E Geochemical Assessment of Coal and Mining Waste Materials

Kevin's Corner Coal Project

Geochemical Assessment of Coal and Mining Waste Materials

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EXECUTIVE SUMMARY

ES1 Background

RGS Environmental Pty Ltd (RGS) was commissioned by URS Australia Pty Ltd (URS) to complete an environmental geochemical assessment of coal and mining wastes likely to be generated by the proposed development of an open-cut and underground coal mine in the Galilee Basin – the Kevin's Corner Project (the Project). Hancock Galilee Pty Ltd (HGPL), a wholly owned subsidiary of GVK Coal Developers (Singapore) Pte Limited, is the Project proponent and submitted an Environmental Impact Statement (EIS) for the Project to the Queensland Government for consideration in September 2011. HGPL has received comment and feedback regarding the EIS, and is currently preparing a Supplementary EIS to address any issues raised.

The RGS geochemical assessment follows on from earlier detailed geochemical assessment work completed on the Project undertaken by SRK Consulting (Australasia) Pty Ltd (SRK). The SRK report (SRK, 2011) was incorporated into the EIS for the Project, and the EIS also included an additional interim geochemical assessment from RGS (RGS, 2011a). Where relevant and practical, the data from the SRK assessment and the RGS Preliminary Report is included herein for context and as part of the overall assessment. Hence, this document is a compilation and discussion of all relevant geochemical information available for the Project up to 30 March 2012, including supplementary information obtained since the EIS was submitted in September 2011; effectively an update of all previous geochemical reports for the Project. An infill drilling, sampling and geochemical testing program is well advanced and continuing for the Project and additional results will be made available to HGPL in an RGS update report towards the end of 2012.

ES2 Project Description

The Project is located in Central Queensland, about 56 km north of Alpha and approximately 170 km west north-west of Emerald and is primarily an underground longwall mining operation, supplemented (particularly) in the early years by open cut mining. The Project is expected to generate up to 30 million tonnes per annum (Mtpa) of product coal from the open cut and underground longwall operations, over a scheduled life of mine of 30 years. The majority of run of mine (ROM) coal 695.6 Mt (79%) will be produced from the underground operations with 184.3Mt (21 %) being produced from the open cut operations. Mining operations will predominantly target the "D" seam in the Upper Permian coal measures of the Galilee Basin. About 93% of coal will be extracted from the "D" seam, with the remainder extracted from the "C" (lower) seam.

Open cut mining will be undertaken from two pits: the Central Pit and the smaller Northern Pit, which have a combined area of approximately 21 km^2. Mining of the open cut pits will commence at the seam sub-crop and progress down dip towards the west. The overburden/interburden will be removed by truck and shovel excavators and dragline operations. For the first two years it will be stockpiled in out-of-pit spoil emplacements, after which it will be used to progressively backfill the open cut pits as the mine working areas advance to the west.

The large majority of mining waste generated by the Project will be overburden/interburden from the open cut mining operations, supplemented by a relatively small quantity of coarse rejects and fine rejects (tailings) from the coal handling and preparation plant (CHPP). Approximately 3.15 billion tonnes of overburden/interburden is expected to be generated from the open pits over the life of mine. In addition, coal reject material will also be generated at the CHPP from coal sourced from both open pit and underground operations. Approximately 150 Mt of coarse rejects and 70 Mt of tailings will be generated over the life of mine and will be stored at on-site emplacement facilities.

ES3 Mining Waste Storage

Overburden/interburden will be placed into out-of-pit overburden emplacement areas for the first two years (approximately) of mining, followed by in-pit placement behind the active mining strip. The overburden/interburden emplacement areas are located near the Northern Pit (**Figure 2,** *end of text*), and will accommodate approximately 110 Mt (about 3.4% of the total overburden mined over the 30 year life of mine).

Coarse rejects will be dewatered and report to low wall edge of the boxcut area in the first two years (approximately) of mining, followed by deep in-pit disposal amongst overburden/interburden for the remaining life of the mine. Coarse rejects will be compacted and limed (as required) prior to encapsulation within reduced permeability overburden/interburden materials.

Tailings will be placed into a purpose-built above-ground tailings storage facility (TSF) for the first five to seven years of mining (approximately), followed by in-pit disposal of tailings to the Northern Pit for the remaining life of the mine.

ES4 Scope of Work

RGS was commissioned to provide technical assistance with geochemical aspects of the EIS and SEIS preparation for the Project and has completed:

1. A review of previous geochemical data available on coal and mining waste materials;
2. Procedures for infill drilling programs and a sampling and geochemical testing program;
3. Geological cross-sections to illustrate the geochemical nature overburden/interburden materials with respect to the Project geological units;
4. An assessment of the geochemical characteristics of the coal and various mining waste materials; and
5. An assessment of potential environmental risks associated with these materials, and developed potential management options.

ES5 Methodology

A sampling and geochemical testing program was developed to integrate with the exploration resource definition and infill drilling programs at the Project. The program was developed using historical guidelines (DME, 1995), as well as more recent Australian and international guidelines (DITR, 2007; INAP, 2009) which advocate a risk-based approach to sampling, especially for proposed coal mines where the geology is well understood and existing information is available on similar coal and mining waste materials. At Kevin's Corner, a significant amount of recent geochemical data was available for the adjacent Alpha Coal Project and the geology was already well understood.

A total of 446 samples from 47 drill holes were included in the geochemical assessment program at locations with sufficient spread to provide lateral coverage of the Project site. A key requirement of the sampling strategy was to ensure that drill-core samples were selected to represent the various mining waste materials likely to be associated with the mine development. The samples were subjected to an extensive static and kinetic geochemical testing program. The number of samples taken and drill hole coverage of the Project site is approximately an order of magnitude greater than that utilised for similar coal mining operation approval processes in Queensland (*eg.* the Bowen Basin). Similarly, kinetic test data for proposed and operational coal mines in Queensland (or elsewhere in Australia) have not been commonly been used to date.

ES6 Conclusions

The results of the geochemical assessment indicate that the bulk overburden/interburden material is Non-Acid Forming (NAF) and has a high factor of safety with respect to potential acid generation. Whilst some potentially Acid Forming (PAF) materials do occur, these represent approximately 1% of the materials tested and are located close to the coal seams in the unweathered zone.

There is some uncertainty regarding the potential acid generating nature of coal and tailings, however these materials are relatively benign and unlikely to generate significant acidity. In contrast, coarse reject materials are PAF and have a low acid buffering capacity and if exposed to oxidising conditions, are likely to generate significant acidity over time.

Coal and mining waste materials should not present a significant risk to the environment with respect to total metal concentrations in solids. The risk of potential significant impact on the quality of surface and groundwater from these materials should be low and relatively simple to manage for all but the coarse reject materials, although this finding should be further verified by the ongoing water quality monitoring program for surface water and groundwater at the Project site.

Most overburden/interburden materials at the Project are likely to be sodic and may be prone to dispersion and erosion if not appropriately managed.

ES7 Management Measures

HGPL will adopt the material characterisation and management measures described in **Table ES1** to effectively manage coal and mining wastes generated by the construction, operation and decommissioning of the Project. Coal and mining wastes will be effectively managed by material type to minimise potential operational and longer term residual impacts on the environment.

Development and implementation of a site-specific Mining Waste Management Plan (MWMP) and effective monitoring and reporting will ensure that the management of coal and mining wastes at the Project is consistent with relevant legislation and guidelines and leading mining industry practice.

Table ES1: Summary of Management Measures for Coal and Mining Waste Materials

Material Type	Management Strategy
Coal	• Contact water contained and segregated from clean site water; • Any acidic contact water (trigger value = pH 5) will undergo lime treatment to control pH
Bulk overburden/interburden • NAF; and • Low-salinity and low sodicity	• In-pit and out-of-pit overburden emplacement facilities. No geochemical management required.
Bulk overburden/interburden • NAF; and • High salinity and/or sodicity	• Report to core (internal) of storage facilities. • Avoid placement at the final top surface and final outer slopes and batters of storage facilities.
Uneconomic coal close to economic coal units • Coal ply partings <30 cm thick • Coal seam roof and floor materials	• Report to CHPP for processing and become part of coarse reject and tailing material streams.
Uneconomic coal away from economic coal units • Coal ply partings >30 cm thick: o NAF o PAF-LC	• Remain at floor of pit (if pit floor capacity is available) and cover with reduced permeability NAF overburden/interburden within four weeks. • If pit floor capacity is unavailable, report to alternative on-pit storage location, or to coarse reject storage area.
Uneconomic coal away from economic coal units • Coal ply partings >30 cm thick: o PAF	• Delineation of PAF units through geological control and ongoing geochemical sampling and testing. • Selectively handling, then report to: o Year 1-2: Out-of-pit coarse reject storage areas; o Year 2+: In-pit coarse reject storage areas.
Coarse reject during Years 1 and 2	• Report to low wall edge of the boxcut area. • Compaction and lime amendment (as required) in approximate 1 to 2 m layers using dozing and compaction equipment. • Cover with reduced permeability NAF overburden within 4 weeks. • Encapsulate with a thick layer (>5m) of NAF overburden/interburden within 3 months. • Cap with truck-shovel pre-strip overburden and topsoil materials.
Coarse reject from Year 2+	• Report to in-pit voids (coarse reject storage areas); • Compaction and lime amendment (as required) in approximate 1 to 2 m layers using dozing and compaction equipment. • Cover with reduced permeability NAF overburden within 4 weeks. • Encapsulate with a thick layer (>5m) of NAF overburden/interburden within 3 months. • Cap with truck-shovel pre-strip overburden and topsoil materials.
Tailings	• Placement as piped slurry to the TSF. • If TSF decant pH or TSF seepage collection pH becomes less than pH 5 add sufficient lime to tailings to increase pH to 6.

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GLOSSARY OF TERMS

ABCC	Acid buffering characteristic curve measures the readily available portion of the inherent acid neutralising capacity (ANC) of a sample by slow acid titration to a set end-point and then calculation of the amount of acid consumed and evaluation of the resultant titration curve.
Acid	A measure of hydrogen ion (H^+) concentration; generally expressed as pH.
ABA	Acid Base Account. Evaluation of the balance between acid generation and acid neutralisation processes. Generally determines the maximum potential acidity (MPA) and the inherent acid neutralising capacity (ANC), as defined below. Expressed as kg of sulfuric acid per tonne of sample (kg H_2SO_4/t).
ANC	Acid neutralising capacity, expressed as kg H_2SO_4 per tonne of sample.
ANC/MPA Ratio	Ratio of the acid neutralising capacity and maximum potential acidity of a sample. Used to assess the risk of a sample generating acid conditions.
AMD	Acid and Metalliferous Drainage from mine waste materials characterised by low pH, elevated metal and sulfate concentrations and high salinity.
CHPP	Coal Handling and Preparation Plant.
eCEC	Effective Cation Exchange Capacity. Provides an indication of the potential for a material to be suitable for revegetation/rehabilitation activities.
EC	Electrical Conductivity, expressed as µS/cm.
EIS and SEIS	Environmental Impact Statement and Supplementary Environmental Impact Statement.
ESP	Exchangeable Sodium Percentage. Provides an indication of the potential for a material to be dispersive and subject to erosion.
Kinetic test	Procedure used to measure the geochemical/weathering behaviour of a sample of mine material over time.
KLC	Kinetic Leach Column test. Generally used to confirm the geochemical characteristics of a material exposed to oxidising conditions over time.
MPA	Maximum Potential Acidity calculated by multiplying the total sulfur content of a sample by 30.6 (stoichiometric factor) and expressed as kg H_2SO_4 per tonne of sample.
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	Net Acid Producing Potential expressed as kg H_2SO_4 per tonne. Calculated by subtracting the ANC from the MPA.
PAF	Potentially Acid Forming. Geochemical classification criterion for a sample that has the potential to generate acid conditions.
(Coal) Reject	Mixture of coarse and finely ground materials from which the desired mineral (coal) values have been largely extracted.
Coarse Reject	Coarse matarials form which the mineral (coal) values have been largely extracted.
Scr	Chromium Reducible Sulfur. Laboratory method for determining the sulfide (potentially reactive) component of a material.

Static test	Procedure for characterising the geochemical nature of a sample at one point in time. Static tests may include measurements of mineral and chemical composition of a sample and the Acid Base Account.
(Coal) Tailing	Finely ground materials from which the desired mineral (coal) values have been largely extracted.
TOS	Total oxidisable sulfur content of a sample generally derived from subtracting sulfate sulfur from total sulfur (expressed as %S).
Total Sulfur	Total sulfur content of a sample generally measured using a 'Leco' analyser expressed as % S.
Uncertain	Geochemical classification criterion for a sample where the potential to generate acid conditions remains uncertain and may require further analysis.

1.0 INTRODUCTION

1.1 Background

Hancock Galilee Pty Ltd (HGPL), a wholly owned subsidiary of GVK Coal Developers (Singapore) Pte Limited, is proposing to develop an open-cut and underground coal mine in the Galilee Basin – the Kevin's Corner Project (the Project). An Environmental Impact Statement (EIS) for the Project has been completed by HGPL (the proponent) and preparation was coordinated by URS Australia Pty Ltd (URS). The EIS was submitted to the Queensland Government for consideration in September 2011. HGPL has received comment and feedback regarding the EIS, and is currently preparing a Supplementary EIS to address any issues raised.

As part of the environmental approvals process for the Project, RGS Environmental Pty Ltd (RGS) was commissioned by HGPL/URS to complete an environmental geochemical assessment of coal and mining wastes likely to be generated by the Project. The assessment follows on from earlier detailed geochemical assessment work for the Project undertaken by SRK Consulting (Australasia) Pty Ltd (SRK). The SRK report (SRK, 2011) was incorporated into the EIS for the Project, and the EIS also included interim additional geochemical assessment from RGS (RGS, 2011a). Where relevant and practical, the data from the SRK assessment and the RGS Preliminary Report is included herein for context and as part of the overall assessment. Hence, this document is a compilation and discussion of all relevant geochemical information available for the Project up to 30 March 2012, including supplementary information obtained since the EIS was submitted in September 2011; effectively an update of all previous geochemical reports for the Project. An infill drilling, sampling and geochemical testing program is continuing for the Project and results will be made available to HGPL in an update report towards the end of 2012.

1.1.1. Project Description

The Project is located in Central Queensland, about 56 km north of Alpha and approximately 170 km west north-west of Emerald (**Figure 1,** end of text). The Project is primarily an underground longwall mining operation, supplemented (particularly) in the early years by open cut mining.

The Project is expected to generate up to 30 million tonnes per annum (Mtpa) of product coal from the open cut and underground longwall operations, over a scheduled life of mine of 30 years. The majority of ROM coal 695.6 Mt (79%) will be produced from the underground operations with 184.3Mt (21%) being produced from the open cut operations. Mining operations will predominantly target the "D" seam in the Upper Permian coal measures of the Galilee Basin. About 93% of coal will be extracted from the "D" seam, with the remainder extracted from the "C" (lower) seam.

Open cut mining will be undertaken from two pits: the Central Pit and the smaller Northern Pit, which have a combined area of approximately 21 km^2. Mining of the open cut pits will commence at the seam sub-crop and progress down dip towards the west. The overburden/interburden will be removed by truck and shovel excavators and dragline operations. For the first two years it will be stockpiled in out-of-pit spoil emplacements, after which it will be used to progressively backfill the open cut pits as the mine working areas advance to the west.

Raw coal from the open cut will be processed at two ROM facilities (one ROM facility for each pit) where it will be reduced in size for further processing at the coal handling and preparation plant (CHPP). For the underground longwall operations, there will be three (ROM) coal receival and sizing systems and the crushed coal will be transported directly to the CHPP, located on site.

The key project components relative to this assessment are shown at **Figure 2** (end of text), which also shows the locations of drill-holes used in the geochemical assessment.

1.1.2. Mining Waste Quantities

The nature of underground longwall mining is such that little mining waste is generated, relative to open cut mining. Almost all mining waste from underground longwall mining is derived from coal rejects from the CHPP. Therefore, the large majority of mining waste generated by the Project will be overburden/interburden from the open cut mining operations, supplemented by a relatively small quantity of coarse rejects and fine rejects (tailings) from the CHPP.

Approximately 3.15 billion tonnes of overburden/interburden is expected to be generated from the open pits over the life of mine, *ie*. approximately 110 Mtpa. In addition, coal reject material would also be generated by the Project from the CHPP from coal sourced from both open pit and underground operations. The coarse reject comprises the larger pieces of overburden and poor quality coal that have passed through the CHPP are not suitable for product sale. The tailings material is the fine component of this CHPP waste material. Both coarse rejects and tailings are segregated from the coal product in the CHPP. For every 100 t of ROM coal fed into the CHPP approximately 17 t of coarse reject and 8 t of tailings will be produced; *ie*. about one quarter of all ROM coal will be coal rejects. This amounts to approximately 150 Mt of coarse rejects and 70 Mt of tailings generated over the life of mine. Both coarse reject and tailings will be stored at on-site emplacement facilities.

Overall, the Project coal rejects (coarse rejects and tailings) are expected to comprise approximately 7% of all mining waste produced by the Project. The proportion of coal rejects to overburden/interburden for the Project is comparable to similar coal mines in the nearby Bowen Basin, which typically average about 5% of mining waste.

1.1.3. Mining Waste Storage

Overburden/interburden will be placed into out-of-pit overburden emplacement areas for the first two years (approximately) of mining, followed by in-pit placement behind the active mining strip. The overburden/interburden emplacement areas are located near the Northern Pit (**Figure 2,** *end of text*), and will accommodate approximately 110 Mt (about 3.4% of the total overburden mined over the 30 year life of mine).

Coarse rejects will be dewatered and report to low wall edge of the boxcut area in the first two years (approximately) of mining, followed by deep in-pit disposal amongst overburden/interburden for the remaining life of the mine. Coarse rejects will be compacted and limed (as required) prior to encapsulation within reduced permeability overburden/interburden materials.

Tailings will be placed into a purpose-built above-ground tailings storage facility (TSF) for the first five to seven years of mining (approximately), followed by in-pit disposal of tailings to the Northern Pit for the remaining life of the mine.

1.2 Report Objectives

This Report describes the static and kinetic geochemical assessment work completed by RGS on coal and mining waste materials from the Project. It also includes a review and interpretation of the earlier static geochemical dataset relied upon by SRK Consulting (Australasia) Pty Ltd (SRK) to complete a previous assessment of the geochemical characteristics of coal and mining waste materials at the Project (SRK, 2011). The RGS work program was designed to:

1. Complement the existing knowledge base regarding the geochemical characteristics of coal and mining waste materials at the Project site itself and the adjacent Alpha Coal Project (HPPL, 2010; SRK, 2010a,b, RGS-Terrenus, 2011b); and
2. Address specific commitments proposed in the Project EIS and associated documents submitted to the Queensland Government in September 2011 (HGPL, 2011).

The agreed scope of work was targeted towards:

- Improving the working knowledge of the likely geochemical characteristics of the Project coal and mining waste materials;
- Understanding and managing potential environmental geochemical risks associated with coal and mining waste materials; and
- Developing appropriate management and ongoing sampling strategies for coal and mining waste materials at the Project.

1.3 Scope of Work

RGS was commissioned to complete the scope of work described in Tasks 1 to 3.

Task 1: EIS/SEIS – Technical Assistance

RGS has provided technical assistance to HGPL with geochemical aspects of its EIS and SEIS preparation for the Project. The three main areas where RGS has provided technical assistance are.

- A targeted review of the geochemical data previously used by SRK for classifying overburden/interburden materials;
- Development of a geochemical sampling and testing program and procedures for infill drilling and future drilling programs; and
- Development of geological cross-sections to illustrate the geochemical nature overburden/interburden materials with respect to the Project geological units.

Task 2: Address HGPL EIS Commitments.

The EIS for the Project contains a number of HGPL commitments regarding ongoing sampling and geochemical testing of coal and mining waste materials. One of these commitments relates to infill drilling and static and kinetic geochemical tests, which have both been completed and documented in this report. RGS has worked closely with HGPL geological and contract drilling personnel (Salva Resources Pty Ltd) and coal quality contract personnel (Sedgman Limited) to select representative samples of coal and mining waste materials for inclusion in the geochemical test program. The sampling and geochemical testing methodology used by RGS for this project is described in detail at **Section 3.2**.

Task 3: Reporting

This draft report has been prepared and submitted to HGPL to meet with current SEIS deliverable requirements and provides an environmental geochemical assessment of the sampling and geochemical test data available to 30 March 2012. An infill drilling, sampling and geochemical testing program is continuing for the Project and additional results and assessment will be made available to HGPL in an updated report towards the end of 2012. The data presented in this report have been interpreted and used to assess the geochemical characteristics of the coal and various mining waste materials, assess potential environmental risks associated with these materials, and confirm potential management options.

2.0 PROJECT GEOLOGY

The Kevin's Corner Coal Deposit occurs within the Galilee Basin, a sequence of Late Permian to Early Triassic sedimentary rocks, characterised by undeformed sediments dipping approximately 1 - 2° westward. These are structurally simple and have an absence of intrusions and significant faults. The site geology consists of gently westerly dipping sediments of Permian age, overlain by Tertiary and Quaternary sediments. The Tertiary strata and some of the Permian deposit contain mudstone, claystone and sandstone, which have a clayey matrix. Sections of the sequence are prone to slaking and thus often rapidly degrade on exposure to weathering conditions. Below these sections, the rock grades into more sandy and generally more competent rock types towards the top of the C Seam. The geology of the deposit reflects consistent, correlatable lithologies and is well understood having been characterised through extensive drilling, geological interpretation and geological modelling as part of the Pre-Feasibility Study.

The genesis of the deposit follows a typical coal and sedimentary rock profile. Historical and recent borehole data shows that the thickness of Tertiary and Quaternary sediments varies from 5m to 60m (average 40m) across the Project site. In addition to the Tertiary and Quaternary sediments, a variable thickness of weathered Permian material is also commonly present. There are six coal seams in the Project area designated as A, B, C, D, E, and F. The D seam is the primary target for the Project although open cut mining will also target the C (Upper) coal seam.

A schematic geological cross-section is presented at **Figure 3** (end of text) illustrating the overburden materials and coal seams within the Project area. The site lithology/stratigraphy, including the site-specific coal seam information, is presented at **Figure 4** (end of text).

2.1 Geological Model

The Project geological model developed for the Pre-Feasibility Study has been independently audited, is compliant with the JORC Code (JORC, 2004) and provides a very good understanding of the Project geology/stratigraphy. The geology/stratigraphy at the Project area is consistent with that of the adjacent Alpha Coal Project. The geological models for both projects describe a predictable coal and sedimentary rock genesis with little significant faulting. A detailed description of the Project site geology has previously been presented in Volume 2, Section 4 of the Project EIS (HGPL, 2011).

The mineralogy of approximately 3,000 samples from over 32 drillholes on site was also undertaken by HGPL using visible, near infrared, short wavelength infrared (vis-NIR-SWIR) reflectance measurements using the HyChips system. The minerals observed included kaolinite, montmorillonite (aluminium smectite), nontronite (iron smectite), and white mica (**Figure 5,** end of text).

3.0 METHODOLOGY

3.1 Sampling Program

3.1.1. Sampling Strategy

A geochemical sampling and testing program was developed to integrate with the exploration resource definition and infill drilling programs. The geochemical assessment was based on data from coal and mining waste samples collected for the Project. Samples were collected by Project geologists (Salva Resources) following receipt of sampling specifications from RGS (and SRK). Graphic logs for drill holes used for sampling and geochemical testing are provided at **Attachment A**.

There are currently no specific regulatory requirements regarding the number of samples required to be obtained and tested for overburden, coal, or potential coal reject materials at mines in Queensland. Whilst historical draft guidelines do exist in Queensland (DME, 1995), more recent Australian and international guidelines (DITR, 2007; INAP, 2009) advocate a risk-based approach to sampling, especially for proposed coal mines where the geology is well understood and existing information is available on similar coal and mining waste materials. At Kevin's Corner, a significant amount of recent geochemical data was available for the adjacent Alpha Coal Project and the geology was already well understood.

The number of samples selected for the initial assessment undertaken by SRK and the current assessment undertaken by RGS was based on a number of factors including the geological variability and complexity in rock types; the size of the operation; the potential for significant environmental or health impacts; sample representation requirements; the volume of coal and mining waste materials; the availability and representativeness of existing geological and geochemical data; the level of confidence in predictive ability; and cost.

A key requirement of the sampling strategy was to ensure that drill-core samples were selected to represent the various mining waste materials likely to be associated with the mine development.

3.1.2. Samples Collected

The initial assessment program undertaken by SRK and the current assessment program undertaken by RGS involved obtaining drill core samples from 47 drill holes, at locations with sufficient spread to provide lateral coverage of the project site, as shown previously at **Figure 2**. The drill hole selection process preferentially selected drill holes completed during the exploration and infill drilling campaigns to ensure high sample quality (*ie*. enabling drill-core samples to be used rather than drill-chip samples). The 47 drill holes comprise 26 drill holes from the initial assessment (SRK, 2011) and 21 infill drill holes from the current assessment (RGS), as committed to by HGPL in the EIS. The infill drilling program focussed on drill holes located in the areas likely to be mined in the first five years of the Project.

Geochemical characterisation, to date, has been undertaken for 446 samples. Furthermore, additional drill-core samples are currently being collected as part of the infill drilling program and additional coal, coarse reject, and tailings samples are being collected as part of the coal quality assessment program. The data and assessment for those additional samples will be reported later in 2012, when available.

The 446 samples, where data has been collated for assessment, comprise:

- 404 drill-core overburden/interburden samples representing overburden spoil above the upper coal seam and interburden spoil between coal seams. The 404 samples comprise 267

obtained by SRK in the initial assessment and 137 samples obtained by RGS for the current assessment;

- 8 drill-core potential coal reject samples from immediate coal seam roof and floor, primarily from the target D seam. All samples are from the initial SRK assessment;
- 19 drill-core coal samples - all from the initial SRK assessment;
- 5 coarse reject samples from a pilot-scale wash process;
- 5 tailings samples from a pilot-scale wash process; and
- 5 coal samples (4 raw coal and 1 product coal) from a pilot-scale wash process.

The 15 coal, coarse reject and tailings samples were generated from simulated processing (crushing and washing) of coal from large diameter drill core at the coal quality laboratory (Preplab Testing Services Pty Ltd) in Gladstone. The raw coal samples required no processing other than required for geochemical analysis.

3.2 Geochemical Tests

The geochemical test methods employed by RGS are outlined below.

The geochemical test methods employed by SRK in the initial assessment are not reported herein, as they have been provided in some detail in Volume 2 of the EIS (SRK, 2011). The methods employed by RGS are similar to those employed by SRK and also include kinetic leach column tests. The SRK assessment included some additional methods, which were not required to be undertaken for the infill drilling and sampling program (such as Net Acid Generation (NAG) testing and carbon speciation).

3.2.1. Static Test Methodology

The static test methods employed on all samples collected by RGS included:

- Sample preparation: crushing and pulverising (to pass 75 μm), as appropriate for each test;
- pH and electrical conductivity (EC) on 1:5 w/v distilled water extracts;
- Total sulphur [Leco method]; and
- Acid Neutralising Capacity (ANC) [AMIRA 2002 method].

From the total sulfur and ANC results, maximum potential acidity (MPA) and net acid producing potential (NAPP) was calculated.

Based on the results of the initial screening tests selected samples underwent further analysis. The selected samples were those that were preliminarily identified by their screening test results and lithology as potentially having some risk generating acid. These samples underwent analysis for:

- Sulfide (chromium reducible sulfur – Scr) [Standards Australia AS 4969.7-2008 method];

The MPA and NAPP of these selected samples was calculated using Scr data instead of the total sulfur data. Scr data provides a more accurate representation of the MPA that could theoretically be generated, as acid generation primarily occurs from reactive sulfide, whereas total sulfur includes other generally non-reactive sulfur forms such as sulfate and organic sulfur, which do not generate acid.

Based on the results of the screening and CRS tests, selected samples of the same lithological type, similar spatial (drill-hole and stratigraphic zone) location and similar basic geochemical characteristics were grouped into 25 'composite' samples. These 'composite' samples (containing between 1 and 5 individual samples) were subjected to several or all of the following tests:

- pH and EC (1:5 w:v);
- Total metals and metalloids analyses [HCl and HNO3 acid digest followed by FIMS, ICP-AES or ICP-MS methods];
- Soluble metals and metalloids [FIMS, ICP-AES and ICP-MS (1:5 w:v water extracts)];
- Soluble cations and anions [ICP-AES (1:5 w:v water extracts)]; and
- Acid Buffering Characterisation Curve (ABCC) tests [AMIRA 2002 method].

All analyses, except total metals and metalloids, were undertaken by Australian Laboratory Services (ALS) Environmental, Brisbane. Total metals and metalloids were undertaken by ALS Chemex, Brisbane. A brief explanation of static geochemical test methods for mine waste materials is provided at **Attachment B**.

3.2.2. Kinetic Test Methodology

Static geochemical tests provide an indication of the geochemical characteristics of coal and mining waste materials, but do not provide information on the reaction kinetics, such as the time preceding any acid generation, duration, or the rates at which a material may leach acid, metals and salts when subjected to day-to-day weather conditions (rain and sunshine). To gain an understanding of such time-dependent variables kinetic leaching column (KLC) tests were undertaken by RGS on selected coal and mining waste materials. A brief explanation of the KLC test method used by RGS is provided at **Attachment B**.

In general, approximately 1-2 kg of sample material was loosely packed into a Buchner column, connected above a Buchner funnel. The base of the column (above the funnel) was lined with a glass-fibre filter paper. The entire unit was supported on a shelf to allow a collection bottle to sit under the funnel. A heat lamp was mounted above the column. The column was subjected to routine de-ionised water addition and subsequent heating to simulate the effects of rainfall and sunshine. During leaching events, typically 1 L of distilled water was applied at fortnightly intervals and allowed to free-drain through the solids for collection and analysis.

The KLC program comprised:

- 12 individual and composite overburden/interburden samples – KLC tests complete;
- 6 composite overburden/interburden samples – KLC tests underway. Scheduled completion June 2012;
- 3 coal samples – KLC tests complete.
- 3 coarse reject samples – KLC tests complete;
- 3 tailings samples – KLC tests complete; and

KLC tests on the 12 overburden/interburden samples were completed at ALS leaching laboratory in Brisbane and are based on standard Australian mining industry methodology (AMIRA, 2002). KLC tests on six overburden/interburden samples have commenced at the RGS in-house laboratory and are scheduled for completion in June 2012.

KLC tests on the three coal, three coarse reject, and three tailing samples were completed at the RGS in-house leaching laboratory in Brisbane and were also based on standard Australian mining industry methodology (AMIRA, 2002). The KLC test materials were obtained from Holes 1302L and 1303L (composite sample), Hole 1492L and Hole 1493L and focussed on the D seam, which will comprise 93% of the coal generated at the Project over the life of mine The core samples, all from large diameter drill holes, were collected using controlled roof and floor dilution (approximately 50 mm and 100 mm, respectively) and are expected to simulate the likely dilution and geochemical characteristics of coal and coarse reject and tailing materials at the Project. The coal and coarse reject samples tested had a particle size greater than 250 µm and the tailings samples were less than 250 µm.

The KLC tests commenced at various stages throughout 2011 and 2012. The KLC tests for coal, coarse rejects and tailings operated for 22 weeks. The KLC tests for the 12 completed overburden/ interburden samples operated for 18 weeks. The six overburden samples currently undergoing testing are proposed to operate over an estimated 18 week period. All KLC testing has undergone fortnightly column leaching during the leaching period (*ie*. 10 leaching events). Collected KLC test leachate have been analysed at ALS Environmental (Brisbane) for pH, EC, acidity, alkalinity, major soluble cations and anions, and soluble trace metals/metalloids.

3.3 Sample Classification Criteria

Sample classification of mining waste materials from coal mining projects follows some general rules, however the classification has to take into account the site geology and other site-specific geochemical characteristics that may influence the classification criteria.

The geochemical criteria used by RGS to classify the samples generally reflect Australian guideline criteria (AMIRA, 2002; DITR, 2007) and other Australian coal mining industry criteria (ACARP, 2008). Samples for the Project were classified, with respect to acid generation, using total sulfur (or Scr, where available), NAPP and ANC/MPA ratio data into three broad categories:

- NAF — Non-Acid Forming;
- Uncertain — Those samples with inconclusive results, leading to a degree of uncertainty about their potential to generate acid; and
- PAF — Potentially Acid Forming.

Within these three broad categories, the sample classification was refined as follows:

***NAF – Barren*:**

Total oxidisable sulfur (TOS) ≤0.1 % (as measured using the Scr test)

***NAF*:**

TOS >0.1 % *and* NAPP <0 kg H_2SO_4/t *and* ANC/MPA ratio >2

***PAF – Low Capacity (PAF-LC)*:**

TOS >0.1 % *and* NAPP between +5 and +10 kg H_2SO_4/t *and* ANC/MPA ratio <2

***PAF*:**

TOS >0.1 % and NAPP >+10 kg H_2SO_4/t and ANC/MPA ratio <2

Uncertain:

TOS >0.1% *and* NAPP between -10 and +5 kg H_2SO_4/t *and* ANC/MPA ratio <2

Where the Scr value was measured, the total oxidisable sulfur (TOS) concentration equals the Scr value. This assumes that the difference between total sulfur and Scr is sulfate-sulfur or organic sulfur, which does not contribute to acidity in the same manner as sulfide-sulfur. Where Scr was not measured, the TOS was assumed to be equal to the total sulfur value. Samples with a TOS content of ≤0.1 % are considered to have negligible capacity to generate acidity, even in the absence of significant ANC.

4.0 STATIC GEOCHEMICAL TEST RESULTS

The geochemical data on the coal and mining waste samples from the static geochemical test programs is summarised in this section for specific material types.

4.1 Acid-Base Account Results for Overburden/Interburden

The Acid-Base Account (ABA) is the theoretical balance between the potential for a sample to generate acid and neutralise acid, and in Australia is commonly expressed in units of kilograms of sulfuric acid per tonne of sample (kg H_2SO_4/t).

The results of ABA geochemical testing of 404 overburden/interburden samples from 39 drill-holes at the Project, relied upon in the geochemical assessment program completed for the EIS (SRK, 2011; and RGS, 2011a) are provided at **Table 1** (end of text) and summarised as follows, with reference to **Graphs 4-1 to 4-4**.

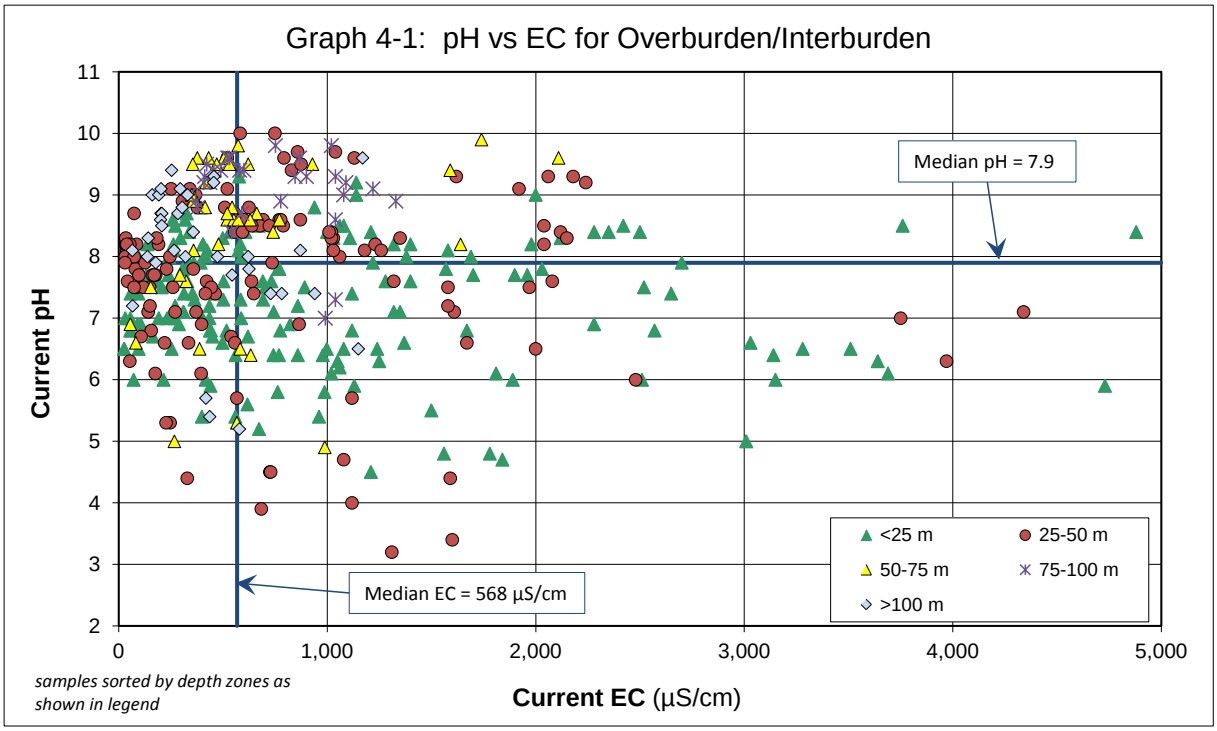
- The current pH of overburden samples is pH-neutral, ranging from pH 3.2 to pH 10 (median pH 7.9) (**Graph 4-1**). The median pH value is regarded as representing materials with 'High' soil pH as defined in Queensland DME technical guidelines (DME, 1995), reproduced in **Table 4-1**. Nine samples have pH values less than or equal to pH 4.5. The sample results in **Graph 4-1** are grouped by sample depth, which indicates no significant difference between the pH of shallower samples compared to deeper samples. There is also no significant distinction in pH between overburden samples with differing lithology or from different drill-holes or specific overburden/ interburden zones.

- The current EC of overburden/interburden samples span a large range from 26 to 4,880 µS/cm. The overall EC is moderate (median EC 568 µS/cm) (**Graph 4-1**), and the median EC value is regarded as representing 'Medium' salinity materials as defined in Queensland DME technical guidelines (DME, 1995), reproduced in **Table 4-1**. The samples have 25th and 75th percentile values of 308 and 1,065 µS/cm, respectively). The sample results in **Graph 4-1** are grouped by sample depth, which indicates that the salinity of shallower samples can be greater than the deeper samples. However, there is no significant distinction in salinity between overburden/ interburden samples with differing lithology, or from different drill-holes or specific overburden/ interburden zones.

Table 4-1 Salinity and pH criteria for assessment of overburden/interburden
(Reproduced from DME, 1995)

	Very Low	Low	Medium	High	Very High
$pH_{1:5}$ (sample:water)	< 4.5	4.5 – 5.5	5.5 – 7.0	7.0 – 9.0	> 9.0
$EC_{1:5}$ (sample:water) µS/cm	< 150	150 - 450	450 - 900	900 – 2,000	> 2,000

The pH and EC tests were completed on pulverised samples (≤ 0.75 µm) with a large surface area in contact with the leaching solution, thereby providing greater potential for dissolution and reaction, and represent an assumed 'worst case' scenario. It should also be noted that the DME guidelines (**Table 4-1**) are for EC and pH values obtained for a 1:5 (sample:water) extract as was used for the RGS samples, whereas the overburden/interburden EC and pH results for the SRK samples were obtained for a more concentrated 1:3 (sample:water) extract. It is also expected that the salinity of leachate from overburden/interburden materials will diminish with time as salts are flushed from the rock matrix and a state of equilibrium develops. At this point the salinity of seepage/runoff should stabilise at a lower asymptotic concentration relative to the weathering/erosion of the materials.



- The total sulfur concentration of the overburden/interburden samples is very low, with a median value of 0.02% (and 75th percentile value of 0.04%[1]). Values spanned a large range from <0.01% to 2.36%. 99% of the samples had total sulfur values below 0.5%.

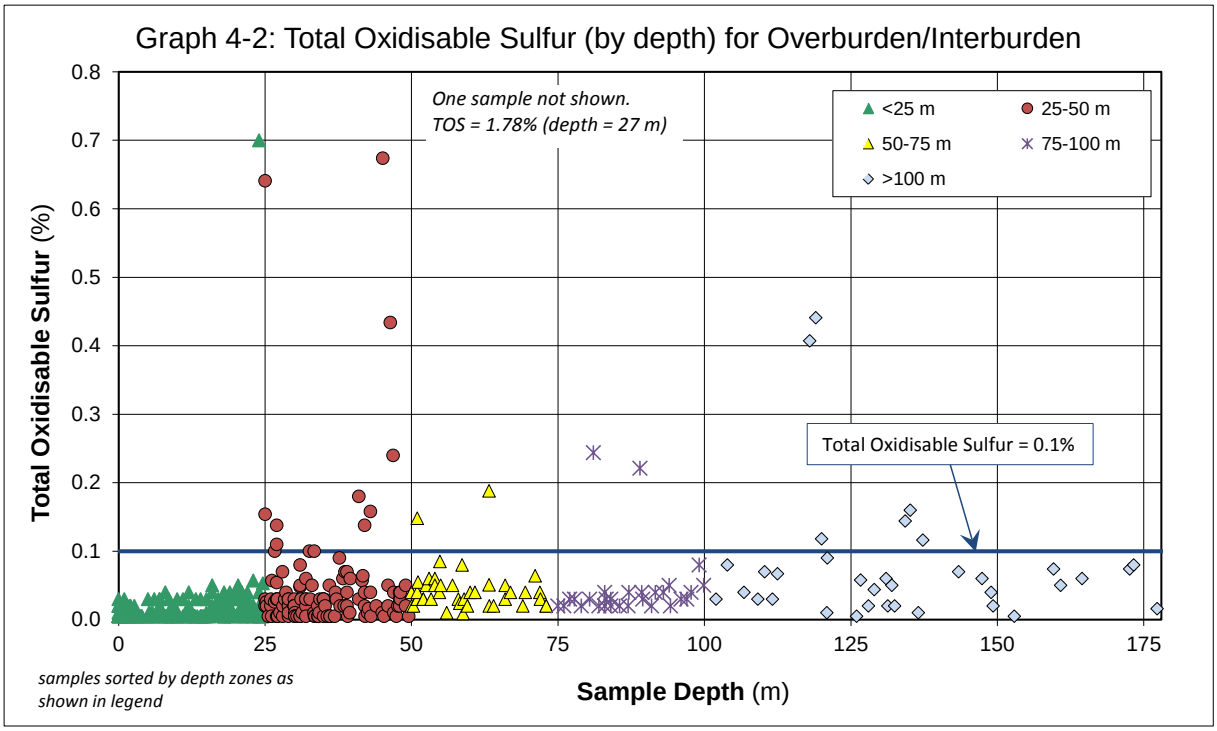
- Sulfide-sulfur (as Scr) was measured in 46 overburden/interburden samples, identified through preliminary screening as having elevated sulfur content. Scr concentrations for these 46 overburden samples ranged from 0.005 to 1.78%, with a median value of 0.07%.

Where measured, the Scr was used as the TOS value instead of the total sulfur value. Of all 404 overburden/interburden samples, 381 samples had TOS concentrations below 0.1% (**Graph 4-2**). The results indicate that the TOS is only elevated in a few sporadic areas close to the coal seams (**Graph 4-2**). There is no significant correlation between the TOS and differing lithology or from different drill-holes or specific overburden/interburden zones.

- The Maximum Potential Acidity (MPA) that could be generated by the overburden/interburden samples was generally very low, with a negligible median value of 0.6 kg H_2SO_4/t. MPA values ranged from 0.2 to 55 kg H_2SO_4/t.

- The Acid Neutralising Capacity (ANC) in overburden/interburden samples spanned a large range from 0.3 to 260 kg H_2SO_4/t, with a relatively low median ANC value of 5.7 kg H_2SO_4/t. About 3.5% of the overburden samples had ANC values above 100 kg H_2SO_4/t. There is no clear distinction in ANC between overburden samples with differing lithology or overburden/interburden zone. Very little siderite was recorded in the lithological logs and the ANC is therefore assumed to be mostly present as calcite or similar calcium-rich carbonate mineral.

[1] The average crustal abundance of sulfur including non-mineralised areas is 0.05% (Wikipedia, 2012).



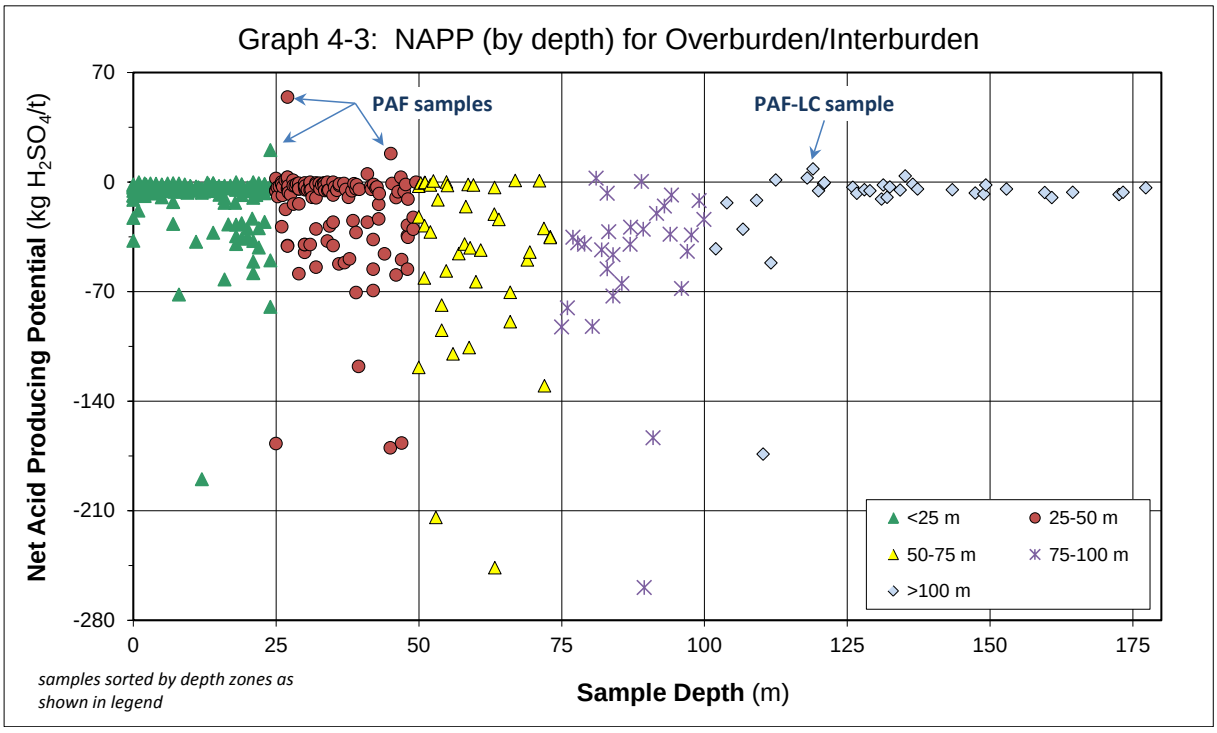
- Based on the very low MPA and relatively low ANC values, the calculated Net Acid Producing Potential (NAPP) values range from -259 to +54 kg H_2SO_4/t, with a median value of -5 kg H_2SO_4/t. All but 22 overburden samples had negative NAPP values (**Graph 4-3**) and of the 22 'positive' samples, only three samples had NAPP values above 10 kg H_2SO_4/t.

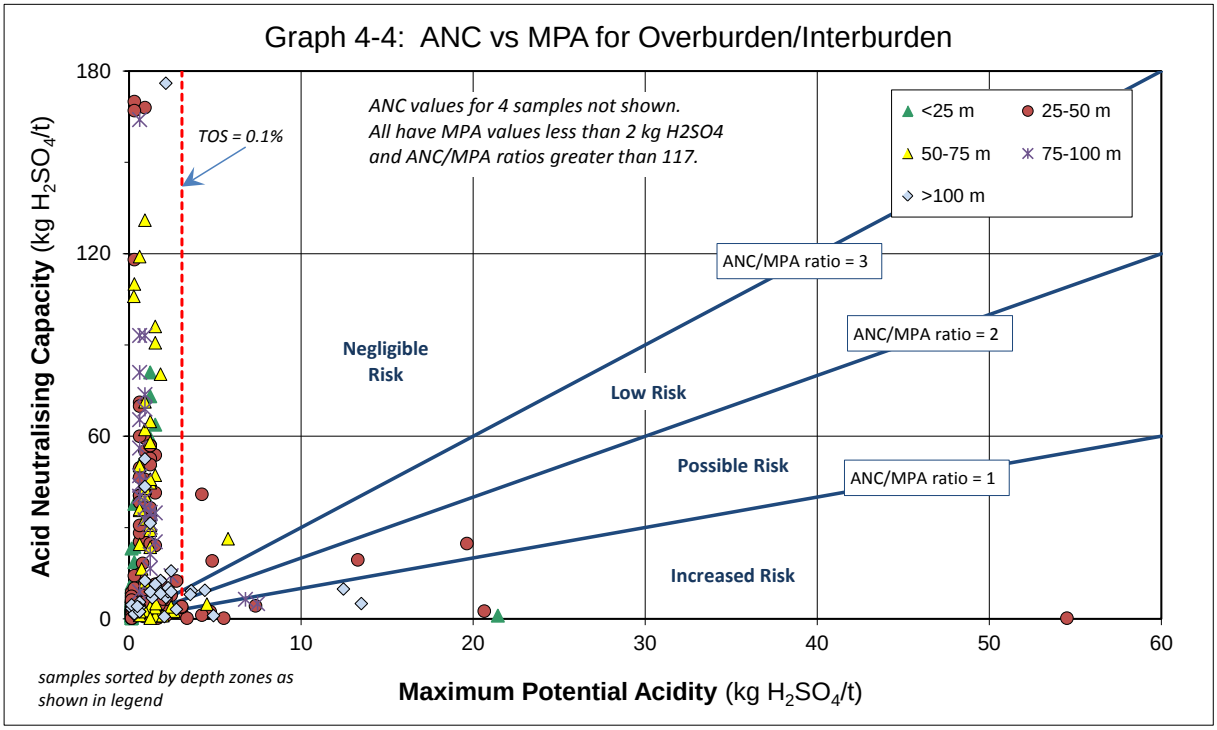
The overburden sample results in **Graph 4-3** are grouped by sample depth, which indicates no significant difference between the NAPP values of shallower samples compared to deeper samples, although the deeper interburden samples (>100m sample depth) typically have low negative NAPP values. Furthermore, there is no significant correlation between NAPP values and lithology, drill-hole location, or specific overburden/interburden zones. The three PAF samples are all located close to coal seams.

Generally those samples with an ANC/MPA mass ratio greater than 2 are considered to have a negligible/low risk of acid generation and a high factor of safety in terms of potential for acid and metalliferous drainage (AMD) (DITR, 2007; INAP, 2009[2]). The results show that 360 of the 404 overburden/interburden samples (approximately 89%) have an ANC/MPA ratio greater than two, and of these 360 samples, most (309 samples) had an ANC/MPA ratio greater than five. The median ANC/MPA ratio for all overburden/interburden samples is 18. Therefore overburden/interburden materials represented by these samples are considered to have a negligible risk of acid generation, excess ANC, and a very high factor of safety (**Graph 4-4**).

Forty-four samples had ANC/MPA ratios of less than or equal to two, however 27 of these had TOS values of less than or equal to 0.1%, therefore were already classified as NAF-barren.

[2] INAP (2009) 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.


Graph 4-3: NAPP (by depth) for Overburden/Interburden
Net Acid Producing Potential (kg H_2SO_4/t)
70
0
-70
-140
-210
-280
PAF samples
PAF-LC sample
<25 m
25-50 m
50-75 m
75-100 m
>100 m
0
25
50
75
100
125
150
175
samples sorted by depth zones as shown in legend
Sample Depth (m)


Graph 4-4: ANC vs MPA for Overburden/Interburden
Acid Neutralising Capacity (kg H_2SO_4/t)
180
120
60
0
TOS = 0.1%
ANC values for 4 samples not shown.
All have MPA values less than 2 kg H2SO4
and ANC/MPA ratios greater than 117.
<25 m
25-50 m
50-75 m
75-100 m
>100 m
ANC/MPA ratio = 3
ANC/MPA ratio = 2
ANC/MPA ratio = 1
Negligible Risk
Low Risk
Possible Risk
Increased Risk
0
10
20
30
40
50
60
samples sorted by depth zones as shown in legend
Maximum Potential Acidity (kg H_2SO_4/t)

The ABA results presented in this section have been used to classify the acid forming nature of the 404 overburden samples as shown in **Table 1** (end of text). The geochemical classification (acid forming nature) of the overburden samples is summarised in **Table 4-2**.

The results in **Table 4-2** show that 96 % of overburden samples tested fall in the NAF-Barren or NAF categories, and overburden materials represented by these samples have very low sulfur values, excess ANC and clearly have little to no capacity to generate acidity. Twelve samples (3%) have an 'Uncertain' classification due to a low TOS content and low NAPP value. The samples identified as 'Uncertain' have a very low capacity to generate acidity, if it were to occur.

Five samples are PAF, with relatively higher TOS concentrations (0.2 to 1.8%) and low ANC. Of these five samples, two are classified as having a 'low capacity' to generate significant acidity, and have been classified as PAF-Low Capacity). The PAF and PAF-Low Capacity samples had no distinguishing or identifying lithological characteristics to indicate their PAF nature (*eg*. visible pyrite), although the PAF samples are located close to the coal seams.

Table 4-2 Geochemical classification criteria for assessment of overburden/interburden

Geochemical Classification	TOS (%)	NAPP (kg H_2SO_4/t)	ANC/MPA Ratio	No. of Overburden/ Interburden Samples (n=404)	% of Overburden/ Interburden Samples
NAF - Barren	≤ 0.1	-	-	381	96
NAF	> 0.1	< 0	≥ 2	6	
Uncertain	> 0.1	Between -10 and 5	< 2	12	3
PAF – Low Capacity	> 0.1	Between 5 and 10	< 2	2	1
PAF	> 0.1	> 10	< 2	3	

The static geochemical assessment finding for overburden/interburden materials is also illustrated in a series of geological cross-sections through the Central open pit area (**Figures 8 to 13**), where the location of the PAF and PAF-Low Capacity samples is shown to be close to the coal seams.

4.2 Acid-Base Account Results for Coal Reject

The results of ABA geochemical testing of 18 coal reject samples are presented in this section. The samples comprise eight coal seam roof and floor drill-core samples and five coarse reject and five tailings samples from a pilot coal preparation process. Unless otherwise stated, the collective name for all 18 samples is 'coal reject samples'. The results presented include additional sample results to those relied upon in the initial geochemical assessment program completed for the EIS (SRK, 2011; and RGS, 2011a).

The sample results are provided at **Table 2** (end of text) and summarised as follows, with reference to **Graphs 4-5 to 4-8**. These graphs also include coal samples, which are discussed in **Section 4.3**.

- The current pH of coal reject samples ranges from pH 3.6 to pH 9.4 (median pH 6.3). The sample results in **Graph 4-5** are grouped by 'type', which clearly indicates that the coarse reject samples have lower pH values compared to the tailings samples, which in turn have lower pH values compared to the roof and floor samples. The coarse reject samples have acidic pH values ranging from pH 3.6 to 4.2 (median 4.1), whereas the tailings samples have pH values ranging from pH 5.6 to 6.9 (median 6.2). The roof and floor samples have the highest pH values, ranging from pH 5.1 to 9.4 (average 8.6).

Whilst the median pH value is regarded as representing materials with 'Medium' soil pH as defined in Queensland DME technical guidelines (DME, 1995), reproduced in **Table 4-3,** it is clear that the median pH values for coarse reject, tailings and roof and floor samples represent materials with 'very low', 'medium' and 'high' soil pH values, respectively.

- The current EC of coal reject samples span a relatively large range from 81 to 1,950 µS/cm. The overall EC is moderate (median EC 845 µS/cm) (**Graph 4-5**).

  The results in **Graph 4-5** are grouped by 'type', which indicates that the coarse reject samples generally have a greater salinity value compared to the tailings samples. The EC of the coarse reject samples ranges from 1,230 to 1,950 µS/cm (median 1,330 µS/cm), whereas the EC of the tailings samples ranges from 81 to 367 µS/cm (median 356 µS/cm). The difference in salinity between the coarse rejects and the tailings samples is probably due to the fact that the coarse rejects have a relatively low pH value compared to the tailings. The drill-core roof and floor samples, which are expected to represent reject materials, cover a range of EC values from 198 to 1,620 µS/cm (median (845 µS/cm) have a large spread of EC values within a similar range to the tailings and coarse rejects.

  Whilst the overall median EC value (845 µS/cm) is regarded as representing materials with 'Medium' soil pH as defined in Queensland DME technical guidelines (DME, 1995), reproduced in **Table 4-3,** it is clear that the median EC values for coarse reject, tailings and roof and floor samples represent materials with 'high', 'low' and 'medium' soil EC values, respectively.

