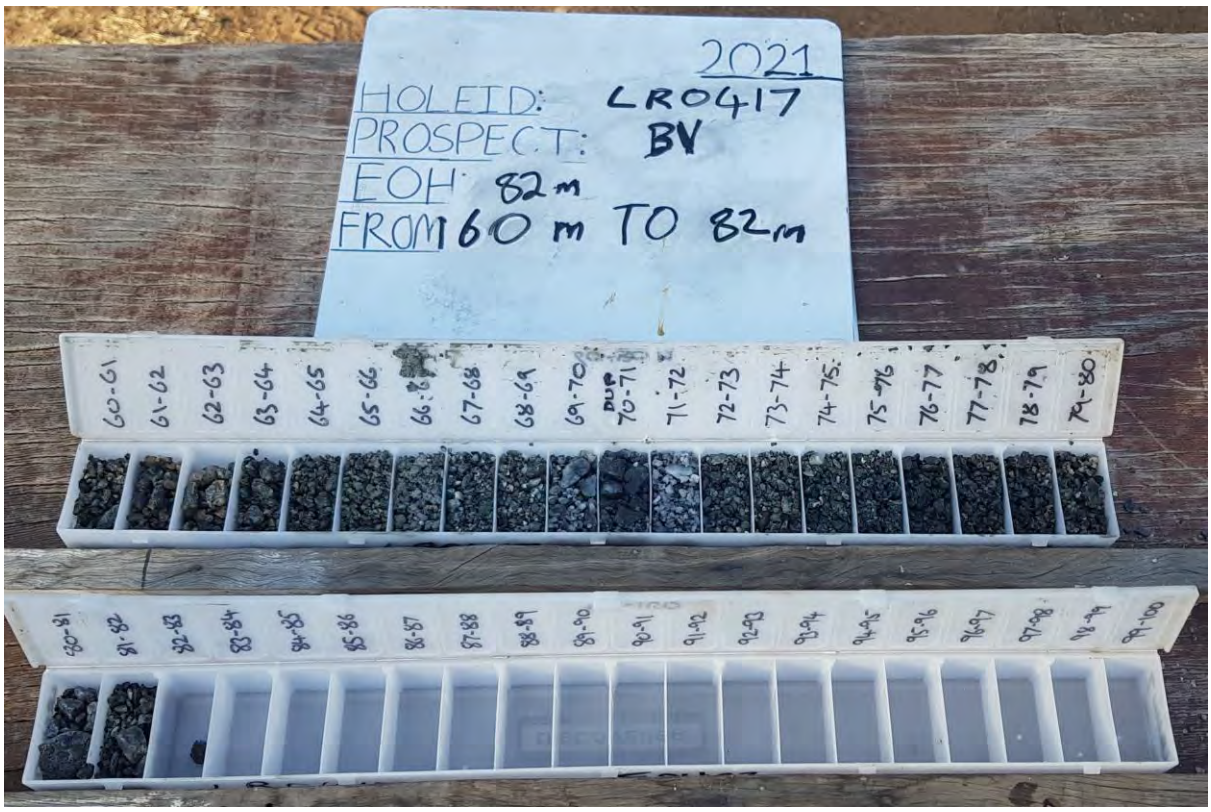


Figure 6 Vertical section (looking north) of selected hole LR0411R (BV_15)


2021
HOLEID: LR0411R
PROSPECT: BV
EOH: 70m
FROM: 0m TO: 60m
0-1
1-2
2-3
3-4
4-5
5-6
6-7
7-8
8-9
9-10
10-11
11-12
12-13
13-14
14-15
15-16
16-17
17-18
18-19
19-20
20-21
21-22
22-23
23-24
24-25
25-26
26-27
27-28
28-29
29-30
30-31
31-32
32-33
33-34
34-35
35-36
36-37
37-38
38-39
39-40
40-41
41-42
42-43
43-44
44-45
45-46
46-47
47-48
48-49
49-50
50-51
51-52
52-53
53-54
54-55
55-56
56-57
57-58
58-59
59-60

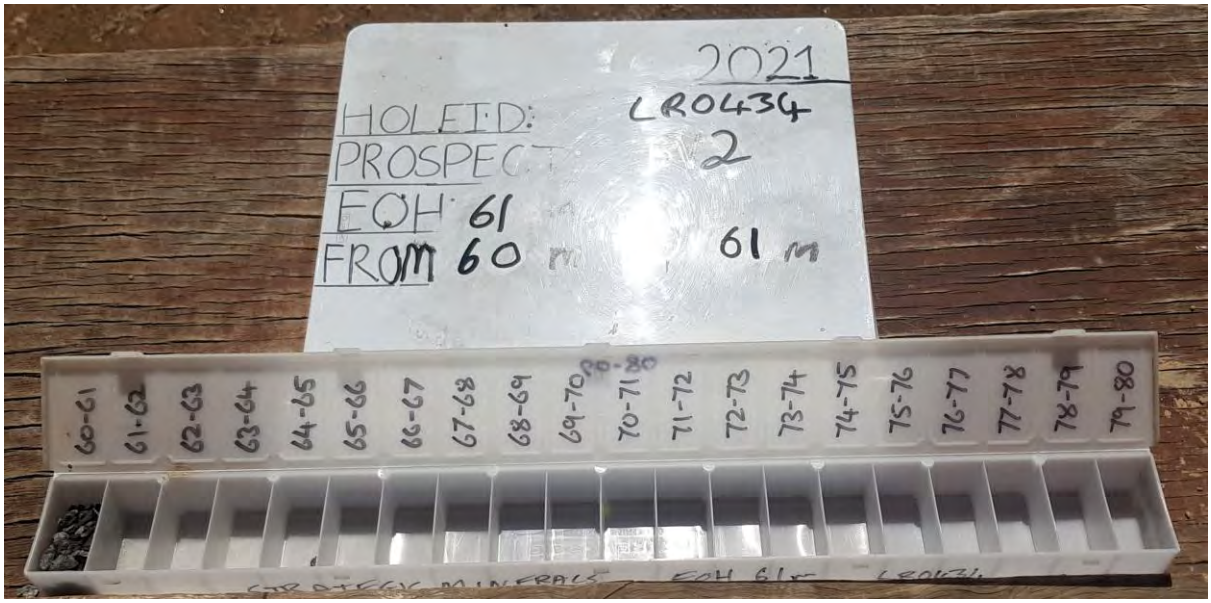

2021
HOLEID: LR0411R
PROSPECT: BV
EOH: 70m
FROM: 60m TO: 70m
60-61
61-62
62-63
63-64
64-65
65-66
66-67
67-68
68-69
69-70
70-71
71-72
72-73
73-74
74-75
75-76
76-77
77-78
78-79
79-80


2021
HOLEID: LR0417
PROSPECT: BV
EOH 82m
FROM 0m TO 60m


2021
HOLEID: LR0417
PROSPECT: BV
EOH 82m
FROM 60m TO 82m


2021
HOLEID: LR0428
PROSPECT: BV2
EOH: 49m
FROM: 0m TO: 49m


2021
HOLEID: LR0434
PROSPECT: BV2
EOH 61 m
FROM 0 m TO 60 m


2021
HOLE ID: LR0434
PROSPECT 2
EOH 61
FROM 60 m
61 m
60-61
61-62
62-63
63-64
64-65
65-66
66-67
67-68
68-69
69-70
70-71
71-72
72-73
73-74
74-75
75-76
76-77
77-78
78-79
79-80



MINE WASTE AND
WATER MANAGEMENT