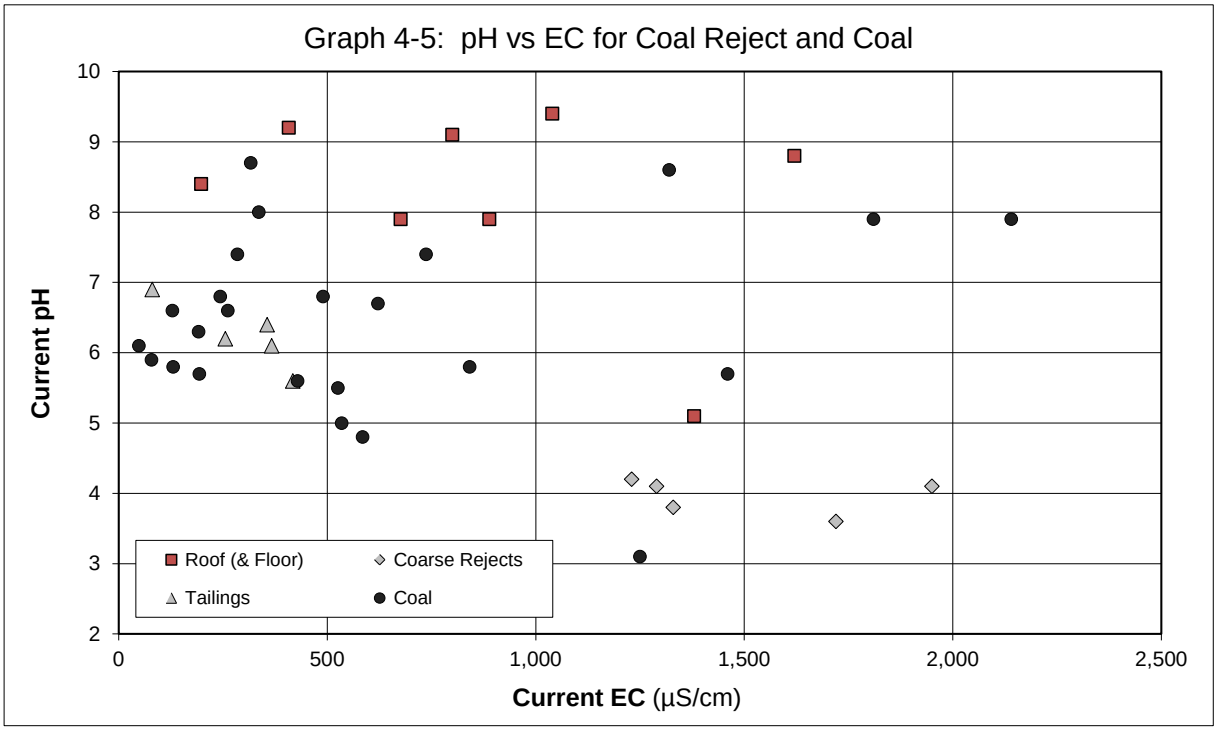
Table 4-3 Salinity and pH criteria for assessment of coal reject
(Reproduced from DME, 1995)

	Very Low	Low	Medium	High	Very High
$pH_{1:5}$ (sample:water)	< 4.5	4.5 – 5.5	5.5 – 7.0	7.0 – 9.0	> 9.0
EC1:5 (sample:water) µS/cm	< 150	150 - 450	450 - 900	900 - 2000	> 2000

The EC and pH tests were completed on pulverised samples (≤ 0.75 µm) with a large surface area in contact with the leaching solution, thereby providing greater potential for dissolution and reaction, and could be seen as representing an assumed 'worst case' scenario. It should also be noted that the DME guidelines (**Table 4-3**) are for EC and pH values obtained for a 1:5 (sample:water) extract as was used for the RGS samples, whereas the potential coal reject EC and pH results for the SRK samples were obtained for a more concentrated 1:3 (sample:water) extract.

- The total sulfur concentration of the coal reject samples ranged from 0.04% to 2.2%, with a median value of 0.51%. The roof and floor samples had the lowest median total sulfur concentration of 0.07%, followed by the tailings samples (median 0.6%), with the coarse reject samples having the highest median total sulfur concentration (1.2%).

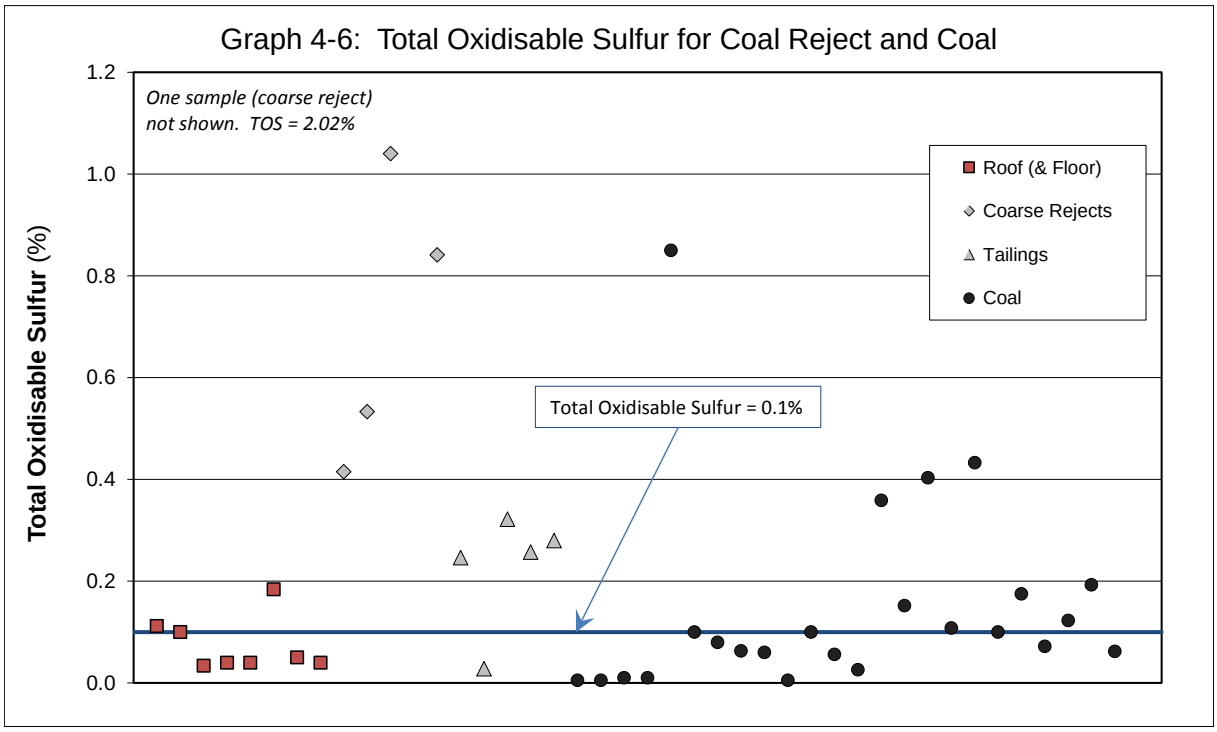
- Sulfide-sulfur (as Scr) was measured in 14 of the 18 coal reject samples, identified through preliminary screening as having elevated total sulfur content. Scr concentrations for these 14 samples ranged from 0.03 to 2.02%, with a median value of 0.27%. The roof and floor samples had median Scr value of 0.11%, the tailings had a median Scr value of 0.26% and the coarse rejects had a median Scr value of 0.84%.

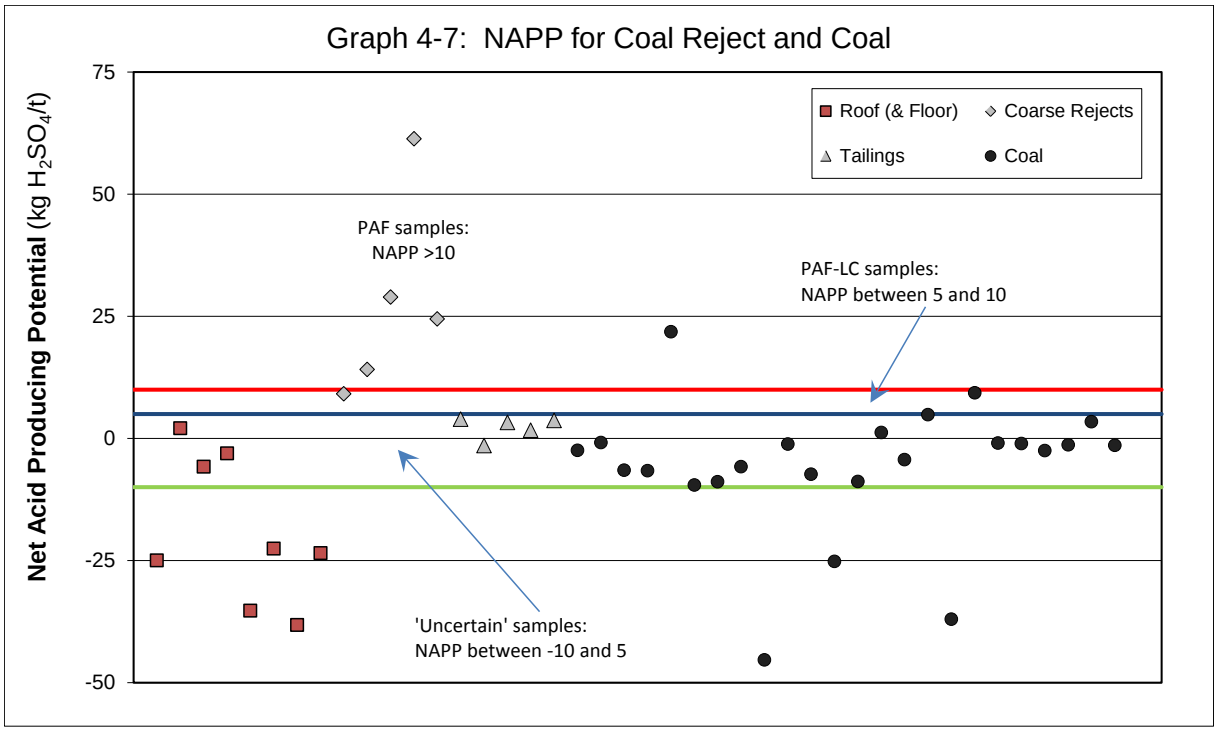


Where measured, the Scr was used as the TOS value instead of the total sulfur value. Of the 18 potential reject samples, 7 samples had TOS concentrations below (or equal to) 0.1% (**Graph 4-6**).

- The MPA that could be generated by the roof and floor and tailings potential coal reject samples was generally low, with a median value of 3.1 kg H_2SO_4/t, and values ranging from 1.0 to 9.9 kg H_2SO_4/t. The MPA that could be generated by the coarse reject samples was much greater, ranging from 13 to 62 H_2SO_4/t (median 26 kg H_2SO_4/t).
- The ANC values in potential coal reject samples also covered a large range from 0.5 to 40 kg H_2SO_4/t, with the roof and floor samples generally containing much greater ANC (median 27 kg H_2SO_4/t) compared to coarse reject (median 2.2 kg H_2SO_4/t) and tailings samples (median 4.9 kg H_2SO_4/t).
- Based on the MPA and ANC values, the calculated NAPP values of potential coal rejects range from -38 to +61 kg H_2SO_4/t, again with a clear distinction between the different potential coal reject 'types' (**Graph 4-7**). All but one of the roof and floor samples had negative NAPP values, all but one of the tailing samples had small positive NAPP values, and all but one of the coarse reject samples had strongly positive NAPP values.

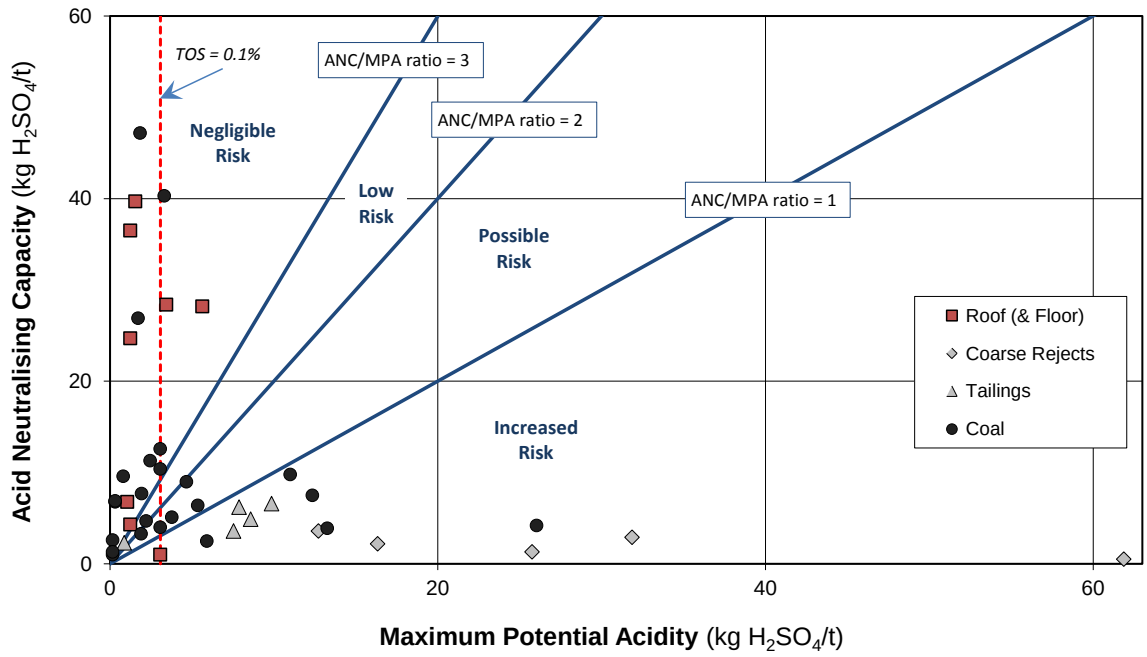
The pH, EC, sulfur, MPA, ANC and NAPP values of roof and floor and tailings samples are generally different to those of coarse reject samples, and much more closely aligned with overburden/ interburden sample geochemistry.


Graph 4-6: Total Oxidisable Sulfur for Coal Reject and Coal
Total Oxidisable Sulfur (%)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
One sample (coarse reject)
not shown. TOS = 2.02%
Roof (& Floor)
Coarse Rejects
Tailings
Coal
Total Oxidisable Sulfur = 0.1%


Graph 4-7: NAPP for Coal Reject and Coal
Net Acid Producing Potential (kg H2SO4/t)
75
50
25
0
-25
-50
Roof (& Floor)
Coarse Rejects
Tailings
Coal
PAF samples:
NAPP >10
PAF-LC samples:
NAPP between 5 and 10
'Uncertain' samples:
NAPP between -10 and 5

Potential coal reject samples with an ANC/MPA mass ratio greater than 2 are generally considered to have a negligible/low risk of acid generation and a high factor of safety in terms of potential for AMD (DITR, 2007; INAP, 2009[2]). The ABA results demonstrate that all but one of the roof and floor samples have an ANC/MPA ratio greater than two. Comparatively, the results show that all except one of the tailings and coarse reject samples have ANC/MPA ratio vales of less than two. Therefore potential coal reject materials represented by these coarse reject and tailings samples are considered to have a reduced factor of safety with respect to potential for acid generation (**Graph 4-8**).

Graph 4-8: ANC vs MPA for Coal Reject and Coal



The ABA results presented in this section have been used to classify the acid forming nature of the potential reject samples as shown in **Table 2** (end of text). The geochemical classification (acid forming nature) of the potential coal reject samples is summarised in **Table 4-4**, and presented by 'type'.

The results in **Table 4-4** show that the potential coal reject samples identified as roof or floor (from drill-core) all fall in the NAF-Barren or NAF categories, and potential reject materials represented by these samples have very low sulfur values, excess ANC and clearly have little to no capacity to generate acidity. Coarse reject samples were all classified as PAF, with one sample classified as being PAF-Low Capacity due to a lower TOS (and therefore, MPA) value compared to the remaining coarse reject samples. The tailings samples were mostly found to have an 'Uncertain' classification, having relatively low TOS and ANC values and a low overall NAPP value of less than 4 kg H2SO4/t. Hence, there is some uncertainty if tailings materials will actually generate acid conditions and these materials are likely to be amenable to cost-effective lime treatment, if required. The uncertainty surrounding the acid generating nature of the tailings samples has been evaluated by KLC tests (refer to **Section 6.0**).

Table 4-4 Geochemical classification criteria for assessment of coal reject

	NAF-Barren	NAF	Uncertain	PAF-Low Capacity	PAF
TOS (%)	≤ 0.1	> 0.1	> 0.1	> 0.1	> 0.1
NAPP (kg H_2SO_4/t)	-	< 0	Between -10 and +5	Between 5 and 10	> 10
ANC/MPA Ratio	-	≥ 2	< 2	< 2	< 2
Roof and Floor Samples (n = 8)					
No. of R&F samples	6	2	0	0	0
% of R&F samples	100		0	0	
Coarse Reject Samples (n = 5)					
No. of CR samples	0	0	0	1	4
% of CR samples	0		0	100	
Tailings Samples (n = 5)					
No. of T Samples	1	0	4	0	0
% of T Samples	20		80	0	

Whilst the coarse reject samples have been classified as PAF and already have a reduced pH value (approximately pH 4), they do not appear to immediately generate significant additional acidity as some time elapsed (a few months) between the sample being taken from large diameter drill core in the field, through initial sample preparation at the coal quality laboratory, to final static geochemical testing. It should also be noted that the pH of the distilled water typically used in geochemical tests typically has a pH of 5.

The acid generating nature of the coarse reject samples has also been evaluated by KLC tests (refer to **Section 6.0**).

4.2.1. Availability of ANC in Tailings Samples

Assigning an ANC/MPA ratio value of 2 to coal and mining waste materials is essentially providing a 'buffer', and assuming that not all ANC will be available to neutralise acidity, thereby ensuring excess ANC is available to allow for inefficient use of, slow reacting, or non-available ANC.

The Acid Buffering Characteristic Curve (ABCC) test (AMIRA, 2002) provides an evaluation of the available ANC in a sample by slow acid titration to a set end-point, evaluation of the resultant titration curve, and calculation of the amount of acid consumed. Essentially the ABCC test results provide an indication of the proportion of the measured ANC that is likely to be available to buffer any acid generated through sulfide oxidation. For the Kevin's Corner geochemical assessment, four tailings samples were selected for analysis using the ABCC test and the results found that between 22% and 64% (average 44 %) of the initial 'static' ANC of these samples is expected to be in a readily-available form (*eg*. calcium carbonate). The remainder of the ANC may be slow to react and is only likely to be available at lower pH values (below pH 4) or, in the case of some silicate minerals, over longer time periods.

The complete ABCC test results for tailings samples are provided at **Attachment C**.

4.3 Acid-Base Account Results for Coal

Substantial existing data is available on the Project coal materials, including total sulfur results for 310 raw and washed coal samples from drill holes across the deposit area (as described in Volume 1, Section 4 of the EIS). The total sulfur content of the target coal seams for the Project is typically around 0.6 %, which is similar to that found at the adjacent Alpha Coal Project.

The results of detailed ABA geochemical testing of 24 coal samples are presented in this section. Whilst 'raw' and 'product' coal materials are clearly not expected to be waste, the environmental characteristics of these materials still need to be assessed, as ROM and product coal stockpile areas could potentially impact water quality if not well managed.

The coal samples assessed comprise four 'raw' coal samples, one 'product' coal sample from a pilot coal preparation process, and 19 coal samples obtained from drill-core. Unless otherwise stated, the collective name for all 24 samples is 'coal' samples. The results presented include additional sample results to those relied upon in the initial geochemical assessment program completed for the EIS (SRK, 2011; and RGS, 2011).

The sample results are provided at **Table 2** (end of text) and summarised as follows, with reference to **Graphs 4-5 to 4-8**, as previously presented in Section 4.2.

- The current pH of coal samples ranged from pH 3.1 to pH 8.7 (median pH 6.5). Most samples lie in the range pH 5 to 9 and only two samples have a pH value less than 5. The coal sample results in **Graph 4-5** are sorted by sample depth, from shallowest (left) to deepest (right), which indicates no significant difference between the pH of shallower samples compared to deeper samples. The median pH value is regarded as representing materials with 'Medium' soil pH as defined in Queensland DME technical guidelines (DME, 1995), reproduced in **Table 4-5**.
- The current EC of coal samples ranged from 49 to 2,140 µS/cm. The overall EC is moderate (median EC 460 µS/cm) (**Graph 4-5**), and the median EC value is regarded as representing 'Medium' salinity materials as defined in Queensland DME technical guidelines (DME, 1995), reproduced in **Table 4-5**. The coal sample results in **Graph 4-5** are sorted by sample depth, from shallowest (left) to deepest (right), which indicates no significant difference between the salinity of shallower samples compared to deeper samples.

Table 4-5 Salinity and pH criteria for assessment of coal
(Reproduced from DME, 1995)

	Very Low	Low	Medium	High	Very High
$EC_{1:5}$ (sample:water) µS/cm	< 150	150 - 450	450 - 900	900 - 2000	> 2000
$pH_{1:5}$ (sample:water)	< 4.5	4.5 – 5.5	5.5 – 7.0	7.0 – 9.0	> 9.0

The EC and pH tests were completed on pulverised samples with a large surface area in contact with the leaching solution, thereby providing greater potential for dissolution and reaction, and could be seen as representing an assumed 'worst case' scenario. The DME guidelines (**Table 4-5**) are for EC and pH values obtained for a 1:5 (sample:water) extract as used by RGS, whereas the SRK coal sample EC and pH results were obtained for a more concentrated 1:3 (sample:water) extract. It is also expected that the salinity of leachate from coal materials will diminish with time as salts are flushed from the material and a state of equilibrium develops. At this point the salinity of seepage/runoff on ROM or Product Coal stockpiles should stabilise at a lower asymptotic concentration relative to the weathering/erosion of the materials.

- The total sulfur concentration of the coal samples ranged from <0.01% to 0.85%, with a median value of 0.25%.
- Sulfide-sulfur (as Scr) was measured in 18 of the 24 coal samples, identified through preliminary screening as having elevated total sulfur content. Scr concentrations for these 18 samples ranged from <0.01% to 0.85 %, with a median value of 0.10%.

Where measured, the CRS was used as the TOS value instead of the total sulfur value. Of the 24 coal samples, 15 samples (about 63%) had TOS concentrations below or equal to 0.1% (**Graph 4-6**).

- The MPA that could be generated by the coal samples was generally low, with a median value of 2.8 kg H_2SO_4/t, and values ranging from 0.2 to 26 kg H_2SO_4/t.
- The ANC values in coal samples also ranged from 1.0 to 47 kg H_2SO_4/t, with a relatively low median ANC value of 6.9 kg H_2SO_4/t.
- Based on the MPA and ANC values, the calculated NAPP values of coal samples range from -45 to +22 kg H_2SO_4/t (**Graph 4-7**). Five of the 24 coal samples had positive NAPP values, with three of these being less than 5 kg H_2SO_4/t.

Those samples with an ANC/MPA mass ratio greater than 2 are considered to have a negligible/low risk of acid generation and a high factor of safety in terms of potential for AMD (DITR, 2007; INAP, 2009[2]). The results show that 14 of the 24 coal samples (58%) have an ANC/MPA ratio greater than 2, and of the 10 samples with ANC/MPA ratios less than two, two of these have had a TOS value of less than or equal to 0.1%, therefore were already classified as NAF-barren.

Therefore, eight of the 24 coal samples have ANC/MPA ratios less than 2 and also have TOS values greater than 0.1% – suggesting that about two-thirds of the coal materials represented by these samples are considered to have a high factor of safety and a low to negligible risk of acid generation (**Graph 4-8**).

The ABA results presented in this section have been used to classify the acid forming nature of the coal samples as shown in **Table 2** (end of text). The geochemical classification (acid forming nature) of the coal samples is summarised in **Table 4-6**.

Table 4-6 Geochemical classification criteria for assessment of coal

Geochemical Classification	TOS (%)	NAPP (kg H_2SO_4/t)	ANC/MPA Ratio	No. of Coal Samples (n=24)	% of Coal Samples
NAF - Barren	≤ 0.1	-	-	15	67
NAF	> 0.1	< 0	≥ 2	1	
Uncertain	> 0.1	Between -10 and 5	< 2	6	25
PAF – Low Capacity	> 0.1	Between 5 and 10	< 2	1	8
PAF	> 0.1	> 10	< 2	1	

The results in **Table 4-6** show that 16 of the coal samples (67%) fall in the NAF-Barren or NAF categories, and coal materials represented by these samples have very low sulfur values, excess ANC and clearly have negligible capacity to generate acidity. Six samples (25%) have an 'Uncertain' classification due to a low TOS content and low NAPP value. The samples identified as 'Uncertain' have a very low capacity to generate significant acidity, if it were to occur.

Two samples are classified as PAF, with relatively higher TOS concentrations (0.4 and 0.85%) and low ANC. One of these samples is classified as having a 'low capacity' to generate significant acidity, and has been classified as PAF-Low Capacity. The PAF and PAF-Low Capacity samples had no distinguishing or identifying lithological characteristics to indicate their PAF nature (*eg*. visible pyrite).

The uncertainty surrounding the potential acid generating nature of some of the coal samples has been evaluated by KLC tests (refer to **Section 6.0**).

4.3.1. Availability of ANC in Coal Samples

Three coal samples were selected for analysis using the ABCC test and the results found that between 30% and 70% (average 43%) of the initial 'static' ANC of these samples is expected to be in a readily-available form (*eg*. calcium carbonate). The remainder of the ANC may be slow to react and is only likely to be available at lower pH values (less than pH 4) or, in the case of some silicate minerals, over long time periods. The complete ABCC test results for coal samples are provided at **Appendix C**.

4.4 Multi-Element Composition

4.4.1. Assessment of Element Enrichment

Multi-element scans are typically carried out to identify any elements (particularly metals and metalloids) present in a material at concentrations that may be of environmental concern with respect to surface water quality and revegetation. The assay result (total concentration) for each element is compared to potentially relevant guideline criteria to determine any issues related to mine operation and final rehabilitation that may warrant further investigation. Elements identified as enriched may not necessarily be a concern for revegetation, drainage water quality, or human/animal health, but their significance should be evaluated. Similarly, because an element is not enriched does not mean it will never be a concern, because under some conditions (*eg*. low pH) the geochemical behaviour of common environmentally important elements such as Al, Cu, Cd and Zn increases significantly.

The geochemical assessment undertaken by SRK (2011) and reported in the EIS (HGPL, 2011) included an assessment of 297 samples for whole rock assay analysis. The objective of these analyses was to determine the abundance of elements in the samples and whether any elements are significantly enriched compared to average crustal abundance. The geochemical results obtained indicated that most elements were not significantly enriched in the sample materials, although silver (Ag), arsenic (As), antimony (Sb) and selenium (Se) were enriched in a very small number of samples compared to average crustal abundance (occurring at between 1% and 3% of the total number of samples for Ag, Sb and Se, with As only enriched in one sample (0.3%). In contrast, enrichment of rhenium (Re) and tellurium (Te) was more widespread. (49% and 73% of the samples were enriched in Re and Te, respectively).

As a commitment in the EIS, and as part of this supplementary geochemical assessment, additional overburden/interburden and potential reject samples underwent multi-element assessment. These samples were the result of an in-fill drilling and sample characterisation program.

There are no guidelines and/or regulatory criteria specifically related to total metal concentrations in mine waste materials, such as overburden/interburden and coal rejects. In the absence of these, and to provide relevant context for this assessment, the total concentration of each element reported in all supplementary mining waste samples (solids) from the infill drilling program is compared to NEPC (1999a) health-based investigation levels (HIL) category 'E' for parks and recreation (open spaces). The applicability of the NEPC (1999a) guideline for 'open spaces' stems from the potential final land use of the mine following closure (*ie*. low-intensity livestock grazing). The total metals concentration

for individual elements in mining waste materials can be relevant for revegetation activities and/or where the potential exists for human contact (*eg*. if the material was to be used off-site).

Sixteen (16) overburden/interburden samples (comprising individual and composite samples) underwent analysis for total metals and metalloids. The composition of the overburden/interburden samples used in the multi-element test program are provided in **Table 3** (end of text), with the results provided in **Table 4** (end of text). Three coarse reject, three tailings and three coal samples also underwent analysis for total metals and metalloids, with the sample composition and results provided in **Tables 3 and 5** (end of text), respectively. The results show that the concentrations of total elements in all 25 samples is below the applied NEPC (1999a) health-based investigation level (HIL'E') for parks and recreation (open spaces).

4.4.2. Cation Exchange Capacity and Sodicity of Solids

The effective cation exchange capacity (eCEC) and exchangeable sodium percentage (ESP) were determined for the sixteen overburden/interburden samples.

The results are presented in **Table 4** (end of text) and indicate that the eCEC of overburden samples ranged from 0.9 to 55 meq/100g (median = 5.8 meq/100g). The ESP results presented in **Table 4** (end of text) indicate that the sodicity of overburden samples ranged from 1 to 64% (median = 27%).

4.4.3. Assessment of Element Solubility

The potential for coal and mining waste materials to leach soluble metals, metalloids and salts at concentrations that may impact the environment or human health has been investigated by RGS using (1:5 solid:water) extract tests. Water extract tests are used to determine the immediate solubility and potential mobility of elements under existing pH and oxygen (redox) conditions. Soluble element concentrations are generally compared with those recommended in relevant surface water and groundwater guideline criteria in order to determine their potential environmental significance.

Again, there are no guidelines and regulatory criteria specifically related to surface runoff and seepage from coal and mining waste materials since guidelines (and regulatory criteria) will depend upon the end-use and receiving environment of the surface runoff and seepage. Therefore, to provide relevant context, the soluble concentration of each element extracted from the mining waste materials has been compared to livestock drinking water guidelines (NEPC, 1999b and ANZECC, 2000). These guidelines allow for higher concentrations of individual parameters (appropriate for an industrial facility in a rural area) and are less prescriptive and more appropriate (in the context of the Project) than guidelines designed for water to be used for direct human consumption or being directly discharged into an aquatic environment (*eg*. stream, river, lake, *etc*.).

The previous geochemical assessment undertaken by SRK (2011) and reported in the EIS included an assessment of the initial solubility of 24 overburden samples, two 'roof' samples and three coal samples. Samples were subjected to a 1:3 (sample:water) leach and the multi-element concentrations of the water extract was assessed relative to water quality guidelines. The SRK assessment reported that the concentrations of the elements in the leachate were typically very low and less than the applied water quality guideline values for overburden/interburden samples. The concentration of Se exceeded the applied water quality guidelines for two of the overburden samples at near neutral pH, which is a relatively common phenomenon at coal mines in Queensland. The other four exceedances were in acidic leachates (ie. pH less than 4.5) from overburden/interburden samples located close to coal seams. The elements that exceeded the applied water quality guidelines were Al (1 sample), Ni (2 samples) and sulfate (1 sample). One coal sample produced acidic leachate and none of the coal or coal seam roof samples produced leachate with metal concentrations that exceeded the applied water quality guideline values.

As a commitment in the EIS, and as part of this supplementary geochemical assessment completed by RGS, additional overburden/interburden, coal and potential coal reject samples underwent soluble multi-element assessment. To evaluate the immediate solubility of multi-elements in solids, water extract (1:5 sample:water) tests were undertaken for soluble metals and metalloids from the sixteen 'new' overburden samples (comprising individual and composite samples), three coarse reject, three tailings and three coal samples (The composition of the samples has already been provided at **Table 3**). The soluble multi-element results for the samples are provided in **Table 6** (end of text) and **Table 7** (end of text) for the overburden/interburden and coal and potential coal rejects, respectively. The 'static' soluble multi-element results show that soluble metal and metalloid concentrations in water extracts from all samples tested are below the applied water quality guidelines and typically below the laboratory limit of reporting.

The main exceptions are the leachate from one overburden/interburden sample classified as PAF, which had a pH of 3.6, and contained soluble Al and Ni at concentrations above the applied livestock drinking water guideline values. Three leachate samples from overburden/interburden, all classified as NAF-Barren, contained soluble Se concentrations of 0.04 mg/L, which is marginally above the applied water quality guideline value (0.02 mg/L). One coarse reject sample (classified as PAF) and two tailings samples (both classified as Uncertain) produced leachate containing soluble Se concentrations marginally above the applied water quality guideline value. Elevated selenium concentrations in water extracts from coal and mining waste materials is relatively common feature in coal mining operations in Queensland.

The dynamic solubility of salts, metals/metalloids and acid from and mining waste materials is presented and discussed with reference to KLC tests in **Section 6.0**.

5.0 GEOCHEMICAL NATURE OF BULK OVERBURDEN/ INTERBURDEN MATERIALS

The static geochemical characteristics of the coal and mining waste materials at the Project have been assessed. The assessment has identified that the bulk overburden/interburden materials are NAF and have a high factor of safety with respect to potential acid generation. A small amount of overburden/interburden materials from the unweathered zone may be PAF, but is located close to the coal seams. In order to visually illustrate this finding a series of cross-sectional illustrations of the proposed Central open-pit area at the Project have been developed.

A plan view of the cross-section locations (layout) is provided at **Figure 7**, with a north-south cross section shown at **Figure 8** and **Figure 9** and a series of four west-east cross-sections shown at **Figures 10 to 13 (**all figures shown at end of text**)**. The data used to generate the cross-sections was obtained from the geological model developed for the Project and geochemical data from the relevant drill-core samples that underwent geochemical testing for the EIS.

The information presented in the cross-sections provides a clear visual demonstration that the bulk overburden/interburden materials are NAF and that the very small amount of PAF materials are limited to parts of the coal seams (including some roof, floor and parting rocks) or in close proximity to uneconomic coal units in the unweathered zone. This is typical of structurally simple coal deposits in Queensland, which have a general absence of intrusions and a general absence of significant faults. Weathered Tertiary sedimentary rock types vary in depth from 5 to 60 m across the site (average 40 m). These sediments are essentially barren of significant sulfur minerals and are classified as NAF. Whilst Permian rock types are present at depth at the proposed open-pit area, most of these materials are also classified as NAF.

These overburden geochemical characteristics make the management of these materials relatively simple in that the bulk of the overburden is overwhelmingly NAF and from an ABA (and neutral drainage metals) perspective will not need to be selectively handled. However, some of the Tertiary clay and Permian siltstone materials are likely to be (initially) saline and some clays are likely to be highly dispersive and placement at the top cover and final batters of out-of-pit and in-pit overburden/interburden emplacement facilities should be avoided. In the nearest comparable operating coal fields of the Bowen Basin, saline and/or sodic materials properties are addressed through appropriate material management and rehabilitation strategies (BMA, 2008).

The geochemical assessment program has also clearly demonstrated that coarse reject materials generated at the Project have a lower factor of safety with respect to potential for acid generation and will need to be well managed. It is recommended that PAF course reject materials are encapsulated in overburden/interburden storage areas, the Tertiary clay material could provide a useful interim (reduced permeability) cover material to seal PAF material within a few weeks of placement and limit sulfide oxidation, until a final cover of more competent NAF overburden and topsoil is placed over these material within a few months. Given that the coarse reject materials have negligible ANC values, it is recommended that lime addition and compaction of these materials be considered prior to encapsulation.

It is possible that some coal seam roof and floor and parting materials located directly adjacent to or within the economic and uneconomic coal seams below the base of weathering at the Project may be PAF. It is recommended that any PAF materials should be identified and handled in a similar manner to PAF coarse reject materials at the Project (*ie*. selective handling, compaction, lime amendment and encapsulation within a thick layer of NAF overburden). Visual identification of these materials through open-pit mining geological control coupled with pre-mining and ongoing geochemical sampling and testing of coal seam and near coal seam materials should be used to delineate the extent of any PAF overburden materials and ensure that these are well managed at the Project.

6.0 KINETIC GEOCHEMICAL TEST PROGRAM

The static geochemical assessment undertaken for the EIS by SRK (2011) and complimentary assessment work undertaken by RGS (2011a) identified the need for a more-detailed understanding of the rates of acid generation and metals release from PAF materials and to quantify the solubility and generation rates of metals and salts from both PAF and NAF materials. The interim geochemical assessment report (RGS, 2011a) included preliminary kinetic leaching column (KLC) data for some coal, coarse reject and tailing samples. Since that report the KLC tests on these materials have been completed along with KLC tests on 12 overburden/interburden materials. Additional KLC tests have recently commenced (6 overburden/interburden samples) as part of the infill drilling geochemical test program and further KLC tests on coal and coal reject materials are planned to commence in the second quarter of 2012. The complete KLC test program, to March 2012 is reported herein. Results of currently incomplete KLC tests will be reported, when available, later in 2012.

The overall KLC test program to date completed by RGS has therefore included 18 overburden samples (comprising individual and composite samples), three coarse reject samples, three tailings samples and three coal samples. The key characteristics of the samples utilised in the 27 KLC tests are summarised in **Table 6-1**.

Table 6-1 Summary of samples used for the KLC test program

KLC ID	Sample Lithology	Sample Type	pH[1]	EC (µS/cm)	Total S (%)	Scr (%)	ANC (kg H2SO4/t)	Sample Classification
Overburden/Interburden								
RKLC-OB001	Sandstone	Overburden	7.1	372	0.04	-	2.4	NAF-Barren
RKLC-OB002	Sandstone	Overburden	8.2	479	0.18	0.148	3.4	Uncertain
			7.9	178	0.16	0.160		
RKLC-OB003	Siltstone	Overburden	9.4	601	0.04	-	21.2	NAF-Barren
RKLC-OB004	Claystone	Overburden	7.1	1,610	0.06	0.026	3.4	NAF-Barren
			4.8	1,780	0.03	-		
RKLC-OB005	Mudstone	Overburden	9.8	752	0.08	-	14.2	NAF-Barren
RKLC-OB006	Sand	Overburden	6.9	2,280	<0.01	-	0.3	NAF-Barren
RKLC-OB007	Sand	Overburden	5.7	1,120	0.26	0.138	2.3	Uncertain and NAF-Barren
			7.7	1,960	<0.01	-		
RKLC-OB008	Carb. Mudstone	Overburden	9.4	1,590	0.35	0.024	16.4	NAF-Barren
RKLC-OB009	Carb. Shale	Overburden	8.8	305	0.08	-	8.9	NAF-Barren
RKLC-OB010	Clay	Overburden	8.2	2,040	0.18	-	2.3	PAF- Low Capacity and NAF-Barren
			7.2	860	<0.01	-		
RKLC-OB011	Clay	Overburden	6.0	3,150	0.7	-	3	PAF and NAF-Barren
			6.9	91	<0.01	-		
RKLC-OB012	Coal	Coal	6.8	490	0.25	0.08	11.3	NAF-Barren
RKLC-OB013	Sandstone	Overburden	7.9	361	<0.01	-	4.2	NAF-Barren
			7.8	772	<0.01	-		
			7.6	733	<0.01	-		
			8.0	1060	0.01	-		
RKLC-OB014	Sandstone	Interburden (C & D)	10.0	750	0.01	-	112.8	NAF-Barren
			9.6	506	0.05	-		
			9.5	471	0.04	-		
			9.6	432	0.04	-		
			9.6	378	0.02	-		
RKLC-OB015	Sandstone & Carb. Sandstone	Overburden	7.4	95	0.02	-	4.6	NAF-Barren
			8.1	39	<0.01	-		
			8.1	81	0.03	-		
			8.2	38	<0.01	-		
			8.0	39	<0.01	-		
RKLC-OB016	Silty/Claystone, Sandstone and Iron-stained Clay	Overburden	7.6	329	<0.01	-	3.6	NAF-Barren
			7.5	207	<0.01	-		
			7.1	271	<0.01	-		
			7.5	444	0.01	-		
RKLC-OB017	Siltstone, Sandy Silstone and Coaly Siltstone	Interburden (C & D) and D Roof	6.5	389	0.11	-	5.1	Uncertain, some NAF-Barren
			5.0	268	0.14	-		
			6.6	83	0.08	-		
			5.7	419	0.26	-		
			5.2	579	0.33	-		
RKLC-OB018	Silty/Sandstone	Interburden(B & C)	9.2	409	0.05	-	107.0	NAF-Barren
			9.4	457	0.03	-		
			9.6	524	0.03	-		
			9.4	581	0.03	-		
Coarse Reject and Tailings								
RKLC-CR002	Coarse Reject	Coal Reject	4.1	1,950	2.20	2.02	6.50	PAF
RKLC-CR005	Coarse reject	Coal Reject	4.2	1,230	1.62	0.84	1.30	PAF
RKLC-CR009	Coarse Reject	Coal Reject	3.6	1720	1.2	1.04	2.90	PAF
RKLC-CR003	Tailings	Coal Reject	6.4	356	0.59	0.26	6.20	Uncertain
RKLC-CR004	Tailings	Coal Reject	6.2	256	1.03	0.28	4.90	Uncertain
RKLC-CR007	Tailings	Coal Reject	5.6	418	0.68	0.32	6.60	Uncertain
Coal								
RKLC-CR006	Raw Coal	Coal	6.6	262	0.67	0.12	5.10	Uncertain
RKLC-CR008	Raw Coal	Coal	5.6	429	0.74	0.19	2.50	Uncertain
RKLC-CR001	Product coal	Coal	4.8	585	0.27	0.06	3.30	Uncertain

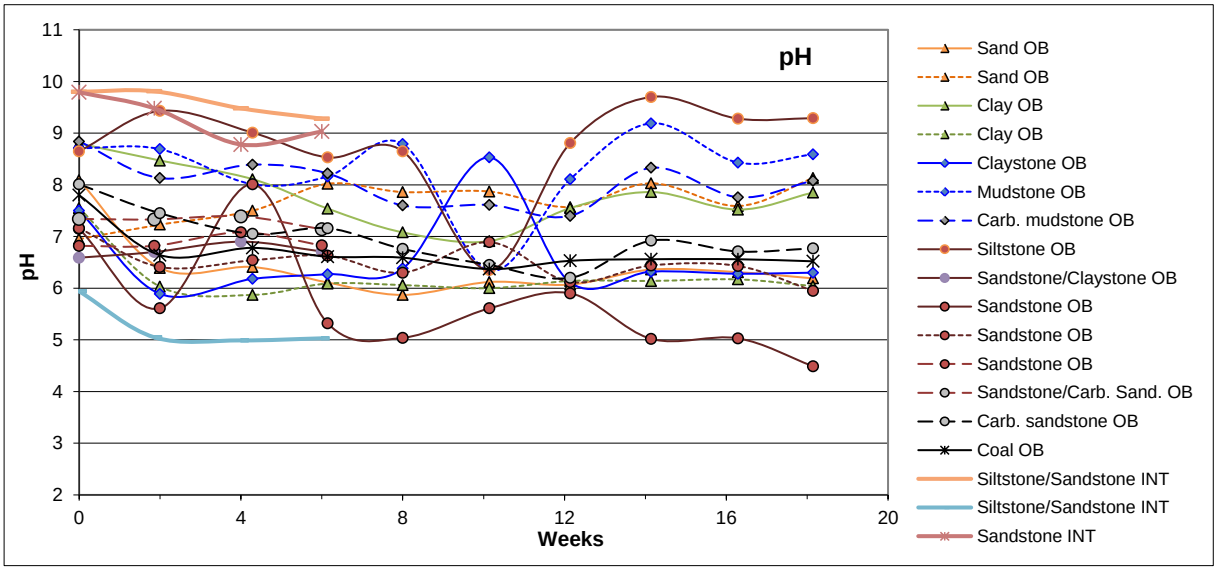
6.1 KLC Tests for Overburden/Interburden

The results for the 18 KLC tests on overburden/interburden are tabulated and presented at **Attachment D**, with the key results and trends summarised in this section. The key findings of the overburden/interburden KLC program are summarised in **Graphs 6-1 to 6-10**. Twelve overburden samples RKLC-OB001 to RKLC-OB012 have completed 18 weeks of leaching (between May and September, 2011). Six overburden samples RKLC-OB013 to RKLC-OB018 have completed six weeks of leaching with approximately 12 weeks remaining. The KLC program for these final six overburden samples is scheduled for completion in mid-2012, and the remaining results will be reported later in 2012.

pH, acidity and alkalinity

Most overburden/interburden samples maintained pH-neutral conditions throughout the leaching period, generally producing leachate between pH 6 and pH 10 (**Graph 6-1**). One sandstone sample has generated a noticeably lower pH that generally fluctuated between pH 5 and 6, but at the end of the leaching period was pH 4.5. De-ionised water used to leach the samples generally has a pH of about pH 5.0 to 6.0, but this is unlikely to alone account for the lower pH of this single Sandstone sample. This sample has a very low total sulfur value (0.04%) and was classified as NAF-Barren, but also had almost no ANC. Therefore, despite the reduced pH value in leachate, this sample is unlikely to generate significant acidity for any significant length of time.

Graph 6-1 pH in leachate from overburden/interburden

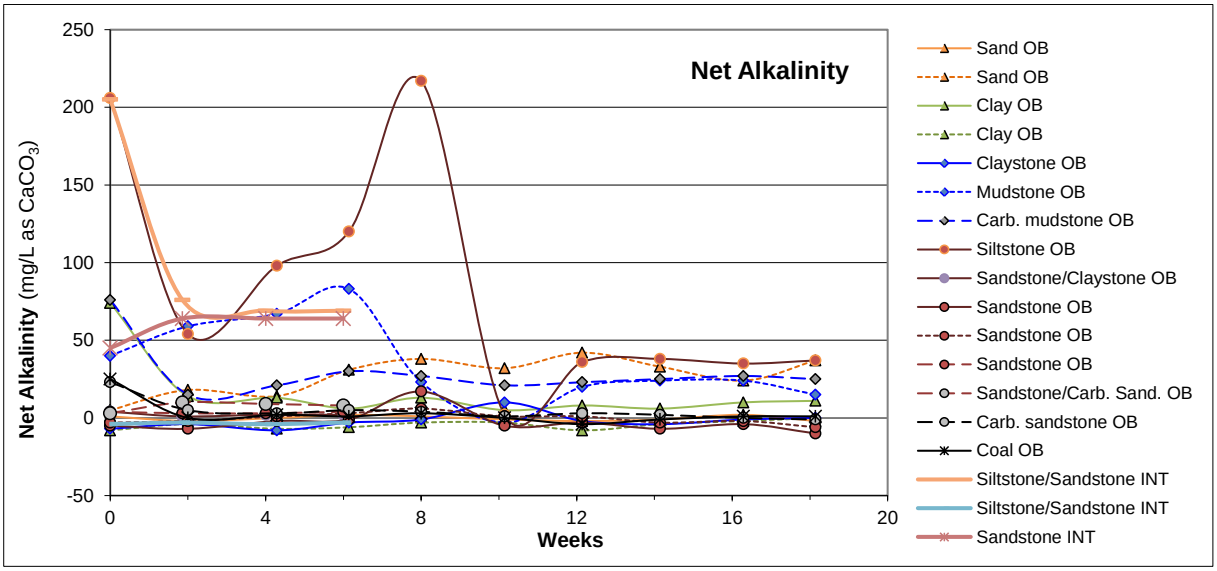


Some overburden samples generated weak acidity, but in most cases this was masked by a greater alkalinity release, which typically produced a positive net alkalinity result (**Graph 6-2**). Net alkalinity is the overall alkalinity calculated by subtracting acidity from total alkalinity. Several samples have a relatively 'neutral' net alkalinity (approximately 0 mg/L), indicating that when some minor acidity is being generated, it is also being neutralised.

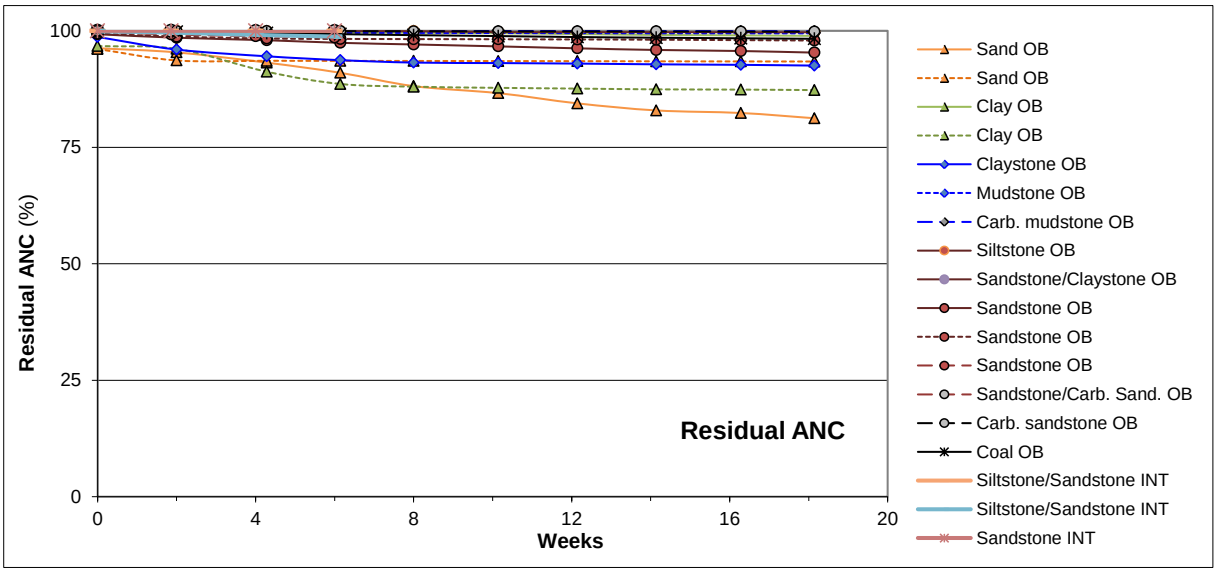
The residual ANC has been calculated in the leachate, based on the calcium and magnesium concentrations assuming all ANC is from calcium and magnesium carbonate, and is readily available.

Whilst being a crude estimation, it shows (in **Graph 6-3**) that most samples have not used a significant proportion of their potentially available ANC, with the residual ANC above 80% for all samples.

Graph 6-2 Net alkalinity in leachate from overburden/interburden



Graph 6-3 Residual ANC in leachate from overburden/interburden

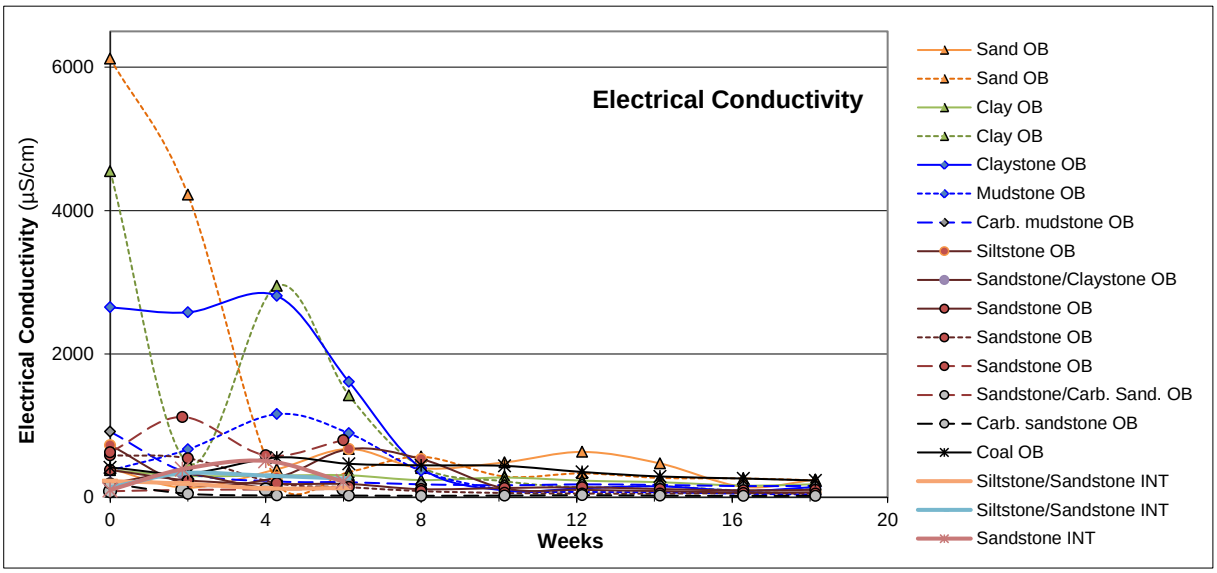


EC, Sulfate and Residual Sulfur

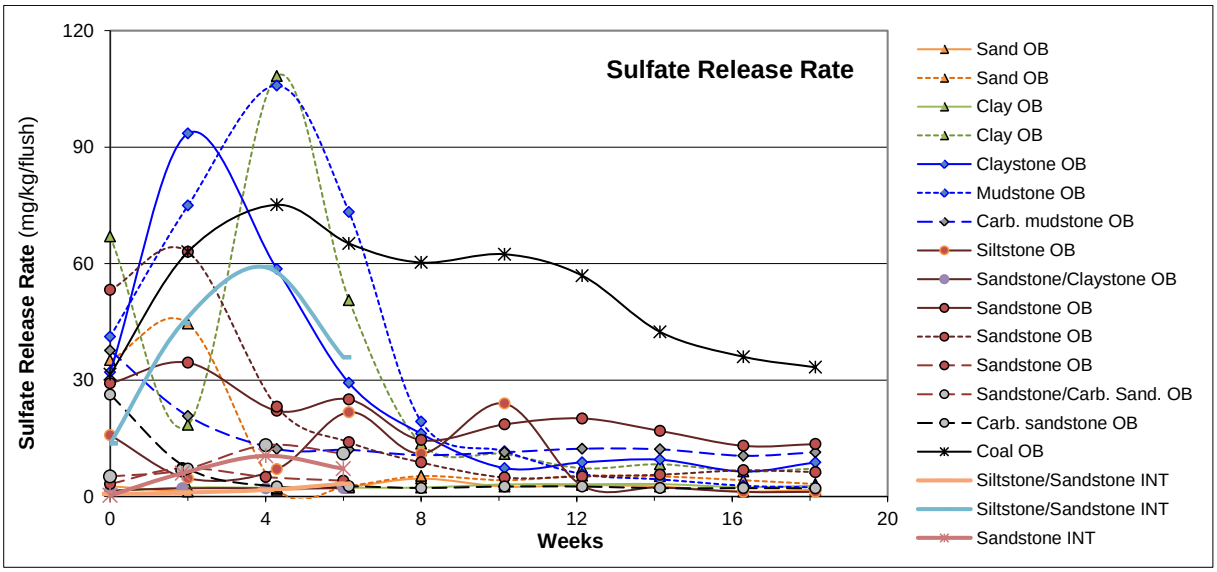
Most samples released greater concentrations of salt in the early stages of leaching, particular between Week 0 (initial flush event) and Week 6 (EC generally less than 1,000 µS/cm, but as high as 6,000 µS/cm from shallow sand and clay samples). After Week 8 the EC release was much lower, generally below 500 µS/cm for all samples, with many samples hovering below 100 µS/cm until the end of the leaching program (**Graph 6-4**).

The rate of sulfate release (mg/kg/flush) followed a similar trend to EC, with greater sulfate release rates (up to 100 mg/kg/flush) during the initial leaching events before generally slowing after about Week 8 to less than 20 mg/kg/flush for most samples (**Graph 6-5**). A coal sample (which is in an uneconomic seam and will report as overburden) has maintained a greater overall sulfate release rate throughout the leaching period. Sulfate release rates below 100 mg/kg/flush are considered to be very low. As evident in **Graph 6-6**, most samples have leached relatively little sulfur (as sulfate), with greater than 80% of the residual sulfur remaining in the samples. The sulfur concentration of these samples was very low at the start, and the relatively stable EC and sulfate release rate trends, for most samples, indicates that most readily formed salt (and sulfate) has been leached and the release of further salt and sulfate is expected to be slow. The sulfate concentration in KLC leachate was generally less than the applied ANZECC (2000) criterion of 1,000 mg/L.

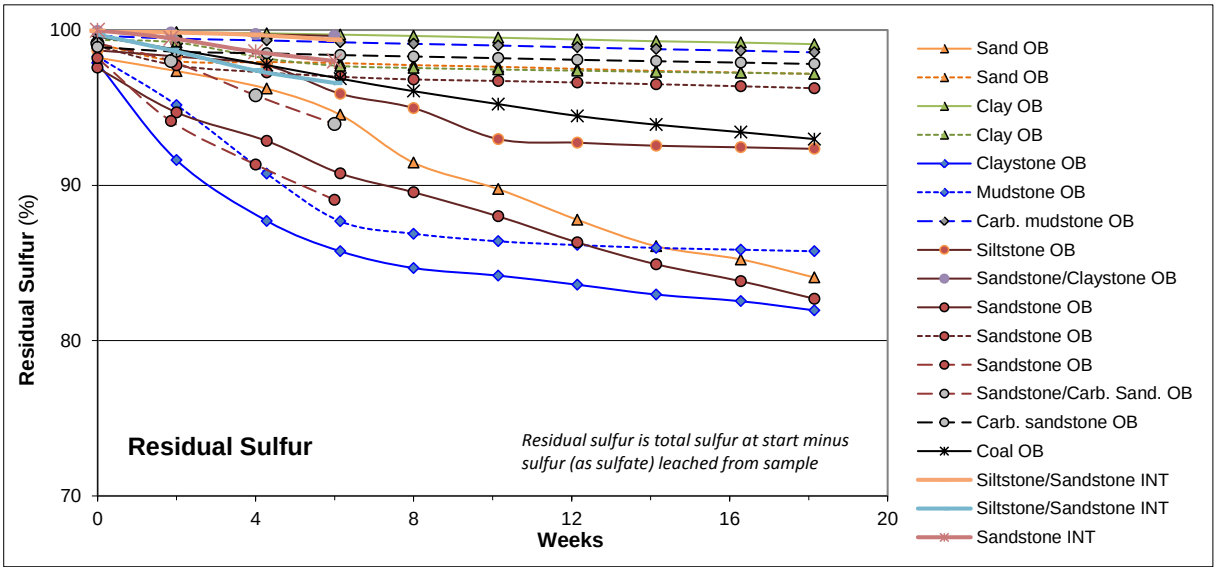
Graph 6-4 EC in leachate from overburden/interburden



Graph 6-5 Sulfate release rate from overburden/interburden



Graph 6-6 Residual sulfur in overburden/interburden

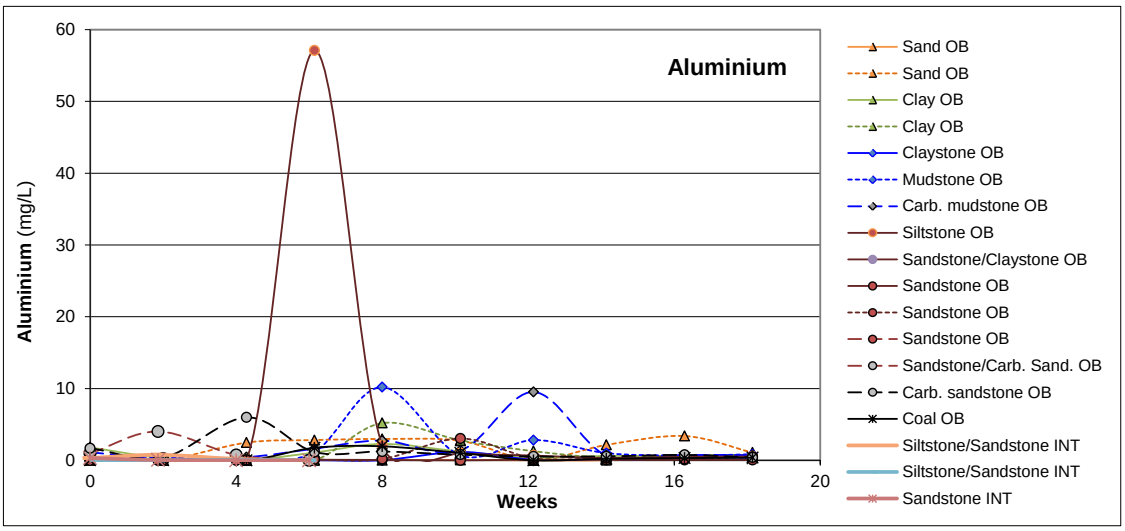


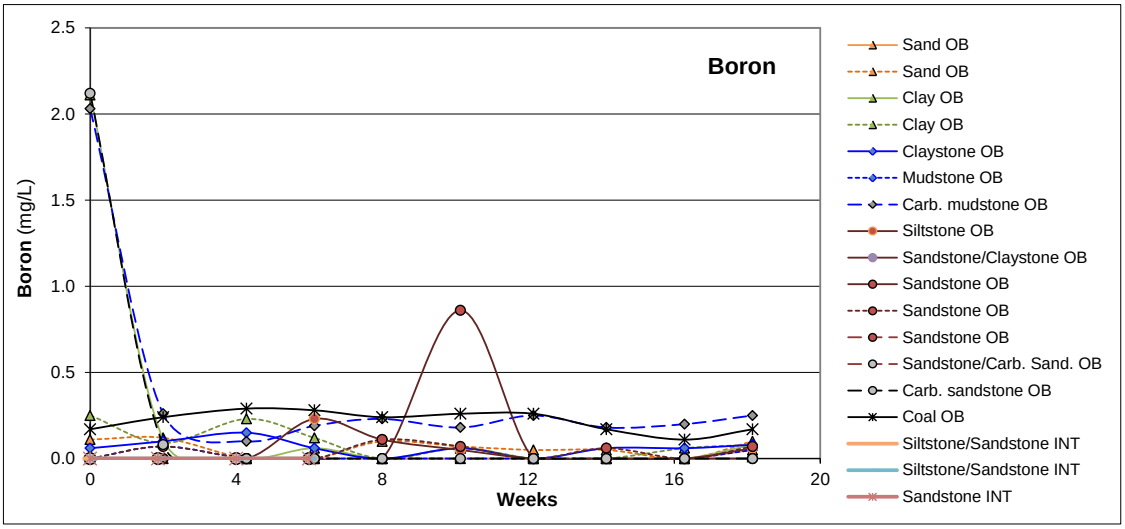
Despite the reduced pH and low net alkalinity in a couple of overburden/interburden samples, the low sulfate release rate and the stable sulfate release rate and EC concentration after a short period of leaching (*ie.* after the readily-available salts have been flushed), the KLC results have confirmed the NAF nature of the overwhelming bulk of the overburden samples.

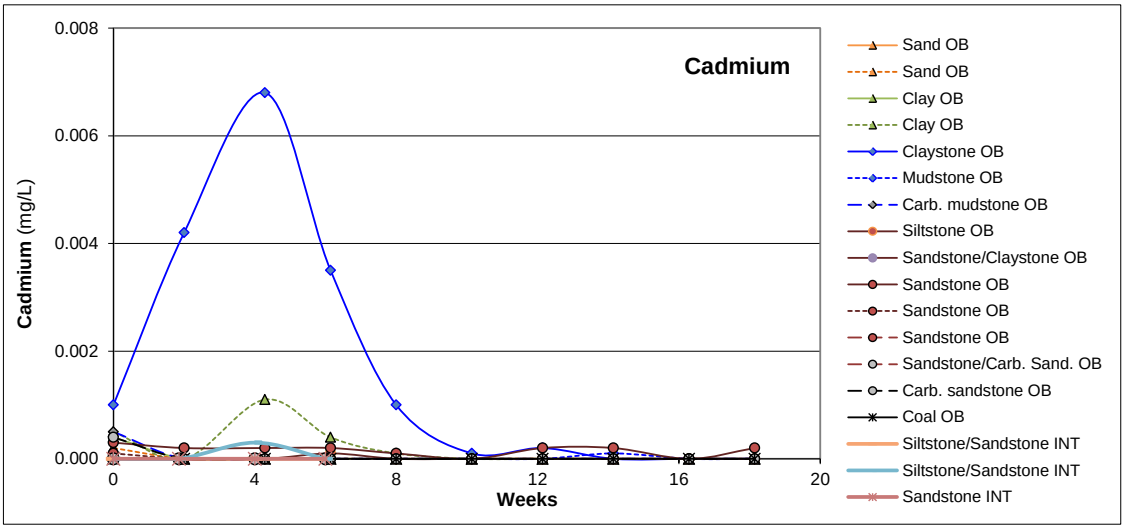
Metals and Metalloids

All overburden samples released metals and metalloids at varying rates, but generally the release rates for most metals and metalloids was very low and decreased significantly in the early stages of the KLC leaching program. The release rate trends for selected metals and metalloids are shown in **Graphs 6-7 to 6-10**. Generally, only those metals and metalloids that were present in leachate above the laboratory limit of reporting (LOR) (and were therefore able to be measured) are shown in **Graphs 6-7 to 6-10**. The metals and metalloids presented in the graphs are aluminium (Al), boron (B), cadmium (Cd), cobalt (Co), copper (Cu), iron (Fe), lead (Pb), manganese (Mn), molybdenum (Mo), nickel (Ni), selenium (Se) and zinc (Zn). The general solubility trends for each of these listed elements are summarised at **Table 6-2** and in the report text following presentation of **Graphs 6-7** to **6-10**.

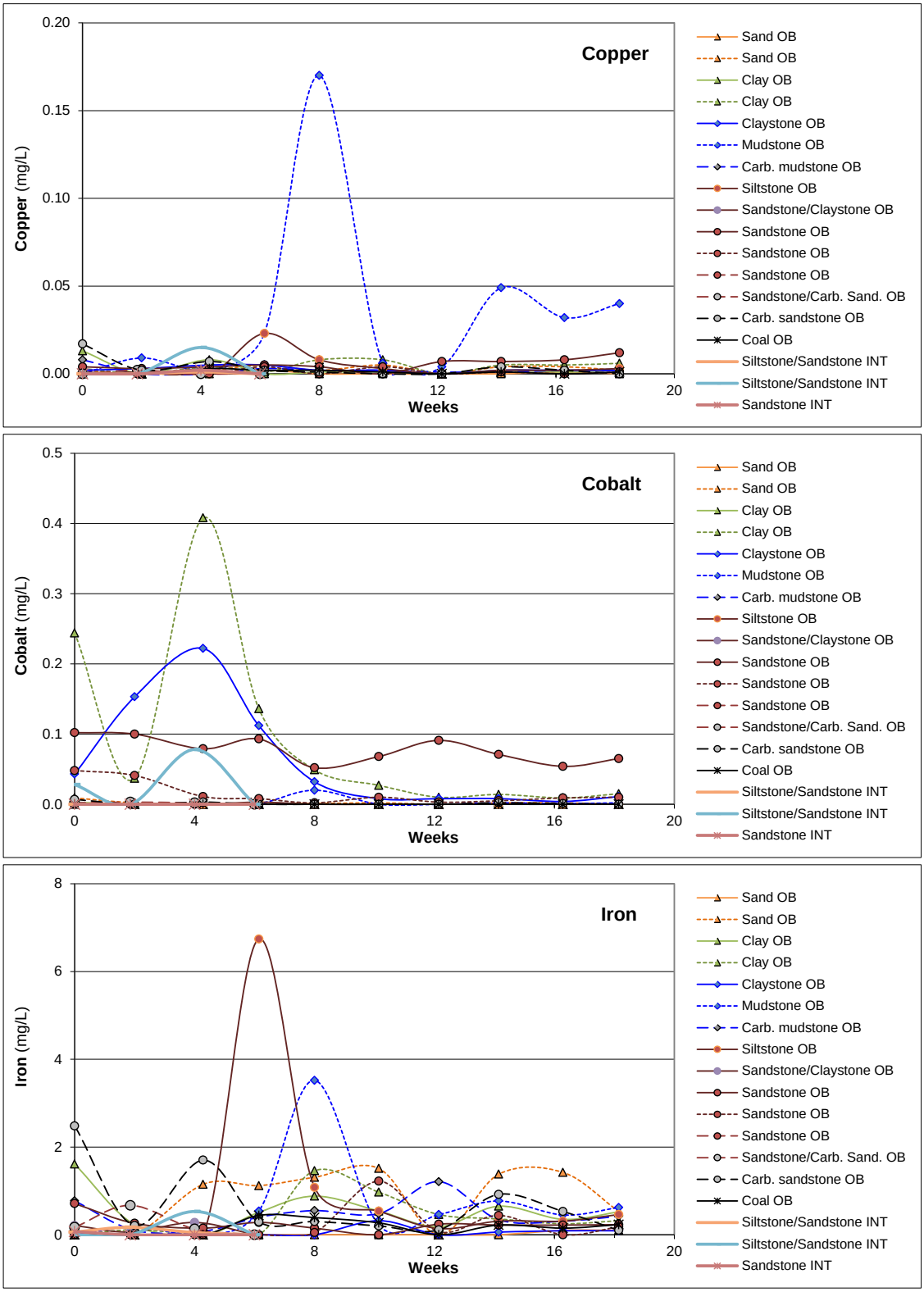
Graph 6-7 Al, B and Cd in leachate from overburden/interburden



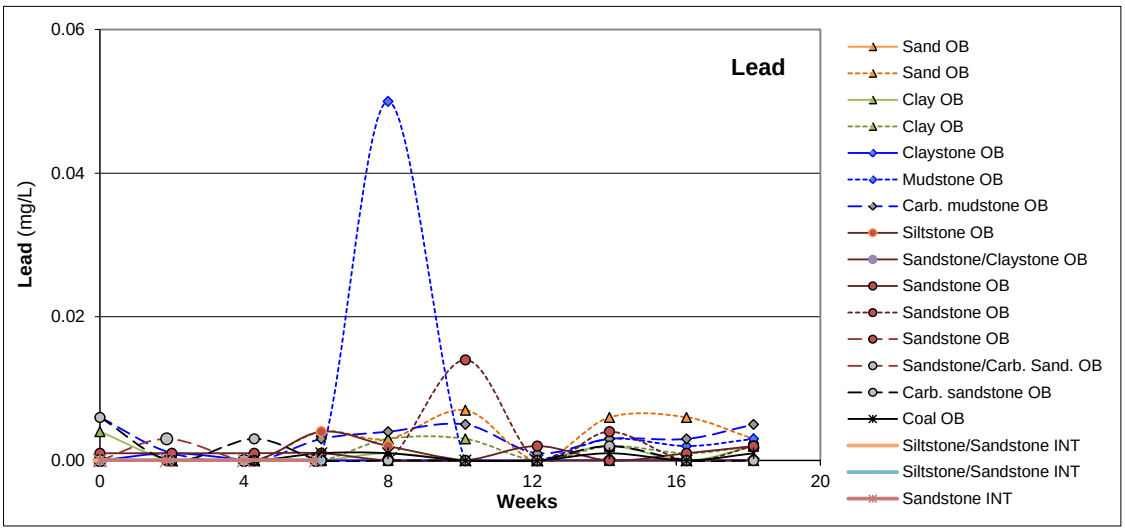


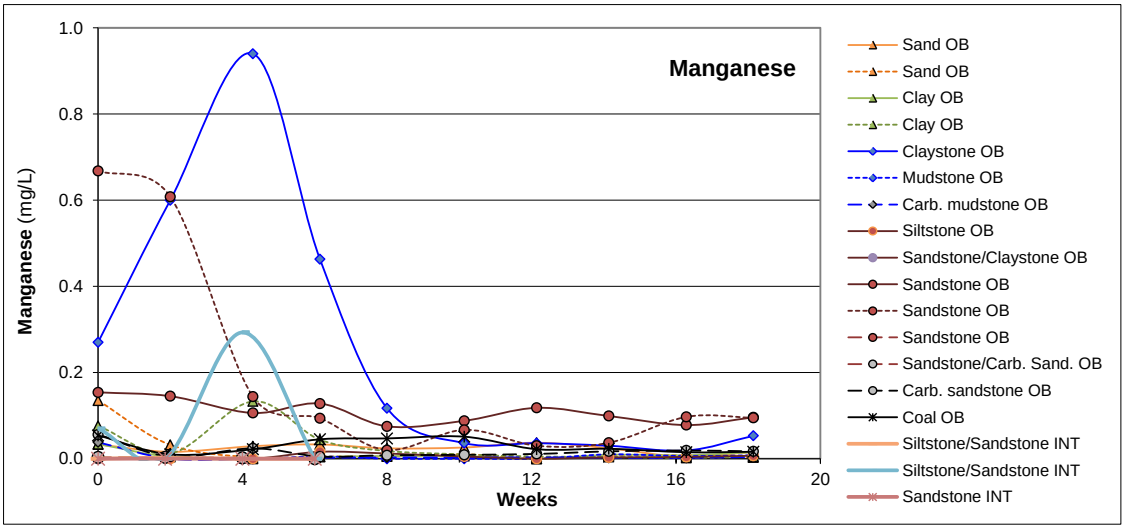


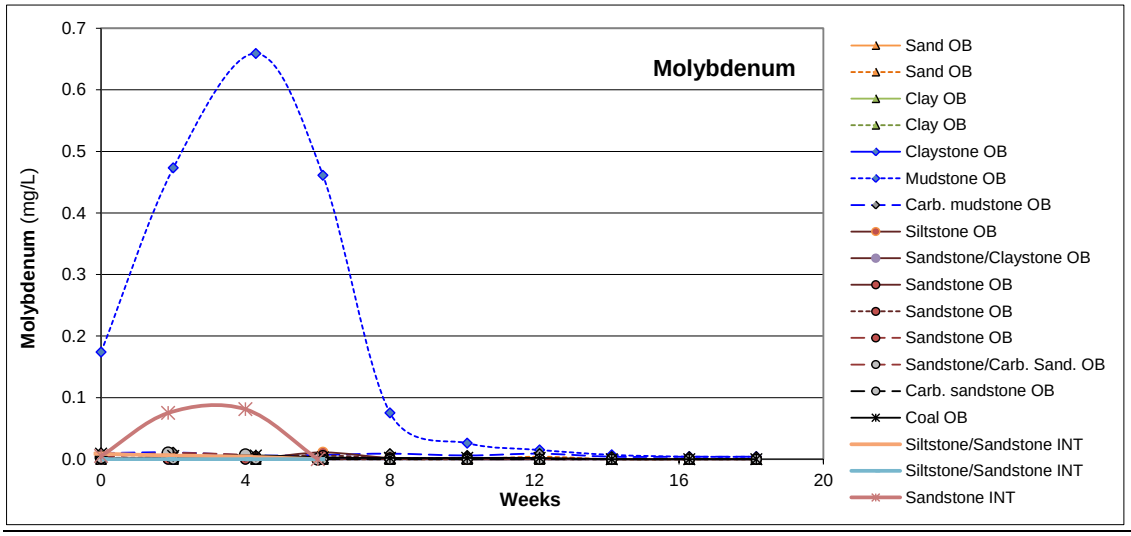
Graph 6-8 Cu, Co and Fe in leachate from overburden/interburden



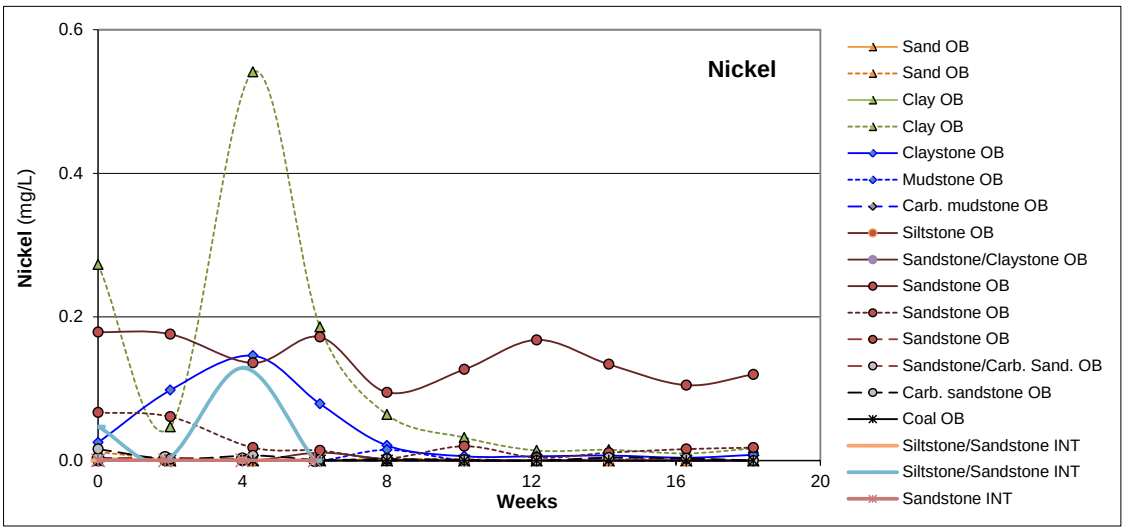
Graph 6-9 Pb, Mn and Mo in leachate from overburden/interburden

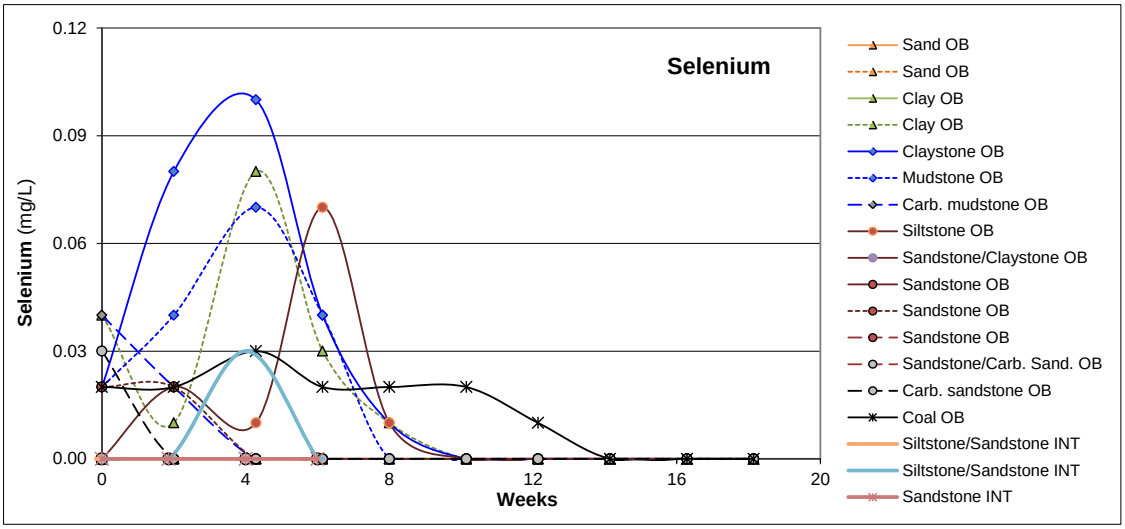


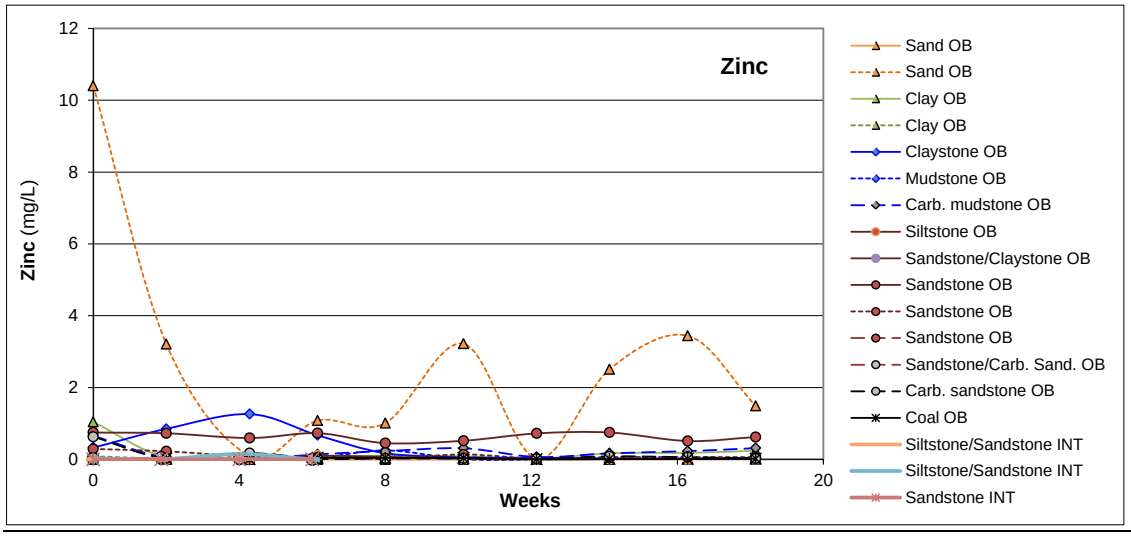




Graph 6-10 Ni, Se and Zn in leachate from overburden/interburden







The solubility trends presented in **Graphs 6-7** to **6-10** illustrate that most metals/metalloids contained in overburden/interburden materials are sparingly soluble at the typical neutral pH of these materials. The solubility results are summarised in **Table 6-2** allow a comparison of KLC leachate data with Australian water quality guideline criteria (ANZECC, 2000; and NEPC, 1999b) for livestock drinking water. The direct comparison of KLC leachate concentration values against these applied water quality guideline criteria is not strictly valid due to scale-up effects, the high sample:water ratio (3:1) used in the KLC tests, and the highly oxidising (cyclical wet and dry) "worst case" conditions. However, it does highlight those elements, which may have the potential to be mobile under fully oxidising conditions.

The results in **Table 6-2** demonstrate that the only elements that are potentially mobile under the KLC test conditions from a few of the overburden/interburden materials are Al, Mo and Se. For Al, five of the 18 overburden/interburden samples generated one leachate event (out of ten) where the concentration of this element was greater than the applied guideline concentration. For Mo, only one of the 18 samples (mudstone) generated an elevated metal concentration in four of the ten leachate events. In the case of Se, eight of the overburden/interburden samples generated a total of 14 leachate events (out of a total of 144) where the Se concentration exceeded the applied guideline criterion. Slightly elevated concentrations of Mo and Se are relatively common in some overburden/interburden materials at coal mining operations in Queensland.

Table 6-2 Summary of Elevated Metal/Metalloid Concentrations in KLC tests for Overburden/Interburden

Metal/Metalloid	ANZECC[1]/NEPC[2] Guideline Concentration	Number of samples that generate elevated metal/ metalloid concentrations in KLC leachate (n=18)	Number of KLC leaching events where metal/ metalloid concentration in leachate is elevated (n = 144)
Aluminium (Al)	**5**	5	5
Boron (B)	**5**	0	0
Cadmium (Cd)	**0.01**	0	0
Cobalt (Co)	**1**	0	0
Copper (Cu)	**0.5**	0	0
Iron (Fe)	**-**	0	0
Lead (Pb)	**0.1**	0	0
Manganese (Mn)	**-**	0	0
Molybdenum (Mo)	**0.15**	1	4
Nickel (Ni)	**1**	0	0
Selenium (Se)	**0.02**	8	14
Zinc (Zn)	**20**	0	0

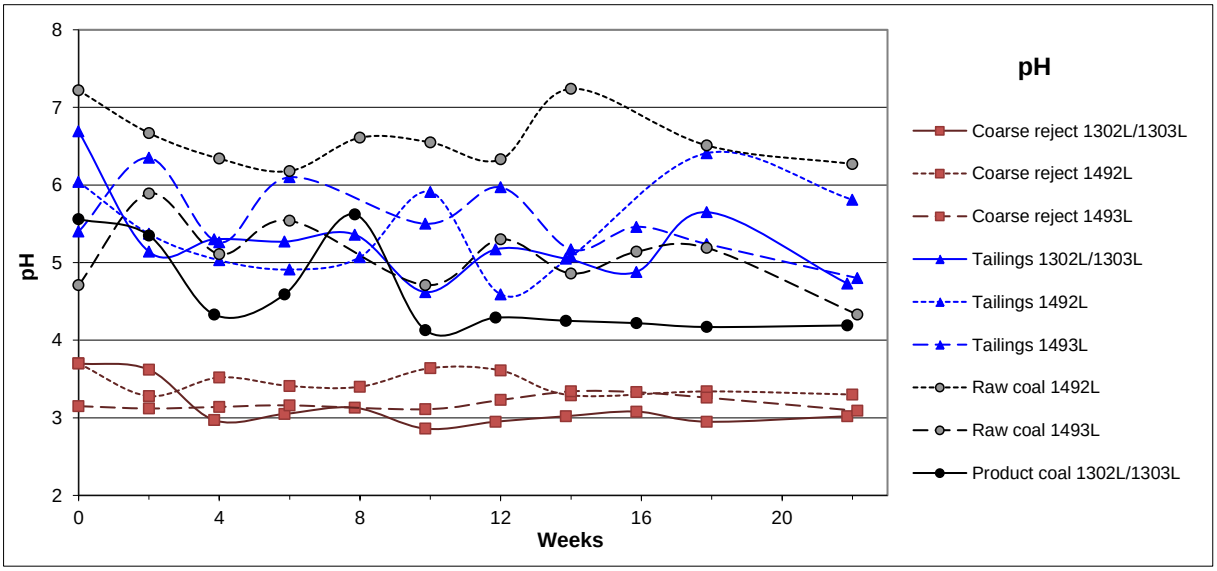
6.2 Kinetic Leaching of Coal and Coal Reject

The results for the three coal, three coarse reject, and three tailings KLC tests are tabulated and presented in **Attachment D**, with the key results and trends summarised in this section. The key findings of the coal, coarse reject and tailing KLC program are summarised with respect to **Graphs 6-11 to 6-20**. All nine samples (RKLC-CR001 to RKLC-CR009) have completed 22 weeks of leaching between December 2010 and May 2011.

pH, acidity and alkalinity

The coal and coal reject materials typically generated reduced pH conditions throughout the leaching period (**Graph 6-11**). The raw coal and tailings samples maintained leachate at pH values generally between pH 4.5 and 7.0. The product coal sample had a lower pH at just above pH 4. The coarse reject samples maintained a leachate pH typically in the range pH 3 to 4. De-ionised water used to leach the samples generally has a low pH (about pH 5.0 to 6.0), but this is unlikely to account for the lower pH of the product coal and coarse reject samples. The coarse reject samples were classified (through static testing) as PAF, and have been confirmed as such. The tailings samples had an 'Uncertain' classification from static testing, and the KLC results confirm that tailings are unlikely to generate significant acidity (the pH can be controlled by lime addition, if necessary). The raw coal samples are also confirmed as NAF, however the product coal sample has generated leachate with reduced pH and appears to be releasing low-levels of acidity.

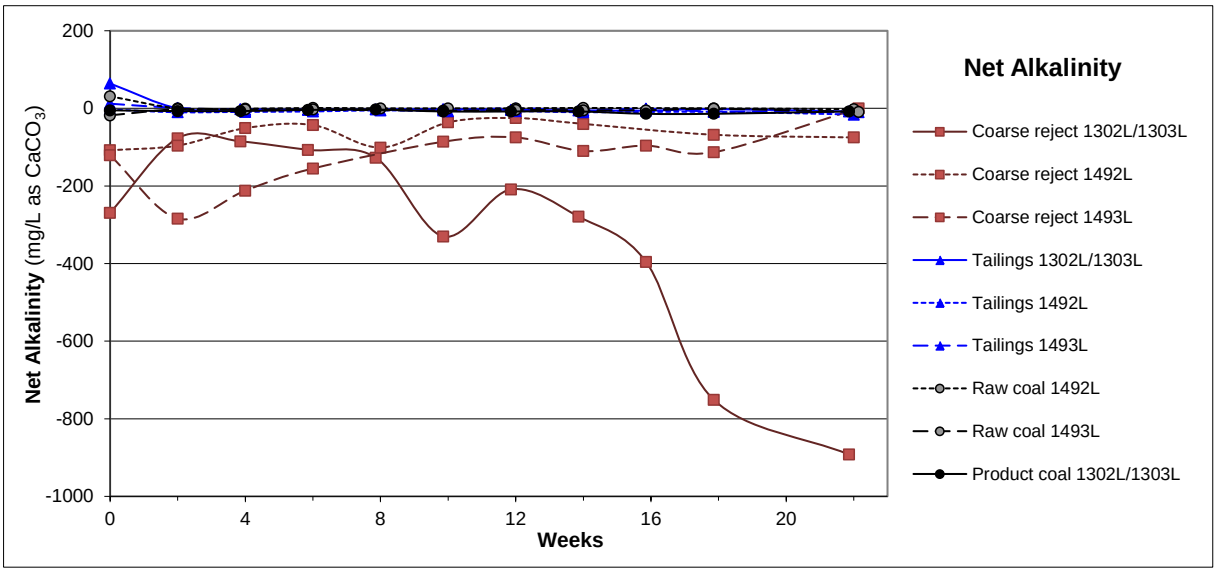
Graph 6-11. pH in leachate from coal and coal reject



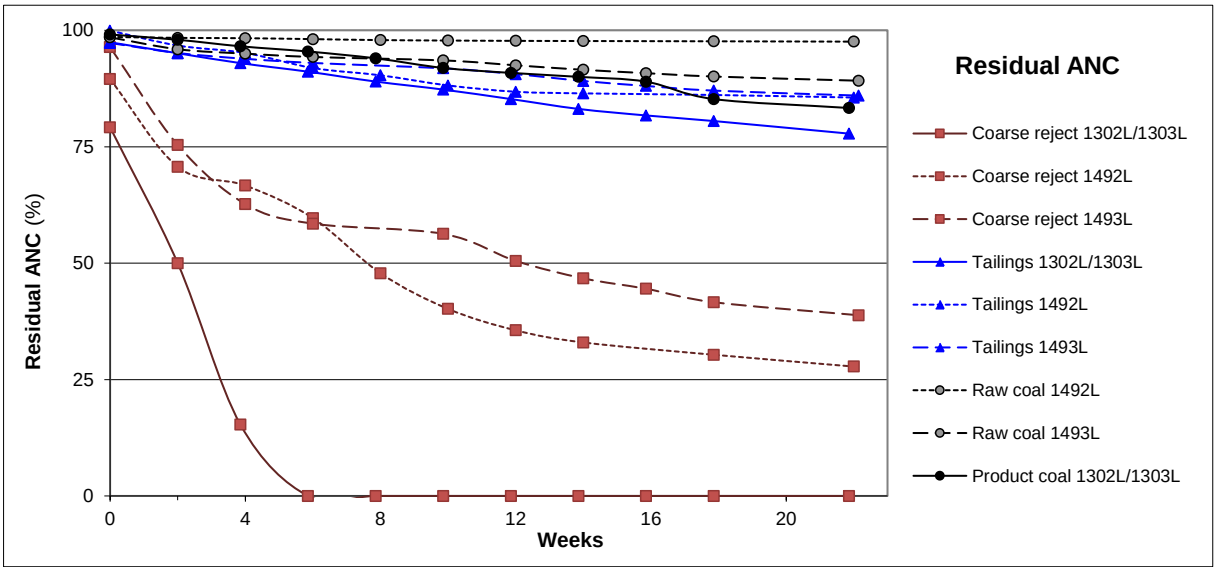
The coal and tailings samples generated weak acidity, which in all cases was masked by an equal alkalinity release. This produced a neutral net alkalinity result (**Graph 6-12**). The low pH evident from the coarse reject samples indicates that acidity is being generated, and not buffered by alkalinity, which results in a strongly negative net alkalinity result (**Graph 6-12**).

The residual ANC has been calculated based on the Ca and Mg concentrations. **Graph 6-13**) shows that the coarse reject samples have used a significant proportion of their potentially available ANC, with the residual ANC below 50% for all coarse reject samples – and already at 0% (full depletion) after six weeks of leaching for one coarse reject sample. Comparatively, the coal and tailing samples have not consumed a significant proportion of their potentially available ANC (> 78% residual ANC).

Graph 6-12. Net alkalinity in leachate from coal and coal reject



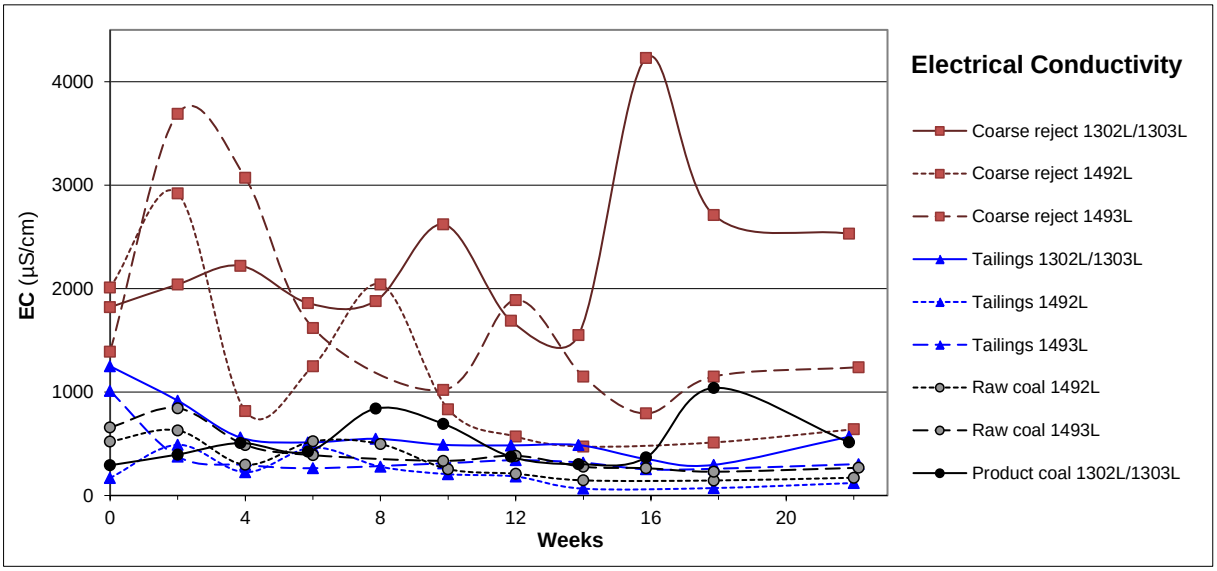
Graph 6-13. Residual ANC in coal and coal reject



EC, Sulfate and Residual Sulfur

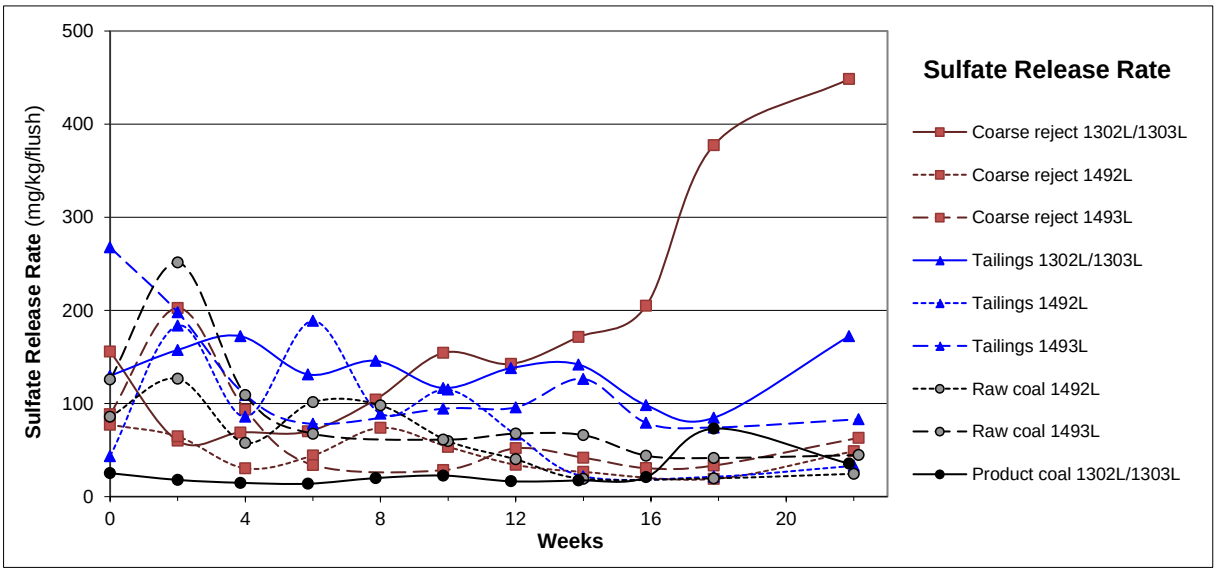
The salt release rate for coal and tailing samples was relatively 'stable' throughout the leaching program, at less than 1,000 µS/cm. Despite some fluctuation in EC values, there was a slight decrease over time in EC in leachate from the raw coal and tailing samples, with final EC values of generally less than 300 µS/cm. The EC in leachate from the product coal sample fluctuated between 200 and 1,000 µS/cm throughout the program (**Graph 6-14**). The coarse reject samples produced leachate with highly fluctuating salinity, ranging from less than 1,000 µS/cm to over 4,000 µS/cm (**Graph 6-14**).

Graph 6-14. EC in leachate from coal and coal reject



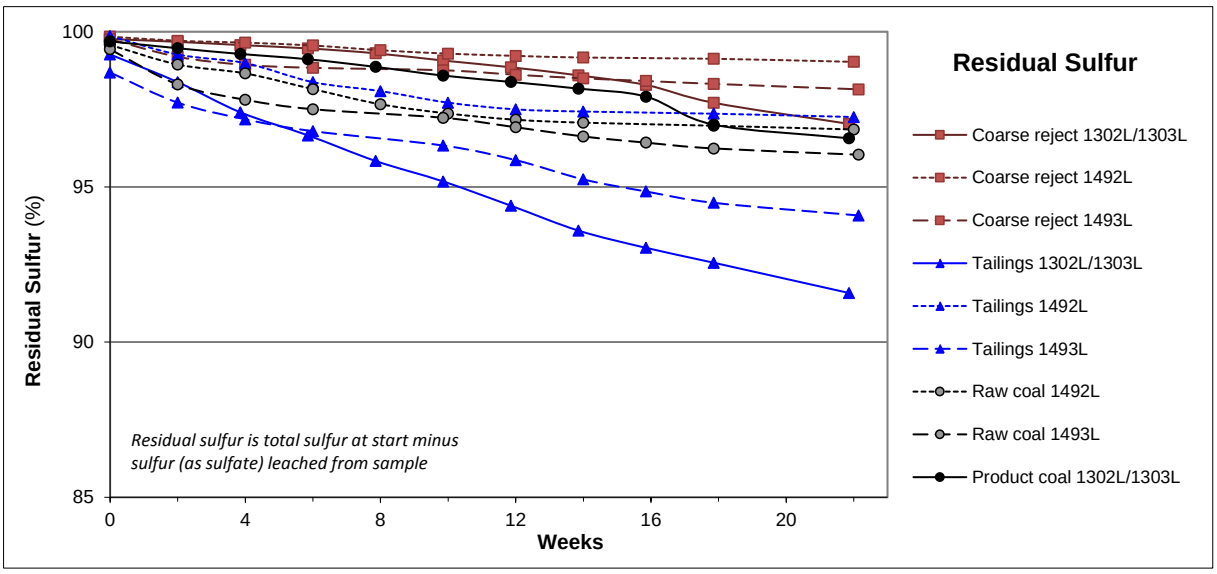
The rate of sulfate release (mg/kg/flush), for almost all coal and coal reject samples, generally decreased through the test period (**Graph 6-15**) from about 200 mg/kg/flush to less than 100 mg/kg/flush. The sulfate release rate for one coarse reject sample increased during the leaching period from less than 100 mg/kg/flush at the start of leaching to about 450 mg/kg/flush at the completion of leaching (**Graph 6-15**). The sulfate concentration in KLC leachate was generally less than the applied ANZECC (2000) criterion of 1,000 mg/L apart from two leachate events for one of the coarse reject samples.

Graph 6-15. Sulfate release rate from coal and coal reject



Graph 6-16 illustrates that most samples have leached relatively little sulfur (as sulfate), with greater than 92% of the residual sulfur remaining in the samples.

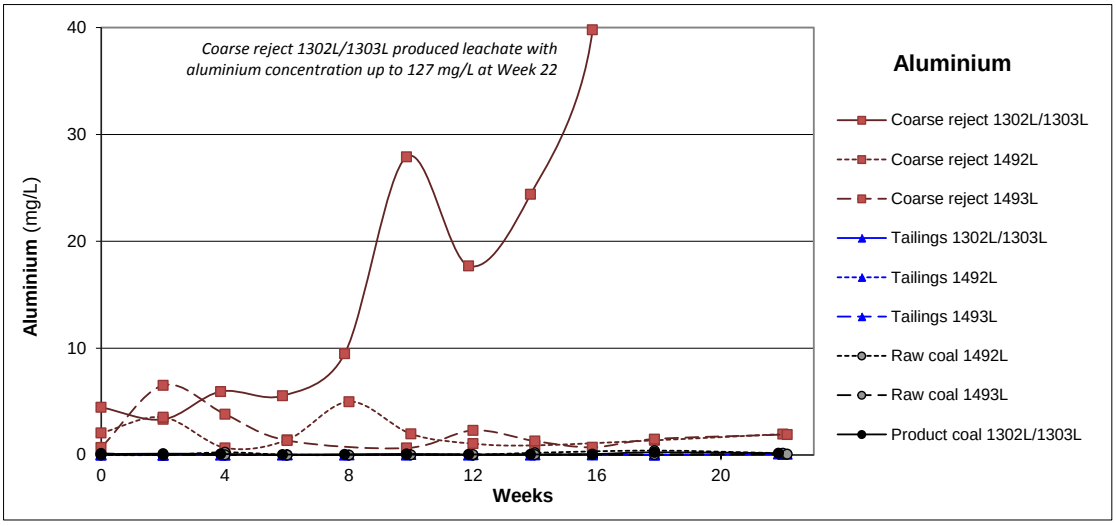
Graph 6-16. Residual sulfur in coal and coal reject

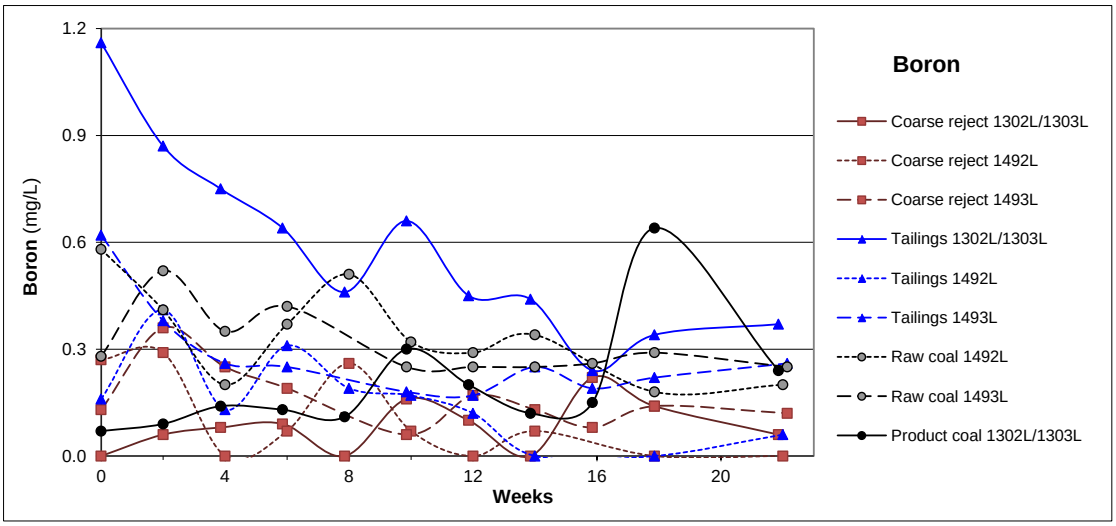


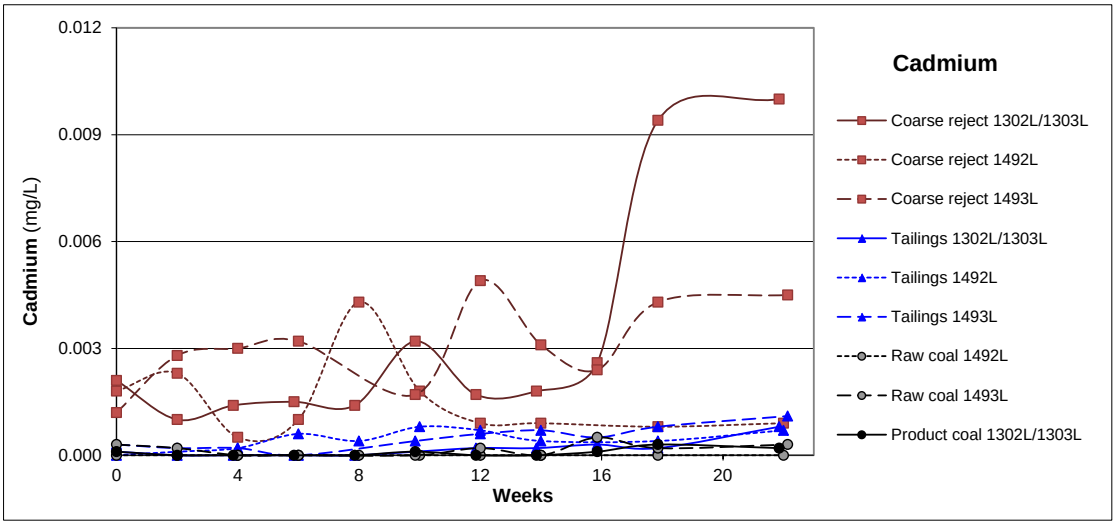
Metals and Metalloids

All coal and coal reject samples released metals and metalloids at varying rates, but generally the release rates for most metals and metalloids was very low and for coal and tailings trends were typically steady in the KLC leaching program. The release rates for coarse reject materials were comparatively greater than the coal and tailings samples and in some cases showed increasing trends. The release rate trends for selected metals and metalloids are shown in **Graphs 6-17 to 6-20**. Generally, only those metals and metalloids that were present in leachate above the laboratory limit of reporting (LOR) (and were therefore able to be measured) are shown in **Graphs 6-17 to 6-20**. The metals and metalloids presented in the graphs are Al, B, Cd, Co, Cu, Fe, Pb, Mn, Mo, Ni, Se and Zn. The general solubility trends for each of these listed elements are summarised at **Table 6-3** and in the report text following presentation of **Graphs 6-17** to **6-20**.

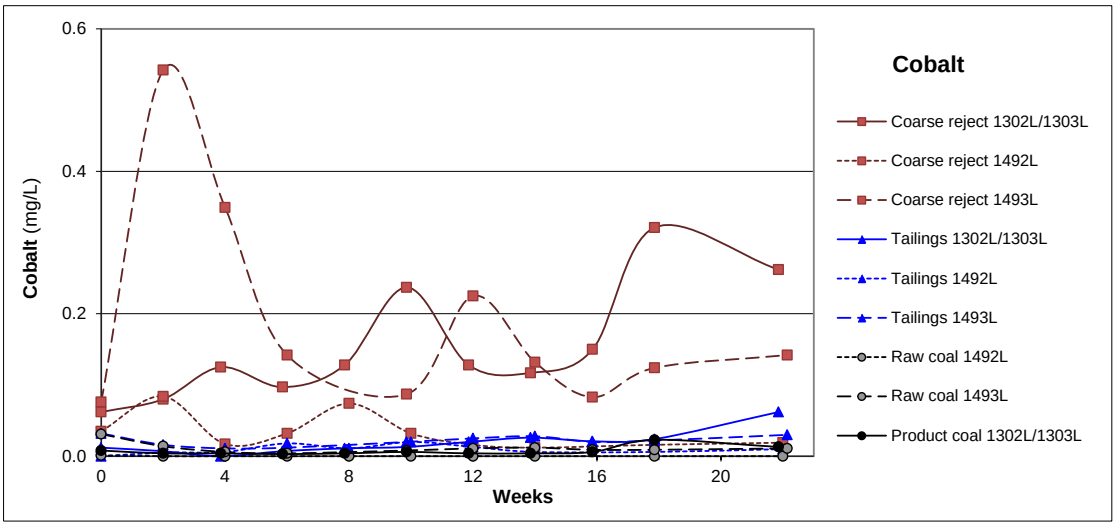
Graph 6-17 Al, B and Cd in coal and coal reject

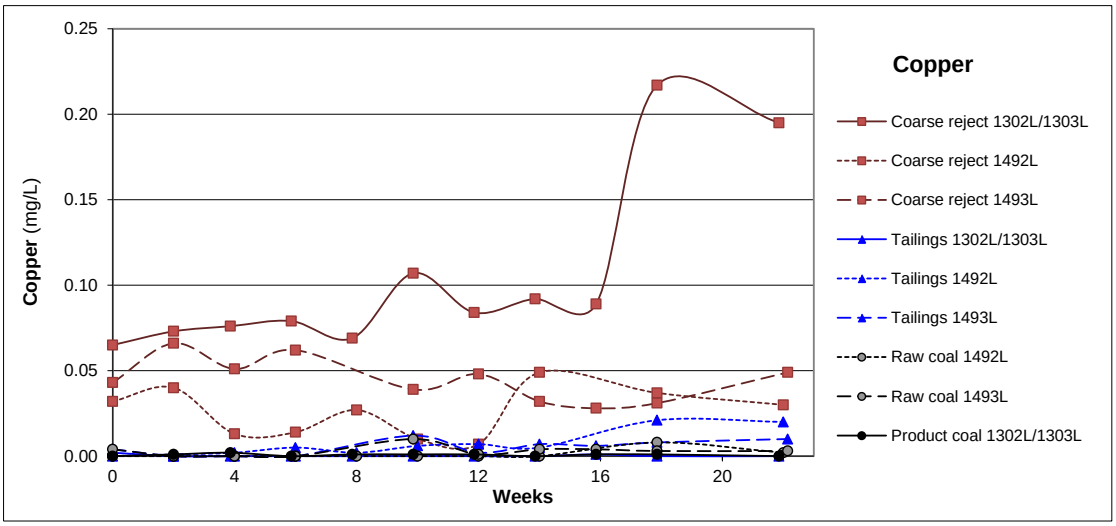


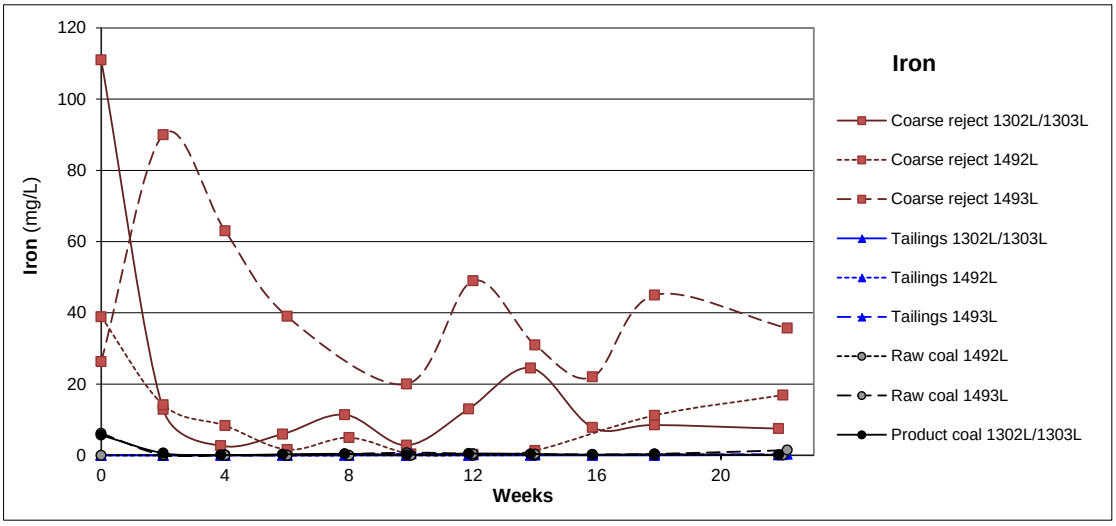




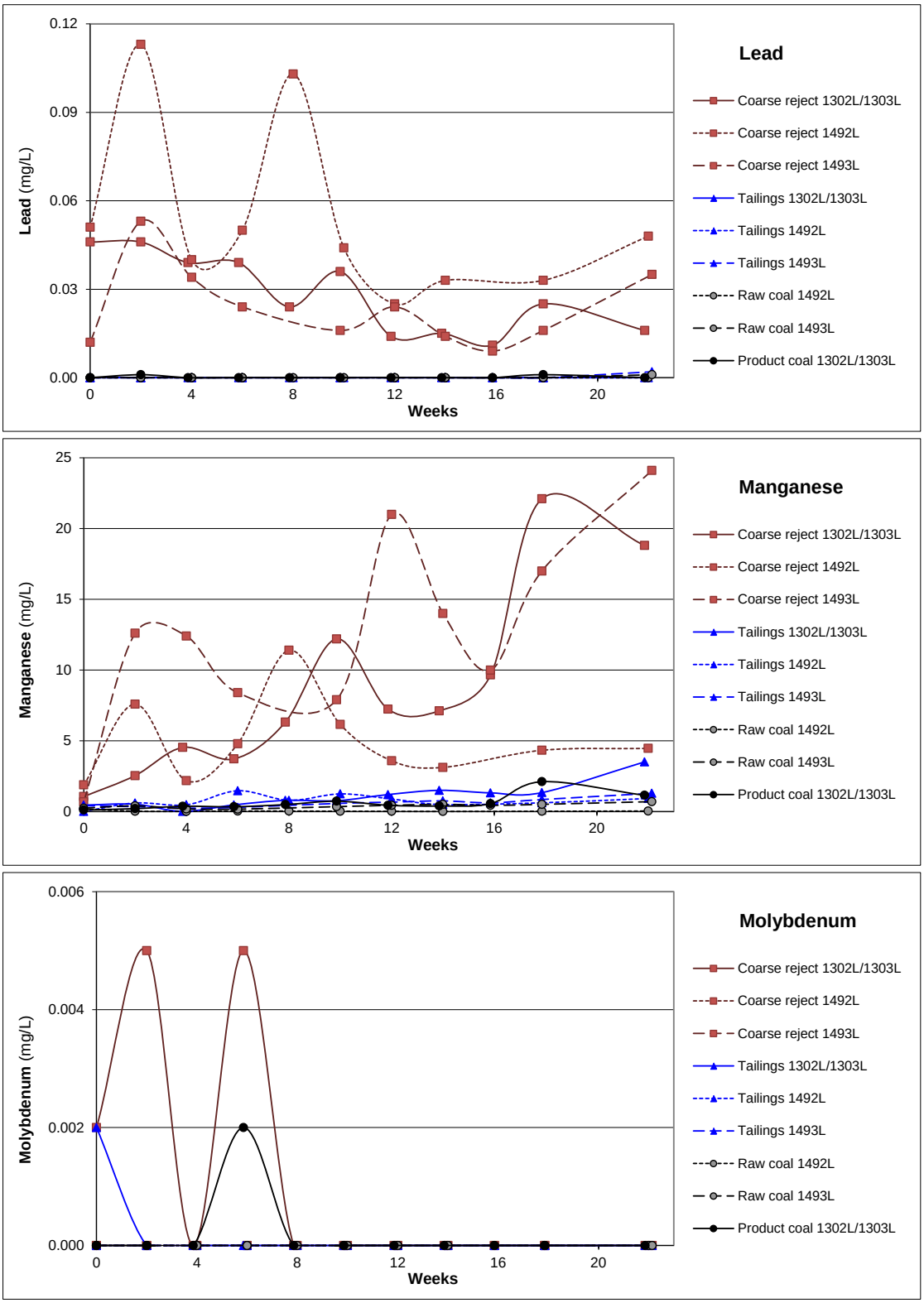
Graph 6-18 Co, Cu and Fe in coal and coal reject



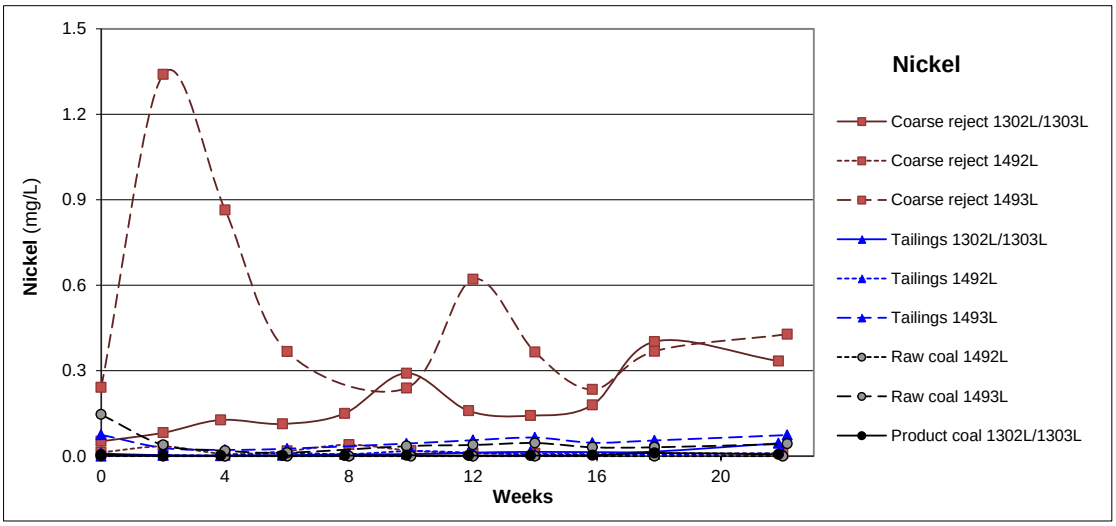


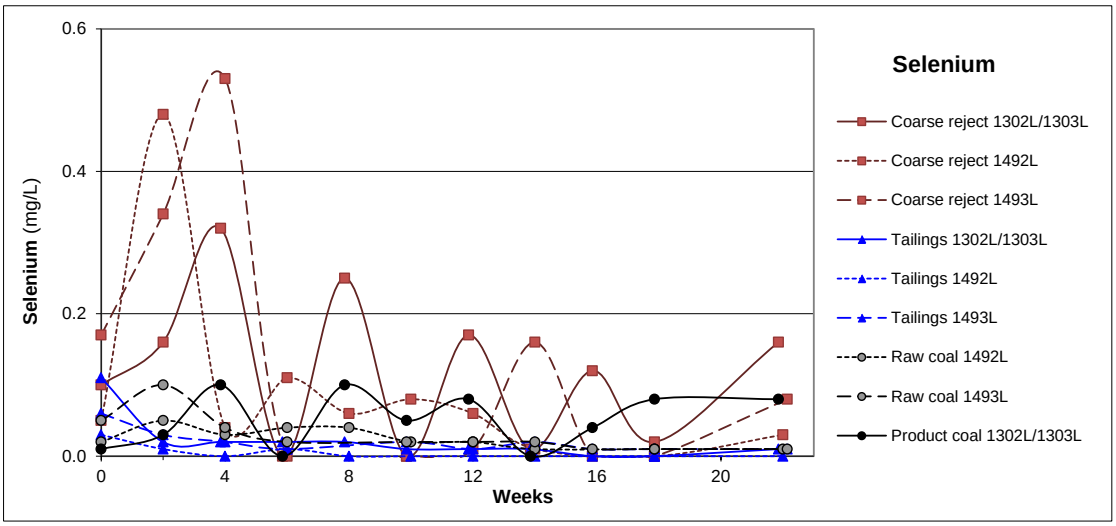


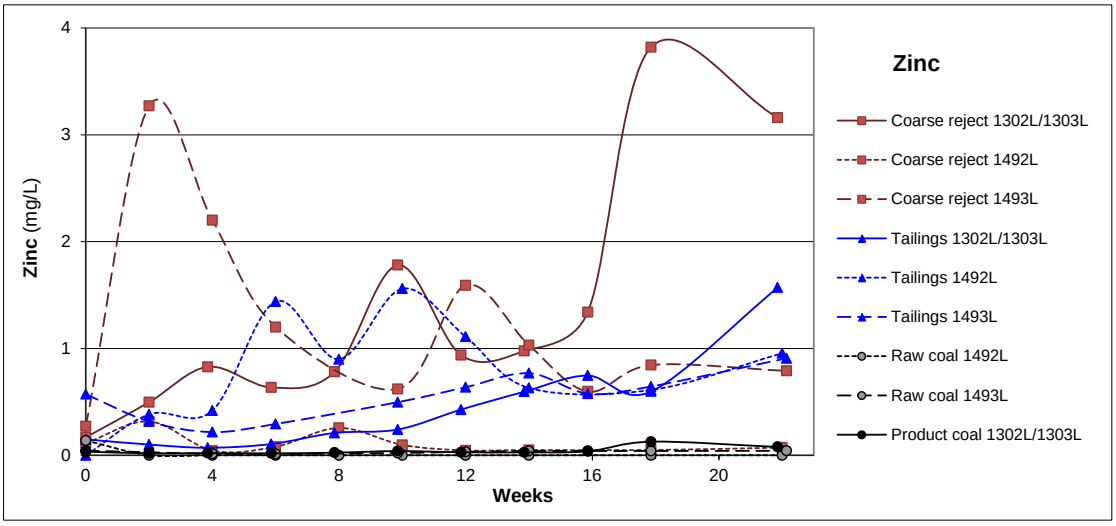
Graph 6-19 Pb, Mn and Mo in coal and coal reject



Graph 6-20 Ni, Se and Zn in coal and coal reject







The solubility trends presented in **Graphs 6-11** to **6-14** illustrate that most metals/metalloids contained in coal and coal reject materials are sparingly soluble at the current pH of these materials. However, for coarse reject, the solubility of some metals is greater than for coal and tailing materials. The solubility results are summarised in **Table 6-3** to allow a comparison of KLC leachate data with Australian water quality guideline criteria (ANZECC, 2000; and NEPC, 1999b) for livestock drinking water. As discussed earlier in this section, direct comparison of KLC leachate concentration values against these applied water quality guideline criteria is not strictly valid due to scale-up effects, the high sample:water ratio (3:1) used in the KLC tests, and the highly oxidising (cyclical wet and dry) "worst case" KLC test conditions. However, it does highlight those elements, which may have the potential to be mobile under fully oxidising conditions.

The results in **Table 6-3** demonstrate that the only elements that are potentially mobile under the KLC test conditions from a few of the sample materials are Al, Pb, Ni and Se. For Al, Pb and Ni, elevated element solubility is limited to leachate from some of the (acidic) coarse reject samples. In comparison, Se generated a total of 39 leachate events (out of a total of 90) where the Se concentration exceeded the applied guideline criterion. It should be noted however, that more than half of these leachate events were from the three coarse reject samples and the Se concentration was generally only marginally elevated for leachate from the coal and tailings samples compared to leachate from the coarse reject samples. Elevated concentrations of Se are relatively common in some coal and coal reject materials at coal mining operations in Queensland.

Table 6-3 Summary of Metal/Metalloid Concentrations in KLC tests for Coal and Coal Reject

Metal/Metalloid	ANZECC[1]/NEPC[2] Guideline Concentration	Number of samples that generate elevated metal/ metalloid concentrations in KLC leachate (n=9)	Number of KLC leaching events where metal/ metalloid concentration in leachate is elevated (n = 90)
Aluminium (Al)	**5**	2	10
Boron (B)	**5**	0	0
Cadmium (Cd)	**0.01**	0	0
Cobalt (Co)	**1**	0	0
Copper (Cu)	**0.5**	0	0
Iron (Fe)	**-**	0	0
Lead (Pb)	**0.1**	1	2
Manganese (Mn)	**-**	0	0
Molybdenum (Mo)	**0.15**	0	0
Nickel (Ni)	**1**	1	1
Selenium (Se)	**0.02**	9	39
Zinc (Zn)	**20**	0	0

7.0 DISCUSSION AND CONCLUSIONS

7.1 Potential for Acid Generation

The results of an extensive static and kinetic geochemical test program on representative overburden/ interburden samples from the Project indicate that the bulk material is NAF and has a high factor of safety with respect to potential acid generation. The majority of overburden/interburden has very low sulfur content and sufficient acid buffering capacity, to buffer the low amount of acidity that could theoretically be generated from these materials. Overall, from an acid-base perspective, the overburden/interburden material tested can be regarded as a NAF unit containing excess neutralising capacity. Whilst some PAF materials do occur, these represent approximately 1% of the 404 samples tested and are located close to the coal seams in the unweathered zone.

The results of the static and kinetic geochemical test program on representative samples of coal and coal reject materials indicate that whilst there is some uncertainty regarding the potential acid generating nature of coal and tailings, these materials are relatively benign and unlikely to generate significant acidity. In contrast, coarse reject materials are PAF and have a low acid buffering capacity and if exposed to oxidising conditions, are likely to generate significant acidity over time.

The concentration of soluble sulfate in leachate from the KLC tests for overburden/interburden, coal and coal reject materials can be used to calculate the rate of sulfide oxidation in these materials over the test period. The sulfate generation rate for each of the composite overburden/interburden and coal reject samples used in the KLC tests has been calculated as shown in **Table 7-1** and **7-2**.

Table 7-1 Oxidation Rates for Overburden/Interburden

KLC Sample Name	KLC Sample Lithology	Sulfate Generation Rate (mg/kg/week)	Oxidation Rate (kg $O_2/m^3/s$)
RKLC-OB001	Sandstone	10.4	2.0×10^{-8}
RKLC-OB002	Sandstone	9.6	1.8×10^{-8}
RKLC-OB003	Siltstone	4.6	8.6×10^{-9}
RKLC-OB004	Claystone	13.5	2.5×10^{-8}
RKLC-OB005	Mudstone	17.1	3.2×10^{-8}
RKLC-OB006	Sand	1.2	2.3×10^{-9}
RKLC-OB007	Sand	5.6	1.1×10^{-8}
RKLC-OB008	Carbonaceous Mudstone	7.6	1.4×10^{-8}
RKLC-OB009	Carbonaceous Sandstone	2.6	4.9×10^{-9}
RKLC-OB010	Clay	1.3	2.4×10^{-9}
RKLC-OB011	Clay	14.9	2.8×10^{-8}
RKLC-OB012	Coal	26.3	4.9×10^{-8}
RKLC-OB013	Sandstone	2.0	3.8×10^{-9}
RKLC-OB014	Sandstone	2.4	4.5×10^{-9}
RKLC-OB015	Carbonaceous Sandstone	3.6	6.8×10^{-9}
RKLC-OB016	Sandstone/Claystone	0.4	7.5×10^{-10}
RKLC-OB017	Siltstone/ Sandstone	15.3	2.9×10^{-8}
RKLC-OB018	Coal	0.4	7.5×10^{-10}

Table 7-2 Oxidation Rates for Coal and Coal Reject

KLC Sample Name	KLC Sample Type	Sulfate Generation Rate (mg/kg/week)	Oxidation Rate (kg $O_2/m^3/s$)
RKLC-CR001	Product Coal	12.6	2.4×10^{-8}
RKLC-CR006	Raw Coal	28.8	5.4×10^{-8}
RKLC-CR008	Raw Coal	40.0	7.5×10^{-8}
RKLC-CR003	Tailings	67.6	1.3×10^{-7}
RKLC-CR004	Tailings	38.5	7.2×10^{-8}
RKLC-CR007	Tailings	54.8	1.0×10^{-7}
RKLC-CR002	Coarse Reject	89.0	1.7×10^{-7}
RKLC-CR005	Coarse Reject	21.5	4.0×10^{-8}
RKLC-CR009	Coarse Reject	30.4	5.7×10^{-8}

The sulfate generation rate from the overburden/interburden KLC samples ranges from 0.4 to 26.3 mg/kg/week indicating that the rate of sulfide oxidation is low in these materials (equivalent to an oxidation rate ranging from 7.5×10^{-10} to 4.9×10^{-8} kg $O_2/m^3/s$. Results of previous KLC test work completed as part of a mining industry sponsored study program (AMIRA, 1995) indicate that mine materials with an oxidation rate of less than 5×10^{-8} kg $O_2/m^3/s$ and low to moderate ANC levels have an increased factor of safety and are likely to generate leachate that is pH neutral and/or has very low levels of acidity. Hence, all of the overburden/interburden samples and coal reject samples tested fall into this category and the KLC results generally reflect the predicted outcome as previously illustrated at **Graphs 6-1** and **6-2**. Overall, leachate from the bulk overburden/interburden materials is expected to be in the range pH 6 to pH 8.

The sulfate generation rate from the coal and coal reject KLC samples ranges from 0.4 to 26.3 mg/kg/week indicating that the rate of sulfide oxidation is low to moderate in these materials (equivalent to an oxidation rate ranging from 2.4×10^{-8} to 1.7×10^{-7} kg $O_2/m^3/s$. As discussed above, mine materials with an oxidation rate of less than 5×10^{-8} kg $O_2/m^3/s$ and low to moderate ANC levels have an increased factor of safety and are likely to generate leachate that is pH neutral and/or has very low levels of acidity. Hence, most of the coal and coal reject samples have oxidation rates close to or slightly greater than this value and some have low ANC levels. Hence, there is a reduced factor of safety for some of these materials and some potential for acid generation. The KLC results generally reflect the predicted outcome as previously illustrated at **Graphs 6-11** and **6-12**, although the level of acidity that is generated from coal and tailings samples is likely to be relatively small compared to coarse reject materials. However, the small level of acidity that could potentially be generate from tailings materials for example, makes them particularly suitable to economic alkaline amendment (*eg.* using lime). Overall, leachate from the coal and tailings materials is likely to be in the range pH 4.5 to 7.0 and from coarse reject materials is expected to be in the range pH 3 to pH 4.

7.2 Multi-Element Composition and Water Quality

7.2.1. Multi-element composition

The multi-element compositions of overburden/interburden, coal and coal reject samples are presented at **Section 4.4**, and results have been compared against applied guideline criteria. The initial geochemical assessment undertaken by SRK (2011) and reported in the EIS (HGPL, 2011) indicated that most elements were not significantly enriched compared to average crustal abundance in the sample materials, although minor enrichment of Ag, Sb, Se and As was apparent in a few samples and enrichment of another two elements (Re and Te) was more widespread. The SRK multi-element test results and additional multi-element test results for samples obtained from the infill drilling

program were compared against applied guideline criteria. The acquired data indicate that all total metal concentrations in overburden/interburden, coal and coal reject samples are below the applied NEPC (1999a) HIL(E) guideline values, where such guideline values exist. Hence, overburden/ interburden, coal and coal reject materials represented by these samples should not present a significant risk to the environment with respect to total metal concentrations in solids.

7.2.2. Water Quality

Static and kinetic geochemical test results indicate that initial and ongoing surface run-off/seepage from bulk overburden/interburden materials will typically be in the range pH 6 to pH 8 with low levels of acidity and alkalinity. The dominant major soluble cation is sodium and the dominant major soluble anions are typically chloride and sulfate. The concentration of all of these ions in surface run-off and seepage is predicted to decrease over time. Similarly, the salinity of the overburden/interburden materials is expected to be in the 'medium' range (DME, 1995) with a median EC of approximately 500-600 µS/cm and diminish over time. The sulfate concentration in surface runoff and seepage is expected to be typically an order of magnitude less than the applied (ANZECC, 2000) water quality guideline concentration for this anion and should decrease over time.

For coal and coal rejects (including coal seam roof and floor materials), the static and kinetic test results indicate that initial and ongoing surface run-off/seepage from coal, tailings and roof/floor materials will typically be in the range pH 4.5 and 7.0 with low levels of acidity and from coarse reject will typically be in the range pH 3.0 to 4.0 with higher levels of acidity. The dominant major soluble cations are sodium, calcium and to a lesser extent magnesium and the dominant major soluble anions are typically chloride and sulfate. The concentration of sodium and chloride tends to decrease over time, while the concentrations of calcium, magnesium and sulfate are more variable and can increase over time.

The salinity of surface runoff/seepage from the coal, tailing and roof/floor materials is expected to be in the 'low' to 'medium' range (DME, 1995) and should diminish over time. In contrast, salinity values from coarse reject materials are expected to be in the "high" range (DME, 1995). The sulfate concentration in surface runoff and seepage from coal and coal reject materials is expected to be elevated but generally less than the applied (ANZECC, 2000) water quality guideline concentration for this anion (1,000 mg/L) and should decrease over time for all but the coarse reject materials.

Most trace metal/metalloids in overburden/interburden, coal and and coal reject are sparingly soluble at the predicted natural pH values of surface run-off/seepage and dissolved concentrations are expected to be low compared to the applied water quality guideline criteria (ANZECC, 2000; and NEPC, 1999b) livestock drinking water guidelines. Minor exceptions include aluminium (Al), molybdenum (Mo) and selenium (Se) in some leachate events from a few of the overburden/interburden samples and Al, lead (Pb), nickel (Ni) and Se in some leachate events from a few of the coal and coal reject materials. For the coal and coal reject materials, Al and Se are more soluble from the coarse reject materials. It is therefore recommended that these elements are included from time to time in the water quality monitoring program for overburden/interburden and coal reject emplacement areas at the Project.

Given that water extract data represents pore water chemistry for coal and mining waste materials and that most of the samples have metal/metalloid concentrations less than the laboratory limit of reporting, it is expected that the concentration of metals/metalloids in leachate from bulk coal and mining waste materials will be lower at the Project. In addition, the laboratory water extract tests and KLC tests are generally completed on crushed and/or pulverised samples, which have a much larger surface area than the coal and mining waste materials at the Project, and would be expected to be a "worst case" scenario. Further dilution effects from rainfall and natural attenuation are also likely to occur in the field hence, the concentration of soluble metals and in runoff and seepage from the coal and mining waste materials will typically remain within applied water quality guideline criteria. Hence,

the risk of potential significant impact on the quality of surface and groundwater should be low and relatively simple to manage for all but the coarse reject materials, although this finding should be further verified by the ongoing water quality monitoring program for surface water and groundwater at the Project site.

7.3 Material Suitability for use in Revegetation & Rehabilitation

From a soil chemistry viewpoint, the median pH and EC values for the bulk overburden/interburden materials are regarded as representing materials with 'High' soil pH and 'Medium' salinity as defined in Queensland DME technical guidelines (DME, 1995).

The overburden/interburden materials typically have low to moderate eCEC values, which should not preclude their use in revegetation and rehabilitation activities at the Project. The main issue with overburden/ interburden materials is that they have elevated ESP values (>14%). Where the EC is 'Medium" (as in the tested samples), an ESP value of 6% or greater indicates that these materials can be regarded as sodic and may be prone to dispersion (Isbell, 2002). Soil with an ESP value greater than 14% is regarded as strongly sodic (Northcote and Skene, 1972).

Hence, the results in **Table 4** (end of text) indicate that most of the overburden/interburden materials at the Project are likely to have structural stability problems related to potential dispersion (Van de Graaff and Patterson, 2001). Some of the deeper Permian siltstone materials appear to be less sodic than the other overburden/interburden materials and these materials may be useful to assist with final surface rehabilitation at the overburden/interburden emplacement areas.

In addition to potential dispersion problems, sodic soils often have unbalanced nutrient ratios that can lead to macro-nutrient deficiencies (Hazelton and Murphy, 2007). The raw eCEC data for the overburden/interburden samples is provided at **Table 4** (end of text). **Table 7-3** shows the proportions of each exchangeable cation relative to eCEC. The 'desirable' proportions of each major cation are also shown (Abbott, 1989, *in* Hazelton and Murphy, 2007).

Table 7-3 eCEC proportions for major exchangeable cations

Exchangeable Cation	Desirable ranges	Coal Reject
	% eCEC	
Calcium (Ca)	65 - 80	10 - 78 (median 25)
Magnesium (Mg)	10 - 15	6 - 56 (median 27)
Potassium (K)	1 - 5	1.5 - 14 (median 3)
Sodium (Na)	0 - 1	1.6 – 64 (median 27)

When compared to the desirable ranges for exchangeable cations in soil (**Table 7-2**), effective exchangeable Ca proportions in overburden/interburden are low, Mg proportions are high and potassium proportions are in the desirable range. However, exchangeable Na proportions are significantly higher than the desirable range. It should be noted that in soil chemistry a median $pH_{1:5}$ (solid:water) value of pH 7.9 is regarded as 'high'. Therefore some degree of nutrient imbalance may already exist in these materials, as shown in **Table 7-2** above.

In summary, most overburden/interburden materials from the Project are sodic and may be prone to dispersion and erosion if not appropriately managed.

7.4 Comparison with Similar Coal Mining Operations

In line with Queensland guidelines (DME, 1995), HGPL has also compared the Project with mining projects with similar case histories which is stated in the guidelines *"is more applicable to stratigraphically continuous coal mines in sedimentary sequence than to non-coal operations*". This statement reflects the fact that most coal mines in the Bowen, Galilee and Surat Basins in Queensland have relatively uniform stratigraphic profiles, with potentially sulfidic materials generally located close to or within coal seams (including uneconomic seams). The geological modelling and results of the geochemical assessment of coal and mining waste materials at Kevin's Corner (and also the Alpha coal project) has confirmed that this Project has a very uniform stratigraphic profile with predictable geochemical characteristics.

In the nearest comparable operating coal fields of the Bowen Basin in Queensland, most overburden/interburden is typically NAF, but can potentially be saline and/or sodic. These material properties are addressed through appropriate material management and rehabilitation strategies (BMA, 2008). At some coal mines in the Bowen Basin, some coarse reject and tailing materials have some capacity to generate acid, salts and metals (*ie*. the majority of coal mines in the Bowen Basin do not have significant AMD issues). Coarse reject and tailings materials are generally managed in above ground containment facilities, although more recently the trend has been to store these materials in final voids, so long as the risk of resource sterilisation (a requirement of the mining licence conditions) and surface and groundwater impacts have been investigated and been found to be low.

At the Project, the aim is to store coarse reject and tailings materials in below ground in-pit storage facilities as soon as sufficient capacity becomes available to achieve this outcome (approximately two years for course reject and seven years for tailing materials). Until that time coarse reject will be encapsulated at out-of-pit overburden/interburden storage facilities and at a surface Tailings Storage Facility (TSF). For PAF coarse reject, material compaction, possible lime amendment and encapsulation within four weeks will be used to manage these materials and generate an improved environmental outcome. For tailing materials, lime addition will be used if the pH of decant water or seepage monitoring becomes less than pH 5. Again, this approach is comparable to, or improves upon, the management strategies used to manage PAF coal reject and tailing materials at approved and operating coal mining operations in Queensland.

In recent years there have not been major issues with acid leaching from coal mine tailings storage facilities in Queensland containing low concentrations of pyritic sulfur. Most Bowen Basin coal mines have low total sulfur content coals (< 0.7%) and the Project is no exception (0.6%). In addition, the proportion of organic and sulfate sulfur in the Project coal, and subsequently tailings, is relatively high (approximately 50%), which will also significantly limit the risk of acid generation from coal and tailings materials.

7.5 Management Measures for Coal and Mining Waste Materials

Management measures for coal and mining waste materials are summarised in this section and also contained in the Project EMP. These measures and associated ongoing sampling/testing and monitoring activities will also be detailed in a Mining Waste Management Plan (MWMP) completed prior to the construction phase of the Project. The MWMP will be similar to that successfully developed and implemented at the adjacent Alpha Bulk Sample Test Pit project in 2010/2011 (RGS-Terrenus, 2010). The management measures are summarised in **Table 7-1** and discussed for each waste type in the following sections.

Table 7-4: Summary of Management Measures for Coal and Mining Waste Materials

Material Type	Management Strategy
Coal	• Contact water contained and segregated from clean site water; • Any acidic contact water (trigger value = pH 5) will undergo lime treatment to control pH
Bulk overburden/interburden • NAF; and • Low-salinity and low sodicity	• In-pit and out-of-pit overburden emplacement facilities. No geochemical management required.
Bulk overburden/interburden • NAF; and • High salinity and/or sodicity	• Report to core (internal) of storage facilities. • Avoid placement at the final top surface and final outer slopes and batters of storage facilities.
Uneconomic coal close to economic coal units • Coal ply partings <30 cm thick • Coal seam roof and floor materials	• Report to CHPP for processing and become part of coarse reject and tailing material streams.
Uneconomic coal away from economic coal units • Coal ply partings >30 cm thick: o NAF o PAF-LC	• Remain at floor of pit (if pit floor capacity is available) and cover with reduced permeability NAF overburden/interburden within four weeks. • If pit floor capacity is unavailable, report to alternative on-pit storage location, or to coarse reject storage area.
Uneconomic coal away from economic coal units • Coal ply partings >30 cm thick: o PAF	• Delineation of PAF units through geological control and ongoing geochemical sampling and testing. • Selectively handling, then report to: o Year 1-2: Out-of-pit coarse reject storage areas; o Year 2+: In-pit coarse reject storage areas.
Coarse reject during Years 1 and 2	• Report to low wall edge of the boxcut area. • Compact and lime amendment (as required) in approximate 1 to 2 m layers using dozing and compaction equipment. • Cover with reduced permeability NAF overburden within 4 weeks. • Encapsulate with a thick layer (>5m) of NAF overburden/interburden within 3 months. • Cap with truck-shovel pre-strip overburden and topsoil materials.
Coarse reject from Year 2+	• Report to in-pit voids (coarse reject storage areas); • Compaction and lime amendment (as required) in approximate 1 to 2 m layers using dozing and compaction equipment. • Cover with reduced permeability NAF overburden within 4 weeks. • Encapsulate with a thick layer (>5m) of NAF overburden/interburden within 3 months. • Cap with truck-shovel pre-strip overburden and topsoil materials.
Tailings	• Placement as piped slurry to the TSF. • If TSF decant pH or TSF seepage collection pH becomes less than pH 5 add sufficient lime to tailings to increase pH to 6.

7.5.1. Coal

As a precautionary measure, contact water from raw and product coal stockpiles materials will be contained to avoid interaction with clean site waters. Lime or an alternative alkaline amendment may be required from time to time to control the pH of any acidic contact water contained in coal stockpile drainage/seepage collection ponds. The dosage of alkaline amendment will dependent upon ongoing geochemical and water quality monitoring test data, and a trigger pH value of 5 will be used.

7.5.2. Overburden/Interburden

Overburden/Interburden materials generated in the first two years of mining will be stored at out-of-pit emplacement areas located to the northeast and northwest of the Northern open pit (**Figure 6**). The bulk overburden/interburden materials generated at the Project will be NAF and, from an acid generating potential perspective, this makes management of bulk overburden materials relatively straightforward with no selective handling required away from coal units. However, a small amount of overburden typically associated with economic and uneconomic coal seams in the unweathered zone may be PAF, with most PAF materials expected to have a low capacity to generate acid. Any PAF materials with a significant capacity to generate acid will be identified through open pit geological control and further delineated in ongoing sampling and geochemical testing programs.

Any overburden associated with coal units such as coal ply partings less than 30 cm in thickness and some roof and floor materials will report with coal to the CHPP and will therefore report as coarse reject. Any PAF uneconomic coal that is mined but not processed will also report directly to coarse reject storage facilities.

Any coal ply parting greater than 30 cm thickness that is NAF or PAF-Low Capacity will be selectively left at the floor of the pit (or if storage capacity is unavailable at the pit floor, will report to an alternative in-pit storage location) and be covered within four weeks with reduced permeability NAF overburden/interburden material. If there are any PAF parting or roof and floor materials of greater capacity, these will be selectively handled and report to either out-of pit (during Years 1 and 2) or in-pit coarse reject storage areas (after Year 2). Open-pit mining geological control coupled with pre-mining and ongoing geochemical sampling and testing of these materials will be used to delineate the extent of any PAF materials and ensure that these are selectively handled and managed in a similar manner to PAF coarse reject materials. There is an ongoing infill drilling program dedicated to geochemical sampling and testing to delineate any PAF materials of greater capacity and make sure that these are selectively mined and stored with coarse rejects.

Some overburden/interburden has the potential to be saline and/or sodic and any out-of-pit overburden will be managed to ensure that saline and/or sodic materials report to the core of storage facilities. Precautions will be taken to prevent water flow over the dispersive materials of overburden/interburden storage facilities by avoiding placement at the final top surface and final outer slopes and batters.

Consideration of placement of coarser overburden material at the base of the emplacement area will be given to assist in overburden/interburden drainage. Some rock mulching may be required on final batters to limit potential erosion from surface runoff and any requirement for this approach will be assessed during rehabilitation field trials. Information on the project rehabilitation strategy is presented in the Project EIS, SEIS and EMP.

7.5.3. Coarse Reject

All coarse reject materials will be paddock dumped and compacted in approximate 1-2 m layers using dozing and compaction equipment. During the first two years of mining, coarse reject will be placed at the low wall edge of the boxcut area and will be lime dosed (as required), and isolated with reduced

permeability NAF overburden within 4 weeks before being encapsulated with a thick layer (>5m) of NAF overburden/interburden within 3 months.

From the end of Year 2 to end of mine life, the coarse reject material will be placed in the in-pit voids between the dragline overburden/interburden (spoil). Again compaction, possible lime dosing, preliminary isolation with reduced permeability material within 4 weeks and encapsulation with a thick layer (>5m) of NAF overburden within 3 months will be utilised to manage the potential for AMD. These placement areas are below the natural ground surface and extend to a depth of 10-20 m below ground level, which is above the predicted depth of the recovered groundwater table. Truck-shovel pre-strip overburden materials will be used to cap the backfilled pit areas. Coarse reject placement will be sequenced such that capping of the rejects will be completed progressively as the working face progresses down dip. Topsoil will be placed onto the re-profiled slopes. Details of the final landforms are contained within the EIS, SEIS and EMP.

7.5.4. Tailings

Tailings will be placed as piped slurry to an above ground TSF located north of the Northern open pit (**Figure 6**) during the first five to seven years of mining until capacity becomes available at the mine out Northern pit void to accommodate tailings materials for the reminder of the life of mine. Geochemical test results indicate that although some tailings may have a low capacity to generate acid, the pH of the TSF decant and any TSF seepage is likely to be in the range pH 5-6. Lime amendment of PAF tailings materials will be used if their occurrence is more widespread than currently predicted and if the pH of TSF decant and any TSF seepage becomes less than a pH trigger value of pH 5. The TSF will be designed to ensure that risk of seepage to the underlying sediments is minimised.

The geochemical characteristics of tailings will also depend upon variations in raw coal, processing methods and potential reactions upon exposure to water and/or air. Hence, during operations small scale field tests on tailings materials will be carried out under actual site conditions to determine the any requirement for operational lime amendment of tailings. The potential merits of lime amendment of tailings reporting to the TSF will also be assessed by ongoing monitoring of the tailings geochemical characteristics, TSF decant water quality and any collected seepage water quality.

Given the semi-arid climate of the region, the tailings surface is expected to dry out relatively quickly and form a dense compact solid material, which will facilitate a cover placement and rehabilitation at the end of mine life. A cover system will be utilised for TSF closure and topsoil will be placed onto the re-profiled final landform slopes. The design of the cover system will be developed

7.6 Ongoing Sampling and Monitoring

7.6.1. Sampling and Geochemical Testing

The distribution of drill holes used for sampling and geochemical testing shows that the geochemical information to date provides good coverage of the proposed open pit areas (**Figure 6**). Geostatistical modelling completed by SRK (2011) found that the uniform geology and stratigraphy at the Project site was reflected by the predictable geochemical characteristics of the coal and mining waste materials. The report also recommended a 1km drill hole spacing at the open pit areas of the Project. This drill hole spacing has been achieved using the infill drilling program for that area of the Project site planned to be mined in the first 10 years of operation. Infill drilling, sampling and geochemical characterisation and assessment is continuing at the Project and will focus on providing additional coverage of those areas planned to be mined from year 10 onwards. The infill drilling program will be supplemented by in-pit sampling and geochemical testing of coal and mining materials as the operation progresses.

The geochemical characteristics of the coal and mining waste materials at Kevin's Corner are more than adequately addresses by the available geochemical testing program data for the EIS stage of a project. To date, sampling and geochemically testing of 446 samples from 47 drill holes has been completed which supplements a similar number of samples and drill holes utlised for geochemical testing at the adjacent Alpha Coal Project from 2010 to 2012. For the Kevin's Corner and Alpha Coal Projects a total of 27 and 26 kinetic leach column tests, respectively, have been initiated. The number of samples taken and drill hole coverage of these proposed project sites is approximately an order of magnitude greater than that utilised for similar coal mining operation approval processes in Queensland (*eg.* the Bowen Basin). Similarly, KLC test data for proposed and operational coal mines in Queensland (or elsewhere in Australia) have not been commonly been used to date.

Notwithstanding, HGPL will continue with the planned infill drilling programs and operational geochemical characterisation of coal and mining waste materials from the Project area to further verify the predicted geochemical characteristics of these materials (the infill drilling program, sampling and geochemical testing program is also described in the EIS and EMP). Acquired geochemical data will be used to refine the management strategies adopted for coal and mining waste materials. For future work, it is anticipated that the range of static and kinetic geochemical test work for coal and mine waste materials will be similar to that reported herein.

7.6.2. Water Quality Management and Monitoring

Surface water and leachate derived from, or in contact with, coal and mining waste materials will be monitored to ensure that water quality is being managed and not significantly compromised by proposed site management practices. Potentially impacted surface waters will be primarily managed by retaining water on-site. This water will be reused in the site water management system. This will be particularly important in any areas where stored materials have the potential to produce brackish surface run-off water.

Management of any poor quality runoff and seepage from overburden/interburden emplacements, open pits, coal stockpiles, coarse reject storage areas, the TSF, and disturbed areas is detailed in the EIS (Volume 1 Section 11 and Section 16) and the EMP.

The potential for the PAF materials at the Project to impact on surface water and regional groundwater quality is relatively low as they are encapsulated with NAF overburden and groundwater flow will be toward the pits, with the resulting potential for any AMD to migrate off site being low. HGPL will complete infill drilling and operational sampling programs and continue to geochemically characterise coal and mining waste materials from the Project area to further verify the predicted geochemical characteristics of these materials. This data will be used to optimise the management strategies of coal and mining waste materials. The geochemical characteristics of coal and mining waste materials at storage facilities will be monitored (pH, EC, acidity, alkalinity, total and sulfide sulfur) and ANC), until such time as the variability of the geochemical characteristics of the bulk materials is well defined.

Surface and seepage water at coal and mining waste storage areas will be monitored on a monthly basis (as well as opportunistically during rainfall events when access is available) and tested for pH, EC, Total Dissolved Solids (TDS), acidity and alkalinity, major anions (sulfate (SO_4), chloride (Cl), major cations (calcium (Ca), magnesium (Mg), sodium (Na) and potassium (K)) and trace metals (aluminium(Al), arsenic (As), antimony (Sb), boron (B), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), iron (Fe), lead (Pb), manganese (Mn), molybdenum (Mo), nickel (Ni), selenium (Se), vanadium (V) and zinc (Zn)) will be included in the range of parameters tested in these water samples, initially on a quarterly basis (for 12 months) and then on an annual basis throughout the life of mine. On a 95th percentile basis, should the pH of the TSF seepage water decrease below pH 5 or the EC increase by more than 100% from typical background values, the full range of parameters described above will be included in the test suite.

7.7 Overall Conclusions

HGPL will adopt the material characterisation and management measures described in **Section 7.0** to effectively manage coal and mining wastes generated by the construction, operation and decommissioning of the Project.

Coal and mining wastes will be effectively managed by material type to minimise potential operational and longer term residual impacts on the environment.

Development and implementation of a site-specific MWMP and effective monitoring and reporting will ensure that the management of coal and mining wastes at the Project are consistent with relevant legislation and guidelines and leading mining industry practice.

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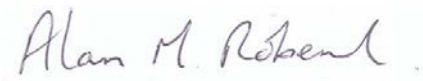
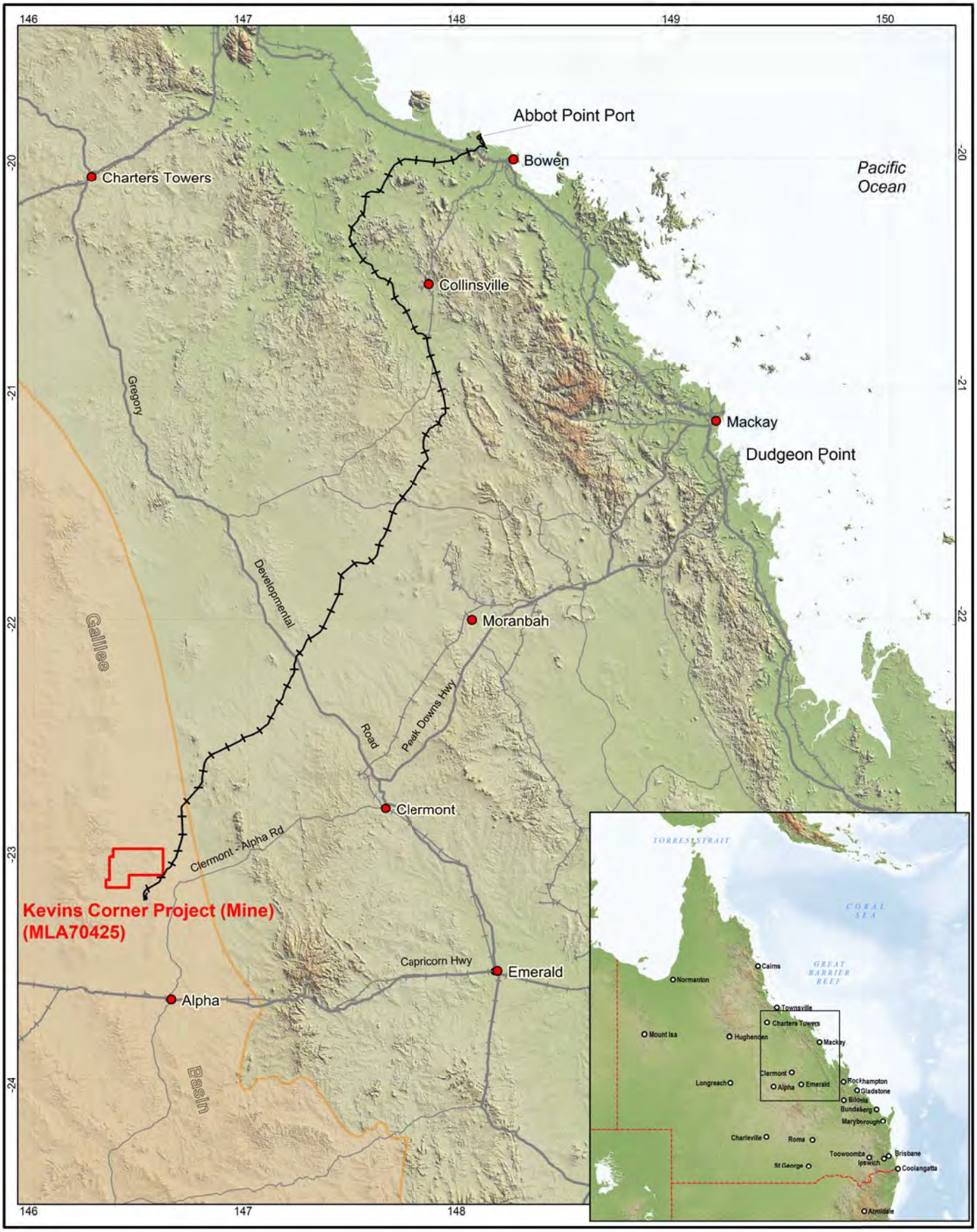


Dr. Alan M. Robertson
Principal Geochemist/Director

FIGURES

Figures 1 to 13



Mining Lease Application (MLA70425) Boundary

Draft

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0 25 50km
Scale 1:2,500,000 (A4)
Projection: Geographic (GDA94)

Datum: GDA94, MGA Zone55

N W E S

RGS

Project Location

Job Number 4262 6920
Revision A
Date 04-04-2012

Figure: 1

File No: 42626920-g-001.wor

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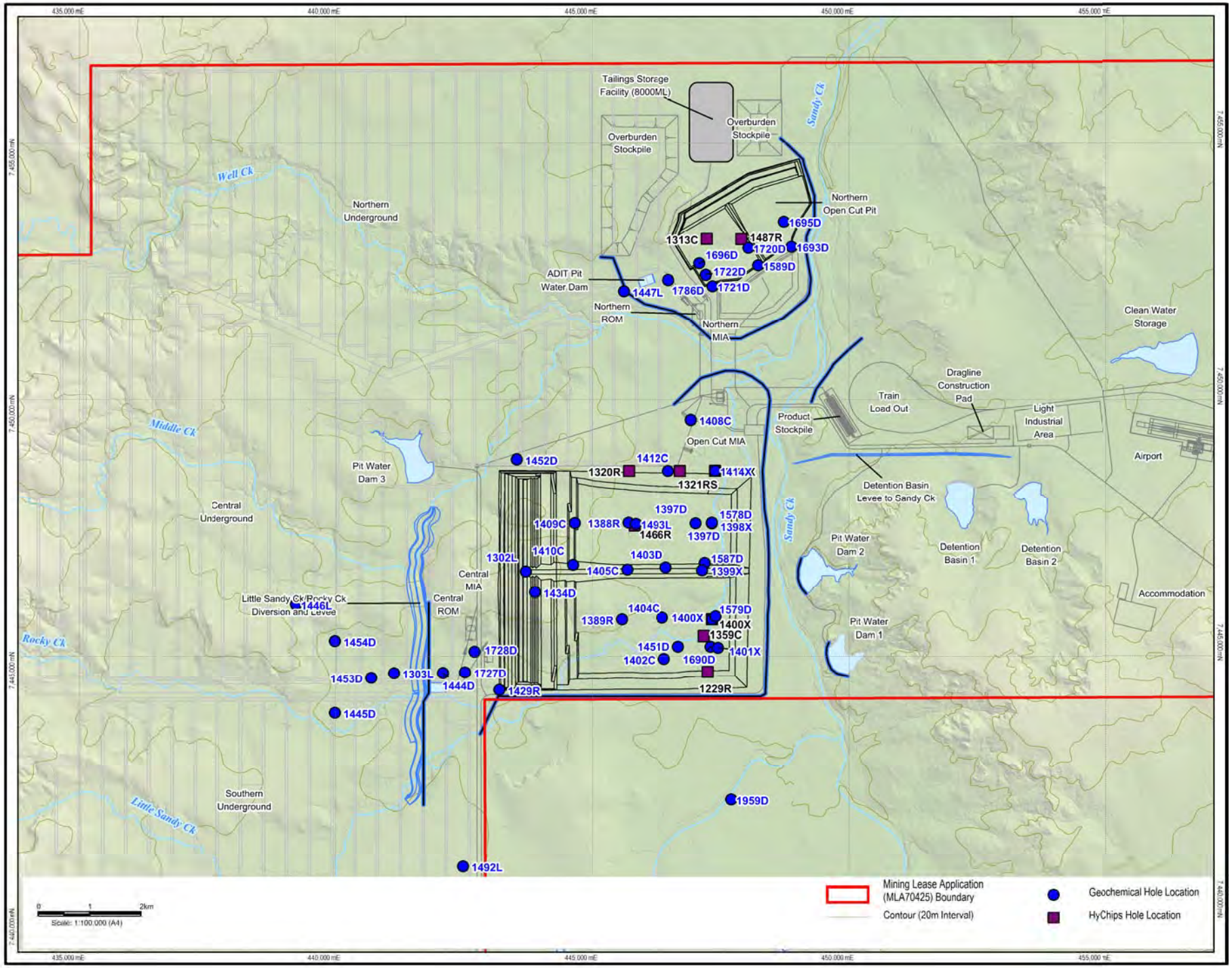

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N W E S

RGS

KEVINS CORNER PROJECT
DRILL HOLES USED TO PROVIDE
LITHOLOGICAL AND GEOCHEMICAL
INFORMATION IN EIS AND SUPPLEMENTARY EIS

Job Number	42626920
Revision	C
Date	04-24-2012

Figure: 2

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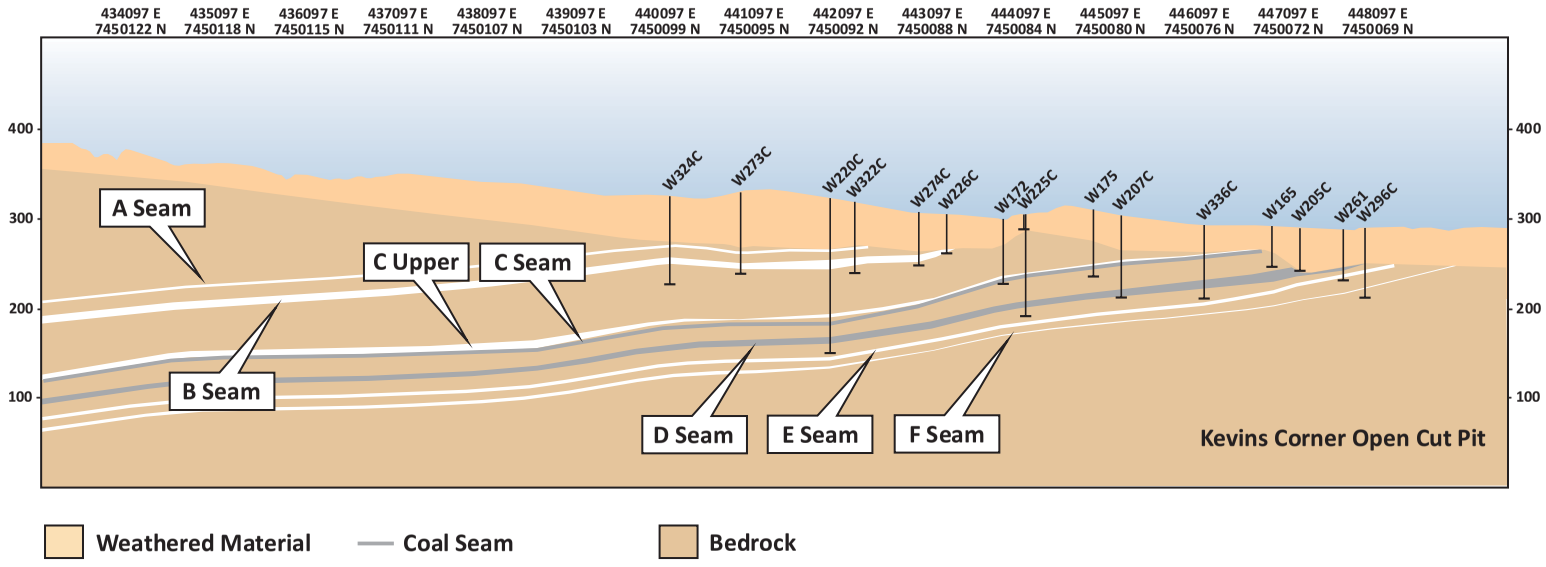

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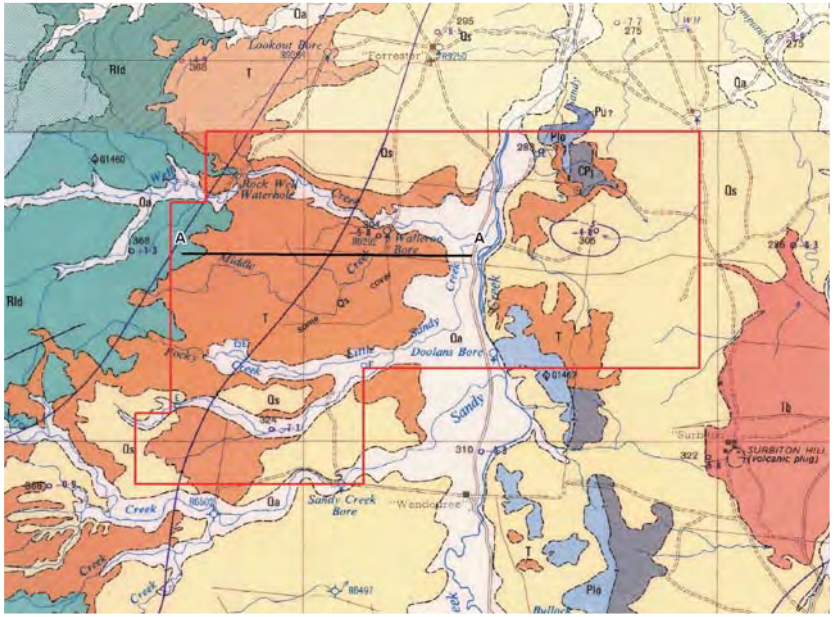
A



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RGS

GEOLOGICAL WEST -EAST
CROSS-SECTION A - A THROUGH
MINING LEASE APPLICATION 70425

Job Number 4262 6920
Revision B
Date 04-04-2012

Figure: 3

File No: 42626920-g-2022.cdr

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Age	Lithology	Stratigraphic Unit	Thickness	Comments
Quaternary	Sand, fine gravel, clay		Average 40 m	Alluvium
Tertiary	Saprolite, laterite and remanent red mudstone and white / beige sandstone		5 - 60 m	Clay-rich
Triassic	Green brown-purple mudstone, siltstone and labile sandstone	Rewan Formation	175 m[1]	In far west
Late Permian	Sandstone	Bandanna Formation	30–50 m	Increasingly argillaceous
	Coal Seam A. Seam contains thin stone bands that thicken from south to north		1 - 2.5 m	
	Labile sandstone, siltstone and mudstone		10 m	
	Coal Seam B. Seam contains numerous dirt bands that constitute between 15 and 30% of seam. Variable in quality.		6 - 8 m	
	Siltstone and mudstone		60–70 m	
		Colinlea Sandstone		Increasingly arenaceous
	Coal Seam C. Inferior C upper seam C Seam		2 - 5 m 3 – 4 m	
	Siltstone and sandstone		2 – 20 m	
	Coal Seam D. Stone bands present with seam thickening westward, upper section splits off main seam to north west		4.5 - 6 m	
	Sandstone		30 m	
	Coal Seam E		0.5 m	
	Sandstone		15 – 20 m	
	Coal Seam F		1 - 3 m	
	Sandstone		Unknown	
Early Permian	Labile and quartz sandstone	Undefined	Transition to Joe Joe Formation	

[1] Typical thickness

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RGS

SCHEMATIC STRATIGRAPHIC SECTION IN THE KEVINS CORNER PROJECT (MINE) AREA

Job Number 4262 6920
Revision B
Date 04-04-2012

Figure: 4

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Plot showing mineral assemblage data for the Kevin's Corner holes. The legend shows the colour for the different assemblages. White in 1313C is where there was no sample.

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RGS

KEVINS CORNER COAL PROJECT (MINE)
MINERAL ASSEMBLAGES ACROSS
HYCHIP DRILL HOLES

Job Number	4262 6920
Revision	B
Date	04-04-2012

Figure: 5

File No: 42626920-g-2024.cdr

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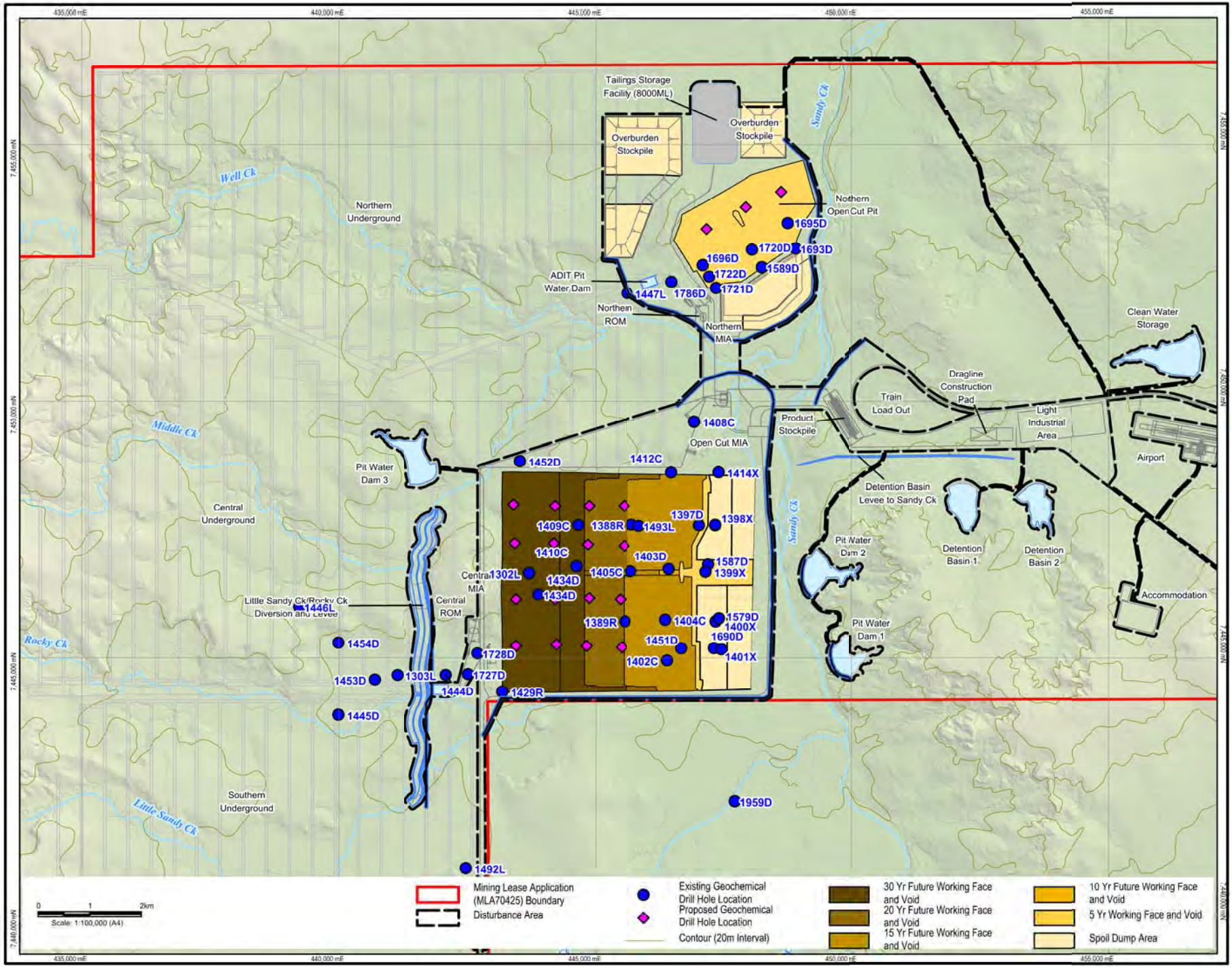

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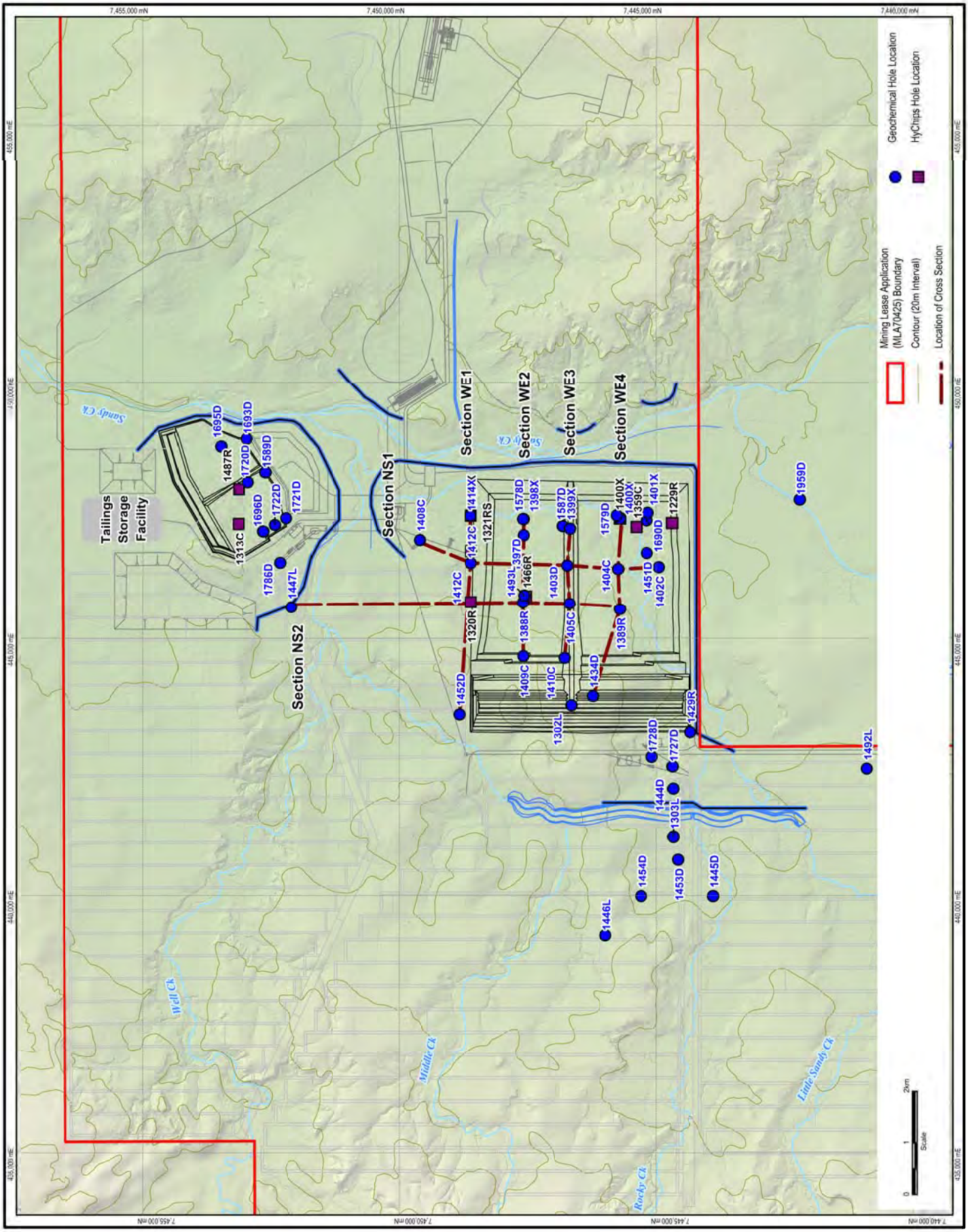
PLANNED LIFE OF MINE AREA AND LOCATION OF EXISTING AND PLANNED ADDITIONAL INFILL DRILL HOLES FOR GEOCHEMICAL SAMPLING

Job Number 4262 6920
Revision C
Date 04-04-2012

Figure: 6



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KEVINS CORNER PROJECT
CROSS SECTION LOCATIONS

Job Number	4262 6920
Revision	C
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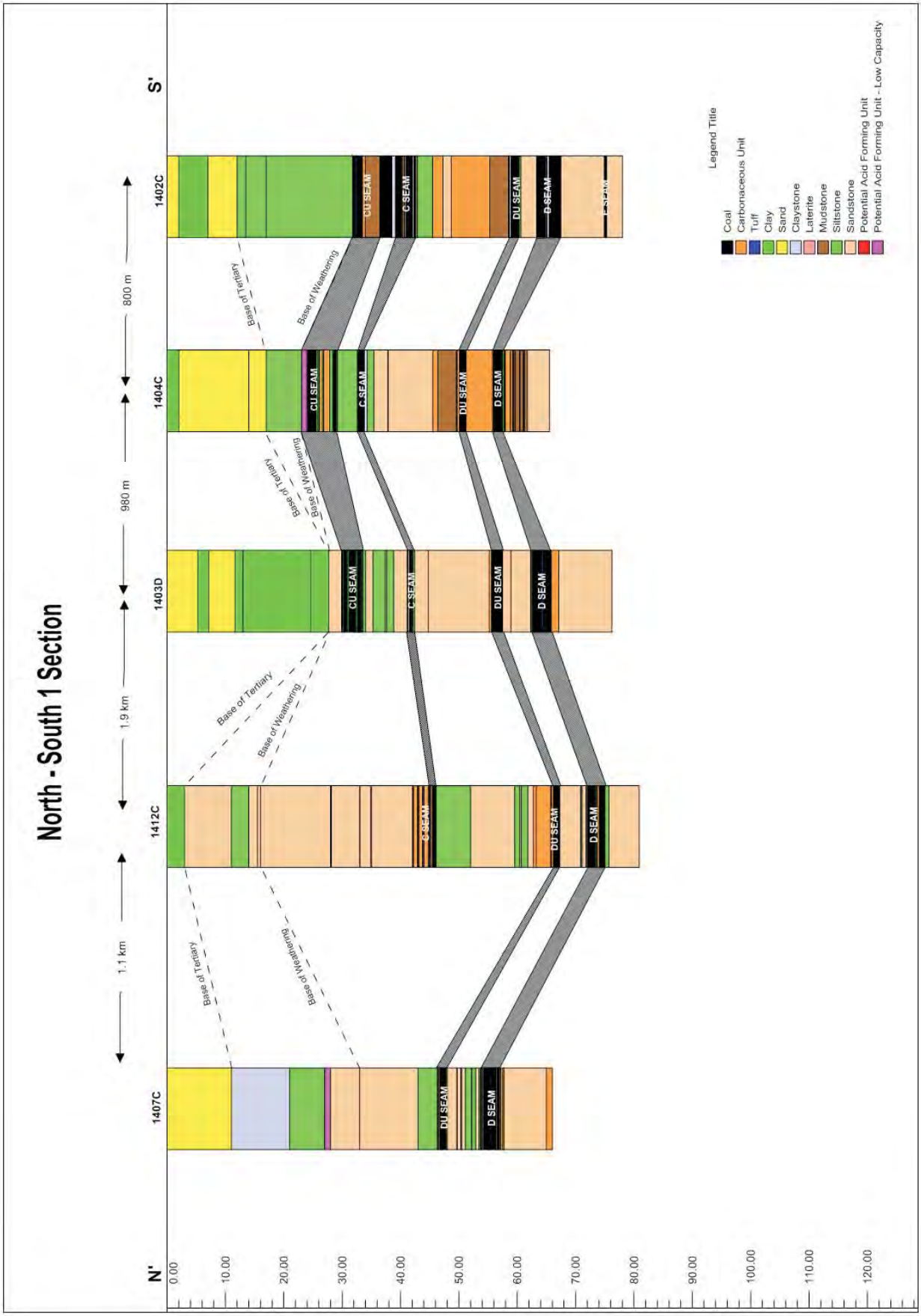

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N-S CROSS SECTION OF PROPOSED KEVINS CORNER PIT ILLUSTRATING UNIFORM GEOLOGY AND LOCATION OF PAF MATERIALS CLOSE TO COAL SEAM

Job Number	4262 6920
Revision	B
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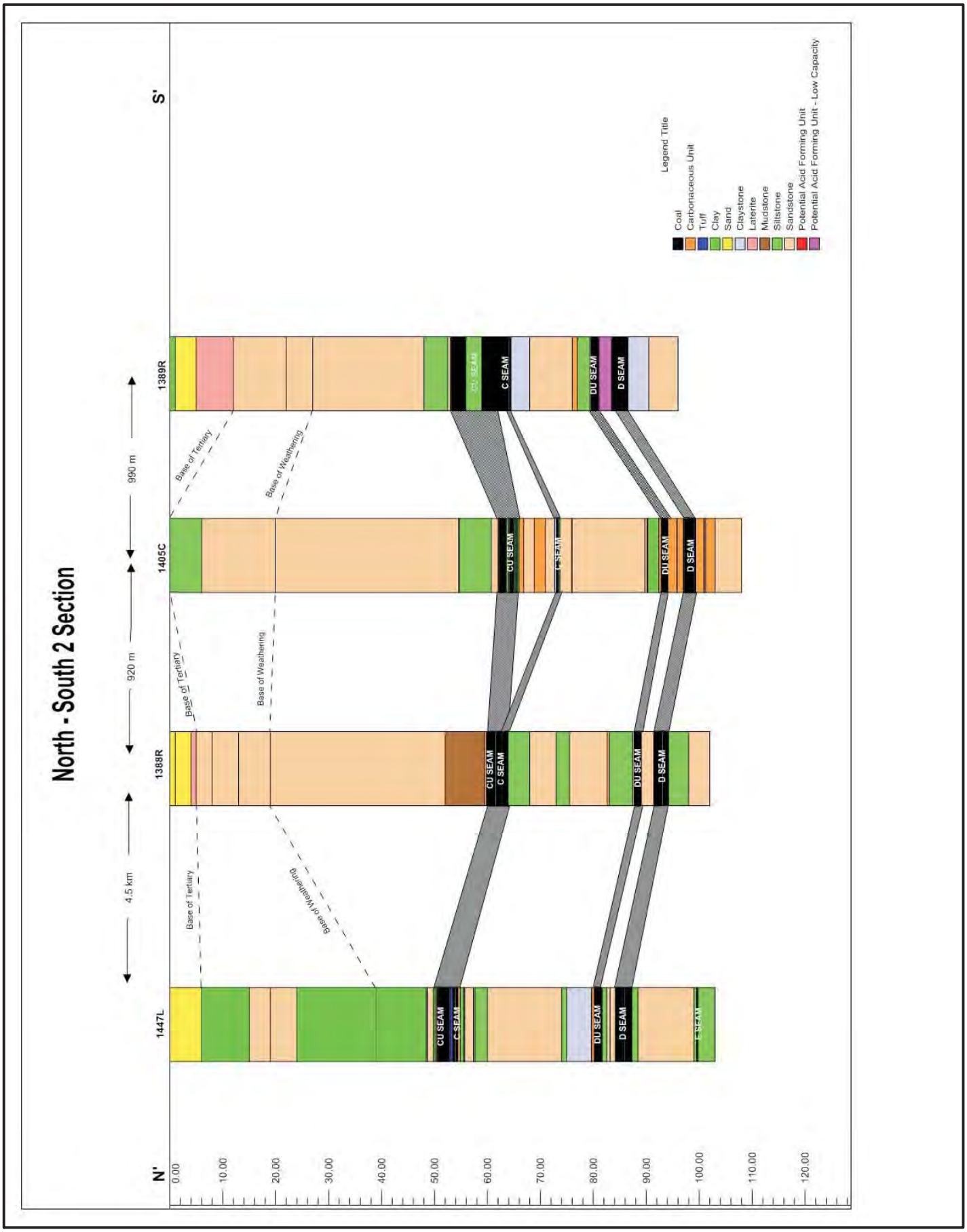

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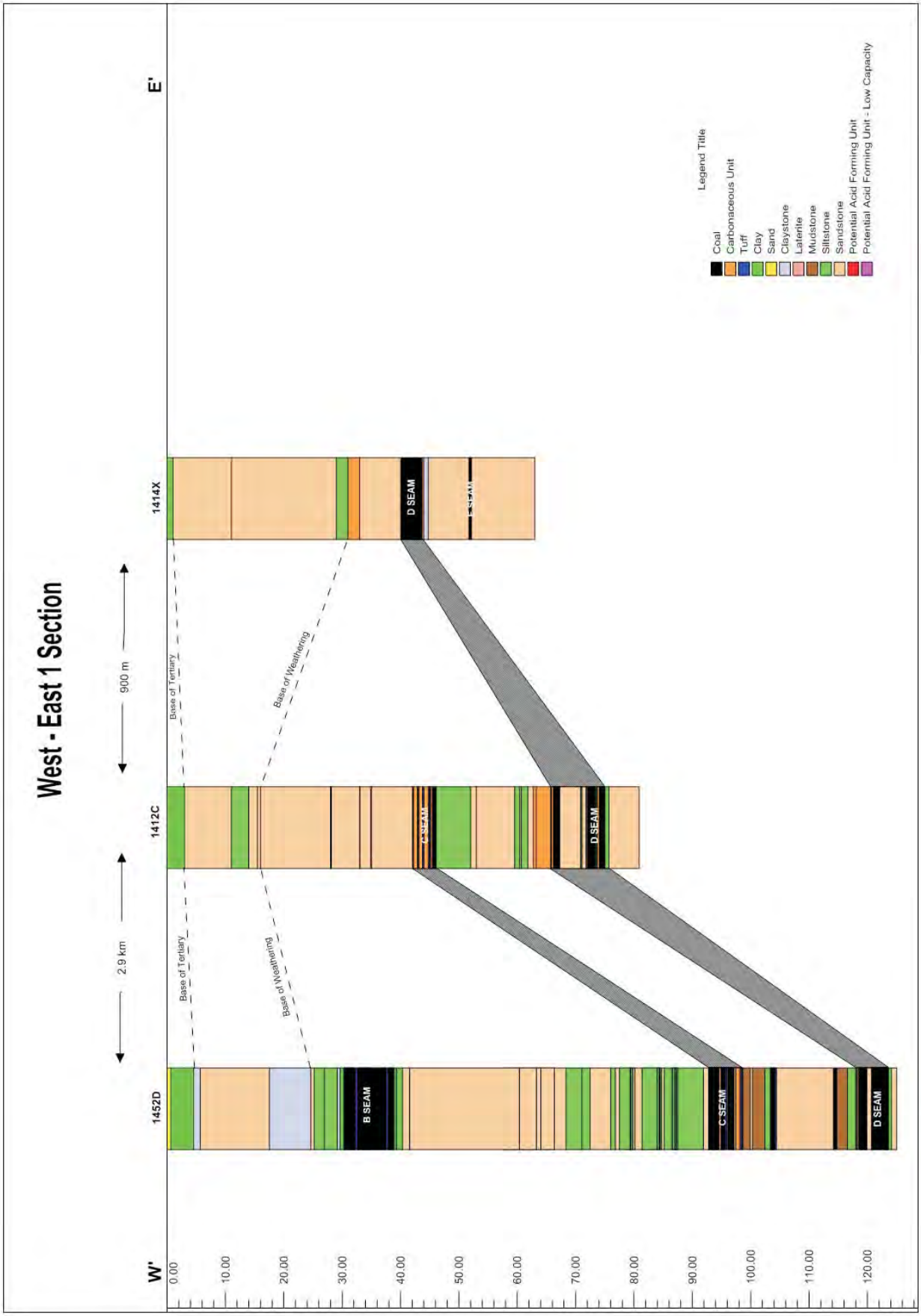

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W-E CROSS SECTION OF PROPOSED KEVINS CORNER PIT ILLUSTRATING UNIFORM GEOLOGY AND LOCATION OF PAF MATERIALS CLOSE TO COAL SEAM

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Revision	B
Date	04-04-2012

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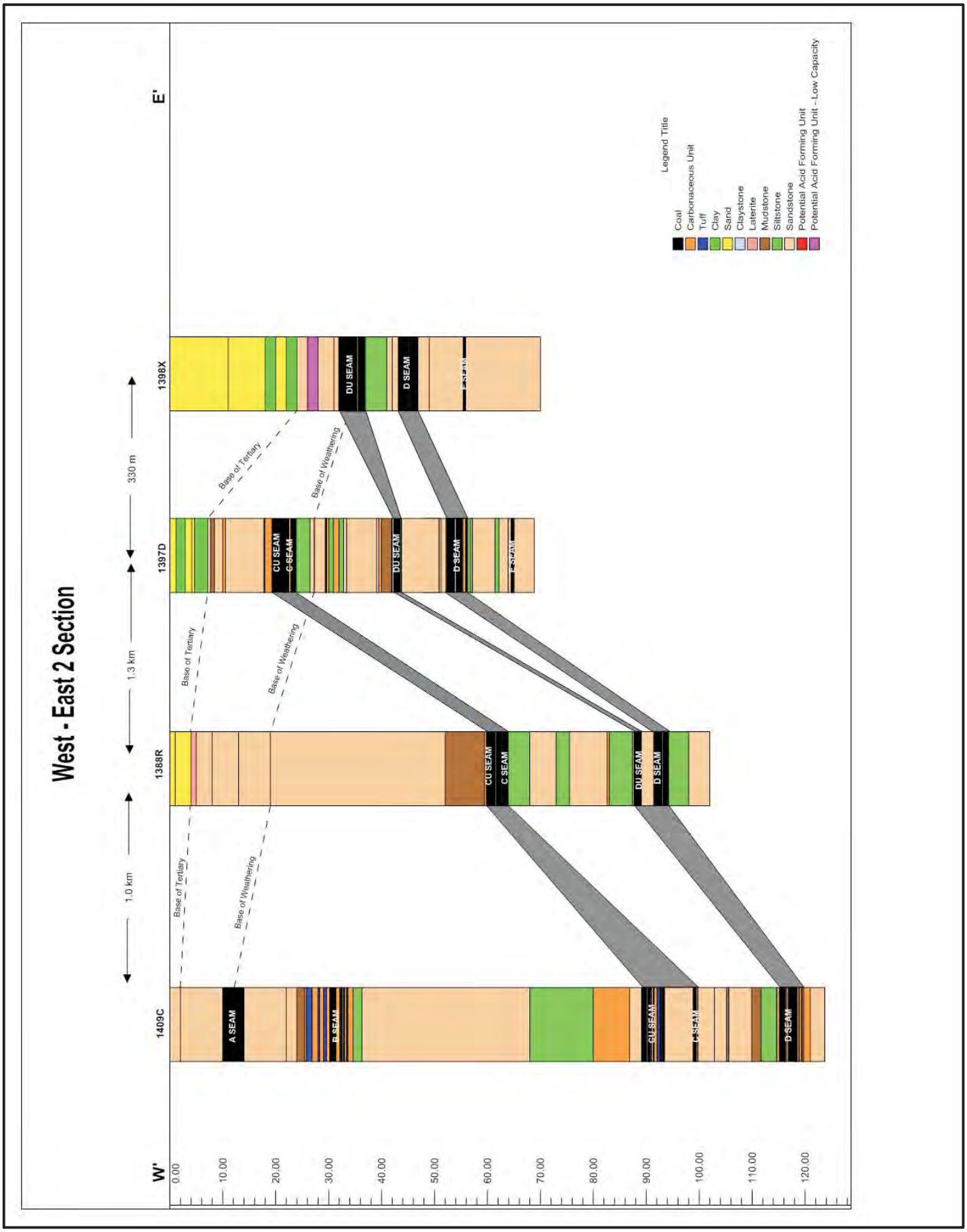

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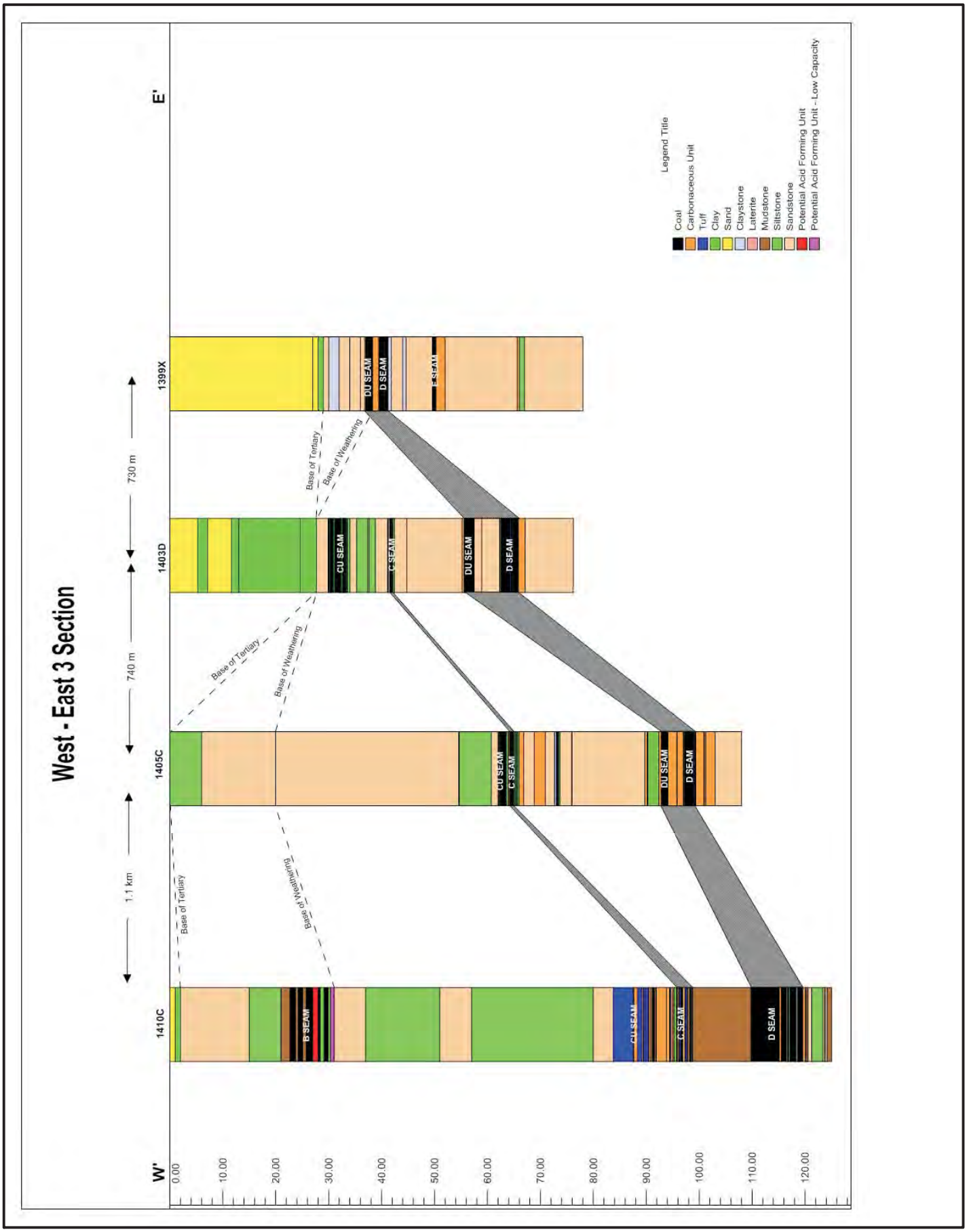

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RGS

W-E CROSS SECTION OF PROPOSED KEVINS CORNER PIT ILLUSTRATING UNIFORM GEOLOGY AND LOCATION OF PAF MATERIALS CLOSE TO COAL SEAM

Job Number	4262 6920
Revision	B
Date	04-04-2012

Figure: 12

File No: 42626920-g-2031.cdr

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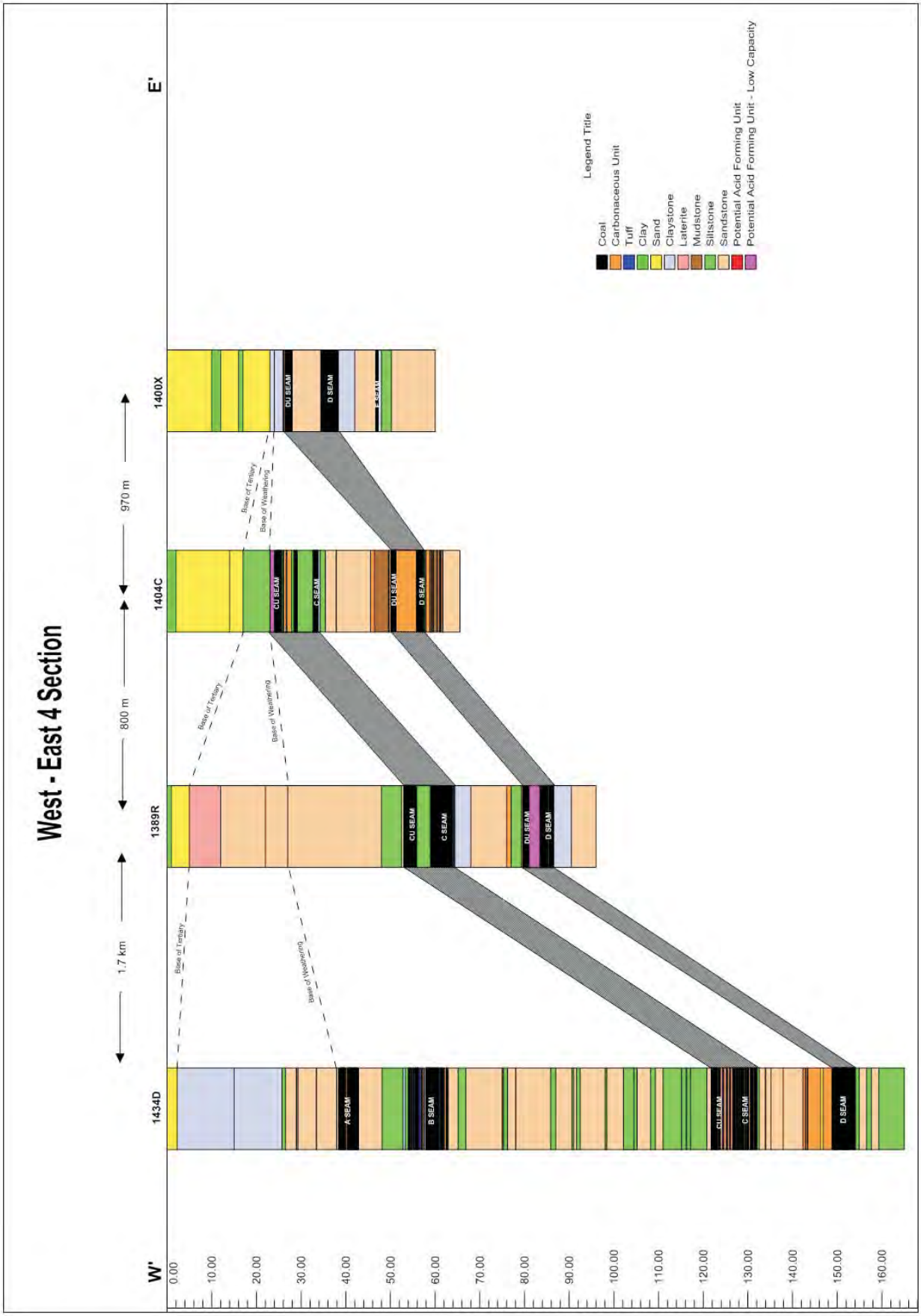

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RGS

W-E CROSS SECTION OF PROPOSED KEVINS CORNER PIT ILLUSTRATING UNIFORM GEOLOGY AND LOCATION OF PAF MATERIALS CLOSE TO COAL SEAM

Job Number	4262 6920
Revision	B
Date	04-04-2012

Figure: 13

File No: 42626920-g-2032.cdr

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TABLES

Tables 1 to 7

Table 1: Acid-Base Account Results for Overburden/Interburden - Kevin's Corner Project

RGS Sample ID	Source	ALS Laboratory Sample ID	Client Sample Name	Drill Hole ID	Sample Depth (m)			Sample Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr	MPA[2]	ANC[2]	NAPP[2]	ANC/MPA ratio	Sample Classification[3]
					From	To	Int.				(µS/cm)	(%)		(kg H_2SO_4/t)				
Overburden/Interburden																		
SABA-OB208	SRK	EB1019995046	1434D_205	1434D	0.0	0.7	0.7	SOIL	Overburden	7.0	193	0.005	-	0.2	3.7	-3.5	24.2	Non-Acid Forming (Barren)
SABA-OB014	SRK	EB1100364001	1398X_1	1398X	0.0	1.0	1.0	SOIL	Overburden	6.8	56	0.005	-	0.2	3.2	-3.0	20.9	Non-Acid Forming (Barren)
SABA-OB060	SRK	EB1100364040	1405C_1	1405C	0.0	1.0	1.0	CLAY	Overburden	8.0	590	0.03	-	0.9	9.4	-8.5	10.2	Non-Acid Forming (Barren)
SABA-OB127	SRK	EB1100364112	1410C_1	1410C	0.0	1.0	1.0	SAND	Overburden	7.2	144	0.005	-	0.2	2.3	-2.1	15.0	Non-Acid Forming (Barren)
SABA-OB158	SRK	EB1100364140	1412C_1	1412C	0.0	1.0	1.0	CLAY	Overburden	7.7	1,700	0.02	-	0.6	6.1	-5.5	10.0	Non-Acid Forming (Barren)
SABA-OB172	SRK	EB1019995035	1414X_175	1414X	0.0	1.0	1.0	CLAY	Overburden	8.0	1,380	0.01	-	0.3	37.8	-37.5	123.4	Non-Acid Forming (Barren)
SABA-OB041	SRK	EB1019995018	1402C_151	1402C	0.0	2.0	2.0	SOIL	Overburden	6.5	26	0.005	-	0.2	1.6	-1.4	10.4	Non-Acid Forming (Barren)
SABA-OB006	SRK	EB1019995009	1397D_134	1397D	0.0	2.8	2.8	CLAY	Overburden	8.8	939	0.005	-	0.2	23.1	-22.9	150.9	Non-Acid Forming (Barren)
SABA-OB180	SRK	EB1019995039	1429R_190	1429R	0.0	2.0	2.0	SOIL	Overburden	6.8	2,570	0.02	-	0.6	9.3	-8.7	15.2	Non-Acid Forming (Barren)
SABA-OB253	SRK	EB1019995077	1453D_275	1453D	0.9	1.7	0.8	SOIL	Overburden	7.7	1,900	0.01	-	0.3	18.6	-18.3	60.7	Non-Acid Forming (Barren)
SABA-OB001	SRK	EB1019995001	1388R_95	1388R	0.0	4.0	4.0	SAND	Overburden	8.6	261	0.005	-	0.2	11.5	-11.3	75.1	Non-Acid Forming (Barren)
SABA-OB015	SRK	EB1100364002	1398X_2	1398X	1.0	2.0	1.0	SAND	Overburden	6.9	107	0.005	-	0.2	1.0	-0.8	6.5	Non-Acid Forming (Barren)
SABA-OB022	SRK	EB1100364011	1399X_2	1399X	1.0	2.0	1.0	SOIL	Overburden	6.7	165	0.005	-	0.2	1.7	-1.5	11.1	Non-Acid Forming (Barren)
SABA-OB032	SRK	EB1100364021	1400X_2	1400X	1.0	2.0	1.0	SOIL	Overburden	7.8	1,570	0.03	-	0.9	4.5	-3.6	4.9	Non-Acid Forming (Barren)
SABA-OB036	SRK	EB1100364026	1401X_2	1401X	1.0	2.0	1.0	SOIL	Overburden	6.5	96	0.005	-	0.2	0.3	-0.1	1.6	Non-Acid Forming (Barren)
SABA-OB051	SRK	EB1100364031	1404C_2	1404C	1.0	2.0	1.0	CLAY	Overburden	6.0	1,890	0.005	-	0.2	2.9	-2.7	18.9	Non-Acid Forming (Barren)
SABA-OB128	SRK	EB1100364113	1410C_2	1410C	1.0	2.0	1.0	LATERITE	Overburden	8.3	172	0.005	-	0.2	3.6	-3.4	23.5	Non-Acid Forming (Barren)
RABA-OB123	RGS	EB1200803123	EA123	1727D	1.2	1.5	0.3	Silty/Clay	Overburden	6.8	775	0.02	-	0.6	7.2	-6.6	11.8	Non-Acid Forming (Barren)
RABA-OB065	RGS	EB1200803065	EA065	1587D	1.2	1.6	0.4	Clayey/Sand	Overburden	7.4	58	0.005	-	0.2	4.4	-4.2	28.7	Non-Acid Forming (Barren)
RABA-OB001	RGS	EB1200803001	EA001	1693D	1.5	1.7	0.2	Sandy Clay	Overburden	8.6	320	0.02	-	0.6	8.8	-8.2	14.4	Non-Acid Forming (Barren)
RABA-OB058	RGS	EB1200803058	EA058	1589D	1.7	2.1	0.4	Clayey/Sand	Overburden	8.2	139	0.005	-	0.2	5.0	-4.8	32.7	Non-Acid Forming (Barren)
RABA-OB035	RGS	EB1200803035	EA035	1579D	1.9	2.3	0.4	Soil	Overburden	6.3	1250	0.02	-	0.6	7.9	-7.3	12.9	Non-Acid Forming (Barren)
SABA-OB037	SRK	EB1100364027	1401X_3	1401X	2.0	3.0	1.0	SOIL	Overburden	6.8	58	0.005	-	0.2	1.0	-0.8	6.5	Non-Acid Forming (Barren)
SABA-OB085	SRK	EB1100364065	1407C_78603	1407C	2.0	3.0	1.0	SAND	Overburden	6.9	823	0.005	-	0.2	1.5	-1.3	9.8	Non-Acid Forming (Barren)
SABA-OB101	SRK	EB1100364081	1408C_78650	1408C	2.0	3.0	1.0	SAND	Overburden	6.4	561	0.02	-	0.6	3.6	-3.0	5.9	Non-Acid Forming (Barren)
SABA-OB129	SRK	EB1100364114	1410C_3	1410C	2.0	3.0	1.0	SANDSTONE	Overburden	6.0	216	0.02	-	0.6	3.2	-2.6	5.2	Non-Acid Forming (Barren)
SABA-OB151	SRK	EB1019995028	1412C_166	1412C	2.0	3.0	1.0	LATERITE	Overburden	6.1	3,690	0.02	-	0.6	9.6	-9.0	15.7	Non-Acid Forming (Barren)
SABA-OB176	SRK	EB1100364154	1414X_3	1414X	2.0	3.0	1.0	SANDSTONE	Overburden	6.1	1,810	0.005	-	0.2	4.1	-3.9	26.8	Non-Acid Forming (Barren)
RABA-OB127	RGS	EB1206468001	EA001	1690D	2.3	2.7	0.4	Clay	Overburden	6.5	255	0.005	-	0.2	1.9	-1.7	12.4	Non-Acid Forming (Barren)
RABA-OB009	RGS	EB1200803009	EA009	1728D	2.7	3.0	0.3	Laterite	Overburden	5.6	618	0.02	-	0.6	5.0	-4.4	8.2	Non-Acid Forming (Barren)
RABA-OB074	RGS	EB1200803074	EA074	1695D	2.7	3.1	0.4	Clayey/Sand	Overburden	7.7	239	0.005	-	0.2	6.7	-6.5	43.8	Non-Acid Forming (Barren)
SABA-OB052	SRK	EB1100364032	1404C_4	1404C	3.0	4.0	1.0	SANDSTONE	Overburden	6.1	1,020	0.01	-	0.3	2.0	-1.7	6.5	Non-Acid Forming (Barren)
SABA-OB227	SRK	EB1100364192	1447L_34	1447L	3.0	4.0	1.0	SAND	Overburden	7.0	32	0.005	-	0.2	1.0	-0.8	6.5	Non-Acid Forming (Barren)
RABA-OB090	RGS	EB1200803090	EA090	1696D	3.1	3.6	0.5	Laterite	Overburden	7.3	364	0.005	-	0.2	7.4	-7.2	48.3	Non-Acid Forming (Barren)
SABA-OB246	SRK	EB1019995070	1452D_268	1452D	3.1	4.7	1.6	CLAY	Overburden	4.7	1,840	0.01	-	0.3	3.4	-3.1	11.1	Non-Acid Forming (Barren)
SABA-OB242	SRK	EB1019995066	1451D_264	1451D	3.3	6.0	2.7	CLAY	Overburden	6.0	2,510	0.005	-	0.2	3.7	-3.5	24.2	Non-Acid Forming (Barren)
RABA-OB049	RGS	EB1200803049	EA049	1720D	3.8	4.2	0.4	Sandy/Clay	Overburden	8.5	272	0.005	-	0.2	4.6	-4.4	30.0	Non-Acid Forming (Barren)
RABA-OB066	RGS	EB1200803066	EA066	1587D	3.8	4.3	0.5	Clayey/Sand	Overburden	8.3	297	0.005	-	0.2	6.8	-6.6	44.4	Non-Acid Forming (Barren)
SABA-OB042	SRK	EB1019995019	1402C_152	1402C	4.0	7.0	3.0	CLAY	Overburden	6.9	91	0.005	-	0.2	5.0	-4.8	32.7	Non-Acid Forming (Barren)
SABA-OB113	SRK	EB1100364093	1409C_5	1409C	4.0	5.0	1.0	SANDSTONE	Overburden	6.0	72	0.005	-	0.2	1.2	-1.0	7.8	Non-Acid Forming (Barren)
SABA-OB023	SRK	EB1100364012	1399X_6	1399X	5.0	6.0	1.0	SAND	Overburden	8.5	1,060	0.005	-	0.2	9.9	-9.7	64.7	Non-Acid Forming (Barren)
SABA-OB061	SRK	EB1100364041	1405C_6	1405C	5.0	6.0	1.0	SILTSTONE	Overburden	4.5	1,210	0.03	-	0.9	3.6	-2.7	3.9	Non-Acid Forming (Barren)
SABA-OB086	SRK	EB1100364066	1407C_78606	1407C	5.0	6.0	1.0	SILTSTONE	Overburden	6.8	438	0.005	-	0.2	1.7	-1.5	11.1	Non-Acid Forming (Barren)
RABA-OB039	RGS	EB1200803039	EA039	1721D	5.2	5.5	0.3	Sandy/Clay	Overburden	8.5	578	0.01	-	0.3	5.0	-4.7	16.3	Non-Acid Forming (Barren)
SABA-OB007	SRK	EB1019995010	1397D_135	1397D	5.3	6.5	1.3	CLAY	Overburden	7.2	860	0.005	-	0.2	4.3	-4.1	28.1	Non-Acid Forming (Barren)
RABA-OB010	RGS	EB1200803010	EA010	1728D	5.6	6.0	0.4	Laterite	Overburden	6.3	1050	0.01	-	0.3	5.7	-5.4	18.6	Non-Acid Forming (Barren)
RABA-OB082	RGS	EB1200803082	EA082	1578D	5.7	6.1	0.5	Clayey/Sand	Overburden	7.6	189	0.005	-	0.2	3.8	-3.6	24.8	Non-Acid Forming (Barren)
RABA-OB002	RGS	EB1200803002	EA002	1693D	5.8	6.1	0.3	Sand	Overburden	9.3	578	0.01	-	0.3	6.2	-5.9	20.2	Non-Acid Forming (Barren)
SABA-OB033	SRK	EB1100364022	1400X_7	1400X	6.0	7.0	1.0	SAND	Overburden	6.5	1,080	0.005	-	0.2	1.0	-0.8	6.5	Non-Acid Forming (Barren)
SABA-OB102	SRK	EB1100364082	1408C_78704	1408C	6.0	7.0	1.0	SILTSTONE	Overburden	6.0	418	0.005	-	0.2	4.9	-4.7	32.0	Non-Acid Forming (Barren)
SABA-OB228	SRK	EB1100364193	1447L_37	1447L	6.0	7.0	1.0	CLAY	Overburden	6.2	1,060	0.005	-	0.2	4.5	-4.3	29.4	Non-Acid Forming (Barren)

Table 1: Acid-Base Account Results for Overburden/Interburden - Kevin's Corner Project

RGS Sample ID	Source	ALS Laboratory Sample ID	Client Sample Name	Drill Hole ID	Sample Depth (m)			Sample Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr	MPA[2]	ANC[2]	NAPP[2]	ANC/MPA ratio	Sample Classification[3]
					From	To	Int.				(µS/cm)	(%)		(kg H_2SO_4/t)				
RABA-OB091	RGS	EB1200803091	EA091	1696D	6.1	6.6	0.5	Laterite	Overburden	5.4	560	0.03	-	0.9	6.3	-5.4	6.9	Non-Acid Forming (Barren)
SABA-OB053	SRK	EB1100364033	1404C_8	1404C	7.0	8.0	1.0	SILTSTONE	Overburden	6.5	3,510	0.03	-	0.9	2.6	-1.7	2.8	Non-Acid Forming (Barren)
SABA-OB130	SRK	EB1100364115	1410C_8	1410C	7.0	8.0	1.0	SANDSTONE	Overburden	5.4	961	0.02	-	0.6	1.4	-0.8	2.3	Non-Acid Forming (Barren)
SABA-OB159	SRK	EB1100364141	1412C_8	1412C	7.0	8.0	1.0	SANDSTONE	Overburden	9.0	1,140	0.03	-	0.9	27.6	-26.7	30.0	Non-Acid Forming (Barren)
SABA-OB177	SRK	EB1100364155	1414X_8	1414X	7.0	8.0	1.0	SANDSTONE	Overburden	8.5	2,420	0.01	-	0.3	13.1	-12.8	42.8	Non-Acid Forming (Barren)
RABA-OB050	RGS	EB1200803050	EA050	1720D	7.3	7.6	0.3	Sandstone	Overburden	8.3	500	0.005	-	0.2	6.3	-6.1	41.1	Non-Acid Forming (Barren)
RABA-OB128	RGS	EB1206468002	EA002	1690D	7.6	8.1	0.5	Clay	Overburden	8.4	339	0.005	-	0.2	4.4	-4.2	28.7	Non-Acid Forming (Barren)
SABA-OB002	SRK	EB1019995002	1388R_96	1388R	8.0	19.0	11.0	SANDSTONE	Overburden	9.0	2,000	0.04	-	1.2	73.1	-71.9	59.7	Non-Acid Forming (Barren)
SABA-OB016	SRK	EB1100364003	1398X_9	1398X	8.0	9.0	1.0	SAND	Overburden	6.6	498	0.005	-	0.2	1.0	-0.8	6.5	Non-Acid Forming (Barren)
SABA-OB229	SRK	EB1100364194	1447L_39	1447L	8.0	9.0	1.0	CLAY	Overburden	6.5	1,240	0.005	-	0.2	4.8	-4.6	31.3	Non-Acid Forming (Barren)
RABA-OB067	RGS	EB1200803067	EA067	1587D	8.1	8.5	0.4	Sand	Overburden	8.2	263	0.005	-	0.2	5.0	-4.8	32.7	Non-Acid Forming (Barren)
RABA-OB083	RGS	EB1200803083	EA083	1578D	8.5	8.8	0.4	Clayey/Sand	Overburden	7.1	388	0.005	-	0.2	5.0	-4.8	32.7	Non-Acid Forming (Barren)
SABA-OB044	SRK	EB1019995021	1403D_159	1403D	8.6	9.8	1.2	SAND	Overburden	4.8	1,560	0.03	-	0.9	6.2	-5.3	6.7	Non-Acid Forming (Barren)
RABA-OB060	RGS	EB1200803060	EA060	1589D	8.6	9.0	0.4	Sandy/Claystone	Overburden	8.7	327	0.005	-	0.2	6.2	-6.0	40.5	Non-Acid Forming (Barren)
SABA-OB004	SRK	EB1019995005	1389R_102	1389R	9.0	12.0	3.0	SILTSTONE	Overburden	5.4	399	0.07	0.005	0.2	5.6	-5.4	36.6	Non-Acid Forming (Barren)
SABA-OB087	SRK	EB1100364067	1407C_78610	1407C	9.0	10.0	1.0	SILTSTONE	Overburden	6.7	450	0.005	-	0.2	1.7	-1.5	11.1	Non-Acid Forming (Barren)
RABA-OB011	RGS	EB1200803011	EA011	1728D	9.1	9.4	0.4	Sandstone	Overburden	7.1	1320	0.01	-	0.3	5.2	-4.9	17.0	Non-Acid Forming (Barren)
RABA-OB092	RGS	EB1200803092	EA092	1696D	9.1	9.6	0.5	Sandy/Clay	Overburden	5.8	763	0.02	-	0.6	6.3	-5.7	10.3	Non-Acid Forming (Barren)
RABA-OB040	RGS	EB1200803040	EA040	1721D	9.5	10.0	0.5	Laterite	Overburden	8.2	406	0.005	-	0.2	6.3	-6.1	41.1	Non-Acid Forming (Barren)
RABA-OB122	RGS	EB1200803122	EA122	1727D	9.5	9.8	0.3	Sandy/Claystone	Overburden	5.9	1130	0.02	-	0.6	7.4	-6.8	12.1	Non-Acid Forming (Barren)
SABA-OB024	SRK	EB1100364013	1399X_11	1399X	10.0	11.0	1.0	SAND	Overburden	7.5	892	0.005	-	0.2	2.7	-2.5	17.6	Non-Acid Forming (Barren)
SABA-OB034	SRK	EB1100364023	1400X_11	1400X	10.0	11.0	1.0	SAND	Overburden	7.4	1,120	0.005	-	0.2	2.9	-2.7	18.9	Non-Acid Forming (Barren)
SABA-OB054	SRK	EB1100364034	1404C_11	1404C	10.0	11.0	1.0	SILTSTONE	Overburden	6.5	28	0.03	-	0.9	3.6	-2.7	3.9	Non-Acid Forming (Barren)
SABA-OB088	SRK	EB1100364068	1407C_78611	1407C	10.0	11.0	1.0	SILTSTONE	Overburden	7.0	233	0.01	-	0.3	4.2	-3.9	13.7	Non-Acid Forming (Barren)
SABA-OB103	SRK	EB1100364083	1408C_78708	1408C	10.0	11.0	1.0	SILTSTONE	Overburden	5.9	440	0.005	-	0.2	5.6	-5.4	36.6	Non-Acid Forming (Barren)
SABA-OB230	SRK	EB1100364195	1447L_41	1447L	10.0	11.0	1.0	CLAY	Overburden	6.6	1,370	0.005	-	0.2	5.6	-5.4	36.6	Non-Acid Forming (Barren)
SABA-OB089	SRK	EB1100364069	1407C_78612	1407C	11.0	12.0	1.0	CLAY	Overburden	6.9	290	0.005	-	0.2	2.9	-2.7	18.9	Non-Acid Forming (Barren)
SABA-OB152	SRK	EB1019995029	1412C_167	1412C	11.0	14.0	3.0	SILTSTONE	Overburden	8.4	4,880	0.03	-	0.9	39.1	-38.2	42.6	Non-Acid Forming (Barren)
SABA-OB008	SRK	EB1019995011	1397D_136	1397D	11.4	13.3	1.9	SAND	Overburden	7.7	1,960	0.005	-	0.2	3.4	-3.2	22.2	Non-Acid Forming (Barren)
RABA-OB059	RGS	EB1200803059	EA059	1589D	11.5	12.0	0.5	Sandstone	Overburden	7.9	339	0.005	-	0.2	5.3	-5.1	34.6	Non-Acid Forming (Barren)
RABA-OB051	RGS	EB1200803051	EA051	1720D	11.5	12.0	0.5	Sandy/Clay	Overburden	8.0	419	0.005	-	0.2	4.1	-3.9	26.8	Non-Acid Forming (Barren)
SABA-OB045	SRK	EB1019995022	1403D_160	1403D	11.6	12.5	0.9	CLAY	Overburden	5.0	3,010	0.01	-	0.3	4.6	-4.3	15.0	Non-Acid Forming (Barren)
SABA-OB043	SRK	EB1019995020	1402C_153	1402C	12.0	13.5	1.5	SILTSTONE	Overburden	9.2	1,140	0.04	-	1.2	191.0	-189.8	155.9	Non-Acid Forming (Barren)
SABA-OB131	SRK	EB1100364116	1410C_13	1410C	12.0	13.0	1.0	SANDSTONE	Overburden	5.8	988	0.02	-	0.6	7.4	-6.8	12.1	Non-Acid Forming (Barren)
SABA-OB231	SRK	EB1100364196	1447L_43	1447L	12.0	13.0	1.0	CLAY	Overburden	6.8	1,120	0.005	-	0.2	4.4	-4.2	28.7	Non-Acid Forming (Barren)
RABA-OB036	RGS	EB1200803036	EA036	1579D	12.4	13.0	0.6	Sandy/Clay	Overburden	8.4	1000	0.005	-	0.2	6.2	-6.0	40.5	Non-Acid Forming (Barren)
SABA-OB017	SRK	EB1100364004	1398X_14	1398X	13.0	14.0	1.0	SAND	Overburden	7.1	1,350	0.005	-	0.2	0.5	-0.3	3.3	Non-Acid Forming (Barren)
SABA-OB090	SRK	EB1100364070	1407C_78614	1407C	13.0	14.0	1.0	CLAY	Overburden	7.1	312	0.005	-	0.2	4.0	-3.8	26.1	Non-Acid Forming (Barren)
SABA-OB178	SRK	EB1100364156	1414X_14	1414X	13.0	14.0	1.0	SANDSTONE	Overburden	7.9	2,700	0.005	-	0.2	3.9	-3.7	25.5	Non-Acid Forming (Barren)
SABA-OB209	SRK	EB1019995047	1434D_206	1434D	13.2	13.8	0.6	CLAYSTONE	Overburden	4.8	1,780	0.03	-	0.9	2.4	-1.5	2.6	Non-Acid Forming (Barren)
RABA-OB041	RGS	EB1200803041	EA041	1721D	13.5	14.0	0.5	Sandstone	Overburden	8.1	265	0.005	-	0.2	5.9	-5.7	38.5	Non-Acid Forming (Barren)
SABA-OB038	SRK	EB1100364028	1401X_15	1401X	14.0	15.0	1.0	SAND	Overburden	7.3	502	0.005	-	0.2	0.8	-0.6	5.2	Non-Acid Forming (Barren)
SABA-OB104	SRK	EB1100364084	1408C_78712	1408C	14.0	15.0	1.0	CLAY	Overburden	7.0	269	0.005	-	0.2	1.0	-0.8	6.5	Non-Acid Forming (Barren)
SABA-OB153	SRK	EB1019995030	1412C_168	1412C	14.0	16.0	2.0	SANDSTONE	Overburden	8.5	3,760	0.03	-	0.9	33.3	-32.4	36.2	Non-Acid Forming (Barren)
RABA-OB012	RGS	EB1200803012	EA012	1728D	14.1	14.5	0.4	Sandstone	Overburden	7.3	693	0.005	-	0.2	4.7	-4.5	30.7	Non-Acid Forming (Barren)
RABA-OB084	RGS	EB1200803084	EA084	1578D	14.3	14.6	0.3	Clayey/Sand	Overburden	7.0	588	0.005	-	0.2	3.9	-3.7	25.5	Non-Acid Forming (Barren)
RABA-OB068	RGS	EB1200803068	EA068	1587D	14.5	15.1	0.6	Sand	Overburden	7.5	439	0.005	-	0.2	4.2	-4.0	27.4	Non-Acid Forming (Barren)
RABA-OB129	RGS	EB1206468003	EA003	1690D	14.7	15.1	0.4	Clay	Overburden	7.8	764	0.005	-	0.2	3.7	-3.5	24.2	Non-Acid Forming (Barren)
SABA-OB091	SRK	EB1100364071	1407C_78616	1407C	15.0	16.0	1.0	CLAY	Overburden	7.2	272	0.005	-	0.2	2.9	-2.7	18.9	Non-Acid Forming (Barren)
SABA-OB232	SRK	EB1100364197	1447L_46	1447L	15.0	16.0	1.0	SILCRETE	Overburden	6.8	518	0.03	-	0.9	3.4	-2.5	3.7	Non-Acid Forming (Barren)
RABA-OB121	RGS	EB1200803121	EA121	1727D	15.0	15.4	0.4	Sandstone	Overburden	7.6	1400	0.01	-	0.3	5.6	-5.3	18.3	Non-Acid Forming (Barren)
RABA-OB093	RGS	EB1200803093	EA093	1696D	15.1	15.5	0.4	Sandy/Clay	Overburden	7.3	585	0.005	-	0.2	8.2	-8.0	53.6	Non-Acid Forming (Barren)

Table 1: Acid-Base Account Results for Overburden/Interburden - Kevin's Corner Project

RGS Sample ID	Source	ALS Laboratory Sample ID	Client Sample Name	Drill Hole ID	Sample Depth (m)			Sample Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr	MPA[2]	ANC[2]	NAPP[2]	ANC/MPA ratio	Sample Classification[3]
					From	To	Int.				(µS/cm)	(%)		(kg H_2SO_4/t)				
RABA-OB003	RGS	EB1200803003	EA003	1693D	15.6	15.8	0.3	Sandstone	Overburden	7.9	361	0.005	-	0.2	3.8	-3.6	24.8	Non-Acid Forming (Barren)
SABA-OB114	SRK	EB1100364098	1409C_17	1409C	16.0	17.0	1.0	SANDSTONE	Overburden	8.4	532	0.02	-	0.6	13.8	-13.2	22.5	Non-Acid Forming (Barren)
SABA-OB132	SRK	EB1100364117	1410C_17	1410C	16.0	17.0	1.0	SILTSTONE	Overburden	6.4	769	0.005	-	0.2	10.4	-10.2	67.9	Non-Acid Forming (Barren)
SABA-OB160	SRK	EB1100364142	1412C_17	1412C	16.0	17.0	1.0	SANDSTONE	Overburden	8.0	1,690	0.05	-	1.5	63.8	-62.3	41.7	Non-Acid Forming (Barren)
SABA-OB233	SRK	EB1100364198	1447L_47	1447L	16.0	17.0	1.0	SILCRETE	Overburden	6.4	979	0.04	-	1.2	3.5	-2.3	2.9	Non-Acid Forming (Barren)
RABA-OB037	RGS	EB1200803037	EA037	1579D	16.5	17.0	0.5	Sandy/Clay	Overburden	7.9	1220	0.01	-	0.3	4.4	-4.1	14.4	Non-Acid Forming (Barren)
RABA-OB075	RGS	EB1200803075	EA075	1695D	16.7	17.0	0.3	Sandy/Clay	Overburden	8.5	672	0.02	-	0.6	27.6	-27.0	45.1	Non-Acid Forming (Barren)
SABA-OB055	SRK	EB1100364035	1404C_18	1404C	17.0	18.0	1.0	SILTSTONE	Overburden	6.5	3,280	0.02	-	0.6	2.9	-2.3	4.7	Non-Acid Forming (Barren)
SABA-OB105	SRK	EB1100364085	1408C_78715	1408C	17.0	18.0	1.0	CLAY	Overburden	6.7	620	0.03	-	0.9	4.0	-3.1	4.4	Non-Acid Forming (Barren)
SABA-OB009	SRK	EB1019995012	1397D_137	1397D	17.9	19.3	1.5	CLAY	Overburden	8.1	1,580	0.01	-	0.3	13.5	-13.2	44.1	Non-Acid Forming (Barren)
SABA-OB018	SRK	EB1100364005	1398X_19	1398X	18.0	19.0	1.0	CLAY	Overburden	6.8	1,670	0.005	-	0.2	0.3	-0.1	1.6	Non-Acid Forming (Barren)
SABA-OB025	SRK	EB1100364014	1399X_19	1399X	18.0	19.0	1.0	SAND	Overburden	7.6	692	0.005	-	0.2	1.5	-1.3	9.8	Non-Acid Forming (Barren)
SABA-OB056	SRK	EB1100364036	1404C_19	1404C	18.0	19.0	1.0	SILTSTONE	Overburden	6.4	3,140	0.02	-	0.6	2.9	-2.3	4.7	Non-Acid Forming (Barren)
SABA-OB062	SRK	EB1100364042	1405C_19	1405C	18.0	19.0	1.0	SANDSTONE	Overburden	8.3	1,110	0.04	-	1.2	35.9	-34.7	29.3	Non-Acid Forming (Barren)
SABA-OB092	SRK	EB1100364072	1407C_78619	1407C	18.0	19.0	1.0	CLAY	Overburden	7.1	310	0.01	-	0.3	2.8	-2.5	9.1	Non-Acid Forming (Barren)
SABA-OB115	SRK	EB1100364099	1409C_19	1409C	18.0	19.0	1.0	SANDSTONE	Overburden	8.2	584	0.02	-	0.6	40.2	-39.6	65.6	Non-Acid Forming (Barren)
SABA-OB161	SRK	EB1100364143	1412C_19	1412C	18.0	19.0	1.0	SANDSTONE	Overburden	8.5	1,080	0.03	-	0.9	28.2	-27.3	30.7	Non-Acid Forming (Barren)
RABA-OB042	RGS	EB1200803042	EA042	1721D	18.0	18.5	0.5	Sandstone	Overburden	8.0	243	0.005	-	0.2	5.0	-4.8	32.7	Non-Acid Forming (Barren)
RABA-OB054	RGS	EB1200803054	EA054	1720D	18.0	18.4	0.4	Sandstone(carb.)	Overburden	8.1	81	0.03	-	0.9	5.6	-4.7	6.1	Non-Acid Forming (Barren)
RABA-OB061	RGS	EB1200803061	EA061	1589D	18.0	18.4	0.4	Silty/Sandstone	Overburden	7.9	393	0.005	-	0.2	3.8	-3.6	24.8	Non-Acid Forming (Barren)
RABA-OB130	RGS	EB1206468004	EA004	1690D	18.1	18.6	0.5	Sandstone	Overburden	7.5	453	0.005	-	0.2	1.6	-1.4	10.4	Non-Acid Forming (Barren)
RABA-OB069	RGS	EB1200803069	EA069	1587D	18.7	19.1	0.5	Silty/Claystone	Overburden	7.6	329	0.005	-	0.2	3.9	-3.7	25.5	Non-Acid Forming (Barren)
SABA-OB057	SRK	EB1100364037	1404C_20	1404C	19.0	20.0	1.0	SILTSTONE	Overburden	6.3	3,640	0.02	-	0.6	2.0	-1.4	3.3	Non-Acid Forming (Barren)
SABA-OB063	SRK	EB1100364043	1405C_20	1405C	19.0	20.0	1.0	SANDSTONE	Overburden	8.3	1,030	0.03	-	0.9	27.2	-26.3	29.6	Non-Acid Forming (Barren)
SABA-OB106	SRK	EB1100364086	1408C_78717	1408C	19.0	20.0	1.0	CLAY	Overburden	7.2	436	0.005	-	0.2	4.9	-4.7	32.0	Non-Acid Forming (Barren)
SABA-OB162	SRK	EB1100364144	1412C_20	1412C	19.0	20.0	1.0	SANDSTONE	Overburden	8.4	2,500	0.04	-	1.2	37.4	-36.2	30.5	Non-Acid Forming (Barren)
SABA-OB234	SRK	EB1100364199	1447L_50	1447L	19.0	20.0	1.0	SILCRETE	Overburden	6.5	999	0.01	-	0.3	8.6	-8.3	28.1	Non-Acid Forming (Barren)
SABA-OB254	SRK	EB1019995078	1453D_276	1453D	19.1	20.5	1.3	CLAYSTONE	Overburden	7.4	2,650	0.01	-	0.3	5.0	-4.7	16.3	Non-Acid Forming (Barren)
RABA-OB094	RGS	EB1200803094	EA094	1696D	19.3	19.7	0.4	Clay(Weathered Coal)	Overburden	7.8	308	0.01	-	0.3	3.6	-3.3	11.8	Non-Acid Forming (Barren)
RABA-OB013	RGS	EB1200803013	EA013	1728D	19.5	19.8	0.3	Sandstone	Overburden	7.5	704	0.01	-	0.3	5.0	-4.7	16.3	Non-Acid Forming (Barren)
SABA-OB064	SRK	EB1100364044	1405C_21	1405C	20.0	21.0	1.0	SANDSTONE	Overburden	8.2	1,400	0.04	-	1.2	36.5	-35.3	29.8	Non-Acid Forming (Barren)
SABA-OB093	SRK	EB1100364073	1407C_78621	1407C	20.0	21.0	1.0	CLAY	Overburden	7.4	355	0.005	-	0.2	3.6	-3.4	23.5	Non-Acid Forming (Barren)
SABA-OB163	SRK	EB1100364145	1412C_21	1412C	20.0	21.0	1.0	SANDSTONE	Overburden	8.4	2,350	0.03	-	0.9	30.7	-29.8	33.4	Non-Acid Forming (Barren)
SABA-OB173	SRK	EB1019995036	1414X_176	1414X	20.0	22.0	2.0	CONGLOMERATE	Overburden	7.8	2,030	0.005	-	0.2	6.0	-5.8	39.2	Non-Acid Forming (Barren)
RABA-OB076	RGS	EB1200803076	EA076	1695D	20.4	20.9	0.5	Sandstone	Overburden	7.6	256	0.05	-	1.5	5.0	-3.5	3.3	Non-Acid Forming (Barren)
SABA-OB046	SRK	EB1019995023	1403D_161	1403D	20.8	21.9	1.1	CLAY	Overburden	5.5	1,500	0.01	-	0.3	23.7	-23.4	77.4	Non-Acid Forming (Barren)
SABA-OB019	SRK	EB1100364006	1398X_22	1398X	21.0	22.0	1.0	SAND	Overburden	6.9	2,280	0.005	-	0.2	0.3	-0.1	1.6	Non-Acid Forming (Barren)
SABA-OB058	SRK	EB1100364038	1404C_22	1404C	21.0	22.0	1.0	SILTSTONE	Overburden	6.6	3,030	0.02	-	0.6	2.0	-1.4	3.3	Non-Acid Forming (Barren)
SABA-OB065	SRK	EB1100364045	1405C_22	1405C	21.0	22.0	1.0	SANDSTONE	Overburden	8.2	1,320	0.04	-	1.2	59.4	-58.2	48.5	Non-Acid Forming (Barren)
SABA-OB116	SRK	EB1100364100	1409C_22	1409C	21.0	22.0	1.0	SANDSTONE	Overburden	8.1	575	0.02	-	0.6	38.3	-37.7	62.5	Non-Acid Forming (Barren)
SABA-OB133	SRK	EB1100364118	1410C_22	1410C	21.0	22.0	1.0	MUDSTONE	Overburden	7.0	56	0.03	-	0.9	10.9	-10.0	11.9	Non-Acid Forming (Barren)
SABA-OB164	SRK	EB1100364146	1412C_22	1412C	21.0	22.0	1.0	SANDSTONE	Overburden	8.4	2,280	0.04	-	1.2	52.1	-50.9	42.5	Non-Acid Forming (Barren)
SABA-OB235	SRK	EB1100364200	1447L_52	1447L	21.0	22.0	1.0	SILCRETE	Overburden	6.4	860	0.01	-	0.3	3.9	-3.6	12.7	Non-Acid Forming (Barren)
RABA-OB052	RGS	EB1200803052	EA052	1720D	21.0	21.6	0.6	Sandstone (carb.)	Overburden	7.4	95	0.02	-	0.6	3.8	-3.2	6.2	Non-Acid Forming (Barren)
RABA-OB085	RGS	EB1200803085	EA085	1578D	21.1	21.4	0.3	Sandstone	Overburden	7.0	436	0.005	-	0.2	2.4	-2.2	15.7	Non-Acid Forming (Barren)
RABA-OB131	RGS	EB1206468005	EA005	1690D	21.3	21.8	0.4	Clay	Overburden	7.6	504	0.02	-	0.6	5.2	-4.6	8.5	Non-Acid Forming (Barren)
RABA-OB004	RGS	EB1200803004	EA004	1693D	21.5	21.8	0.3	Sandstone	Overburden	7.8	772	0.005	-	0.2	3.8	-3.6	24.8	Non-Acid Forming (Barren)
SABA-OB247	SRK	EB1019995071	1452D_269	1452D	21.6	22.2	0.6	CLAYSTONE	Overburden	6.8	443	0.02	-	0.6	8.9	-8.3	14.5	Non-Acid Forming (Barren)
SABA-OB107	SRK	EB1100364087	1408C_78720	1408C	22.0	23.0	1.0	SILTSTONE	Overburden	7.6	108	0.005	-	0.2	0.8	-0.6	5.2	Non-Acid Forming (Barren)
SABA-OB117	SRK	EB1100364101	1409C_23	1409C	22.0	23.0	1.0	SANDSTONE	Overburden	8.4	608	0.03	-	0.9	42.7	-41.8	46.5	Non-Acid Forming (Barren)
SABA-OB165	SRK	EB1100364147	1412C_23	1412C	22.0	23.0	1.0	SANDSTONE	Overburden	8.2	1,980	0.04	-	1.2	30.7	-29.5	25.1	Non-Acid Forming (Barren)
RABA-OB120	RGS	EB1200803120	EA120	1727D	22.3	22.7	0.4	Clayey/Sand	Overburden	5.2	674	0.01	-	0.3	5.1	-4.8	16.7	Non-Acid Forming (Barren)

Table 1: Acid-Base Account Results for Overburden/Interburden - Kevin's Corner Project

RGS Sample ID	Source	ALS Laboratory Sample ID	Client Sample Name	Drill Hole ID	Sample Depth (m)			Sample Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr	MPA[2]	ANC[2]	NAPP[2]	ANC/MPA ratio	Sample Classification[3]
					From	To	Int.				(µS/cm)	(%)		(kg H_2SO_4/t)				
RABA-OB043	RGS	EB1200803043	EA043	1721D	22.4	22.8	0.4	Sandstone	Overburden	7.4	314	0.005	-	0.2	5.8	-5.6	37.9	Non-Acid Forming (Barren)
SABA-OB026	SRK	EB1100364015	1399X_24	1399X	23.0	24.0	1.0	SAND	Overburden	8.1	425	0.005	-	0.2	1.4	-1.2	9.1	Non-Acid Forming (Barren)
SABA-OB059	SRK	EB1100364039	1404C_24	1404C	23.0	24.0	1.0	SILTSTONE	Overburden	5.9	4,730	0.32	0.057	1.7	4.2	-2.5	2.4	Non-Acid Forming (Barren)
SABA-OB094	SRK	EB1100364074	1407C_78624	1407C	23.0	24.0	1.0	SILTSTONE	Overburden	7.8	100	0.005	-	0.2	3.3	-3.1	21.6	Non-Acid Forming (Barren)
SABA-OB118	SRK	EB1100364102	1409C_24	1409C	23.0	24.0	1.0	SANDSTONE	Overburden	8.2	404	0.02	-	0.6	26.0	-25.4	42.4	Non-Acid Forming (Barren)
SABA-OB183	SRK	EB1100364158	1429R_24	1429R	23.0	24.0	1.0	CLAYSTONE	Overburden	7.5	2,520	0.02	-	0.6	7.8	-7.2	12.7	Non-Acid Forming (Barren)
SABA-OB236	SRK	EB1100364201	1447L_54	1447L	23.0	24.0	1.0	SANDSTONE	Overburden	6.4	743	0.01	-	0.3	1.9	-1.6	6.2	Non-Acid Forming (Barren)
RABA-OB062	RGS	EB1200803062	EA062	1589D	23.9	24.4	0.5	Coarse Sandstone	Overburden	7.4	468	0.005	-	0.2	3.4	-3.2	22.2	Non-Acid Forming (Barren)
SABA-OB035	SRK	EB1100364024	1400X_25	1400X	24.0	25.0	1.0	CLAY	Overburden	6.0	3,150	0.70	-	21.4	1.0	20.4	0.05	Potentially Acid Forming
SABA-OB066	SRK	EB1100364046	1405C_25	1405C	24.0	25.0	1.0	SANDSTONE	Overburden	8.4	1,210	0.04	-	1.2	81.0	-79.8	66.1	Non-Acid Forming (Barren)
SABA-OB119	SRK	EB1100364103	1409C_25	1409C	24.0	25.0	1.0	MUDSTONE	Overburden	8.8	395	0.02	-	0.6	50.7	-50.1	82.8	Non-Acid Forming (Barren)
SABA-OB179	SRK	EB1100364157	1414X_25	1414X	24.0	25.0	1.0	SANDSTONE	Overburden	8.3	2,120	0.005	-	0.2	3.6	-3.4	23.5	Non-Acid Forming (Barren)
RABA-OB005	RGS	EB1200803005	EA005	1693D	24.1	24.6	0.5	Sandstone	Overburden	7.6	733	0.005	-	0.2	4.0	-3.8	26.1	Non-Acid Forming (Barren)
RABA-OB070	RGS	EB1200803070	EA070	1587D	24.1	24.5	0.4	Sandstone	Overburden	7.5	207	0.005	-	0.2	2.5	-2.3	16.3	Non-Acid Forming (Barren)
RABA-OB124	RGS	EB1200803124	EA001*	1959D	24.5	25.4	0.9	Coarse Sandstone	Overburden	7.7	134	0.005	-	0.2	3.5	-3.3	22.9	Non-Acid Forming (Barren)
RABA-OB038	RGS	EB1200803038	EA038	1579D	24.6	25.1	0.5	Sandstone	Overburden	7.6	1280	0.005	-	0.2	4.6	-4.4	30.0	Non-Acid Forming (Barren)
SABA-OB010	SRK	EB1019995013	1397D_138	1397D	24.6	25.1	0.5	SILTSTONE	Overburden	7.1	744	0.08	0.053	1.6	2.5	-0.9	1.5	Non-Acid Forming (Barren)
SABA-OB067	SRK	EB1100364047	1405C_26	1405C	25.0	26.0	1.0	SANDSTONE	Overburden	8.6	872	0.03	-	0.9	168.0	-167.1	182.9	Non-Acid Forming (Barren)
SABA_CR007	SRK	EB1100364025	1400X_26	1400X	25.0	26.0	1.0	COALY SHALE	Overburden	6.0	2480	0.61	0.154	4.7	2.4	2.3	0.5	Uncertain
SABA-OB120	SRK	EB1100364104	1409C_26	1409C	25.0	26.0	1.0	CARB. MUDSTONE	Overburden	8.1	1,180	0.57	0.641	19.6	24.7	-5.1	1.3	Uncertain
SABA-OB184	SRK	EB1100364159	1429R_26	1429R	25.0	26.0	1.0	SILTSTONE	Overburden	6.6	1,670	0.02	-	0.6	6.5	-5.9	10.6	Non-Acid Forming (Barren)
SABA-OB047	SRK	EB1019995024	1403D_162	1403D	25.2	26.5	1.2	CLAYSTONE	Overburden	7.1	1,610	0.06	0.026	0.8	4.3	-3.5	5.4	Non-Acid Forming (Barren)
RABA-OB014	RGS	EB1200803014	EA014	1728D	25.3	25.7	0.4	Sandy Clay	Overburden	8.2	1230	0.02	-	0.6	9.8	-9.2	16.0	Non-Acid Forming (Barren)
RABA-OB053	RGS	EB1200803053	EA053	1720D	25.6	26.0	0.4	Sandstone	Overburden	8.1	39	0.005	-	0.2	3.0	-2.8	19.6	Non-Acid Forming (Barren)
SABA-OB039	SRK	EB1100364029	1401X_27	1401X	26.0	27.0	1.0	SANDSTONE	Overburden	4.5	726	0.19	0.028	0.9	0.8	0.1	0.9	Non-Acid Forming (Barren)
SABA-OB095	SRK	EB1100364075	1407C_78627	1407C	26.0	27.0	1.0	SILTSTONE	Overburden	6.1	396	0.02	-	0.6	1.9	-1.3	3.1	Non-Acid Forming (Barren)
SABA-OB166	SRK	EB1100364148	1412C_27	1412C	26.0	27.0	1.0	SANDSTONE	Overburden	8.5	2,040	0.03	-	0.9	29.4	-28.5	32.0	Non-Acid Forming (Barren)
RABA-OB086	RGS	EB1200803086	EA086	1578D	26.1	26.5	0.4	Sandstone	Overburden	8.2	192	0.005	-	0.2	8.6	-8.4	56.2	Non-Acid Forming (Barren)
RABA-OB125	RGS	EB1200803125	EA002*	1959D	26.2	27.1	0.9	Tuffaceous/Clay	Overburden	5.7	568	0.18	0.057	1.7	4.7	-3.0	2.7	Non-Acid Forming (Barren)
RABA-OB132	RGS	EB1206468006	EA006	1690D	26.6	27.1	0.5	Sandstone	Overburden	5.3	247	0.10	-	3.1	1.9	1.2	0.6	Uncertain
RABA-OB015	RGS	EB1200803015	EA015	1728D	26.7	27.0	0.3	Carbonaceous Silt/S	Overburden	7.2	1580	0.22	0.026	0.8	18.2	-17.4	22.9	Non-Acid Forming (Barren)
SABA-OB020	SRK	EB1100364007	1398X_28	1398X	27.0	28.0	1.0	SAND	Overburden	5.7	1,120	0.26	0.138	4.2	1.2	3.0	0.3	Uncertain
SABA-OB040	SRK	EB1100364030	1401X_28	1401X	27.0	28.0	1.0	SANDSTONE	Overburden	3.4	1,600	2.36	1.780	54.5	0.3	54.3	0.005	Potentially Acid Forming
SABA-OB068	SRK	EB1100364048	1405C_28	1405C	27.0	28.0	1.0	SANDSTONE	Overburden	8.8	510	0.03	-	0.9	41.4	-40.5	45.1	Non-Acid Forming (Barren)
SABA-OB096	SRK	EB1100364076	1407C_78628	1407C	27.0	28.0	1.0	SILTSTONE	Overburden	3.9	684	0.15	0.054	1.7	0.3	1.4	0.2	Non-Acid Forming (Barren)
SABA-OB108	SRK	EB1100364088	1408C_78725	1408C	27.0	28.0	1.0	SILTSTONE	Overburden	4.5	729	0.11	-	3.4	0.3	3.1	0.1	Uncertain
SABA-OB167	SRK	EB1100364149	1412C_28	1412C	27.0	28.0	1.0	SANDSTONE	Overburden	9.1	1,920	0.03	-	0.9	41.7	-40.8	45.4	Non-Acid Forming (Barren)
RABA-OB044	RGS	EB1200803044	EA044	1721D	27.0	27.5	0.5	Sandstone	Overburden	7.8	230	0.005	-	0.2	4.4	-4.2	28.7	Non-Acid Forming (Barren)
RABA-OB077	RGS	EB1200803077	EA077	1695D	27.1	27.5	0.4	Sandstone	Overburden	8.2	87	0.005	-	0.2	3.4	-3.2	22.2	Non-Acid Forming (Barren)
RABA-OB095	RGS	EB1200803095	EA095	1696D	27.1	27.5	0.3	Sandy/Siltstone	Interburden(C & D)	7.5	87	0.03	-	0.9	3.4	-2.5	3.7	Non-Acid Forming (Barren)
RABA-OB119	RGS	EB1200803119	EA119	1727D	27.2	27.6	0.4	Siltstone	Overburden	7.6	1320	0.005	-	0.2	6.8	-6.6	44.4	Non-Acid Forming (Barren)
RABA-OB087	RGS	EB1200803087	EA087	1578D	27.6	28.0	0.4	Sandstone	Overburden	7.7	178	0.01	-	0.3	8.2	-7.9	26.8	Non-Acid Forming (Barren)
SABA-OB109	SRK	EB1100364089	1408C_78726	1408C	28.0	29.0	1.0	SANDSTONE	Overburden	6.1	176	0.07	-	2.1	1.0	1.1	0.5	Non-Acid Forming (Barren)
RABA-OB071	RGS	EB1200803071	EA071	1587D	28.0	28.5	0.5	Sandstone	Overburden	7.1	271	0.005	-	0.2	2.5	-2.3	16.3	Non-Acid Forming (Barren)
SABA-OB248	SRK	EB1019995072	1452D_270	1452D	28.1	28.8	0.7	SILTSTONE	Overburden	9.4	829	0.02	-	0.6	14.7	-14.1	24.0	Non-Acid Forming (Barren)
SABA-OB243	SRK	EB1019995067	1451D_265	1451D	28.4	29.8	1.4	SILTSTONE	Overburden	7.8	358	0.03	-	0.9	3.4	-2.5	3.7	Non-Acid Forming (Barren)
SABA-OB011	SRK	EB1019995014	1397D_139	1397D	28.6	29.4	0.8	SANDSTONE	Overburden	7.1	372	0.04	-	1.2	2.4	-1.2	2.0	Non-Acid Forming (Barren)
SABA-OB069	SRK	EB1100364049	1405C_30	1405C	29.0	30.0	1.0	SANDSTONE	Overburden	8.6	693	0.03	-	0.9	59.4	-58.5	64.7	Non-Acid Forming (Barren)
SABA-OB097	SRK	EB1100364077	1407C_78630	1407C	29.0	30.0	1.0	SANDSTONE	Overburden	7.7	163	0.005	-	0.2	2.9	-2.7	18.9	Non-Acid Forming (Barren)
SABA-OB110	SRK	EB1100364090	1408C_78727	1408C	29.0	30.0	1.0	SANDSTONE	Overburden	6.6	221	0.02	-	0.6	1.4	-0.8	2.3	Non-Acid Forming (Barren)
SABA-OB174	SRK	EB1019995037	1414X_177	1414X	29.0	31.0	2.0	SILTSTONE	Overburden	7.0	3,750	0.02	-	0.6	5.1	-4.5	8.3	Non-Acid Forming (Barren)
SABA-OB181	SRK	EB1019995040	1429R_191	1429R	29.0	30.0	1.0	MUDSTONE	Overburden	9.2	2,240	0.01	-	0.3	14.2	-13.9	46.4	Non-Acid Forming (Barren)

Table 1: Acid-Base Account Results for Overburden/Interburden - Kevin's Corner Project

RGS Sample ID	Source	ALS Laboratory Sample ID	Client Sample Name	Drill Hole ID	Sample Depth (m)			Sample Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr	MPA[2]	ANC[2]	NAPP[2]	ANC/MPA ratio	Sample Classification[3]
					From	To	Int.				(µS/cm)	(%)		(kg H_2SO_4/t)				
SABA-OB237	SRK	EB1100364202	1447L_60	1447L	29.0	30.0	1.0	CLAY	Overburden	6.5	2,000	0.03	-	0.9	5.2	-4.3	5.7	Non-Acid Forming (Barren)
SABA-OB027	SRK	EB1100364016	1399X_31	1399X	30.0	31.0	1.0	CLAY	Overburden	7.6	2,080	0.02	-	0.6	2.6	-2.0	4.2	Non-Acid Forming (Barren)
SABA-OB070	SRK	EB1100364050	1405C_31	1405C	30.0	31.0	1.0	SANDSTONE	Overburden	8.3	1,030	0.03	-	0.9	45.8	-44.9	49.9	Non-Acid Forming (Barren)
SABA-OB098	SRK	EB1100364078	1407C_78631	1407C	30.0	31.0	1.0	SANDSTONE	Overburden	7.8	81	0.02	-	0.6	3.6	-3.0	5.9	Non-Acid Forming (Barren)
SABA-OB111	SRK	EB1100364091	1408C_78728	1408C	30.0	31.0	1.0	SANDSTONE	Overburden	6.8	157	0.02	-	0.6	1.2	-0.6	2.0	Non-Acid Forming (Barren)
SABA-OB185	SRK	EB1100364160	1429R_31	1429R	30.0	31.0	1.0	MUDSTONE	Overburden	9.3	2,060	0.02	-	0.6	40.5	-39.9	66.1	Non-Acid Forming (Barren)
RABA-OB016	RGS	EB1200803016	EA016	1728D	30.0	30.3	0.3	Carbonaceous Sand	Overburden	9.7	1040	0.02	-	0.6	40.5	-39.9	66.1	Non-Acid Forming (Barren)
RABA-OB006	RGS	EB1200803006	EA006	1693D	30.1	30.6	0.5	Sandstone	Overburden	8.0	1060	0.01	-	0.3	5.2	-4.9	17.0	Non-Acid Forming (Barren)
RABA-OB078	RGS	EB1200803078	EA078	1695D	30.1	30.4	0.3	Sandstone	Overburden	8.2	34	0.005	-	0.2	3.8	-3.6	24.8	Non-Acid Forming (Barren)
RABA-OB096	RGS	EB1200803096	EA096	1696D	30.1	30.5	0.4	Sandstone	Interburden(C & D)	7.6	43	0.005	-	0.2	2.7	-2.5	17.6	Non-Acid Forming (Barren)
RABA-OB055	RGS	EB1200803055	EA055	1720D	30.5	30.9	0.5	Sandstone	Interburden	8.2	38	0.005	-	0.2	5.1	-4.9	33.3	Non-Acid Forming (Barren)
SABA-OB021	SRK	EB1100364008	1398X_32	1398X	31.0	32.0	1.0	SANDSTONE	Interburden	6.7	540	0.11	0.048	1.5	2.3	-0.8	1.6	Non-Acid Forming (Barren)
SABA-OB028	SRK	EB1100364017	1399X_32	1399X	31.0	32.0	1.0	CLAY	Interburden	7.5	1,970	0.005	-	0.2	2.0	-1.8	13.1	Non-Acid Forming (Barren)
SABA-OB071	SRK	EB1100364051	1405C_32	1405C	31.0	32.0	1.0	SANDSTONE	Interburden	8.4	1,020	0.05	-	1.5	41.4	-39.9	27.0	Non-Acid Forming (Barren)
SABA-OB099	SRK	EB1100364079	1407C_78632	1407C	31.0	32.0	1.0	SANDSTONE	Interburden	7.7	98	0.005	-	0.2	0.3	-0.1	1.6	Non-Acid Forming (Barren)
SABA-OB175	SRK	EB1019995038	1414X_178	1414X	31.0	33.0	2.0	CARB. MUDSTONE	Interburden	6.3	3,970	0.08	-	2.5	7.7	-5.3	3.1	Non-Acid Forming (Barren)
RABA-OB063	RGS	EB1200803063	EA063	1589D	31.2	31.7	0.5	Silty/Clay	Interburden	7.6	422	0.03	-	0.9	5.6	-4.7	6.1	Non-Acid Forming (Barren)
RABA-OB118	RGS	EB1200803118	EA118	1727D	31.3	31.7	0.3	Sandstone	Interburden	8.8	626	0.01	-	0.3	10.0	-9.7	32.7	Non-Acid Forming (Barren)
SABA-OB072	SRK	EB1100364052	1405C_33	1405C	32.0	33.0	1.0	SANDSTONE	Interburden	8.3	1,020	0.03	-	0.9	30.9	-30.0	33.6	Non-Acid Forming (Barren)
SABA-OB100	SRK	EB1100364080	1407C_78633	1407C	32.0	33.0	1.0	SANDSTONE	Interburden	7.5	150	0.02	-	0.6	1.2	-0.6	2.0	Non-Acid Forming (Barren)
SABA-OB112	SRK	EB1100364092	1408C_78730	1408C	32.0	33.0	1.0	SANDSTONE	Interburden	6.7	109	0.005	-	0.2	1.7	-1.5	11.1	Non-Acid Forming (Barren)
SABA-OB186	SRK	EB1100364161	1429R_33	1429R	32.0	33.0	1.0	SANDSTONE	Interburden	9.3	2,180	0.03	-	0.9	55.2	-54.3	60.1	Non-Acid Forming (Barren)
SABA-OB238	SRK	EB1100364203	1447L_63	1447L	32.0	33.0	1.0	CLAY	Interburden	8.3	1,350	0.06	-	1.8	11.9	-10.1	6.5	Non-Acid Forming (Barren)
RABA-OB126	RGS	EB1200803126	EA003*	1959D	32.6	33.1	0.5	Sandstone (carb.)	Interburden	5.3	228	0.10	-	3.1	3.8	-0.7	1.2	Non-Acid Forming (Barren)
RABA-OB007	RGS	EB1200803007	EA007	1693D	32.7	33.1	0.4	Sandstone/Siltstone	Interburden	7.4	648	0.03	-	0.9	5.4	-4.5	5.9	Non-Acid Forming (Barren)
SABA-OB029	SRK	EB1100364018	1399X_34	1399X	33.0	34.0	1.0	SANDSTONE	Interburden	6.9	866	0.05	-	1.5	3.2	-1.7	2.1	Non-Acid Forming (Barren)
SABA-OB012	SRK	EB1019995015	1397D_140	1397D	33.4	34.9	1.5	SANDSTONE	Interburden	8.0	246	0.01	-	0.3	0.8	-0.5	2.6	Non-Acid Forming (Barren)
RABA-OB088	RGS	EB1200803088	EA088	1578D	33.4	33.8	0.3	Clayey/Siltstone	Interburden	7.4	463	0.10	-	3.1	4.0	-0.9	1.3	Non-Acid Forming (Barren)
SABA-OB210	SRK	EB1019995048	1434D_207	1434D	33.5	34.8	1.3	SANDSTONE	Interburden	6.6	558	0.005	-	0.2	2.6	-2.4	17.0	Non-Acid Forming (Barren)
RABA-OB045	RGS	EB1200803045	EA045	1721D	33.5	34.0	0.5	Silty/Clay	Interburden	7.5	119	0.005	-	0.2	5.6	-5.4	36.6	Non-Acid Forming (Barren)
SABA-OB030	SRK	EB1100364019	1399X_35	1399X	34.0	35.0	1.0	SANDSTONE	Interburden	4.4	1,590	0.11	0.005	0.2	0.3	-0.1	1.6	Non-Acid Forming (Barren)
SABA-OB134	SRK	EB1100364123	1410C_35	1410C	34.0	35.0	1.0	SILTSTONE	Interburden	8.4	556	0.02	-	0.6	38.3	-37.7	62.5	Non-Acid Forming (Barren)
RABA-OB079	RGS	EB1200803079	EA079	1695D	34.1	34.5	0.4	Coarse Sandstone	Interburden	8.0	51	0.005	-	0.2	5.6	-5.4	36.6	Non-Acid Forming (Barren)
RABA-OB072	RGS	EB1200803072	EA072	1587D	34.3	34.6	0.4	Iron-stained Clay	Interburden	7.5	444	0.01	-	0.3	5.3	-5.0	17.3	Non-Acid Forming (Barren)
RABA-OB017	RGS	EB1200803017	EA017	1728D	34.4	34.7	0.3	Silty/Sandstone	Interburden	9.6	793	0.03	-	0.9	29.0	-28.1	31.6	Non-Acid Forming (Barren)
SABA-OB031	SRK	EB1100364020	1399X_36	1399X	35.0	36.0	1.0	SANDSTONE	Interburden	4.7	1,080	0.12	0.005	0.2	0.3	-0.1	1.6	Non-Acid Forming (Barren)
SABA-OB073	SRK	EB1100364053	1405C_36	1405C	35.0	36.0	1.0	SANDSTONE	Interburden	8.6	770	0.03	-	0.9	41.4	-40.5	45.1	Non-Acid Forming (Barren)
SABA-OB239	SRK	EB1100364204	1447L_66	1447L	35.0	36.0	1.0	CLAY	Interburden	8.1	1,030	0.03	-	0.9	9.2	-8.3	10.0	Non-Acid Forming (Barren)
RABA-OB018	RGS	EB1200803018	EA018	1728D	35.0	35.5	0.4	Silty/Sandstone	Interburden	9.6	1130	0.03	-	0.9	26.6	-25.7	29.0	Non-Acid Forming (Barren)
SABA-OB048	SRK	EB1019995025	1403D_163	1403D	35.3	37.4	2.1	SILTSTONE	Interburden	7.5	261	0.02	-	0.6	3.7	-3.1	6.0	Non-Acid Forming (Barren)
RABA-OB056	RGS	EB1200803056	EA056	1720D	35.7	36.0	0.4	Sandstone	Interburden	8.0	39	0.005	-	0.2	5.4	-5.2	35.3	Non-Acid Forming (Barren)
SABA-OB121	SRK	EB1100364106	1409C_29	1409C	36.0	42.0	6.0	SANDSTONE	Interburden	8.4	594	0.05	-	1.5	53.8	-52.3	35.1	Non-Acid Forming (Barren)
RABA-OB097	RGS	EB1200803097	EA097	1696D	36.1	36.5	0.4	Sandstone	Interburden(C & D)	8.0	36	0.005	-	0.2	2.4	-2.2	15.7	Non-Acid Forming (Barren)
RABA-OB133	RGS	EB1206468007	EA007	1690D	36.1	36.6	0.5	Sandstone	Interburden	8.3	35	0.005	-	0.2	1.3	-1.1	8.5	Non-Acid Forming (Barren)
SABA-OB013	SRK	EB1019995016	1397D_141	1397D	36.9	38.4	1.5	SANDSTONE	Interburden	8.3	183	0.005	-	0.2	1.0	-0.8	6.5	Non-Acid Forming (Barren)
SABA-OB187	SRK	EB1100364162	1429R_38	1429R	37.0	38.0	1.0	SANDSTONE	Interburden	9.3	1,620	0.04	-	1.2	52.7	-51.5	43.0	Non-Acid Forming (Barren)
RABA-OB046	RGS	EB1200803046	EA046	1721D	37.2	37.5	0.3	Silty/Sandstone	Interburden	7.1	142	0.03	-	0.9	5.6	-4.7	6.1	Non-Acid Forming (Barren)
RABA-OB064	RGS	EB1200803064	EA064	1589D	37.7	38.2	0.5	Weathered Coal	D Roof	6.6	335	0.09	-	2.8	12.4	-9.6	4.5	Non-Acid Forming (Barren)
RABA-OB117	RGS	EB1200803117	EA117	1727D	37.8	38.2	0.4	Siltstone	Interburden	9.7	859	0.02	-	0.6	49.6	-49.0	81.0	Non-Acid Forming (Barren)
RABA-OB080	RGS	EB1200803080	EA080	1695D	38.3	38.8	0.5	Sandy/Siltstone	Interburden(C & D)	7.9	128	0.06	-	1.8	7.4	-5.6	4.0	Non-Acid Forming (Barren)
RABA-OB019	RGS	EB1200803019	EA019	1728D	38.5	38.8	0.3	Sandy/siltstone	Interburden	9.5	875	0.02	-	0.6	25.3	-24.7	41.3	Non-Acid Forming (Barren)
RABA-OB073	RGS	EB1200803073	EA073	1587D	38.7	39.1	0.4	Sandstone/Carb.Mudst.	Interburden	4.4	330	0.12	0.070	2.1	3.2	-1.1	1.5	Non-Acid Forming (Barren)

Table 1: Acid-Base Account Results for Overburden/Interburden - Kevin's Corner Project

RGS Sample ID	Source	ALS Laboratory Sample ID	Client Sample Name	Drill Hole ID	Sample Depth (m)			Sample Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr	MPA[2]	ANC[2]	NAPP[2]	ANC/MPA ratio	Sample Classification[3]
					From	To	Int.				(µS/cm)	(%)		(kg H_2SO_4/t)				
SABA-OB074	SRK	EB1100364054	1405C_40	1405C	39.0	40.0	1.0	SANDSTONE	Interburden	8.4	1,010	0.04	-	1.2	33.4	-32.2	27.3	Non-Acid Forming (Barren)
SABA-OB135	SRK	EB1100364124	1410C_40	1410C	39.0	40.0	1.0	SANDSTONE	Interburden	9.1	252	0.02	-	0.6	71.1	-70.5	116.1	Non-Acid Forming (Barren)
SABA-OB240	SRK	EB1100364205	1447L_70	1447L	39.0	40.0	1.0	CLAY	Interburden	8.1	1,260	0.07	-	2.1	6.4	-4.3	3.0	Non-Acid Forming (Barren)
RABA-OB134	RGS	EB1206468008	EA008	1690D	39.1	39.6	0.5	Sandstone	Interburden	8.0	32	0.005	-	0.2	1.9	-1.7	12.4	Non-Acid Forming (Barren)
RABA-OB020	RGS	EB1200803020	EA020	1728D	39.5	39.8	0.4	Sandstone	Interburden(C & D)	10.0	750	0.01	-	0.3	118.0	-117.7	385.3	Non-Acid Forming (Barren)
RABA-OB057	RGS	EB1200803057	EA057	1720D	39.6	40.0	0.4	Siltstone (carb.)	Interburden	7.2	151	0.06	-	1.8	6.4	-4.6	3.5	Non-Acid Forming (Barren)
SABA-OB075	SRK	EB1100364055	1405C_42	1405C	41.0	42.0	1.0	SANDSTONE	Interburden	8.7	557	0.03	-	0.9	26.6	-25.7	29.0	Non-Acid Forming (Barren)
SABA-OB188	SRK	EB1100364164	1429R_42	1429R	41.0	42.0	1.0	CLAY	Interburden	8.2	2,040	0.18	-	5.5	0.3	5.3	0.05	PAF- Low Capacity
SABA-OB154	SRK	EB1019995031	1412C_169	1412C	41.6	42.0	0.5	SANDSTONE	Interburden	7.5	1,580	0.09	0.057	1.7	4.6	-2.9	2.6	Non-Acid Forming (Barren)
RABA-OB089	RGS	EB1200803089	EA089	1578D	41.7	42.1	0.4	Silty/Sandstone	Interburden(C & D)	6.9	398	0.11	0.064	2.0	6.5	-4.5	3.3	Non-Acid Forming (Barren)
SABA-OB076	SRK	EB1100364056	1405C_43	1405C	42.0	43.0	1.0	SANDSTONE	Interburden	8.6	601	0.04	-	1.2	56.9	-55.7	46.4	Non-Acid Forming (Barren)
SABA-OB122	SRK	EB1100364107	1409C_30	1409C	42.0	48.0	6.0	SANDSTONE	Interburden	8.5	679	0.02	-	0.6	69.9	-69.3	114.1	Non-Acid Forming (Barren)
SABA-OB189	SRK	EB1100364165	1429R_43	1429R	42.0	43.0	1.0	CARB. SHALE	Interburden	8.4	2,120	0.31	0.138	4.2	40.9	-36.7	9.7	Non-Acid Forming
RABA-OB098	RGS	EB1200803098	EA098	1696D	42.1	42.5	0.4	Sandstone	Interburden(C & D)	8.0	75	0.005	-	0.2	1.7	-1.5	11.1	Non-Acid Forming (Barren)
RABA-OB008	RGS	EB1200803008	EA008	1693D	42.5	42.8	0.3	Sandstone	Interburden(D & E)	8.2	54	0.01	-	0.3	4.0	-3.7	13.1	Non-Acid Forming (Barren)
SABA-OB244	SRK	EB1019995068	1451D_266	1451D	42.7	43.4	0.7	CARB. SANDSTONE	Interburden	7.4	417	0.06	0.016	0.5	3.7	-3.2	7.6	Non-Acid Forming (Barren)
SABA-OB077	SRK	EB1100364057	1405C_44	1405C	43.0	44.0	1.0	SANDSTONE	Interburden	8.5	790	0.04	-	1.2	24.7	-23.5	20.2	Non-Acid Forming (Barren)
SABA-OB190	SRK	EB1100364166	1429R_44	1429R	43.0	44.0	1.0	CARB. SHALE	Interburden	8.3	2,150	0.19	0.158	4.8	19.0	-14.2	3.9	Non-Acid Forming
RABA-OB047	RGS	EB1200803047	EA047	1721D	43.1	43.5	0.5	Tuff	Interburden	7.5	75	0.005	-	0.2	7.4	-7.2	48.3	Non-Acid Forming (Barren)
RABA-OB116	RGS	EB1200803116	EA116	1727D	44.0	44.3	0.3	Tuff	B Floor	10.0	583	0.02	-	0.6	46.5	-45.9	75.9	Non-Acid Forming (Barren)
SABA-OB136	SRK	EB1100364125	1410C_46	1410C	45.0	46.0	1.0	SANDSTONE	Interburden	9.0	369	0.01	-	0.3	170.0	-169.7	555.1	Non-Acid Forming (Barren)
RABA-OB081	RGS	EB1200803081	EA081	1695D	45.1	45.6	0.5	Sandy/Siltstone	Parting (DU/DM)	3.2	1310	1.13	0.674	20.6	2.5	18.1	0.12	Potentially Acid Forming
RABA-OB135	RGS	EB1206468009	EA009	1690D	45.3	45.9	0.6	Siltstone	Interburden	6.3	54	0.005	-	0.2	1.0	-0.8	6.5	Non-Acid Forming (Barren)
SABA-OB137	SRK	EB1100364126	1410C_47	1410C	46.0	47.0	1.0	SANDSTONE	Interburden	8.8	378	0.02	-	0.6	60.0	-59.4	98.0	Non-Acid Forming (Barren)
SABA-OB241	SRK	EB1100364206	1447L_77	1447L	46.0	47.0	1.0	CLAY	Interburden	7.9	736	0.05	-	1.5	11.4	-9.9	7.4	Non-Acid Forming (Barren)
SABA-OB182	SRK	EB1019995041	1429R_192	1429R	46.4	46.8	0.5	CARB. SHALE	Interburden	7.1	4,340	0.96	0.434	13.3	19.4	-6.1	1.5	Uncertain
SABA-OB245	SRK	EB1019995069	1451D_267	1451D	46.9	48.0	1.1	SANDSTONE	Interburden	4.0	1,120	0.24	-	7.4	4.3	3.1	0.6	Uncertain
SABA-OB078	SRK	EB1100364058	1405C_48	1405C	47.0	48.0	1.0	SANDSTONE	Interburden	8.5	723	0.04	-	1.2	50.7	-49.5	41.4	Non-Acid Forming (Barren)
SABA-OB138	SRK	EB1100364127	1410C_48	1410C	47.0	48.0	1.0	SANDSTONE	Interburden	9.1	342	0.01	-	0.3	167.0	-166.7	545.3	Non-Acid Forming (Barren)
RABA-OB048	RGS	EB1200803048	EA048	1721D	47.4	47.9	0.4	Sandstone	Interburden	7.9	31	0.005	-	0.2	6.2	-6.0	40.5	Non-Acid Forming (Barren)
RABA-OB136	RGS	EB1206468010	EA010	1690D	47.7	48.1	0.4	Sandstone	Interburden	8.2	40	0.02	-	0.6	2.1	-1.5	3.4	Non-Acid Forming (Barren)
SABA-OB079	SRK	EB1100364059	1405C_49	1405C	48.0	49.0	1.0	SANDSTONE	Interburden	8.7	74	0.03	-	0.9	35.2	-34.3	38.3	Non-Acid Forming (Barren)
SABA-OB123	SRK	EB1100364108	1409C_31	1409C	48.0	54.0	6.0	SANDSTONE	Interburden	8.5	639	0.04	-	1.2	56.9	-55.7	46.4	Non-Acid Forming (Barren)
SABA-OB139	SRK	EB1100364128	1410C_49	1410C	48.0	49.0	1.0	SANDSTONE	Interburden	8.9	307	0.02	-	0.6	28.2	-27.6	46.0	Non-Acid Forming (Barren)
SABA-OB211	SRK	EB1019995049	1434D_208	1434D	48.1	49.8	1.7	SILTSTONE	Interburden	9.6	521	0.03	-	0.9	11.8	-10.9	12.8	Non-Acid Forming (Barren)
SABA-OB249	SRK	EB1019995073	1452D_271	1452D	48.1	49.5	1.4	SANDSTONE	Interburden	7.6	638	0.04	-	1.2	36.5	-35.3	29.8	Non-Acid Forming (Barren)
SABA-OB080	SRK	EB1100364060	1405C_50	1405C	49.0	50.0	1.0	SANDSTONE	Interburden	8.6	778	0.05	-	1.5	24.1	-22.6	15.7	Non-Acid Forming (Barren)
SABA-OB140	SRK	EB1100364129	1410C_50	1410C	49.0	50.0	1.0	SANDSTONE	Interburden	9.1	522	0.02	-	0.6	30.7	-30.1	50.1	Non-Acid Forming (Barren)
SABA-OB049	SRK	EB1019995026	1403D_164	1403D	49.5	50.1	0.6	PEBBLE CONGLOM.	Interburden	7.7	171	0.005	-	0.2	0.3	-0.1	1.6	Non-Acid Forming (Barren)
SABA-OB081	SRK	EB1100364061	1405C_51	1405C	50.0	51.0	1.0	SANDSTONE	Interburden	8.6	772	0.04	-	1.2	23.5	-22.3	19.2	Non-Acid Forming (Barren)
SABA-OB141	SRK	EB1100364130	1410C_51	1410C	50.0	51.0	1.0	SANDSTONE	Interburden	9.0	357	0.02	-	0.6	119.0	-118.4	194.3	Non-Acid Forming (Barren)
SABA-OB168	SRK	EB1100364150	1412C_51	1412C	50.0	51.0	1.0	SANDSTONE	Interburden	8.1	360	0.04	-	1.2	3.9	-2.7	3.2	Non-Acid Forming (Barren)
RABA-OB137	RGS	EB1206468011	EA011	1690D	50.4	50.9	0.5	Sandstone	Interburden	6.9	57	0.02	-	0.6	1.1	-0.5	1.8	Non-Acid Forming (Barren)
SABA-OB255	SRK	EB1019995079	1453D_277	1453D	51.0	52.2	1.2	SANDSTONE	Interburden	9.6	2,110	0.03	-	0.9	62.2	-61.3	67.7	Non-Acid Forming (Barren)
SABA-OB082	SRK	EB1100364062	1405C_52	1405C	51.0	52.0	1.0	SANDSTONE	Interburden	6.4	634	0.04	-	1.2	29.1	-27.9	23.8	Non-Acid Forming (Barren)
SABA-OB169	SRK	EB1100364151	1412C_52	1412C	51.0	52.0	1.0	SANDSTONE	Interburden	8.2	479	0.18	0.148	4.5	4.8	-0.3	1.1	Uncertain
RABA-OB099	RGS	EB1200803099	EA099	1696D	51.1	51.4	0.3	Siltstone	Interburden(C & D)	6.5	389	0.11	0.055	1.7	1.9	-0.2	1.1	Non-Acid Forming (Barren)
SABA-OB083	SRK	EB1100364063	1405C_53	1405C	52.0	53.0	1.0	SANDSTONE	Interburden	8.6	522	0.03	-	0.9	32.8	-31.9	35.7	Non-Acid Forming (Barren)
SABA-OB170	SRK	EB1100364152	1412C_53	1412C	52.0	53.0	1.0	SANDSTONE	Interburden	7.6	325	0.03	-	0.9	2.7	-1.8	2.9	Non-Acid Forming (Barren)
SABA-OB050	SRK	EB1019995027	1403D_165	1403D	52.5	53.6	1.1	SANDSTONE	Interburden	6.5	583	0.05	-	1.5	0.8	0.7	0.5	Non-Acid Forming (Barren)
SABA-OB084	SRK	EB1100364064	1405C_54	1405C	53.0	54.0	1.0	SANDSTONE	Interburden	8.4	741	0.06	-	1.8	216.0	-214.2	117.6	Non-Acid Forming (Barren)
SABA-OB261	SRK	EB1019995085	1454D_284	1454D	53.4	54.0	0.7	SILTSTONE	Interburden	9.5	930	0.03	-	0.9	12.2	-11.3	13.3	Non-Acid Forming (Barren)

Table 1: Acid-Base Account Results for Overburden/Interburden - Kevin's Corner Project

RGS Sample ID	Source	ALS Laboratory Sample ID	Client Sample Name	Drill Hole ID	Sample Depth (m)			Sample Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr	MPA[2]	ANC[2]	NAPP[2]	ANC/MPA ratio	Sample Classification[3]
					From	To	Int.				(µS/cm)	(%)		(kg H_2SO_4/t)				
SABA-OB124	SRK	EB1100364109	1409C_32	1409C	54.0	60.0	6.0	SANDSTONE	Interburden	8.7	663	0.06	-	1.8	80.4	-78.6	43.8	Non-Acid Forming (Barren)
RABA-OB021	RGS	EB1200803021	EA021	1728D	54.0	54.3	0.3	Sandstone	Interburden(C & D)	9.6	506	0.05	-	1.5	96.1	-94.6	62.8	Non-Acid Forming (Barren)
RABA-OB022	RGS	EB1200803022	EA022	1728D	54.8	55.1	0.3	Sandstone	Interburden(C & D)	9.5	471	0.04	-	1.2	58.0	-56.8	47.3	Non-Acid Forming (Barren)
RABA-OB100	RGS	EB1200803100	EA100	1696D	54.9	55.2	0.3	Sandy/Siltstone	Interburden(C & D)	5.0	268	0.14	0.085	2.6	2.5	0.1	1.0	Non-Acid Forming (Barren)
SABA-OB171	SRK	EB1100364153	1412C_56	1412C	55.0	56.0	1.0	SANDSTONE	Interburden	7.7	295	0.05	-	1.5	3.7	-2.2	2.4	Non-Acid Forming (Barren)
SABA-OB142	SRK	EB1100364131	1410C_57	1410C	56.0	57.0	1.0	SILTSTONE	Interburden	8.8	415	0.01	-	0.3	110.0	-109.7	359.2	Non-Acid Forming (Barren)
SABA-OB143	SRK	EB1100364132	1410C_58	1410C	57.0	58.0	1.0	SANDSTONE	Interburden	8.9	369	0.05	-	1.5	47.2	-45.7	30.8	Non-Acid Forming (Barren)
SABA-OB144	SRK	EB1100364133	1410C_59	1410C	58.0	59.0	1.0	SANDSTONE	Interburden	8.9	357	0.03	-	0.9	40.5	-39.6	44.1	Non-Acid Forming (Barren)
SABA-OB256	SRK	EB1019995080	1453D_278	1453D	58.3	58.6	0.3	CARB. MUDSTONE	Interburden	9.4	1,590	0.35	0.024	0.7	16.4	-15.7	22.3	Non-Acid Forming (Barren)
RABA-OB101	RGS	EB1200803101	EA101	1696D	58.7	59.1	0.4	Silty/Sandstone	Interburden	6.6	83	0.08	-	2.5	3.9	-1.5	1.6	Non-Acid Forming (Barren)
RABA-OB115	RGS	EB1200803115	EA115	1727D	58.8	59.3	0.5	Sandstone	Interburden(B & C)	9.5	622	0.15	0.009	0.3	106.0	-105.7	384.6	Non-Acid Forming (Barren)
SABA-OB145	SRK	EB1100364134	1410C_60	1410C	59.0	60.0	1.0	SANDSTONE	Interburden	8.8	545	0.03	-	0.9	42.9	-42.0	46.7	Non-Acid Forming (Barren)
SABA-OB155	SRK	EB1019995032	1412C_170	1412C	59.6	60.4	0.9	SILTSTONE	Interburden	7.5	154	0.02	-	0.6	2.4	-1.8	3.9	Non-Acid Forming (Barren)
SABA-OB125	SRK	EB1100364110	1409C_33	1409C	60.0	66.0	6.0	SANDSTONE	Interburden	9.0	350	0.04	-	1.2	64.9	-63.7	53.0	Non-Acid Forming (Barren)
RABA-OB023	RGS	EB1200803023	EA023	1728D	60.8	61.1	0.3	Sandstone	Interburden(C & D)	9.6	432	0.04	-	1.2	44.7	-43.5	36.5	Non-Acid Forming (Barren)
SABA-OB220	SRK	EB1019995058	1445D_233	1445D	63.2	63.7	0.4	CARB. SANDSTONE	Interburden	8.2	1,640	0.35	0.188	5.8	26.3	-20.5	4.6	Non-Acid Forming
SABA-OB156	SRK	EB1019995033	1412C_171	1412C	63.3	63.5	0.3	CARB. MUDSTONE	Interburden	4.9	989	0.19	0.051	1.6	5.0	-3.4	3.2	Non-Acid Forming (Barren)
RABA-OB024	RGS	EB1200803024	EA024	1728D	63.3	63.6	0.3	Sandstone	Interburden(C & D)	9.6	378	0.02	-	0.6	247.0	-246.4	403.3	Non-Acid Forming (Barren)
SABA-OB146	SRK	EB1100364135	1410C_65	1410C	64.0	65.0	1.0	SANDSTONE	Interburden	8.6	553	0.02	-	0.6	24.5	-23.9	40.0	Non-Acid Forming (Barren)
SABA-OB126	SRK	EB1100364111	1409C_34	1409C	66.0	72.0	6.0	SILTSTONE	Interburden	8.7	522	0.05	-	1.5	90.7	-89.2	59.2	Non-Acid Forming (Barren)
RABA-OB114	RGS	EB1200803114	EA114	1727D	66.0	66.5	0.5	Sandstone	Interburden(B & C)	9.6	525	0.03	-	0.9	71.3	-70.4	77.6	Non-Acid Forming (Barren)
SABA-OB212	SRK	EB1019995050	1434D_209	1434D	66.9	69.0	2.1	SANDSTONE	Interburden	9.8	574	0.04	-	1.2	0.3	1.0	0.2	Non-Acid Forming (Barren)
SABA-OB147	SRK	EB1100364136	1410C_70	1410C	69.0	70.0	1.0	SANDSTONE	Interburden	8.6	573	0.02	-	0.6	50.3	-49.7	82.1	Non-Acid Forming (Barren)
RABA-OB025	RGS	EB1200803025	EA025	1728D	69.5	70.0	0.5	Sandstone (carb.)	Interburden(C & D)	9.5	356	0.04	-	1.2	45.9	-44.7	37.5	Non-Acid Forming (Barren)
SABA-OB157	SRK	EB1019995034	1412C_173	1412C	71.1	71.7	0.6	SANDSTONE	Interburden	5.3	568	0.11	0.064	2.0	1.0	1.0	0.5	Non-Acid Forming (Barren)
SABA-OB221	SRK	EB1019995059	1445D_234	1445D	71.9	72.7	0.8	SILTSTONE	Interburden	9.9	1,740	0.04	-	1.2	30.8	-29.6	25.1	Non-Acid Forming (Barren)
RABA-OB113	RGS	EB1200803113	EA113	1727D	72.0	72.5	0.5	Sandstone	Interburden(B & C)	9.5	532	0.03	-	0.9	131.0	-130.1	142.6	Non-Acid Forming (Barren)
SABA-OB148	SRK	EB1100364137	1410C_74	1410C	73.0	74.0	1.0	SANDSTONE	Interburden	8.6	631	0.02	-	0.6	35.6	-35.0	58.1	Non-Acid Forming (Barren)
SABA-OB191	SRK	EB1100364168	1429R_74	1429R	73.0	74.0	1.0	SILTSTONE	Interburden	9.2	420	0.02	-	0.6	36.0	-35.4	58.8	Non-Acid Forming (Barren)
RABA-OB026	RGS	EB1200803026	EA026	1728D	75.0	75.4	0.4	Sandstone	Interburden(C & D)	9.5	423	0.02	-	0.6	93.1	-92.5	152.0	Non-Acid Forming (Barren)
RABA-OB112	RGS	EB1200803112	EA112	1727D	76.0	76.5	0.5	Sandstone	Interburden(B & C)	9.6	533	0.02	-	0.6	81.0	-80.4	132.2	Non-Acid Forming (Barren)
SABA-OB149	SRK	EB1100364138	1410C_78	1410C	77.0	78.0	1.0	SANDSTONE	Interburden	8.7	590	0.03	-	0.9	36.2	-35.3	39.4	Non-Acid Forming (Barren)
SABA-OB262	SRK	EB1019995086	1454D_285	1454D	77.8	79.6	1.8	SILTSTONE	Interburden	9.8	1,020	0.03	-	0.9	39.7	-38.8	43.2	Non-Acid Forming (Barren)
SABA-OB192	SRK	EB1100364169	1429R_80	1429R	79.0	80.0	1.0	SILTSTONE	Interburden	9.3	901	0.02	-	0.6	40.3	-39.7	65.8	Non-Acid Forming (Barren)
RABA-OB027	RGS	EB1200803027	EA027	1728D	80.4	80.8	0.4	Sandy/Siltstone	Interburden(C & D)	8.8	380	0.03	-	0.9	93.1	-92.2	101.3	Non-Acid Forming (Barren)
SABA-OB005	SRK	EB1019995008	1389R_107	1389R	81.0	83.4	2.4	SANDSTONE	Interburden	7.3	1,040	0.38	0.244	7.5	5.0	2.5	0.7	Uncertain
SABA-OB193	SRK	EB1100364170	1429R_83	1429R	82.0	83.0	1.0	SILTSTONE	Interburden	9.3	1,040	0.02	-	0.6	43.9	-43.3	71.7	Non-Acid Forming (Barren)
SABA-OB150	SRK	EB1100364139	1410C_84	1410C	83.0	84.0	1.0	SILTSTONE	Interburden	8.4	542	0.04	-	1.2	8.3	-7.1	6.8	Non-Acid Forming (Barren)
SABA-OB194	SRK	EB1100364171	1429R_84	1429R	83.0	84.0	1.0	SILTSTONE	Interburden	9.3	846	0.02	-	0.6	56.1	-55.5	91.6	Non-Acid Forming (Barren)
RABA-OB028	RGS	EB1200803028	EA028	1728D	83.3	83.6	0.3	Silty/Sandstone	Interburden(C & D)	9.4	490	0.03	-	0.9	32.6	-31.7	35.5	Non-Acid Forming (Barren)
SABA-OB195	SRK	EB1100364172	1429R_85	1429R	84.0	85.0	1.0	SILTSTONE	Interburden	9.1	1,220	0.02	-	0.6	47.0	-46.4	76.7	Non-Acid Forming (Barren)
RABA-OB111	RGS	EB1200803111	EA111	1727D	84.0	84.6	0.6	Silty/Sandstone	Interburden(B & C)	9.4	581	0.03	-	0.9	73.7	-72.8	80.2	Non-Acid Forming (Barren)
SABA-OB257	SRK	EB1019995081	1453D_279	1453D	85.5	86.8	1.3	CARB. SANDSTONE	Interburden	9.6	868	0.02	-	0.6	65.4	-64.8	106.8	Non-Acid Forming (Barren)
SABA-OB196	SRK	EB1100364173	1429R_88	1429R	87.0	88.0	1.0	SILTSTONE	Interburden	8.9	1,330	0.02	-	0.6	40.3	-39.7	65.8	Non-Acid Forming (Barren)
SABA-OB250	SRK	EB1019995074	1452D_272	1452D	87.1	89.1	2.0	SILTSTONE	Interburden	9.3	413	0.04	-	1.2	30.1	-28.9	24.6	Non-Acid Forming (Barren)
SABA-OB003	SRK	EB1019995004	1388R_100	1388R	89.0	91.4	2.4	SANDSTONE	Interburden	7.0	991	0.37	0.221	6.8	6.4	0.4	0.9	Uncertain
RABA-OB029	RGS	EB1200803029	EA029	1728D	89.3	89.7	0.4	Siltstone	Interburden(C & D)	9.2	438	0.04	-	1.2	31.4	-30.2	25.6	Non-Acid Forming (Barren)
RABA-OB110	RGS	EB1200803110	EA110	1727D	89.5	90.0	0.5	Silty/Sandstone	Interburden(B & C)	9.6	524	0.03	-	0.9	260.0	-259.1	283.0	Non-Acid Forming (Barren)
SABA-OB197	SRK	EB1100364174	1429R_92	1429R	91.0	92.0	1.0	SILTSTONE	Interburden	9.2	1,090	0.02	-	0.6	164.0	-163.4	267.8	Non-Acid Forming (Barren)
SABA-OB213	SRK	EB1019995051	1434D_210	1434D	91.6	92.5	0.9	SILTSTONE	Interburden	9.4	601	0.04	-	1.2	21.2	-20.0	17.3	Non-Acid Forming (Barren)
RABA-OB030	RGS	EB1200803030	EA030	1728D	93.0	93.5	0.5	Sandy/Siltstone	Interburden(C & D)	9.0	335	0.04	-	1.2	16.6	-15.4	13.6	Non-Acid Forming (Barren)
SABA-OB198	SRK	EB1100364175	1429R_95	1429R	94.0	95.0	1.0	SANDSTONE	Interburden	8.6	1,040	0.05	-	1.5	34.8	-33.3	22.7	Non-Acid Forming (Barren)

Table 1: Acid-Base Account Results for Overburden/Interburden - Kevin's Corner Project

RGS Sample ID	Source	ALS Laboratory Sample ID	Client Sample Name	Drill Hole ID	Sample Depth (m)			Sample Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr	MPA[2]	ANC[2]	NAPP[2]	ANC/MPA ratio	Sample Classification[3]
					From	To	Int.				(µS/cm)	(%)		(kg H_2SO_4/t)				
SABA-OB263	SRK	EB1019995087	1454D_286	1454D	94.2	95.0	0.8	SANDSTONE	Interburden	8.9	777	0.22	0.020	0.6	8.9	-8.3	14.5	Non-Acid Forming (Barren)
RABA-OB109	RGS	EB1200803109	EA109	1727D	96.0	96.5	0.5	Silty/Sandstone	Interburden(B & C)	9.4	457	0.03	-	0.9	68.9	-68.0	75.0	Non-Acid Forming (Barren)
SABA-OB199	SRK	EB1100364176	1429R_98	1429R	97.0	98.0	1.0	SANDSTONE	Interburden	9.0	1,080	0.03	-	0.9	45.2	-44.3	49.2	Non-Acid Forming (Barren)
RABA-OB031	RGS	EB1200803031	EA031	1728D	97.7	98.1	0.4	Sandy/Siltstone	Interburden(C & D)	8.9	371	0.04	-	1.2	35.0	-33.8	28.6	Non-Acid Forming (Barren)
SABA-OB251	SRK	EB1019995075	1452D_273	1452D	99.1	99.5	0.4	MUDSTONE	Interburden	9.8	752	0.08	-	2.5	14.2	-11.8	5.8	Non-Acid Forming (Barren)
RABA-OB108	RGS	EB1200803108	EA108	1727D	99.9	100.5	0.6	Silty/Sandstone	Interburden(B & C)	9.2	409	0.05	-	1.5	25.3	-23.8	16.5	Non-Acid Forming (Barren)
RABA-OB032	RGS	EB1200803032	EA032	1728D	102.0	102.5	0.5	Sandy/Siltstone	Interburden(C & D)	9.0	331	0.03	-	0.9	43.5	-42.6	47.3	Non-Acid Forming (Barren)
RABA-OB107	RGS	EB1200803107	EA107	1727D	103.9	104.4	0.5	Sandstone (carb.)	Interburden(B & C)	9.3	458	0.08	-	2.5	15.7	-13.3	6.4	Non-Acid Forming (Barren)
RABA-OB033	RGS	EB1200803033	EA033	1728D	106.8	107.1	0.3	Sandy/Siltstone	Interburden(C & D)	9.1	296	0.04	-	1.2	31.4	-30.2	25.6	Non-Acid Forming (Barren)
RABA-OB034	RGS	EB1200803034	EA034	1728D	109.1	109.6	0.5	Sandy/Siltstone	Interburden	8.7	204	0.03	-	0.9	12.5	-11.6	13.6	Non-Acid Forming (Barren)
RABA-OB106	RGS	EB1200803106	EA106	1727D	110.3	110.7	0.4	Coaly/Siltstone	Interburden(B & C)	9.4	254	0.07	-	2.1	176.0	-173.9	82.1	Non-Acid Forming (Barren)
SABA-OB258	SRK	EB1019995082	1453D_280	1453D	111.6	112.4	0.8	SANDSTONE	Interburden	9.6	1,170	0.03	-	0.9	52.6	-51.7	57.3	Non-Acid Forming (Barren)
SABA-OB252	SRK	EB1019995076	1452D_274	1452D	112.5	113.6	1.1	SANDSTONE	Interburden	5.4	437	0.07	0.067	2.1	0.7	1.4	0.3	Non-Acid Forming (Barren)
SABA-OB200	SRK	EB1100364178	1429R_119	1429R	118.0	119.0	1.0	SILTSTONE	Interburden	6.5	1,150	0.50	0.407	12.5	9.8	2.7	0.8	Uncertain
SABA-OB201	SRK	EB1100364179	1429R_120	1429R	119.0	120.0	1.0	SILTSTONE	Interburden	7.4	782	0.45	0.441	13.5	5.0	8.5	0.37	PAF- Low Capacity
SABA-OB202	SRK	EB1100364180	1429R_121	1429R	120.0	121.0	1.0	SILTSTONE	Interburden	7.4	941	0.18	0.118	3.6	9.2	-5.6	2.5	Non-Acid Forming
SABA-OB217	SRK	EB1019995055	1444D_227	1444D	120.9	121.4	0.5	SANDSTONE	Interburden	8.0	139	0.01	-	0.3	1.4	-1.1	4.6	Non-Acid Forming (Barren)
SABA-OB203	SRK	EB1100364181	1429R_122	1429R	121.0	122.0	1.0	SILTSTONE	Interburden	8.1	872	0.09	-	2.8	3.1	-0.3	1.1	Non-Acid Forming (Barren)
RABA-OB105	RGS	EB1200803105	EA105	1727D	126.0	126.4	0.4	Sandstone (carb.)	Interburden(C & D)	8.1	66	0.005	-	0.2	3.4	-3.2	22.2	Non-Acid Forming (Barren)
SABA-OB218	SRK	EB1019995056	1444D_228	1444D	126.7	127.7	1.1	CARB. SHALE	Interburden	8.0	622	0.18	0.058	1.8	8.9	-7.1	5.0	Non-Acid Forming (Barren)
SABA-OB204	SRK	EB1100364182	1429R_129	1429R	128.0	129.0	1.0	SANDSTONE	Interburden	8.4	359	0.02	-	0.6	5.5	-4.9	9.0	Non-Acid Forming (Barren)
SABA-OB205	SRK	EB1100364183	1429R_130	1429R	129.0	130.0	1.0	SANDSTONE	Interburden	7.7	545	0.16	0.044	1.3	6.9	-5.6	5.1	Non-Acid Forming (Barren)
SABA-OB206	SRK	EB1100364185	1429R_132	1429R	131.0	132.0	1.0	MUDSTONE	Interburden	8.0	474	0.06	-	1.8	12.6	-10.8	6.9	Non-Acid Forming (Barren)
RABA-OB104	RGS	EB1200803104	EA104	1727D	131.3	131.7	0.4	Sandstone	Interburden(C & D)	7.2	67	0.02	-	0.6	2.4	-1.8	3.9	Non-Acid Forming (Barren)
SABA-OB207	SRK	EB1100364186	1429R_133	1429R	132.0	133.0	1.0	MUDSTONE	Interburden	7.8	626	0.05	-	1.5	11.2	-9.7	7.3	Non-Acid Forming (Barren)
SABA-OB219	SRK	EB1019995057	1444D_229	1444D	132.5	133.0	0.5	SILTSTONE	Interburden	8.3	142	0.02	-	0.6	3.7	-3.1	6.0	Non-Acid Forming (Barren)
RABA-OB103	RGS	EB1200803103	EA103	1727D	134.3	134.7	0.4	Coaly/Siltstone	Interburden(C & D)	5.2	579	0.33	0.144	4.4	9.4	-5.0	2.1	Non-Acid Forming
SABA-OB214	SRK	EB1019995052	1434D_211	1434D	135.2	137.9	2.7	SANDSTONE	Interburden	7.9	178	0.16	0.160	4.9	1.0	3.9	0.2	Uncertain
SABA-OB259	SRK	EB1019995083	1453D_281	1453D	136.5	138.1	1.6	SILTSTONE	Interburden	8.7	207	0.01	-	0.3	1.6	-1.3	5.2	Non-Acid Forming (Barren)
RABA-OB102	RGS	EB1200803102	EA102	1727D	137.3	137.8	0.5	Sandy/Siltstone	Interburden(C & D)	5.7	419	0.26	0.116	3.6	8.0	-4.4	2.3	Non-Acid Forming
SABA-OB215	SRK	EB1019995053	1434D_212	1434D	143.4	145.2	1.8	CARB. SANDSTONE	Interburden	8.1	267	0.07	-	2.1	7.0	-4.9	3.3	Non-Acid Forming (Barren)
SABA-OB216	SRK	EB1019995054	1434D_213	1434D	147.4	148.4	1.0	CARB. SANDSTONE	Interburden	8.7	285	0.06	-	1.8	8.9	-7.1	4.8	Non-Acid Forming (Barren)
SABA-OB260	SRK	EB1019995084	1453D_282	1453D	148.9	150.3	1.3	SANDSTONE	Interburden	9.0	161	0.04	-	1.2	8.9	-7.7	7.3	Non-Acid Forming (Barren)
SABA-OB222	SRK	EB1019995061	1445D_237	1445D	149.3	150.2	0.9	CARB. SANDSTONE	Interburden	9.0	193	0.02	-	0.6	2.4	-1.8	3.9	Non-Acid Forming (Barren)
SABA-OB223	SRK	EB1019995062	1445D_238	1445D	152.9	154.5	1.6	SANDSTONE	Interburden	8.0	321	0.005	-	0.2	4.6	-4.4	30.0	Non-Acid Forming (Barren)
SABA-OB224	SRK	EB1019995063	1445D_239	1445D	159.6	160.6	1.0	CARB. SANDSTONE	Interburden	9.2	456	0.11	0.074	2.3	8.9	-6.6	3.9	Non-Acid Forming (Barren)
SABA-OB225	SRK	EB1019995064	1445D_240	1445D	160.8	161.5	0.7	CARB. SANDSTONE	Interburden	9.1	204	0.05	-	1.5	11.4	-9.9	7.4	Non-Acid Forming (Barren)
SABA-OB226	SRK	EB1019995065	1445D_241	1445D	164.5	166.3	1.8	SILTSTONE	Interburden	8.6	202	0.06	-	1.8	8.3	-6.5	4.5	Non-Acid Forming (Barren)
SABA-OB264	SRK	EB1019995088	1454D_288	1454D	172.6	173.1	0.5	SILTSTONE	Interburden	7.4	729	0.17	0.074	2.3	10.2	-7.9	4.5	Non-Acid Forming (Barren)
SABA-OB265	SRK	EB1019995089	1454D_289	1454D	173.3	173.9	0.6	CARB. SHALE	Interburden	8.8	305	0.08	-	2.5	8.9	-6.5	3.6	Non-Acid Forming (Barren)
SABA-OB266	SRK	EB1019995090	1454D_290	1454D	177.3	177.8	0.5	MUDSTONE	Interburden	8.5	207	0.07	0.016	0.5	4.1	-3.6	8.4	Non-Acid Forming (Barren)

Notes

1. Current pH and EC provided for 1:5 sample:water extracts
2. Scr = Chromium Reducible Sulfur; MPA = Maximum potential acidity; ANC = Acid neutralising capacity; and NAPP = Net acid producing potential
3. Sample classification detail provided in report text.

Table 2: Acid-Base Account Results for Coal and Coal Reject Materials - Kevin's Corner Project

RGS Sample ID	Source	ALS Laboratory Sample ID	Client Sample Name	Drill Hole ID	Sample Depth (m)			Sample Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr	MPA[2]	ANC[2]	NAPP[2]	ANC/MPA ratio	Sample Classification[3]
					From	To	Int.				(µS/cm)	(%)		(kg H_2SO_4/t)				
Potential Rejects (roof & floor)																		
SABA_CR012	SRK	EB1100364-105	1409C_27	1409C	26	27	1.0	CARB. MUDSTONE	ROOF	7.9	676	0.17	0.112	3.4	28.4	-25.0	8.3	Non Acid Forming
SABA_CR005	SRK	EB1100364-009	1398X_33	1398X	41	42	1.0	SANDSTONE	ROOF	5.1	1380	0.18	0.100	3.1	1.0	2.1	0.3	Non-Acid Forming (Barren)
SABA_CR002	SRK	EB1019995-006	1389R_103	1389R	52.7	53.2	0.5	SILTSTONE	ROOF	7.9	889	0.09	0.034	1.0	6.8	-5.8	6.5	Non-Acid Forming (Barren)
SABA_CR004	SRK	EB1019995-017	1397D_146	1397D	56.2	56.8	0.6	SILTSTONE	FLOOR	8.4	198	0.04	-	1.2	4.3	-3.1	3.5	Non-Acid Forming (Barren)
SABA_CR001	SRK	EB1019995-003	1388R_97	1388R	59.0	59.5	0.5	SANDSTONE	ROOF	9.4	1040	0.04	-	1.2	36.5	-35.3	29.8	Non-Acid Forming (Barren)
SABA_CR028	SRK	EB1019995-060	1445D_235	1445D	74.8	80.3	5.5	CARB. SHALE	ROOF	9.1	800	0.74	0.184	5.6	28.2	-22.6	5.0	Non Acid Forming
SABA_CR023	SRK	EB1019995-042	1429R_193	1429R	106.3	106.8	0.5	MUDSTONE	ROOF	8.8	1620	0.05	-	1.5	39.7	-38.2	25.9	Non-Acid Forming (Barren)
SABA_CR025	SRK	EB1019995-044	1429R_195	1429R	124.0	124.5	0.5	SANDSTONE	ROOF	9.2	408	0.04	-	1.2	24.7	-23.5	20.2	Non-Acid Forming (Barren)
Coarse Rejects																		
RABA-CR001	RGS	EB1108720-002		1446L	-	-	-	Coarse Reject 1446L	Reject	4.1	1290	0.44	0.415	12.7	3.6	9.1	0.3	PAF- Low Capacity
RABA-CR002	RGS	EB1108720-005		1447L	-	-	-	Coarse Reject 1447L	Reject	3.8	1330	0.68	0.533	16.3	2.2	14.1	0.1	**Potentially Acid Forming**
RABA-CR003	RGS	EB1108015-002		1493L	-	-	-	Coarse Reject 1493L	Reject	3.6	1720	1.20	1.040	31.9	2.9	29.0	0.1	**Potentially Acid Forming**
RABA-CR004	RGS	EB1023365-002		1302L/1303L	-	-	-	Coarse Rejects 1302L/1303L	Reject	4.1	1,950	2.20	2.020	61.9	0.5	61.4	0.0	**Potentially Acid Forming**
RABA-CR005	RGS	EB1103269-002		1492L	-	-	-	Coarse Rejects 1492L	Reject	4.2	1,230	1.62	0.841	25.8	1.3	24.5	0.1	**Potentially Acid Forming**
Tailings																		
RABA-CR006	RGS	EB1108720-001		1446L	-	-	-	Fine Tailings 1446L	Tailings	6.1	367	0.58	0.246	7.5	3.6	3.9	0.5	Uncertain
RABA-CR007	RGS	EB1108720-004		1447L	-	-	-	Fine Tailings 1447L	Tailings	6.9	81	0.06	0.028	0.9	2.3	-1.4	2.7	Non-Acid Forming (Barren)
RABA-CR008	RGS	EB1108015-001		1493L	-	-	-	Fine Tailings 1493L	Tailings	5.6	418	0.68	0.322	9.9	6.6	3.3	0.7	Uncertain
RABA-CR009	RGS	EB1023365-001		1302L/1303L	-	-	-	Tailings 1302L/1303L	Tailings	6.4	356	0.59	0.257	7.9	6.2	1.7	0.8	Uncertain
RABA-CR010	RGS	EB1103269-001		1492L	-	-	-	Tailings 1492L	Tailings	6.2	256	1.03	0.280	8.6	4.9	3.7	0.6	Uncertain
Coal																		
SABA_CR008	SRK	EB1100364-094	1409C_11	1409C	10	11	1.0	COAL WEATHERED	Coal	5.9	79	0.005	-	0.2	2.6	-2.4	17.0	Non-Acid Forming (Barren)
SABA_CR009	SRK	EB1100364-095	1409C_12	1409C	11	12	1.0	COAL WEATHERED	Coal	6.1	49	0.005	-	0.2	1.0	-0.8	6.5	Non-Acid Forming (Barren)
SABA_CR010	SRK	EB1100364-096	1409C_13	1409C	12	13	1.0	COAL WEATHERED	Coal	5.8	131	0.01	-	0.3	6.8	-6.5	22.2	Non-Acid Forming (Barren)
SABA_CR011	SRK	EB1100364-097	1409C_14	1409C	13	14	1.0	COAL, undifferentiated	Coal	5.7	194	0.01	-	0.3	6.9	-6.6	22.5	Non-Acid Forming (Barren)
SABA_CR013	SRK	EB1100364-119	1410C_28	1410C	27	28	1.0	COAL, undifferentiated	Coal	3.1	1250	0.85	0.850	26.0	4.2	21.8	0.2	**Potentially Acid Forming**
SABA_CR014	SRK	EB1100364-120	1410C_29	1410C	28	29	1.0	COAL, undifferentiated	Coal	5.8	842	0.19	0.100	3.1	12.6	-9.5	4.1	Non-Acid Forming (Barren)
SABA_CR015	SRK	EB1100364-121	1410C_30	1410C	29	30	1.0	COAL, undifferentiated	Coal	6.8	490	0.25	0.080	2.5	11.3	-8.9	4.6	Non-Acid Forming (Barren)
SABA_CR016	SRK	EB1100364-122	1410C_31	1410C	30	31	1.0	COAL, undifferentiated	Coal	5.5	526	0.38	0.063	1.9	7.7	-5.8	4.0	Non-Acid Forming (Barren)
SABA_CR027	SRK	EB1100364-163	1429R_41	1429R	40	41	1.0	COAL, undifferentiated	Coal	7.9	1810	0.24	0.060	1.8	47.2	-45.4	25.7	Non-Acid Forming (Barren)
SABA_CR006	SRK	EB1100364-010	1398X_34	1398X	43	44	1.0	COAL, undifferentiated	Coal	5.7	1460	0.14	0.005	0.2	1.3	-1.1	8.5	Non-Acid Forming (Barren)
SABA_CR003	SRK	EB1019995-007	1389R_104/105/106	1389R	53.2	56	2.8	COAL, undifferentiated	Coal	8.7	317	0.10	-	3.1	10.4	-7.3	3.4	Non-Acid Forming (Barren)
SABA_CR024	SRK	EB1019995-043	1429R_194	1429R	110	113	3.0	COAL, undifferentiated	Coal	8.6	1320	0.16	0.056	1.7	26.9	-25.2	15.7	Non-Acid Forming (Barren)
SABA_CR017	SRK	EB1100364-184	1429R_131	1429R	130	131	1.0	COAL, undifferentiated	Coal	7.4	737	0.11	0.026	0.8	9.6	-8.8	12.1	Non-Acid Forming (Barren)
SABA_CR026	SRK	EB1019995-045	1429R_196	1429R	135.5	138	2.5	COAL, undifferentiated	Coal	8.0	336	0.75	0.359	11.0	9.8	1.2	0.9	Uncertain
SABA_CR018	SRK	EB1100364-187	1429R_139	1429R	138	139	1.0	COAL, undifferentiated	Coal	6.7	622	0.44	0.152	4.7	9.0	-4.3	1.9	Uncertain
SABA_CR019	SRK	EB1100364-188	1429R_140	1429R	139	140	1.0	COAL, undifferentiated	Coal	6.8	244	0.72	0.403	12.3	7.5	4.8	0.6	Uncertain
SABA_CR020	SRK	EB1100364-189	1429R_141	1429R	140	141	1.0	COAL, undifferentiated	Coal	7.9	2140	0.18	0.108	3.3	40.3	-37.0	12.2	Non Acid Forming
SABA_CR021	SRK	EB1100364-190	1429R_142	1429R	141	142	1.0	COAL, undifferentiated	Coal	5.0	535	0.51	0.433	13.3	3.9	9.4	0.3	PAF- Low Capacity
SABA_CR022	SRK	EB1100364-191	1429R_143	1429R	142	143	1.0	COAL, undifferentiated	Coal	7.4	285	0.10	-	3.1	4.0	-0.9	1.3	Non-Acid Forming (Barren)
RABA-CR012	RGS	EB1108720-003	Raw Coal 1446L	1446L	-	-	-	Raw Coal	Coal	6.6	129	0.52	0.175	5.4	6.4	-1.0	1.2	Uncertain
RABA-CR013	RGS	EB1108720-006	Raw Coal 1447L	1447L	-	-	-	Raw Coal	Coal	6.3	192	0.41	0.072	2.2	4.7	-2.5	2.1	Non-Acid Forming (Barren)
RABA-CR014	RGS	EB1103269-003	Raw Coal 1492L	1492L	-	-	-	Raw Coal	Coal	6.6	262	0.67	0.123	3.8	5.1	-1.3	1.4	Uncertain
RABA-CR015	RGS	EB1108015-003	Raw Coal 1493L	1493L	-	-	-	Raw Coal	Coal	5.6	429	0.74	0.193	5.9	2.5	3.4	0.4	Uncertain
RABA-CR011	RGS	EB1023365-003	Prod. Coal 1302/1303L	1302L/1303L	-	-	-	Product Coal	Coal	4.8	585	0.27	0.062	1.9	3.3	-1.4	1.7	Non-Acid Forming (Barren)

Notes

1. Current pH and EC provided for 1:5 sample:water extracts
2. Scr = Chromium Reducible Sulfur; MPA = Maximum potential acidity; ANC = Acid neutralising capacity; and NAPP = Net acid producing potential
3. Sample classification detail provided in report text.

Table 3: Composite In-Fill Drilling Overburden/Interburden Sample Details - Kevin's Corner Project

Composite No.	RGS Composite No.	ALS Laboratory Sample ID	Drill Hole Location	Client Sample Name	Drill Hole ID	Sample Depth (m)			Sample Lithology	Sample Type	pH[1]	EC[1]	Total S	Scr	Sample Classification[3]
						From	To	Interval				(µS/cm)	(%)		
Overburden/Interburden															
RME_OB001	1	EB1200803003	KC_11_GT_003	EA003	1693D	15.6	15.8	0.28	Sandstone	Overburden	7.9	361	<0.01	-	Non-Acid Forming (Barren)
		EB1200803004		EA004		21.5	21.8	0.34			7.8	772	<0.01	-	
		EB1200803005		EA005		24.1	24.6	0.49			7.6	733	<0.01	-	
		EB1200803006		EA006		30.1	30.6	0.48			8.0	1060	0.01	-	
RME_OB002	2	EB1200803008	KC_11_GT_003	EA008	1693D	42.5	42.8	0.33	Sandstone	Interburden(D & E)	8.2	54	0.01	-	Non-Acid Forming (Barren)
RME_OB003	3	EB1200803009	KC_11_GT_021	EA009	1728D	2.7	3.0	0.31	Laterite	Overburden	5.6	618	0.02	-	Non-Acid Forming (Barren)
		EB1200803010		EA010		5.6	6.0	0.39			6.3	1050	0.01	-	
RME_OB004	4	EB1200803015	KC_11_GT_021	EA015	1728D	26.7	27.0	0.33	Carb. Siltstone and Sandstone	Overburden	7.2	1580	0.22	0.03	Non-Acid Forming (Barren)
		EB1200803016		EA016	1728D	30.0	30.3	0.33			9.7	1040	0.02	-	
RME_OB005	5	EB1200803020	KC_11_GT_021	EA020	1728D	39.5	39.8	0.36	Sandstone	Interburden(C & D)	10.0	750	0.01	-	Non-Acid Forming (Barren)
		EB1200803021		EA021		54.0	54.3	0.34			9.6	506	0.05	-	
		EB1200803022		EA022		54.8	55.1	0.31			9.5	471	0.04	-	
		EB1200803023		EA023		60.8	61.1	0.29			9.6	432	0.04	-	
		EB1200803024		EA024		63.3	63.6	0.33			9.6	378	0.02	-	
RME_OB006	6	EB1200803030	KC_11_GT_021	EA030	1728D	93.0	93.5	0.46	Sandy/Siltstone	Interburden(C & D)	9.0	335	0.04	-	Non-Acid Forming (Barren)
		EB1200803031		EA031		97.7	98.1	0.41			8.9	371	0.04	-	
		EB1200803032		EA032		102.0	102.5	0.46			9.0	331	0.03	-	
		EB1200803033		EA033		106.8	107.1	0.28			9.1	296	0.04	-	
RME_OB007	7	EB1200803036	KC_11_GT_014	EA036	1579D	12.4	13.0	0.60	Sandy/Clay	Overburden	8.4	1000	<0.01	-	Non-Acid Forming (Barren)
		EB1200803037		EA037		16.5	17.0	0.52			7.9	1220	0.01	-	
RME_OB008	8	EB1200803041	KC_11_GT_008	EA041	1721D	13.5	14.0	0.53	Sandstone	Overburden	8.1	265	<0.01	-	Non-Acid Forming (Barren)
		EB1200803042		EA042		18.0	18.5	0.53			8.0	243	<0.01	-	
		EB1200803043		EA043		22.4	22.8	0.39			7.4	314	<0.01	-	
		EB1200803044		EA044		27.0	27.5	0.54			7.8	230	<0.01	-	
RME-OB009	9	EB1200803052	KC_11_GT_004	EA052	1720D	21.0	21.6	0.57	Sandstone (carb.) and Sandstone	Overburden	7.4	95	0.02	-	Non-Acid Forming (Barren)
		EB1200803053		EA053		25.6	26.0	0.44			8.1	39	<0.01	-	
		EB1200803054		EA054		18.0	18.4	0.44			8.1	81	0.03	-	
		EB1200803055		EA055		30.5	30.9	0.46			8.2	38	<0.01	-	
		EB1200803056		EA056		35.7	36.0	0.35			8.0	39	<0.01	-	
RME-OB010	10	EB1200803069	KC_11_GT_011	EA069	1587D	18.7	19.1	0.48	Silty/Claystone, Sandstone and Iron-stained Clay	Overburden	7.6	329	<0.01	-	Non-Acid Forming (Barren)
		EB1200803070		EA070		24.1	24.5	0.43			7.5	207	<0.01	-	
		EB1200803071		EA071		28.0	28.5	0.53			7.1	271	<0.01	-	
		EB1200803072		EA072		34.3	34.6	0.37			7.5	444	0.01	-	
RME_OB011	11	EB1200803081	KC_11_GT_001	EA081	1695D	45.1	45.6	0.50	Sandy/Siltstone	Interburden(D & E)	3.2	1310	1.13	0.67	**Potentially Acid Forming**
RME_OB012	12	EB1200803082	KC_11_GT_009	EA082	1578D	5.7	6.1	0.45	Clayey/Sand	Overburden	7.6	189	<0.01	-	Non-Acid Forming (Barren)
		EB1200803083		EA083		8.5	8.8	0.36			7.1	388	<0.01	-	
		EB1200803084		EA084		14.3	14.6	0.33			7.0	588	<0.01	-	
RME_OB013	13	EB1200803096	KC_11_GT_005	EA096	1696D	30.1	30.5	0.37	Sandstone	Interburden(C & D)	7.6	43	<0.01	-	Non-Acid Forming (Barren)
		EB1200803097		EA097		36.1	36.5	0.40			8.0	36	<0.01	-	
		EB1200803098		EA098		42.1	42.5	0.39			8.0	75	<0.01	-	
RME_OB014	14	EB1200803102	KC_11_GT_022	EA102	1727D	137.3	137.8	0.45	Sandy/Siltstone and Coaly/Siltstone	Interburden(C & D)	5.7	419	0.26	0.12	Non-Acid Forming
		EB1200803103		EA103		134.3	134.7	0.38			5.2	579	0.33	0.14	
RME-OB015	15	EB1200803108	KC_11_GT_022	EA108	1727D	99.9	100.5	0.59	Silty/Sandstone	Interburden(B & C)	9.2	409	0.05	-	Non-Acid Forming (Barren)
		EB1200803109		EA109		96.0	96.5	0.50			9.4	457	0.03	-	
		EB1200803110		EA110		89.5	90.0	0.52			9.6	524	0.03	-	
		EB1200803111		EA111		84.0	84.6	0.58			9.4	581	0.03	-	
RME-OB016	16	EB1200803124	A_11_E_001	EA001*	1959D	24.5	25.4	0.91	Coarse Sandstone	Overburden	7.7	134	<0.01	-	Non-Acid Forming (Barren)
		EB1200803125		EA002*		26.2	27.1	0.92	Tuffaceous/Clay		5.7	568	0.18	0.06	
		EB1200803126		EA003*		32.6	33.1	0.53	Sandstone (carb.)		5.3	228	0.10	-	
Coal and Coal Reject															
RME-CR001	Coarse Reject 1493L	EB1108015-002			1493L				Coarse Reject 1493L		3.6	1720	1.2	1.04	**Potentially Acid Forming**
RME-CR002	Coarse Reject 1302L/03L	EB1023365-002			1302L/1303L				Coarse Rejects 1302L/1303L		4.1	1,950	2.20	2.020	**Potentially Acid Forming**
RME-CR003	Coarse Reject 1492L	EB1103269-002			1492L				Coarse Rejects 1492L		4.2	1,230	1.62	0.841	**Potentially Acid Forming**
RME-CR004	Tailings 1493L	EB1108015-001			1493L				Fine Tailings 1493L		5.6	418	0.68	0.322	Uncertain
RME-CR005	Tailings 1302L/1303L	EB1023365-001			1302L/1303L				Tailings 1302L/1303L		6.4	356	0.59	0.257	Uncertain
RME-CR006	Tailings 1492L	EB1103269-001			1492L				Tailings 1492L		6.2	256	1.03	0.280	Uncertain
RME-CR007	Product Coal 1302L/03L	EB1023365-003			1302L/1303L				Product Coal 1302L/1303L		4.8	585	0.27	0.062	Uncertain
RME-CR008	Raw Coal1492L	EB1103269-003			1492L				Raw Coal 1492L		6.6	262	0.67	0.123	Uncertain
RME-CR009	Raw Coal1493L	EB1108015-003			1493L				Raw Coal 1493L		5.6	429	0.74	0.193	Uncertain

Table 4: Multi-Element and Exchangeable Cation Concentrations in Overburden/Interburden - Kevin's Corner Project

Parameters	Material description--->		RME_OB001 (Sandstone)	RME_OB002 (Sandstone)	RME_OB003 (Laterite)	RME_OB004 (Siltstone/sandstone)	RME_OB005 (Sandstone)	RME_OB006 (Sandy Siltstone)	RME_OB007 (Sandy Clay)	RME_OB008 (Sandstone)	RME-OB009 (Carb. Sandstone)	RME-OB010 (Claystone/Sandstone)	RME_OB011 (Siltstone)	RME_OB012 (Clayey Sand)	RME_OB013 (Sandstone)	RME_OB014 (Coaly Siltstone	RME-OB015 (Silty Sandstone)	RME-OB016 (Sandstone/Clay)
	Laboratory Limit of Reporting (LOR)	**NEPC (1999) Health-Based Investigation Level**																
Elements	**All units mg/kg**																	
Aluminium (Al)	50	-	2150	1580	2780	4780	6280	9330	3550	1860	750	8010	4450	2190	2190	2690	8620	2720
Antimony (Sb)	5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic (As)	5	200	8	<5	<5	5	<5	6	<5	<5	<5	14	58	<5	<5	<5	8	6
Boron (B)	50	6,000	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium (Cd)	1	40	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Calcium (Ca)	10	-	160	220	220	7950	47900	9280	250	110	60	2230	300	180	180	100	41600	220
Chromium (Cr) total	2	-**	15	15	15	8	9	14	12	17	27	13	14	17	14	18	10	10
Cobalt (Co)	2	200	<2	<2	4	62	11	10	2	<2	<2	26	6	6	<2	2	8	11
Copper (Cu)	5	2,000	14	5	15	48	16	34	<5	<5	<5	72	10	10	9	<5	29	20
Iron (Fe)	50	-	9260	880	37700	2350	27000	23000	8980	6680	760	13400	24800	4000	15000	6070	23900	4450
Lead (Pb)	5	600	14	10	7	12	10	13	<5	<5	<5	28	16	8	7	<5	9	12
Magnesium (Mg)	10	-	370	270	740	2840	11400	3940	920	350	70	2120	1660	670	280	500	4260	530
Manganese (Mn)	5	3,000	<5	<5	73	78	837	488	7	<5	6	194	202	48	38	10	955	14
Molybdenum (Mo)	2	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Nickel (Ni)	2	600	<2	3	7	50	10	18	3	<2	2	44	18	9	<2	2	12	18
Potassium (K)	10	-	390	760	510	680	650	1240	320	270	300	1070	1020	620	640	510	1090	730
Selenium (Se)	5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Sodium (Na)	10	-	780	100	1320	3730	2500	800	1730	340	60	550	160	110	410	600	2140	370
Vanadium (V)	5	-	20	<5	46	18	29	34	18	12	<5	46	19	5	14	15	29	16
Zinc (Zn)	5	14,000	<5	15	22	91	45	69	5	78	<5	93	73	92	7	277	58	36
Exchangeable Cations	**All units meq/100g (except Exchangeable Sodium Percentage (%))**																	
Exch. Calcium	0.1	-	0.6	1.0	1.0	23.6	33.2	23.8	1.2	0.5	0.2	6.4	1.3	0.6	0.8	0.5	34.6	0.9
Exch. Magnesium	0.1	-	1.9	0.4	3.4	13.2	8.6	2.2	3.0	1.6	0.2	2.1	1.8	0.9	1.5	2.0	3.0	1.6
Exch. Potassium	0.1	-	0.2	0.3	0.2	0.8	0.9	0.9	0.2	0.1	0.1	0.6	0.05	0.2	0.3	0.2	1.2	0.3
Exch. Sodium	0.1	-	3.5	0.4	5.7	17.0	12.4	3.5	7.8	1.5	0.2	2.1	0.1	0.4	1.7	2.5	10.1	1.5
Cation Exchange Capacity	0.1	-	6.3	2.2	10.3	54.6	55.1	30.4	12.2	3.7	0.9	11.1	3.2	2.2	4.2	5.2	48.9	4.3
Exchangeable Sodium Percentage	0.1 %	-	56.2	17.6	55.0	31.2	22.6	11.5	64.1	39.7	28.3	18.7	1.6	20.0	40.0	48.5	20.7	35.0

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

1. NEPC (1999)a. National Environmental Protection Council (NEPC). National Environmental Protection (Assessment of Site Contamination) Measure (NEPM). Guideline on investigation levels for soil and groundwater. HIL(E); parks, recreation open space and playing fields.

** Guideline level for Cr(VI) = 200 mg/kg. Guideine level for Cr(III) = 24% of total Cr.

Table 5: Multi-Element Concentrations in Coal and Coal Reject Materials - Kevin's Corner Project

Parameters	Material description--->		RME-CR001 (Coarse Reject)	RME-CR002 (Coarse Reject)	RME-CR003 (Coarse Reject)	RME-CR004 (Tailing)	RME-CR005 (Tailing)	RME-CR006 (Tailing)	RME-CR007 (Product Coal)	RME-CR008 (Raw Coal)	RME-CR009 (Raw Coal)
	Laboratory Limit of Reporting (LOR)	**NEPC (1999) Health-Based Investigation Level**									
Elements	**All units mg/kg**										
Aluminium (Al)	50	-	18,800	42,600	30,800	135,000	99,100	51,700	25,600	20,900	48,400
Antimony (Sb)	5	-	0.83	0.60	0.9	0.51	0.39	0.9	0.53	0.74	0.8
Arsenic (As)	5	200	1.3	2.3	5.4	64.6	28.9	23.2	1.9	3.9	7.4
Boron (B)	50	6,000	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	1	40	0.08	0.24	0.19	0.23	0.24	0.11	0.10	0.30	0.30
Calcium (Ca)	10	-	1,200	1,000	900	1,400	1,100	700	1,200	1,400	1,000
Chromium (Cr) total	2	-**	28	7	12	16	4	16	32	13	31
Cobalt (Co)	2	200	5.6	4.1	5.4	2.3	1.6	5.1	3.3	2.6	4.6
Copper (Cu)	5	2,000	12.9	15.4	20	19.7	15.1	29	12.7	27.7	34
Iron (Fe)	50	-	7,700	26,200	14,900	47,500	61,400	42,100	22,000	33,200	40,700
Lead (Pb)	5	600	9.7	23.2	17	32.2	33.0	26	10.7	17.1	29
Magnesium (Mg)	10	-	400	500	700	1,300	800	700	500	500	900
Manganese (Mn)	5	3,000	82	244	147	244	497	505	237	329	414
Molybdenum (Mo)	2	-	1.01	1.99	1.52	4.19	2.73	1.38	0.88	4.14	2.95
Nickel (Ni)	2	600	15.6	6.4	15.5	6.0	1.9	13.3	10.2	5.0	13.5
Phosphorus (P)	2	-	30	70	60	210	160	110	50	40	110
Potassium (K)	10	-	400	1,200	1,900	3,800	2,200	3,900	900	400	3,000
Selenium (Se)	5	-	2	1	1	6	1	1	1	<1	<1
Sodium (Na)	10	-	300	400	400	600	400	500	200	200	300
Vanadium (V)	5	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)	5	14,000	15	17	53	23	16	43	56	69	104

Notes for solid < indicates less than the analytical detection limit. Shaded cells exceed guideline concentrations.
1. NEPC (1999)a. National Environmental Protection Council (NEPC). National Environmental Protection (Assessment of Site Contamination) Measure (NEPM). Guideline on investigation levels for soil and groundwater. HIL(E); parks, recreation open space and playing fields.
* * Guideline level for Cr(VI) = 200 mg/kg. Guideine level for Cr(III) = 24% of total Cr.

Table 6: Multi-Element Water Extract Results for Overburden/Interburden - Kevin's Corner Project

Parameters	Material description--->		RME_OB001 (Sandstone)	RME_OB002 (Sandstone)	RME_OB003 (Laterite)	RME_OB004 (Siltstone/sandstone)	RME_OB005 (Sandstone)	RME_OB006 (Sandy Siltstone)	RME_OB007 (Sandy Clay)	RME_OB008 (Sandstone)	RME-OB009 (Carb. Sandstone)	RME-OB010 (Claystone/Sandstone)	RME_OB011 (Siltstone)	RME_OB012 (Clayey Sand)	RME_OB013 (Sandstone)	RME_OB014 (Coaly Siltstone	RME-OB015 (Silty Sandstone)	RME-OB016 (Sandstone/Clay)
	Laboratory Limit of Reporting (LOR)	**Guideline Levels[1]**																
pH	0.1 pH unit	-	7.5	7.9	5.7	8.1	9.4	9.0	8.1	7.9	7.4	5.4	3.6	7.9	7.5	7.5	9.2	6.4
Electrical Conductivity	1 µS/cm	-	805	56	909	1900	882	340	1150	266	54	505	1150	68	319	417	585	355
Alkalinity (as CaCO3)	1	-	96	96	32	728	984	567	54	96	107	54	0	86	75	75	963	54
Major Ions	All element concentrations in mg/L																	
Calcium (Ca)	2	1000	<2	<2	<2	<2	<2	<2	<2	<2	<2	14	44	<2	<2	<2	<2	<2
Magnesium (Mg)	2	-	2	<2	<2	<2	<2	<2	<2	<2	<2	4	42	<2	<2	<2	<2	2
Sodium (Na)	2	-	136	8	176	166	40	60	212	44	8	72	<2	10	56	72	18	56
Potassium (K)	2	-	2	<2	2	4	<2	6	<2	<2	<2	10	<2	<2	2	<2	<2	8
Chloride (Cl)	2	-	216	6	292	136	28	12	320	56	6	<2	<2	4	78	100	20	34
Sulphate (SO4)	2	1,000	12	2	8	42	6	26	22	4	2	184	518	8	8	8	2	86
Metals/Metalloids	All element concentrations in mg/L																	
Aluminium (Al)	0.2	5	<0.2	0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.6	0.4	25.2	0.8	<0.2	<0.2	<0.2	<0.2
Antimony (Sb)	0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02
Arsenic (As)	0.02	0.5	<0.02	<0.02	<0.02	0.14	0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	0.04	<0.02
Boron (B)	0.2	5	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium (Cd)	0.02	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chromium (Cr)	0.02	1 / -	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02
Cobalt (Co)	0.02	1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.74	<0.02	<0.02	<0.02	<0.02	0.02
Copper (Cu)	0.02	1 / 0.5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02
Iron (Fe)	0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	62.4	<0.2	<0.2	<0.2	<0.2	<0.2
Lead (Pb)	0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Manganese (Mn)	0.02	-	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.28	13.84	<0.02	<0.02	<0.02	0.02	0.06
Mercury (Hg)	0.0005	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	<0.0001	<0.0001	<0.0001
Molybdenum (Mo)	0.02	0.15	<0.02	<0.02	<0.02	<0.02	0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel (Ni)	0.02	1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	2.0	<0.02	<0.02	<0.02	<0.02	0.04
Phosporous (P)	2	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Selenium (Se)	0.02	0.02	<0.02	<0.02	<0.02	0.08	<0.02	0.04	<0.02	<0.02	<0.02	0.04	0.02	<0.02	0.02	<0.02	<0.02	0.04
Vanadium (V)	0.02	- / 0.1	<0.02	<0.02	<0.02	0.08	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc (Zn)	0.02	20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	7.04	<0.02	<0.02	0.04	<0.02	<0.02

Notes for solution: < Indicates concentration less than the detection limit. Shaded cells exceed guideline concentrations.

1. The first guideline level shown refers to ANZECC (2000) and the second to NEPC (1999) . Where the two guidelines limits for a given element are in agreement, only one value is shown. A 'dash' represents no trigger value provided for this element.

a. ANZECC and ARMCANZ, Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Environment Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra, ACT (2000). Livestock drinking water (cattle).

b. NEPC (1999b). National Environment Protection Council (NEPC). National Environmental Protection (Assessment of Site Contamination) Measure (NEPM) Guideline on investigation levels for soil and groundwater. Groundwater Investigations Levels (Agricultural: Livestock).

Table 7: Multi-Element Water Extract Results for Coal and Coal Reject Materials - Kevin's Corner Project

Parameters	Material description--->		RME-CR001 (Coarse Reject)	RME-CR002 (Coarse Reject)	RME-CR003 (Coarse Reject)	RME-CR004 (Tailing)	RME-CR005 (Tailing)	RME-CR006 (Tailing)	RME-CR007 (Product Coal)	RME-CR008 (Raw Coal)	RME-CR009 (Raw Coal)
	Laboratory Limit of Reporting (LOR)	**Guideline Levels[1]**									
pH	0.1 pH unit	-	3.6	4.1	4.2	5.6	6.4	6.2	4.8	6.6	5.6
Electrical Conductivity	1 µS/cm	-	1,720	1,950	1,230	418	356	256	585	262	429
Alkalinity (as CaCO3)	1	-	<1	<1	<1	24	64	36	<1	2	<1
Major Ions	All element concentrations in mg/L										
Calcium (Ca)	2	1000	39	2	18	114	42	134	23	15	28
Magnesium (Mg)	2	-	12	<1	6	39	7	46	6	2	<10
Sodium (Na)	2	-	61	27	88	54	54	123	23	18	42
Potassium (K)	2	-	5	1	4	8	6	17	2	1	<10
Chloride (Cl)	2	-	136	3	3	253	204	915	36	8	15
Sulphate (SO4)	2	1,000	92	39	225	538	48	240	53	54	134
Metals/Metalloids	All element concentrations in mg/L										
Aluminium (Al)	0.2	5	0.45	0.27	0.12	17.2	0.03	2.22	0.44	0.03	0.49
Antimony (Sb)	0.02	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.086
Arsenic (As)	0.02	0.5	<0.001	<0.001	0.01	0.015	<0.001	0.075	<0.001	<0.001	0.083
Boron (B)	0.2	5	1.74	0.35	1.62	1.28	0.44	2.58	1.51	0.37	2.42
Cadmium (Cd)	0.02	0.01	0.0004	<0.0001	0.0042	0.0079	0.0005	0.0086	0.0001	<0.0001	0.0906
Chromium (Cr)	0.02	1 / -	0.001	<0.001	0.007	0.002	<0.001	0.002	<0.001	<0.001	0.09
Cobalt (Co)	0.02	1	0.01	<0.001	0.024	0.10	0.011	0.212	0.004	<0.001	0.09
Copper (Cu)	0.02	1 / 0.5	0.01	0.002	0.01	0.196	0.003	0.114	0.011	0.003	0.179
Fluoride (F)	0.1	2	0.4	0.6	0.4	1.6	0.5	1.1	0.3	0.4	0.4
Iron (Fe)	0.2	-	0.39	0.69	0.47	109	6.51	116	0.18	0.07	<0.52
Lead (Pb)	0.02	0.1	0.001	0.002	0.008	0.008	<0.001	0.056	<0.001	<0.001	0.083
Manganese (Mn)	0.02	-	0.863	0.004	0.239	3.260	0.984	4.08	0.274	0.054	0.254
Mercury (Hg)	0.0005	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum (Mo)	0.02	0.15	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.084
Nickel (Ni)	0.02	1	0.005	<0.001	0.054	0.072	0.005	0.556	0.004	<0.001	0.099
Phosporous (P)	2	-	0.02	0.02	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01
Selenium (Se)	0.02	0.02	0.01	0.02	0.04	0.04	<0.01	0.3	<0.01	<0.01	<0.10
Vanadium (V)	0.02	- / 0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.10
Zinc (Zn)	0.02	20	1.31	0.017	0.543	2.54	0.569	4.18	0.709	0.019	1.61

Notes for solution: < Indicates concentration less than the detection limit. Shaded cells exceed guideline concentrations.

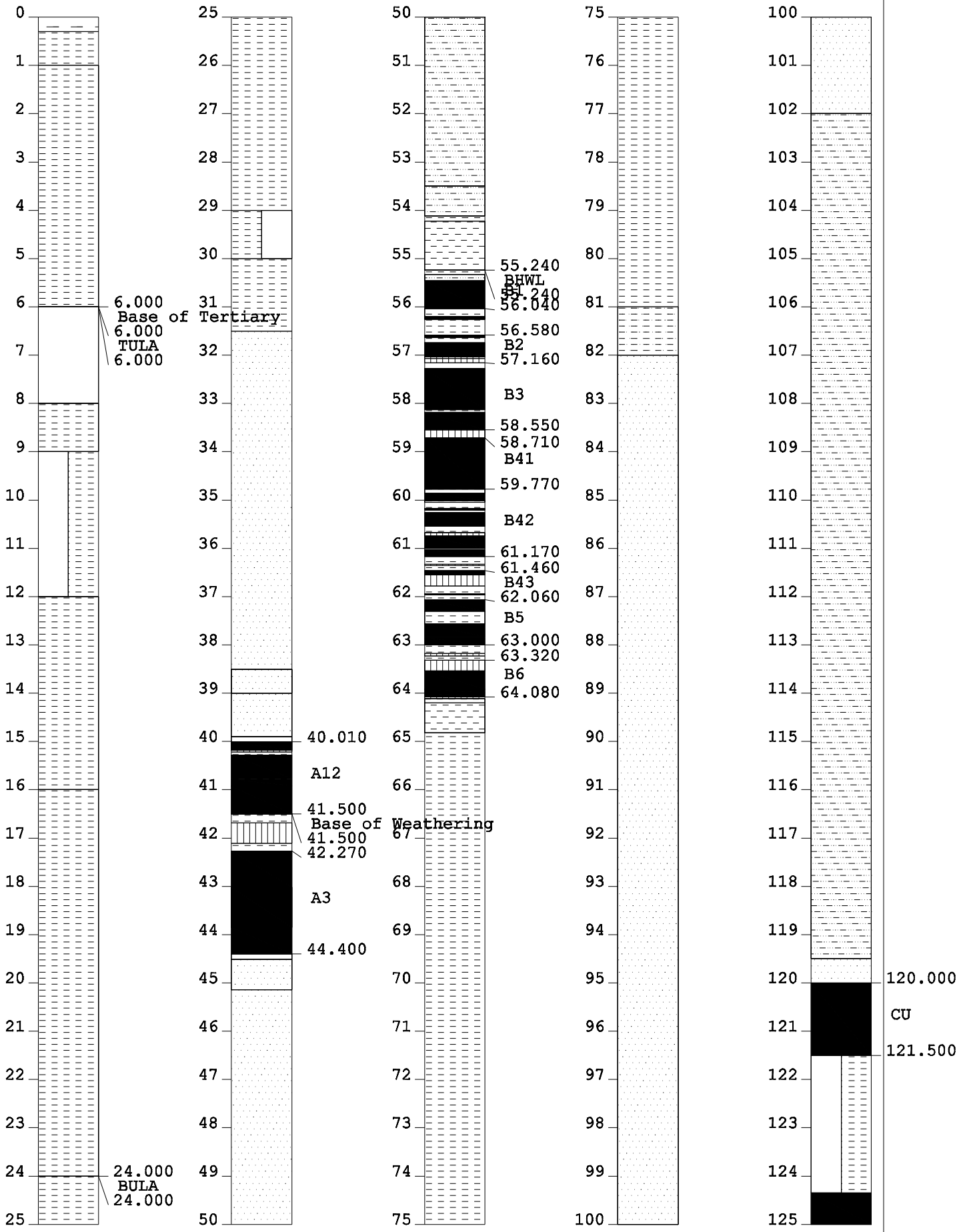
1. The first guideline level shown refers to ANZECC (2000) and the second to NEPC (1999) . Where the two guidelines limits for a given element are in agreement, only one value is shown. A 'dash' represents no trigger value provided for this element.

a. ANZECC and ARMCANZ, Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Environment Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra, ACT (2000). Livestock drinking water (cattle).

b. NEPC (1999b). National Environment Protection Council (NEPC). National Environmental Protection (Assessment of Site Contamination) Measure (NEPM) Guideline on investigation levels for soil and groundwater. Groundwater Investigations Levels (Agricultural: Livestock).

ATTACHMENT A

Graphic Drill Hole Logs



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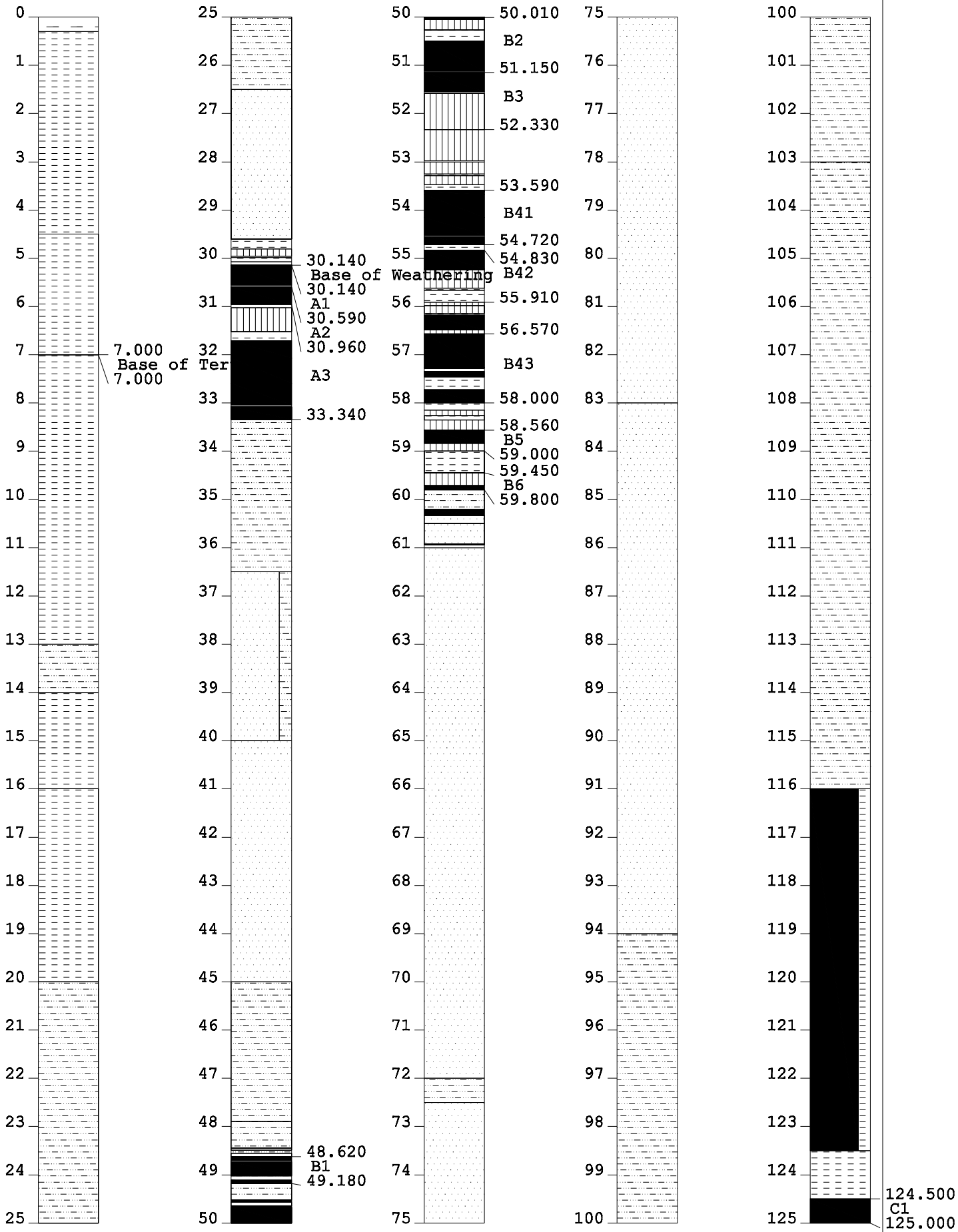

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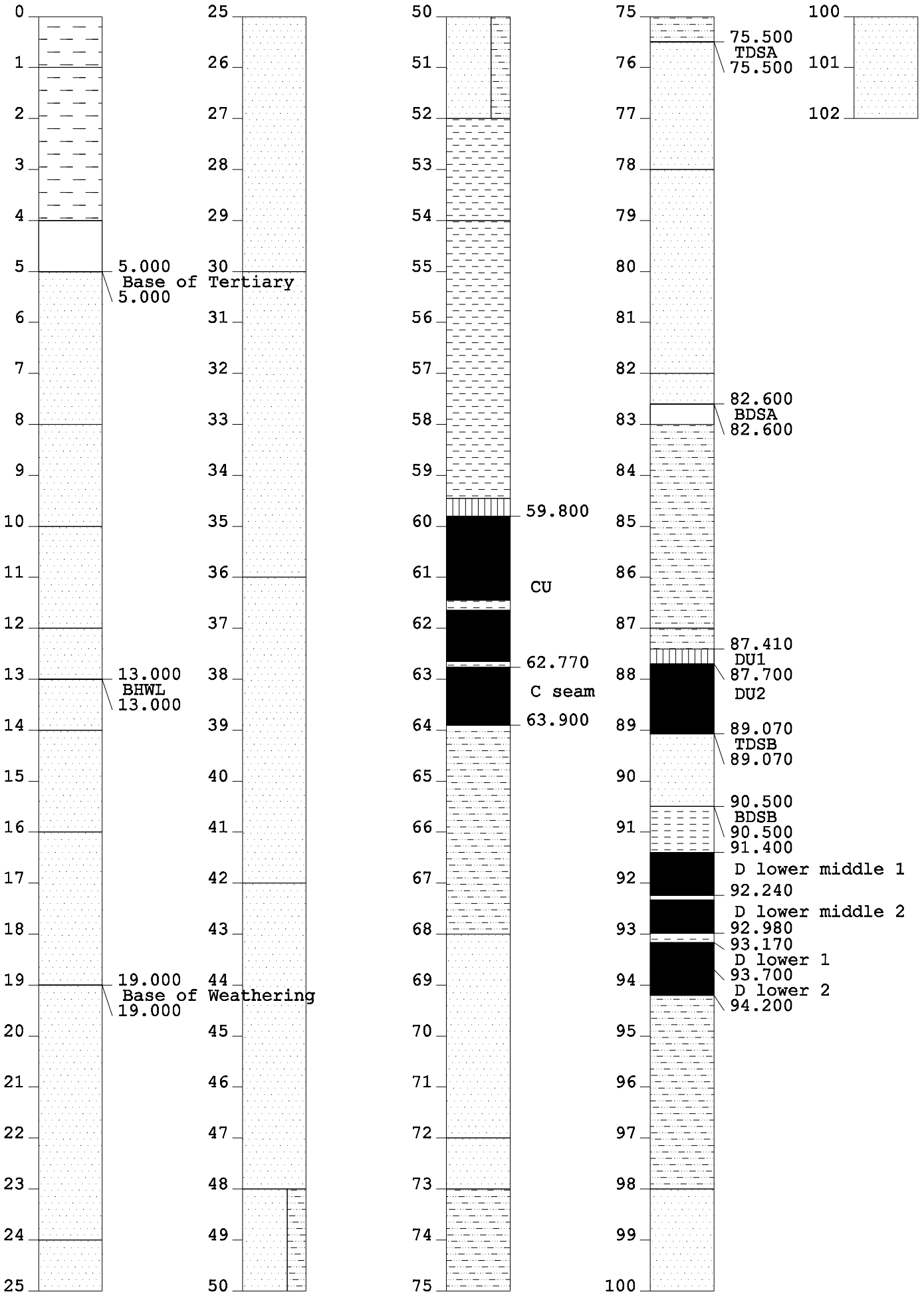

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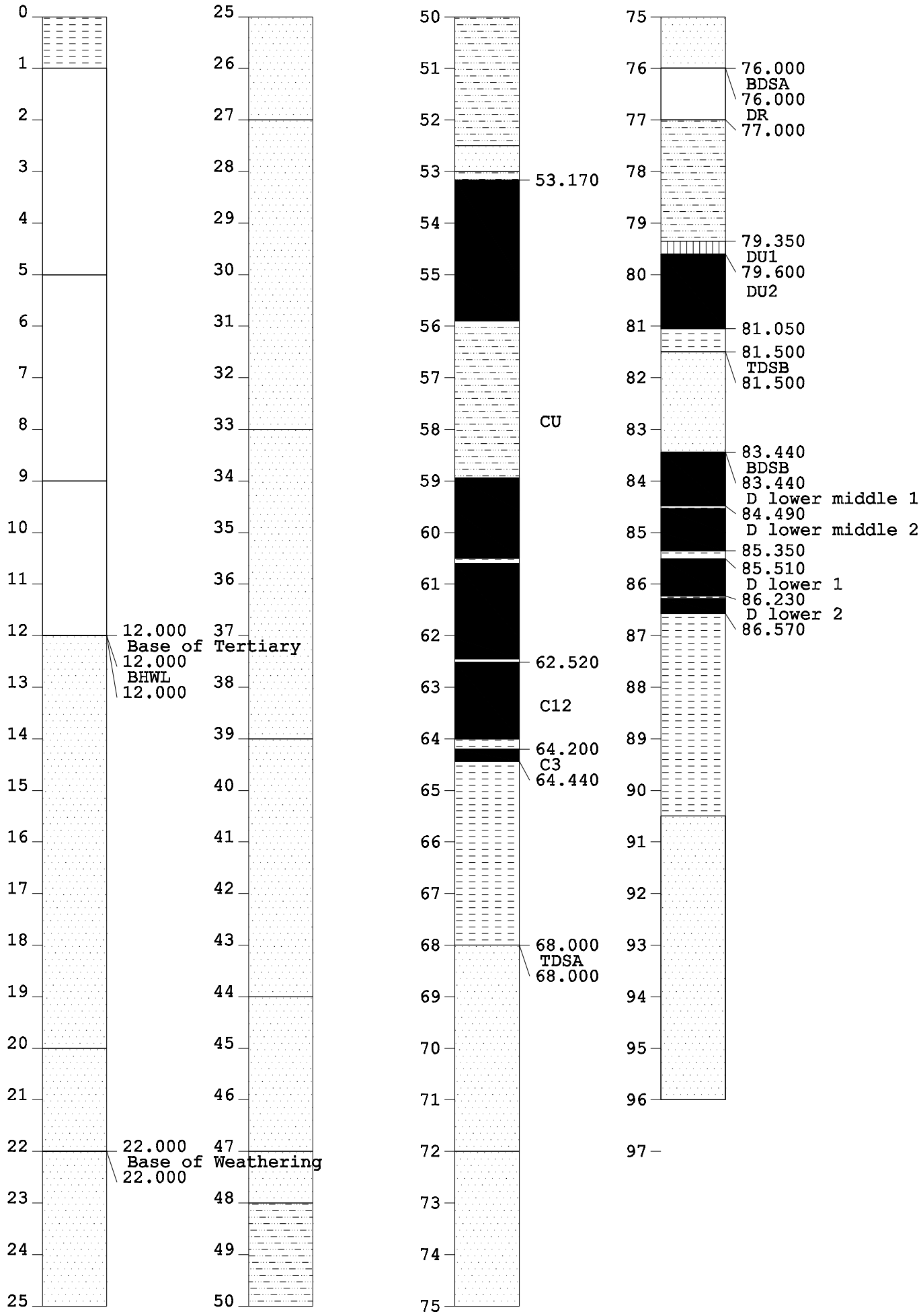

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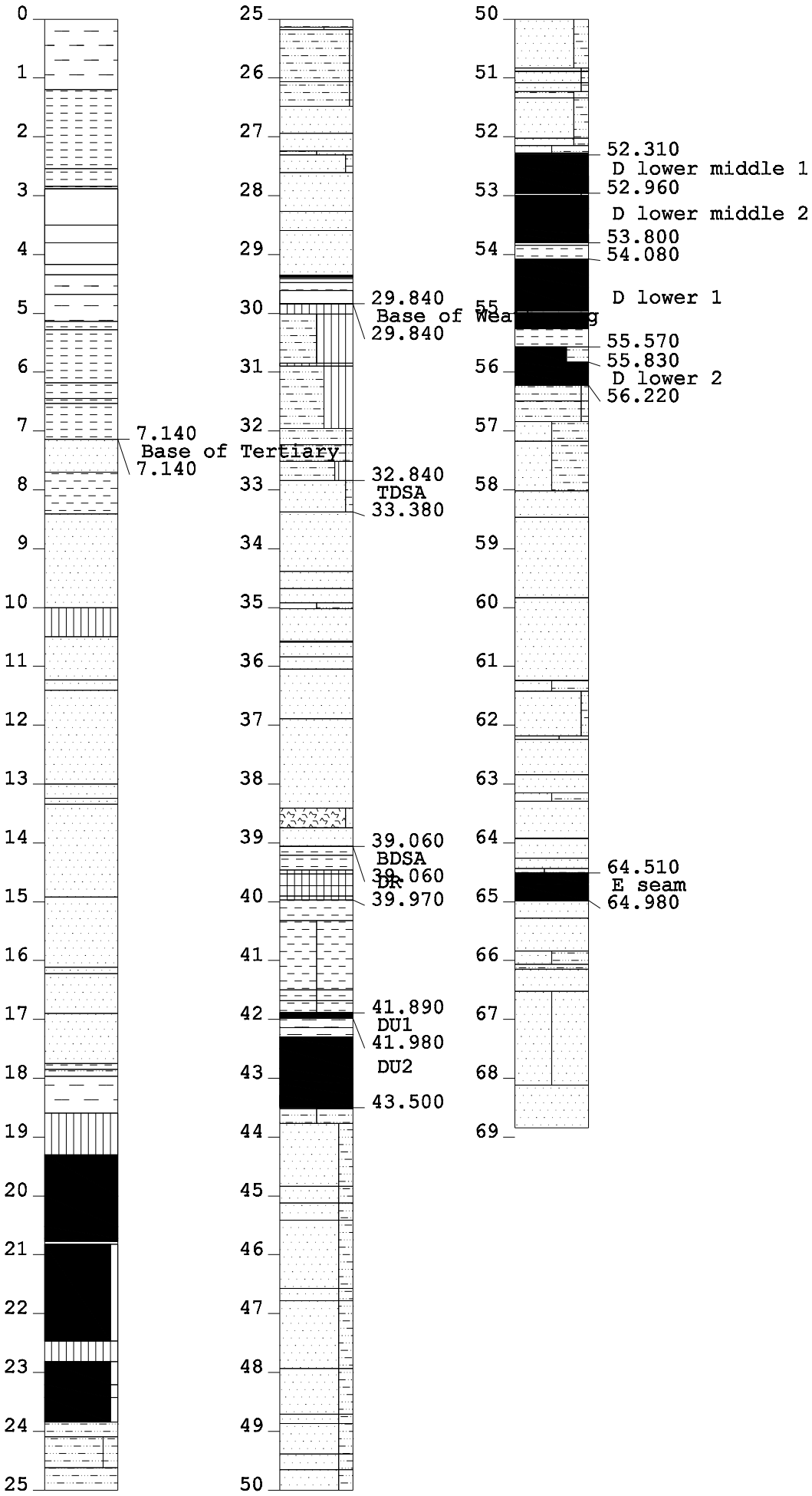

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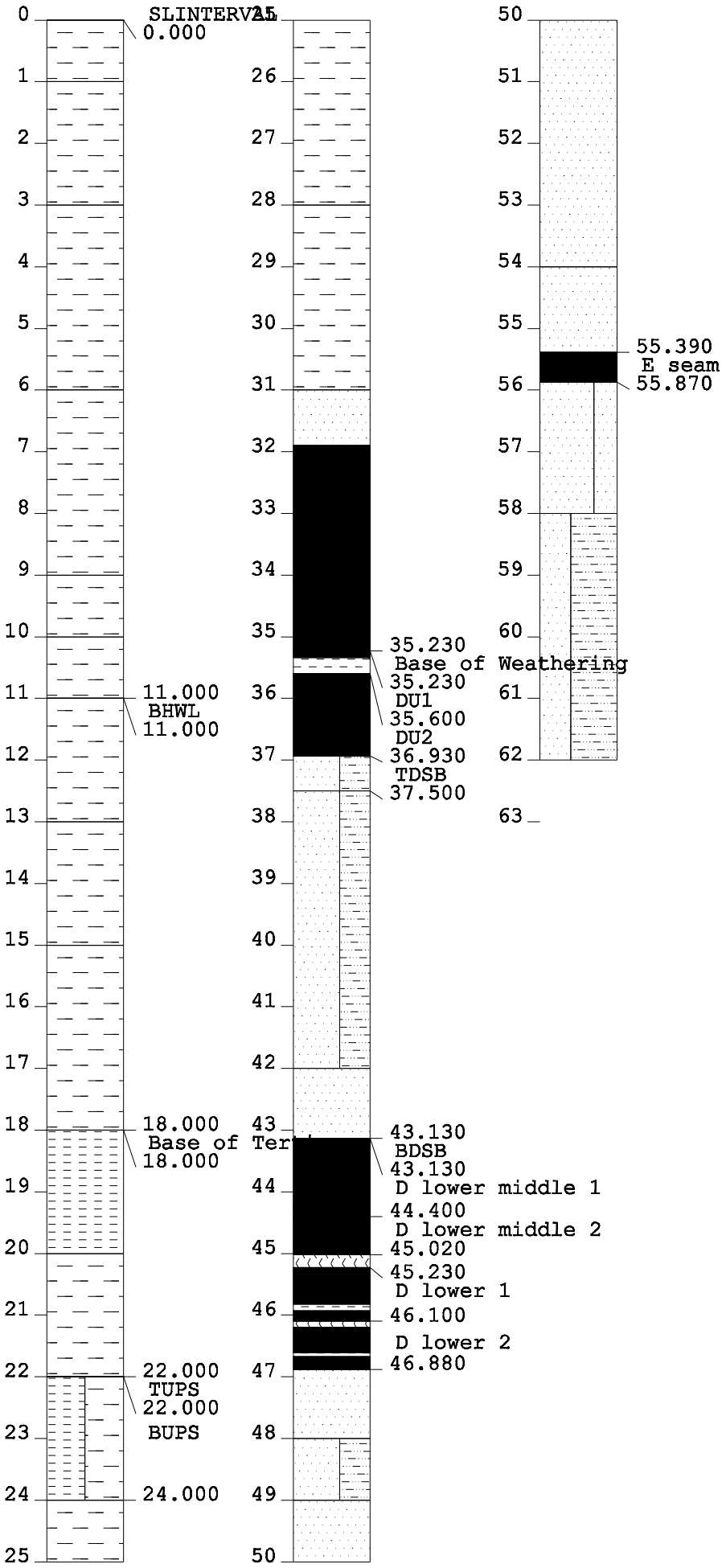

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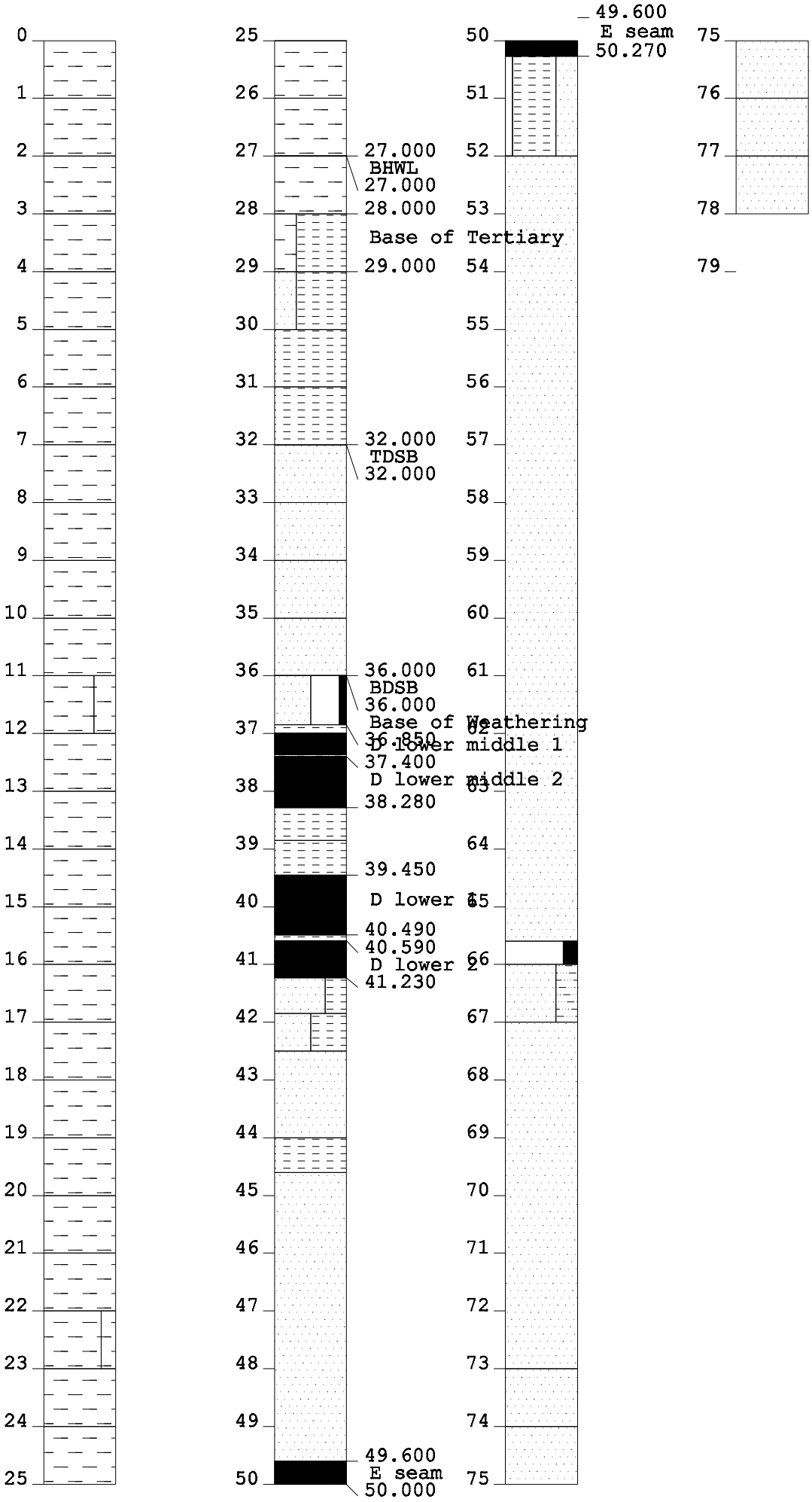

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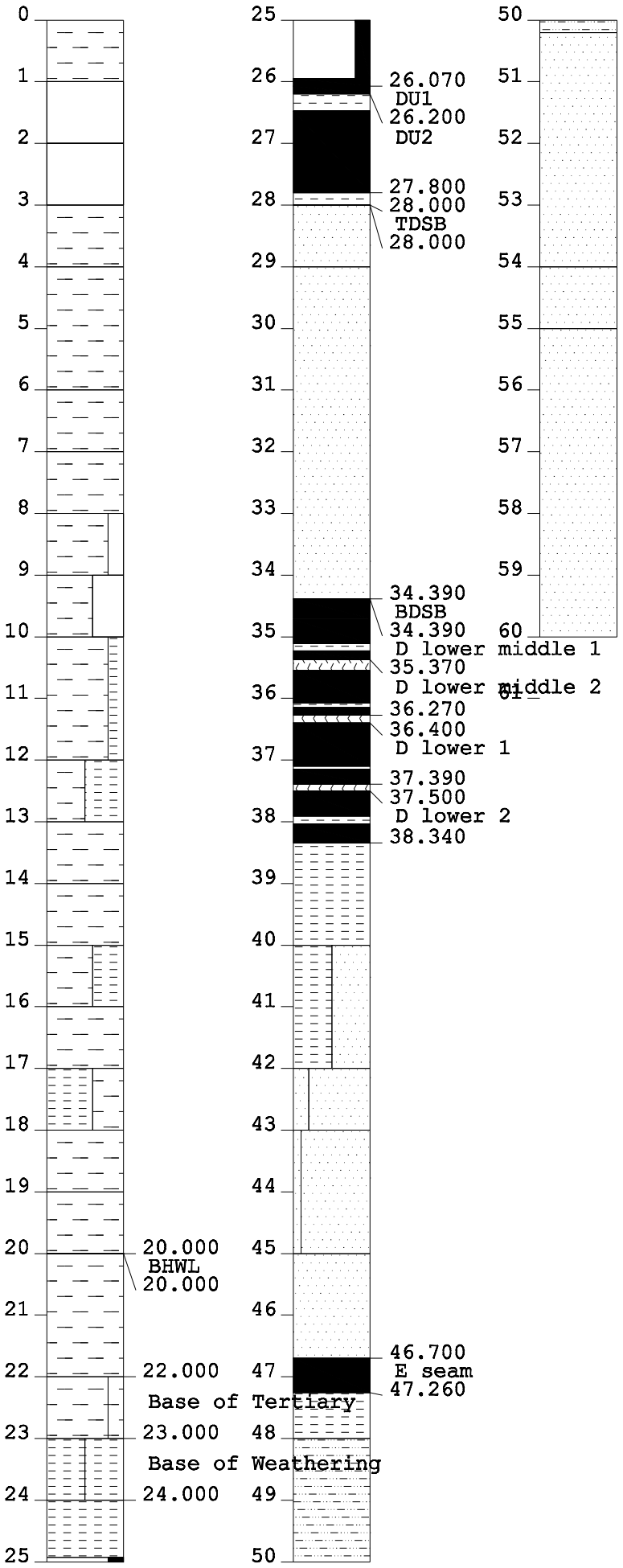

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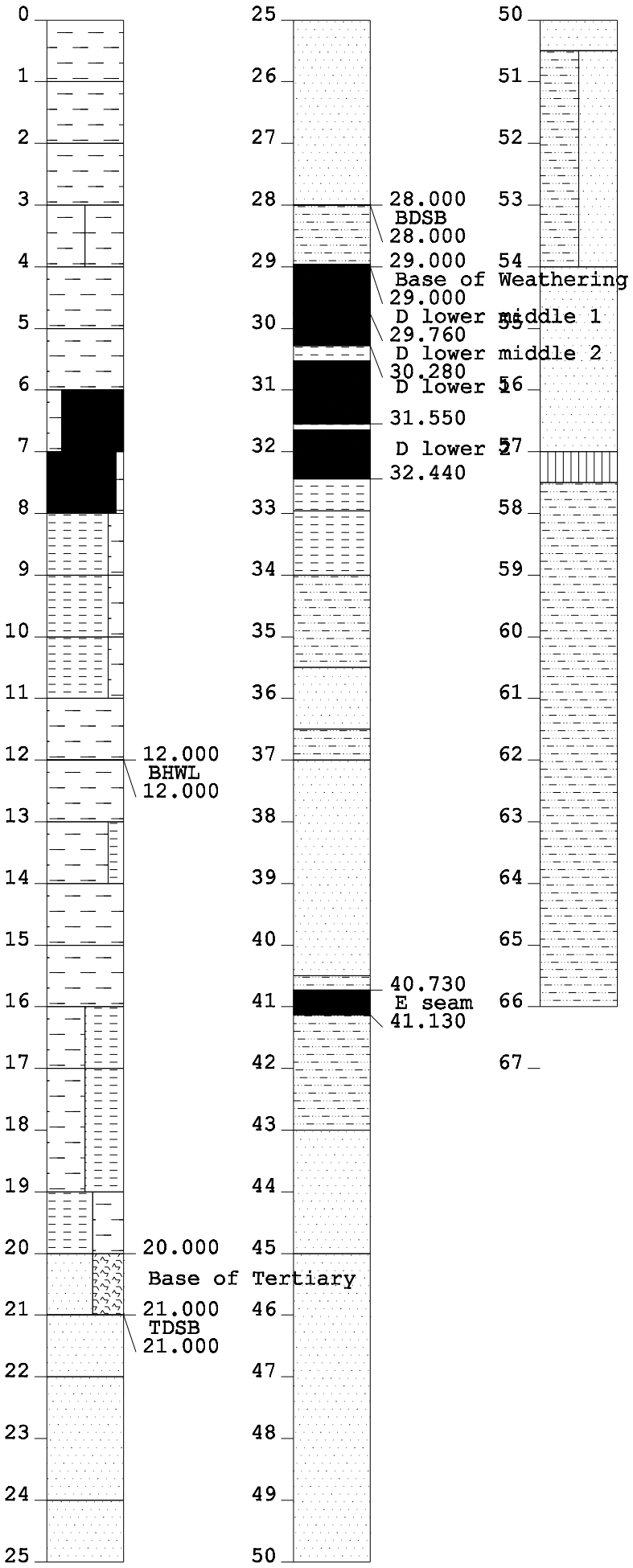

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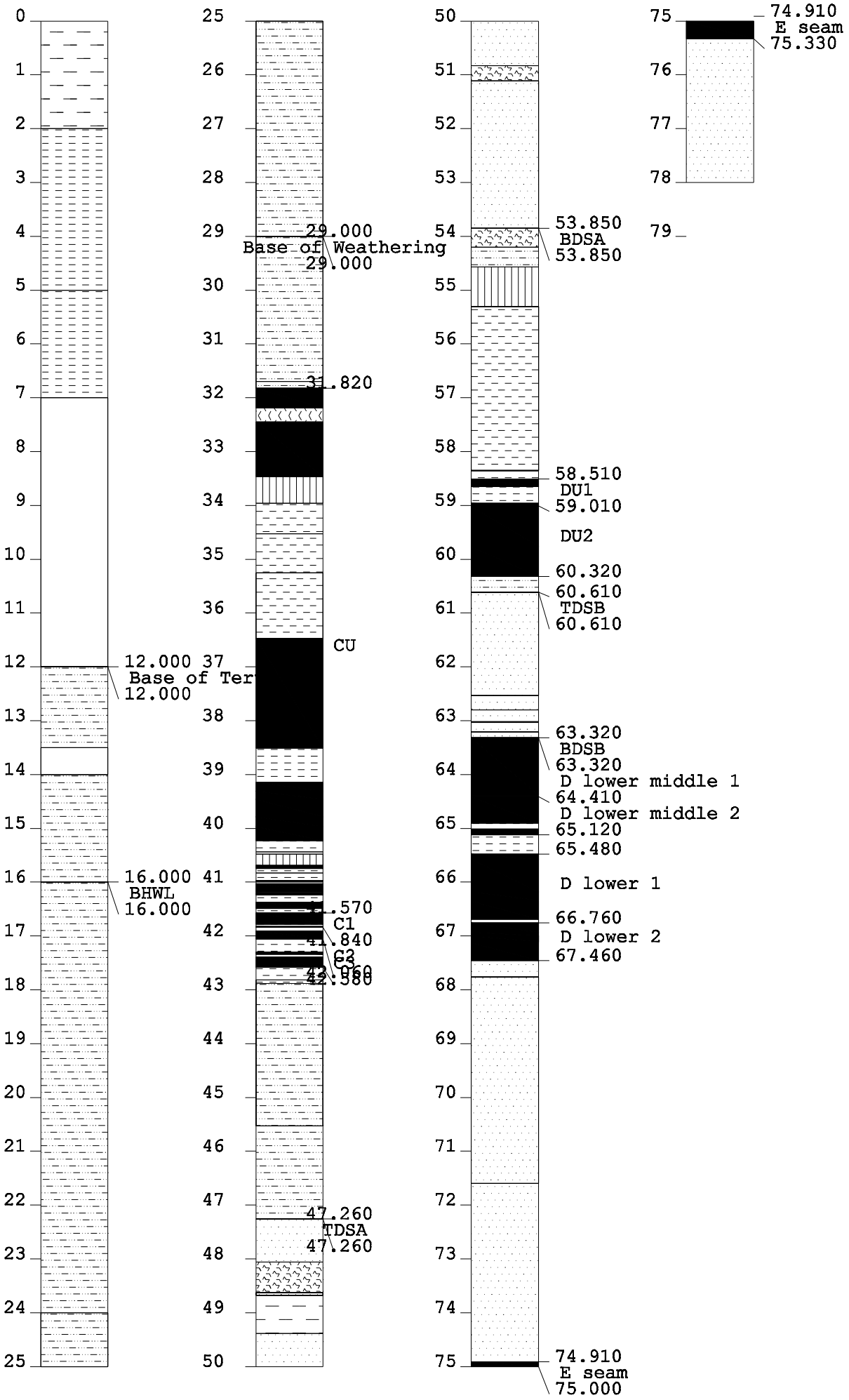

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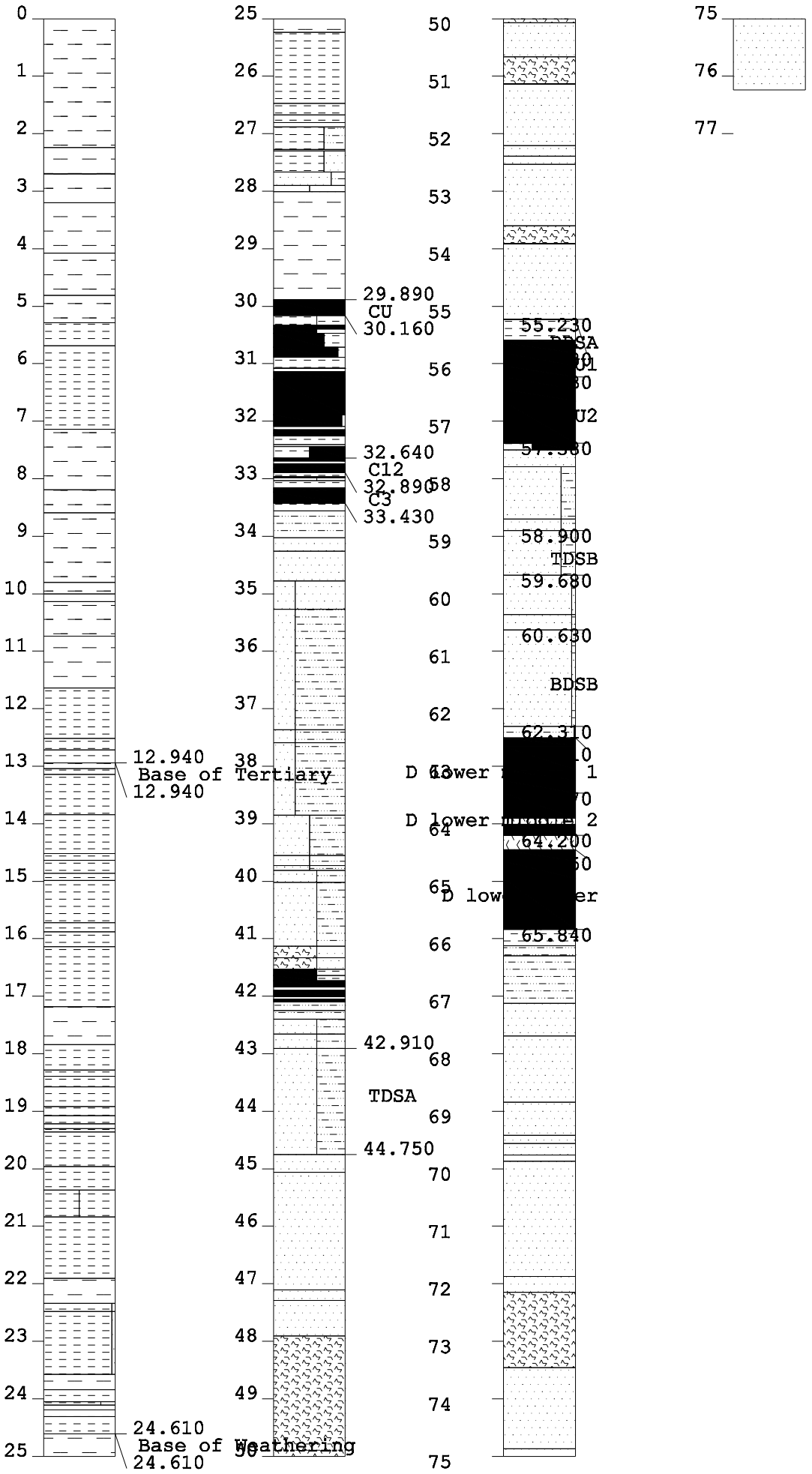

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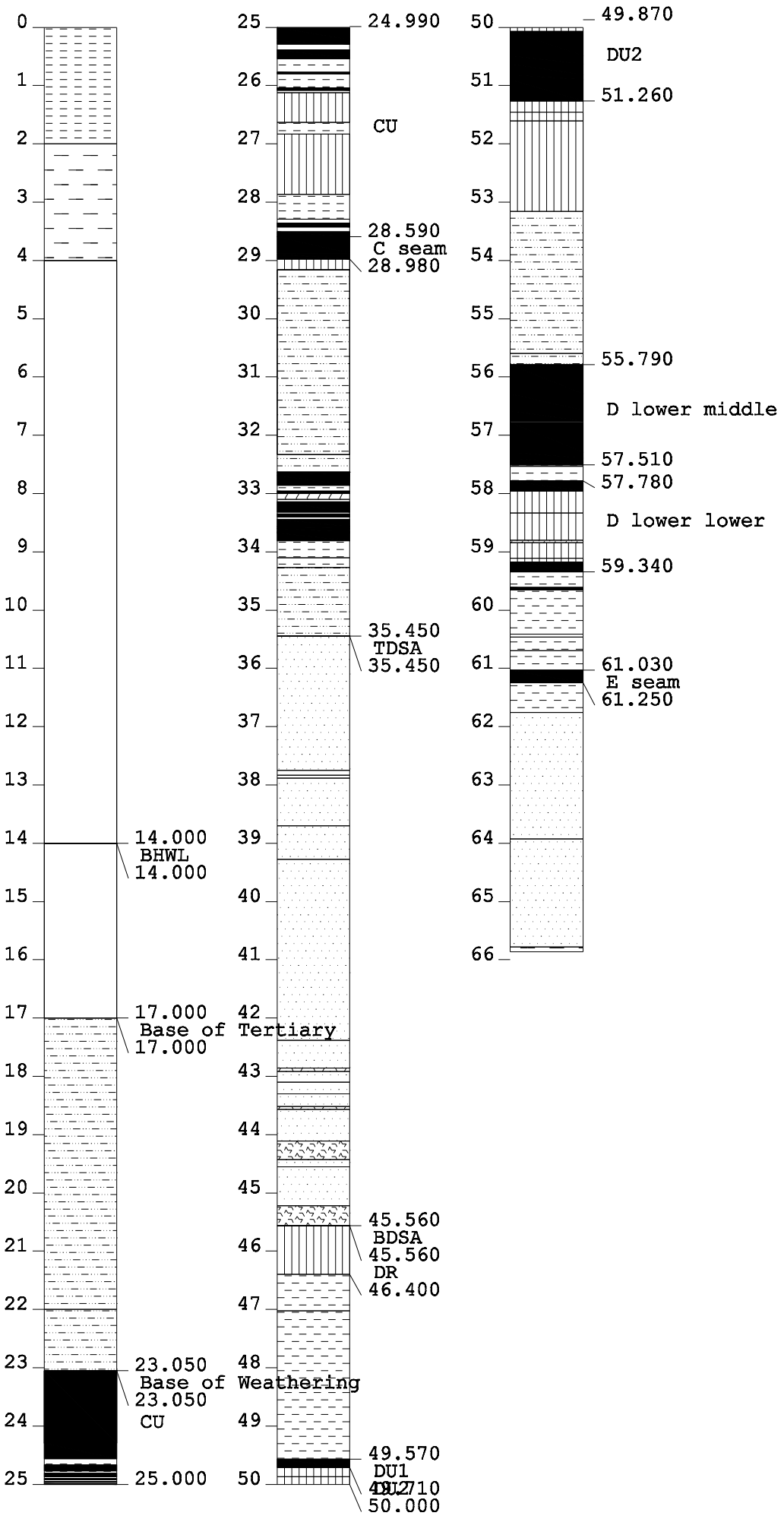

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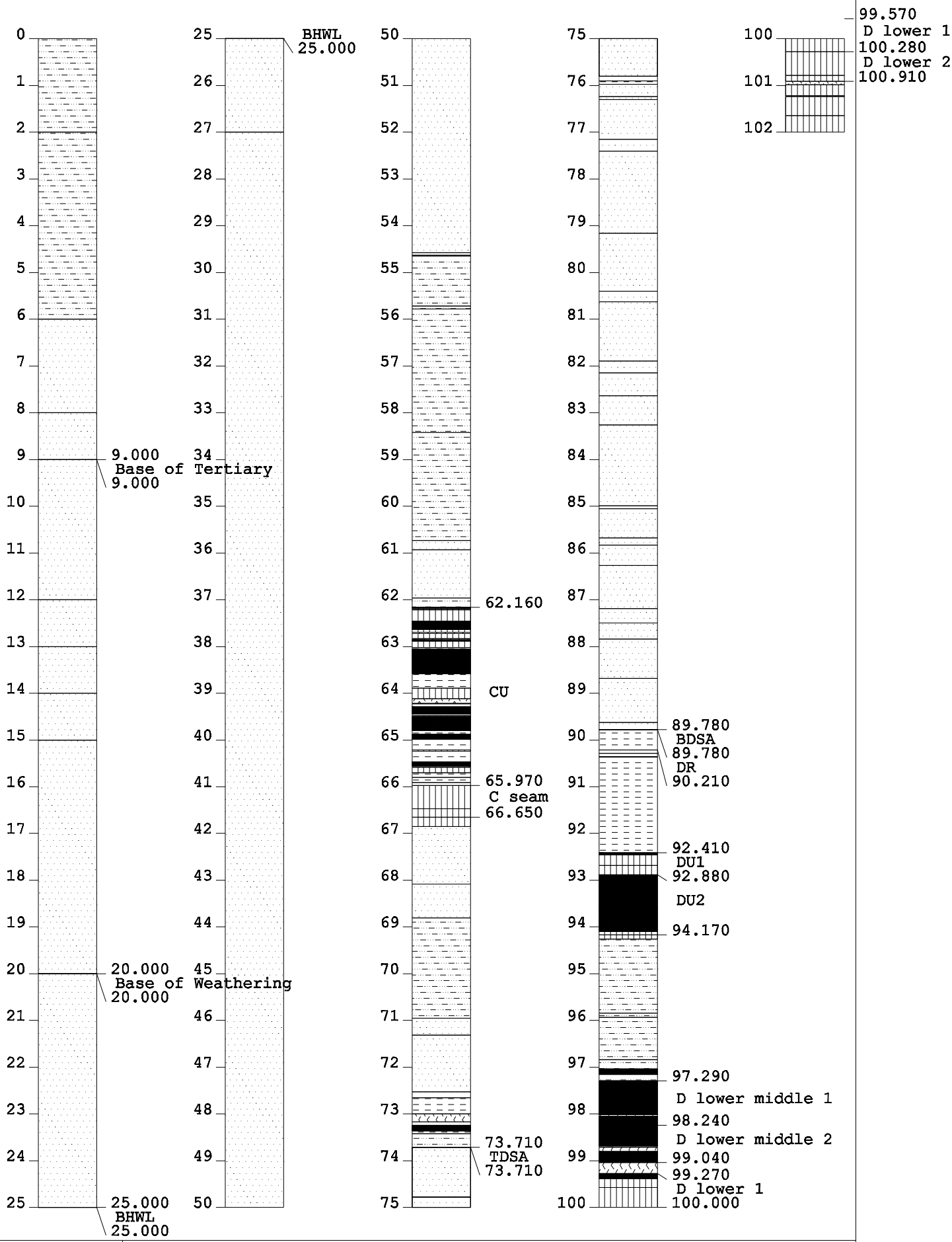

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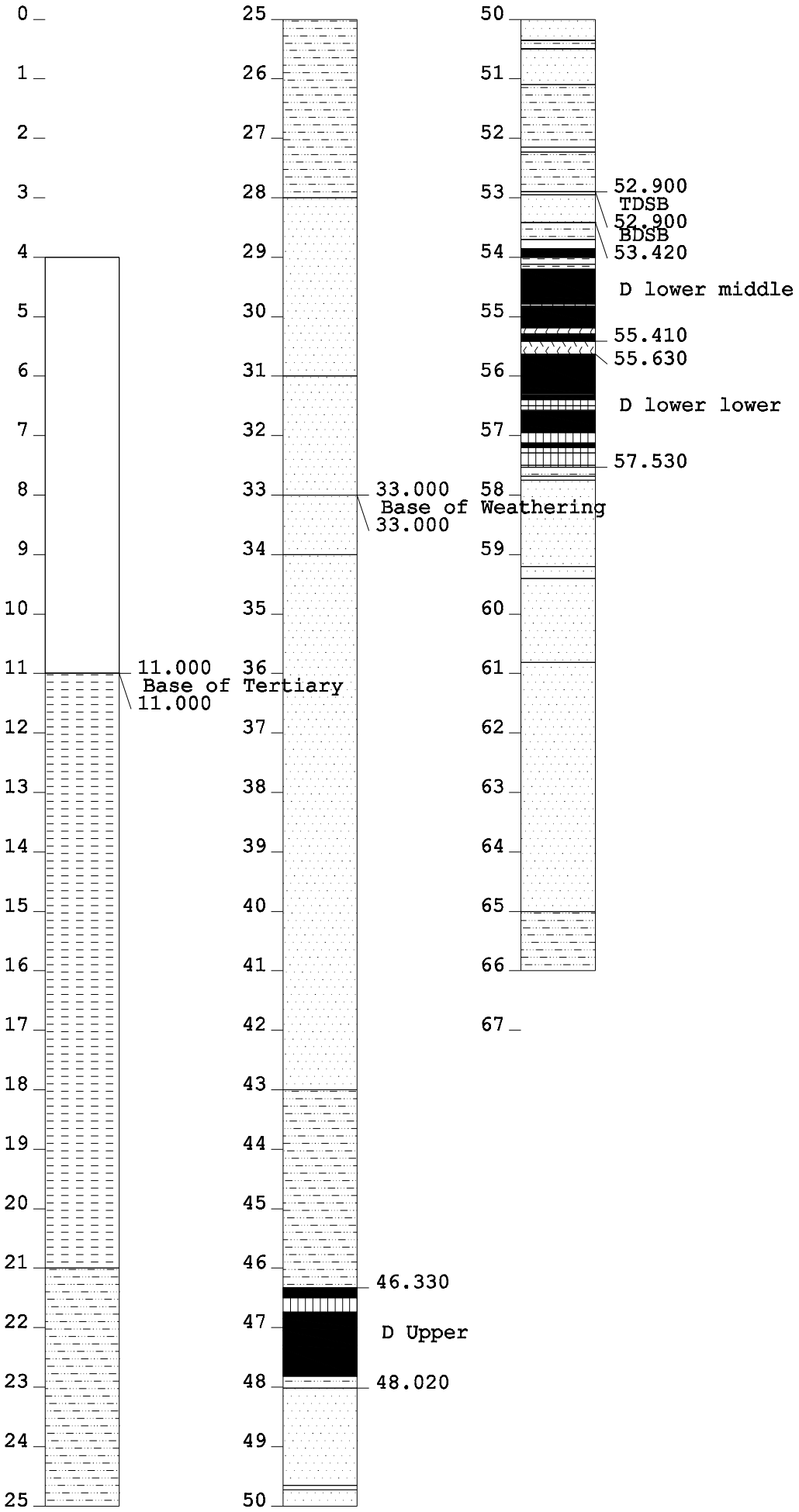

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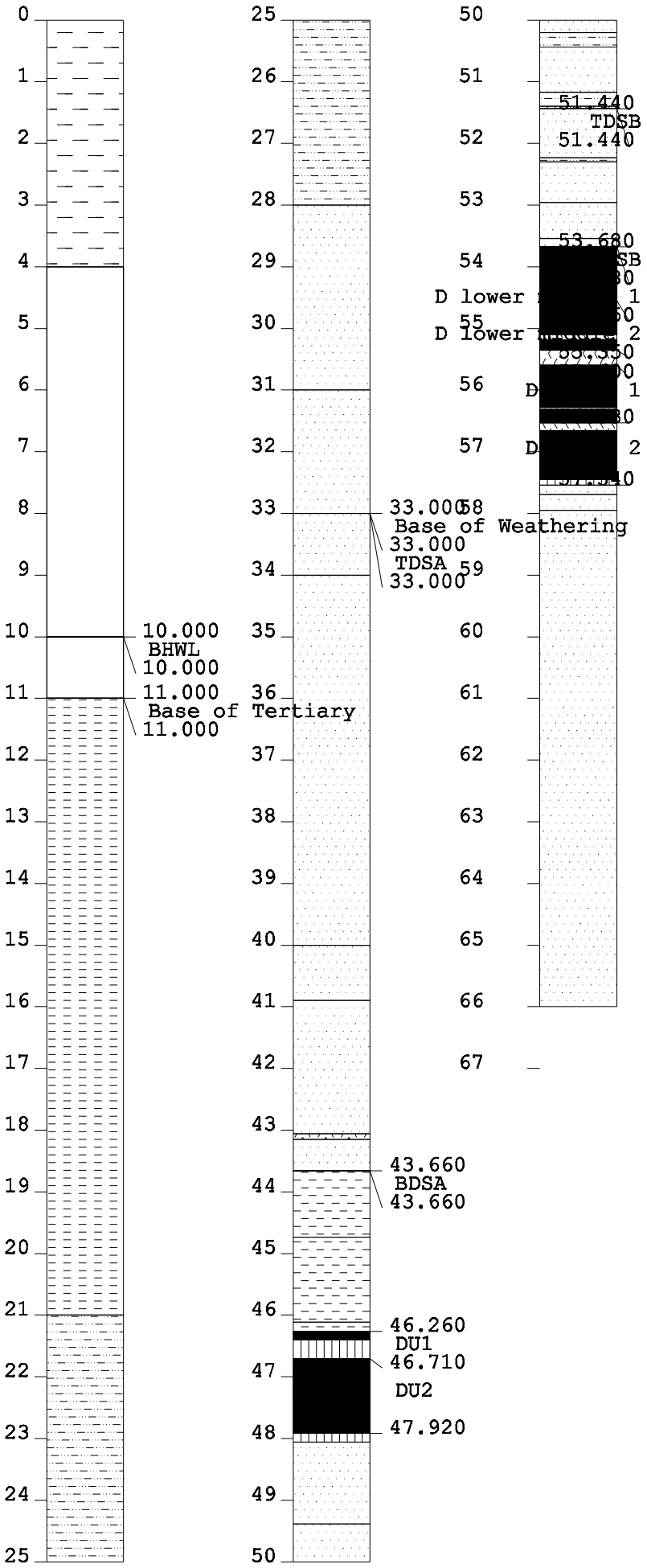

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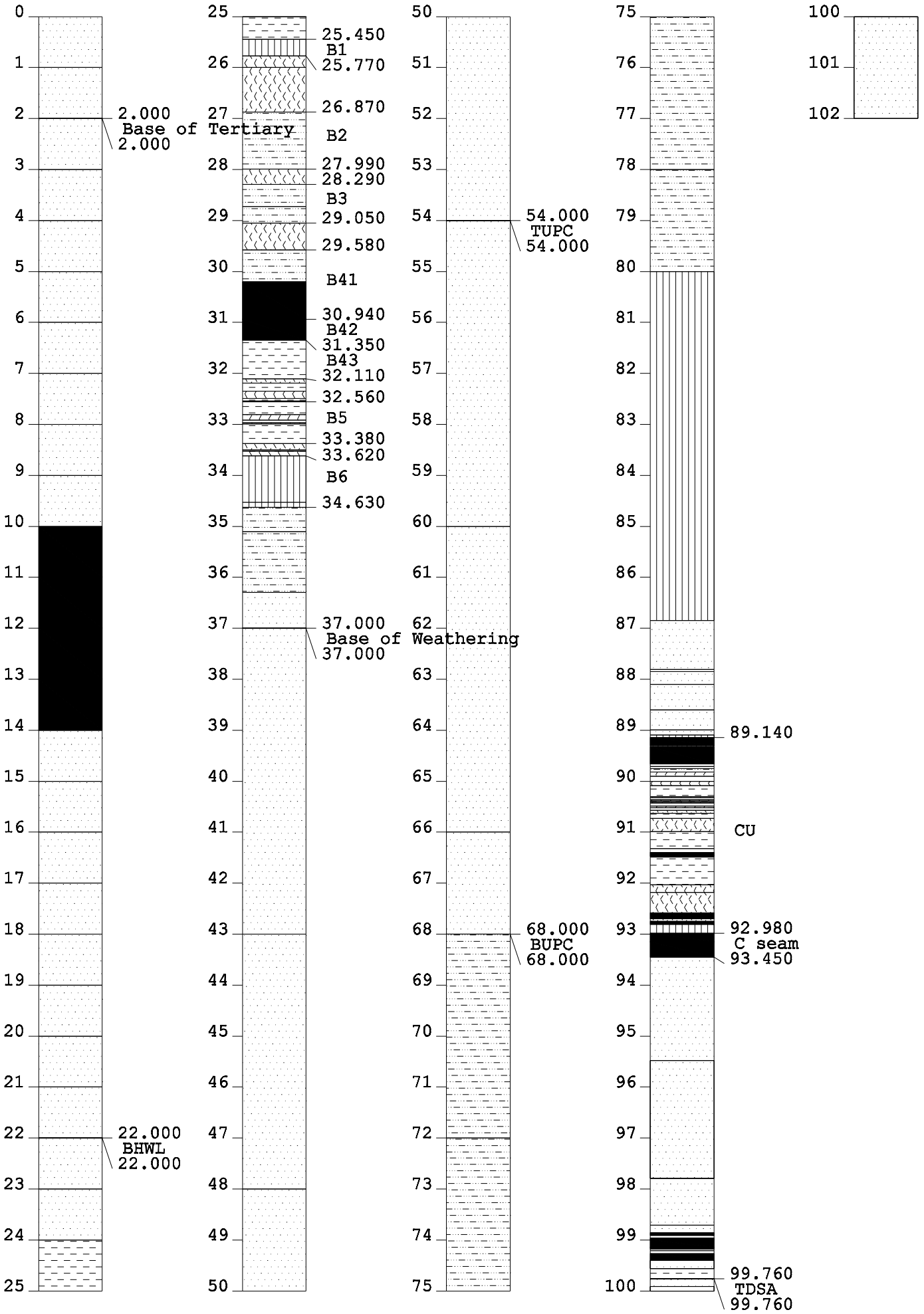

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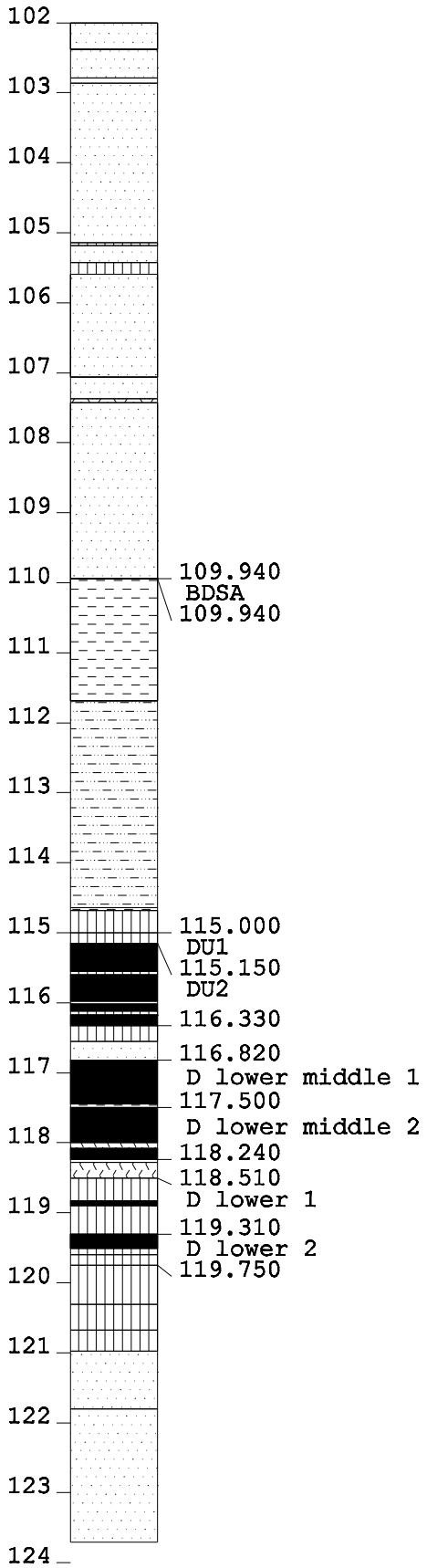

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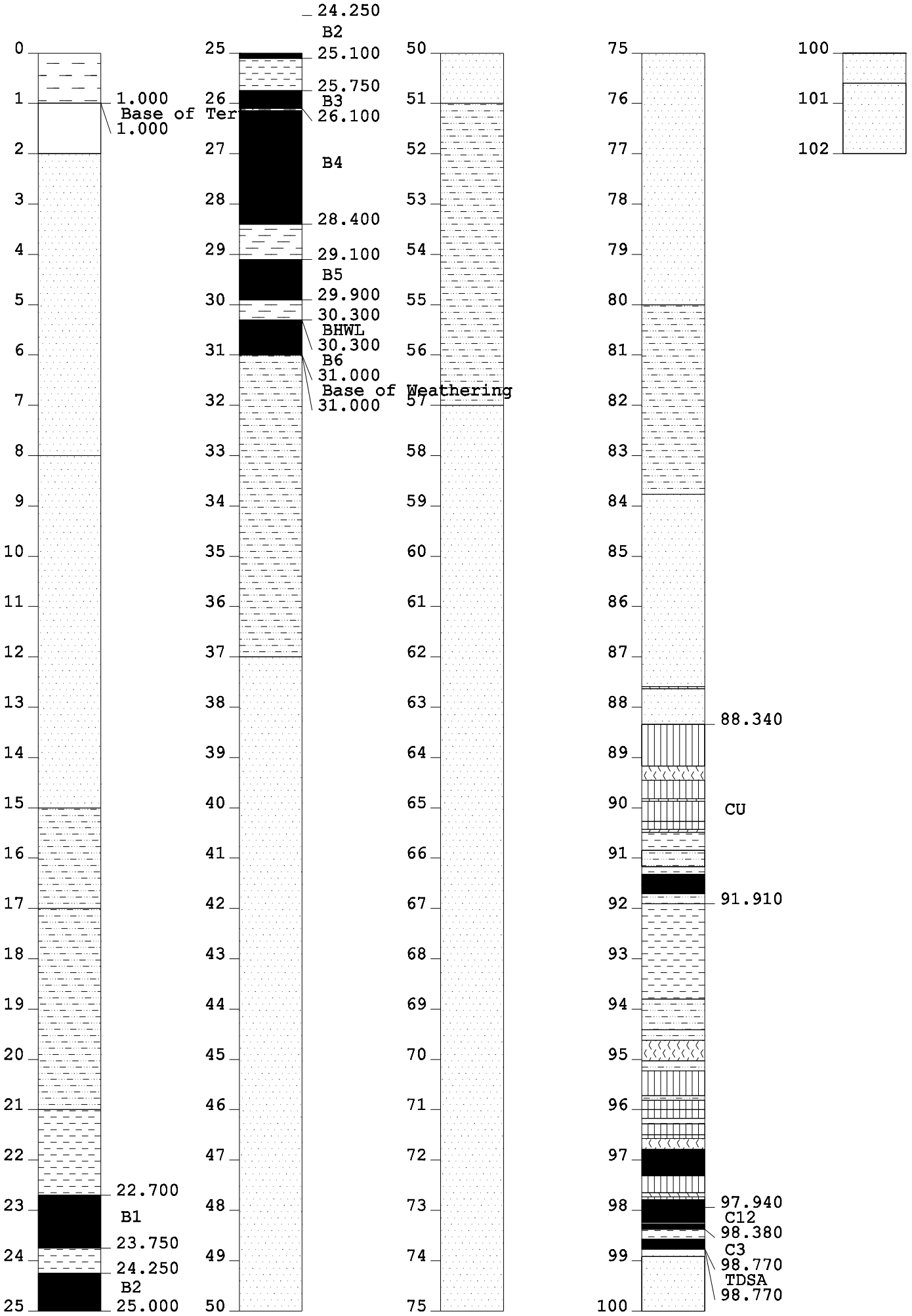

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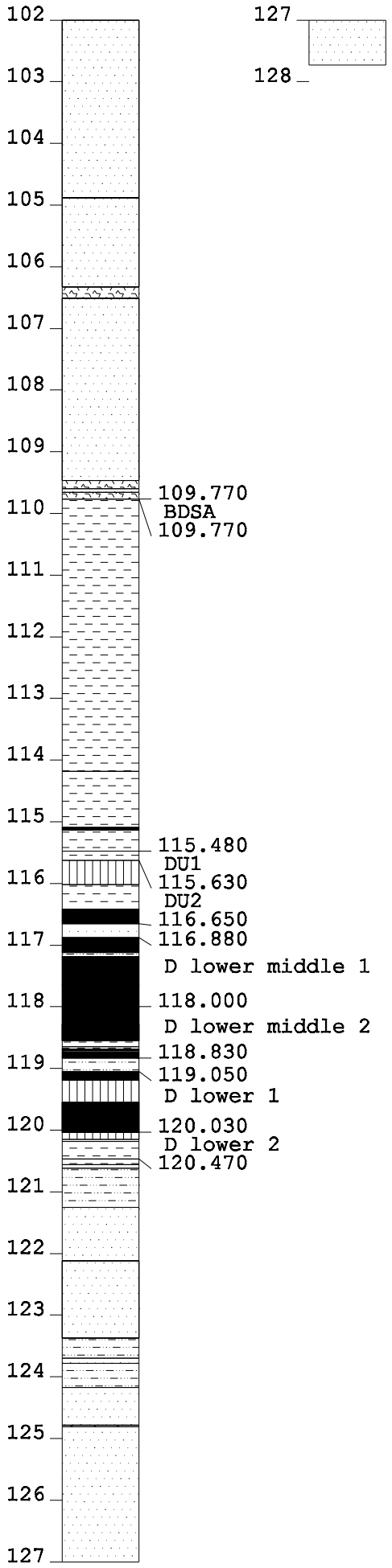

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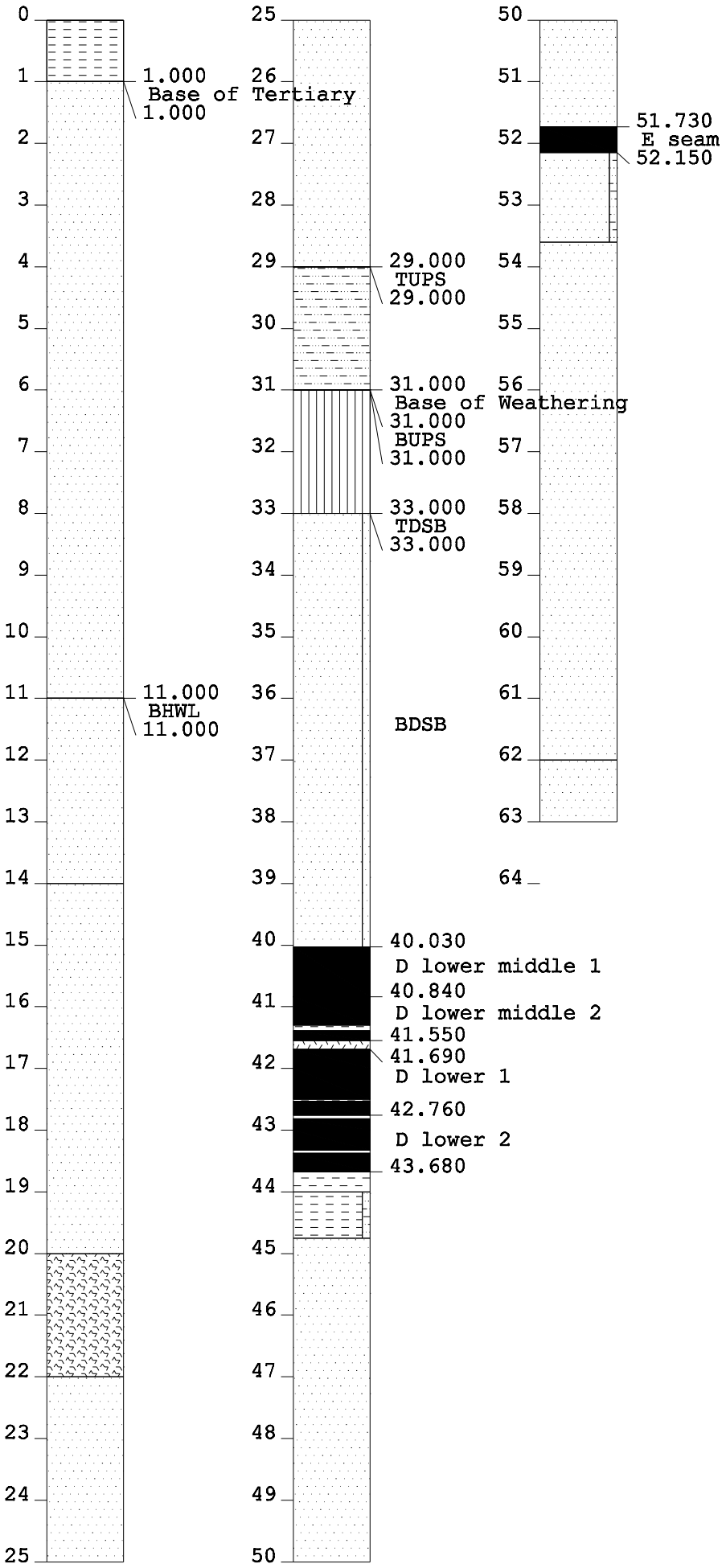

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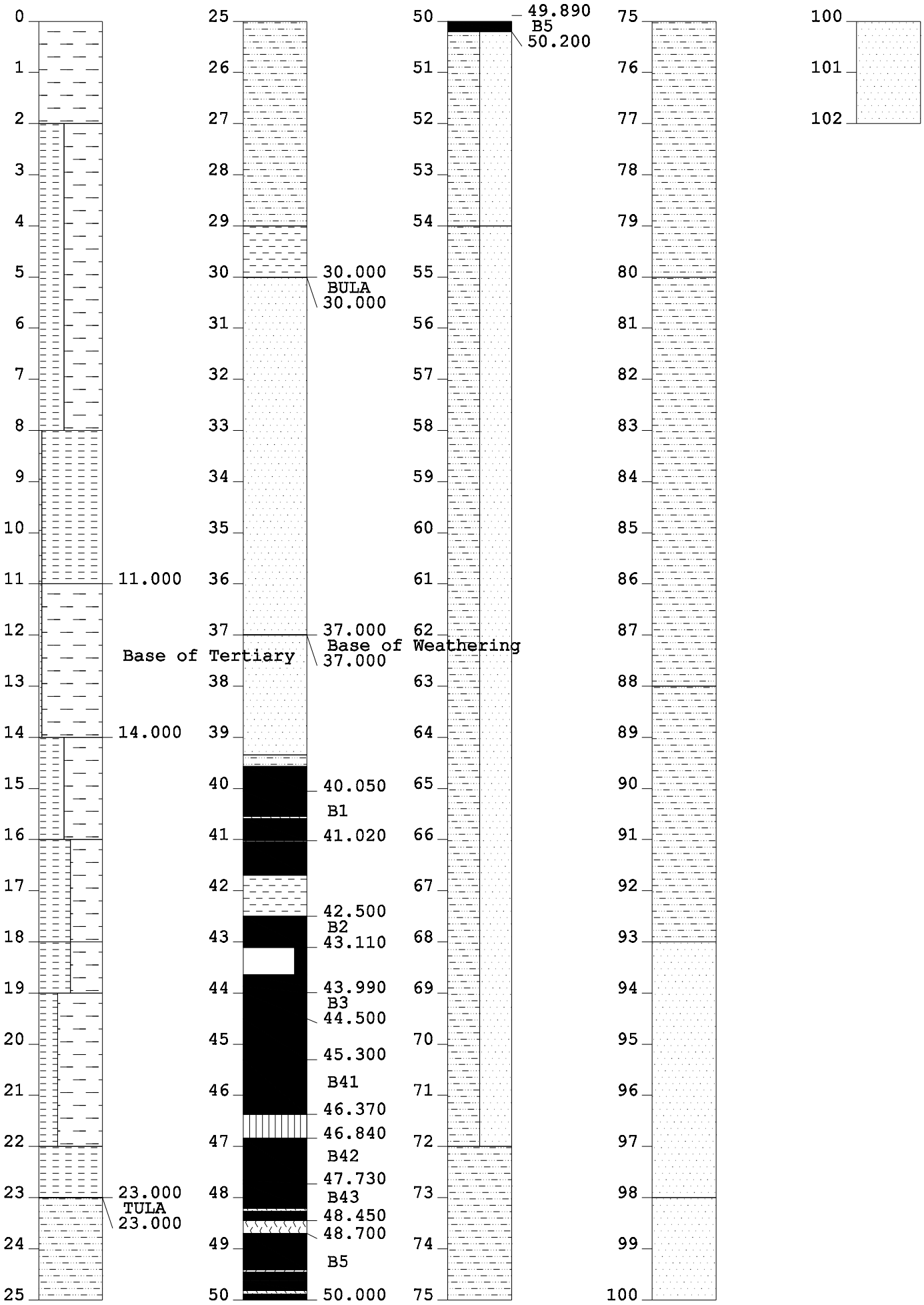

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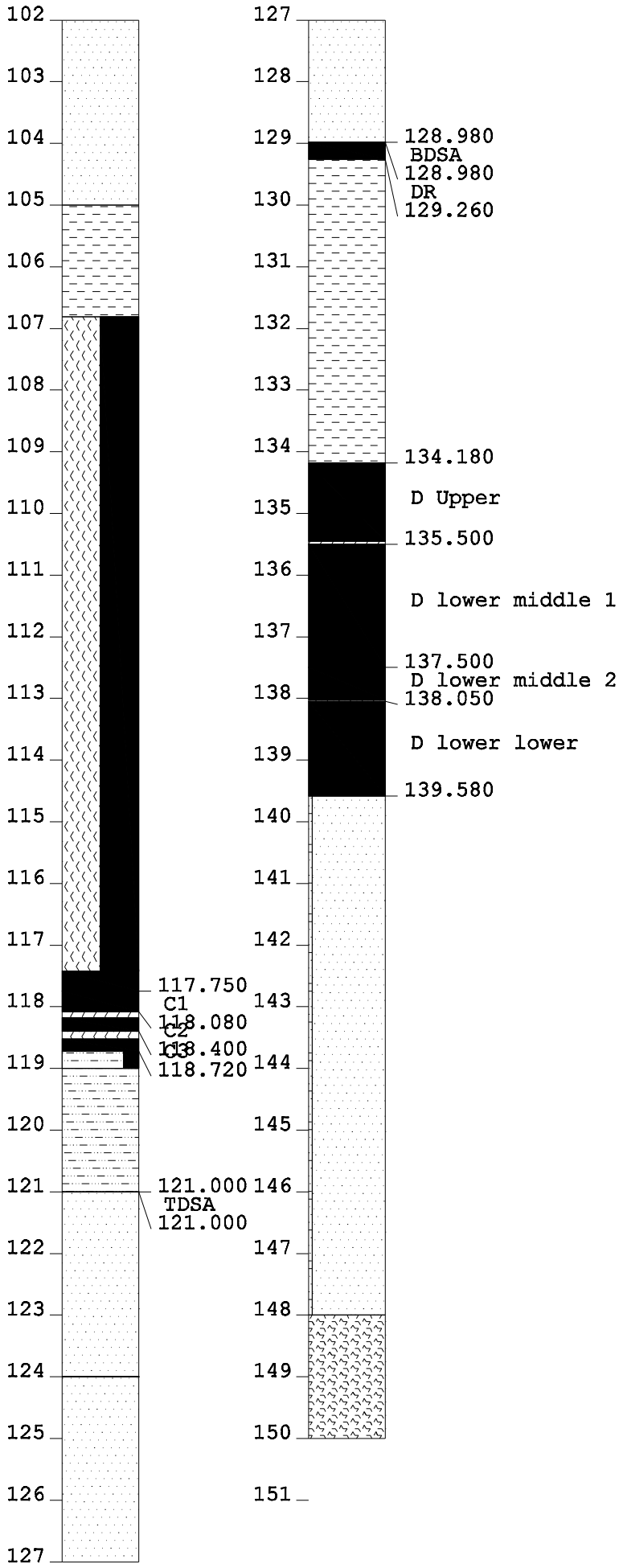

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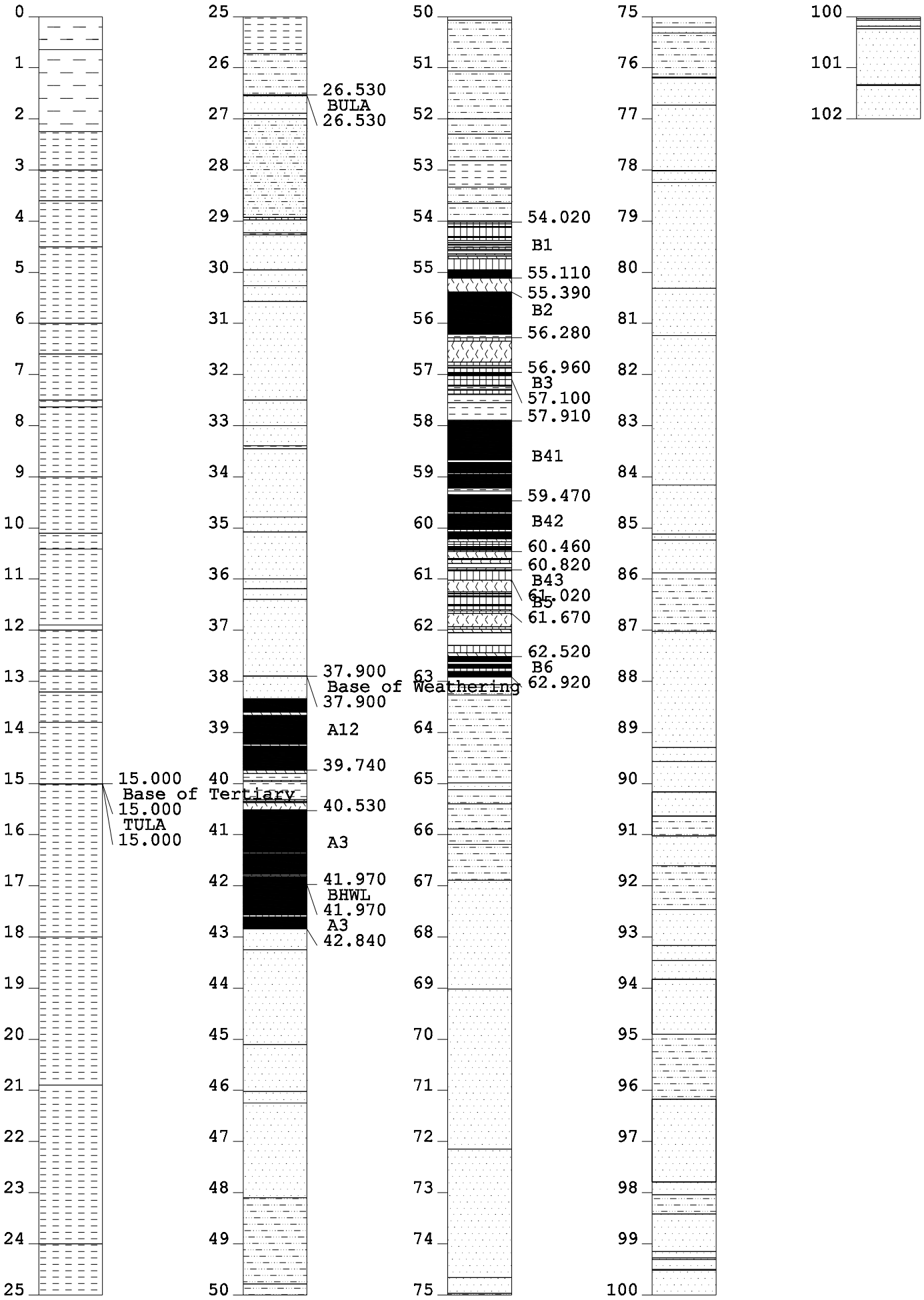

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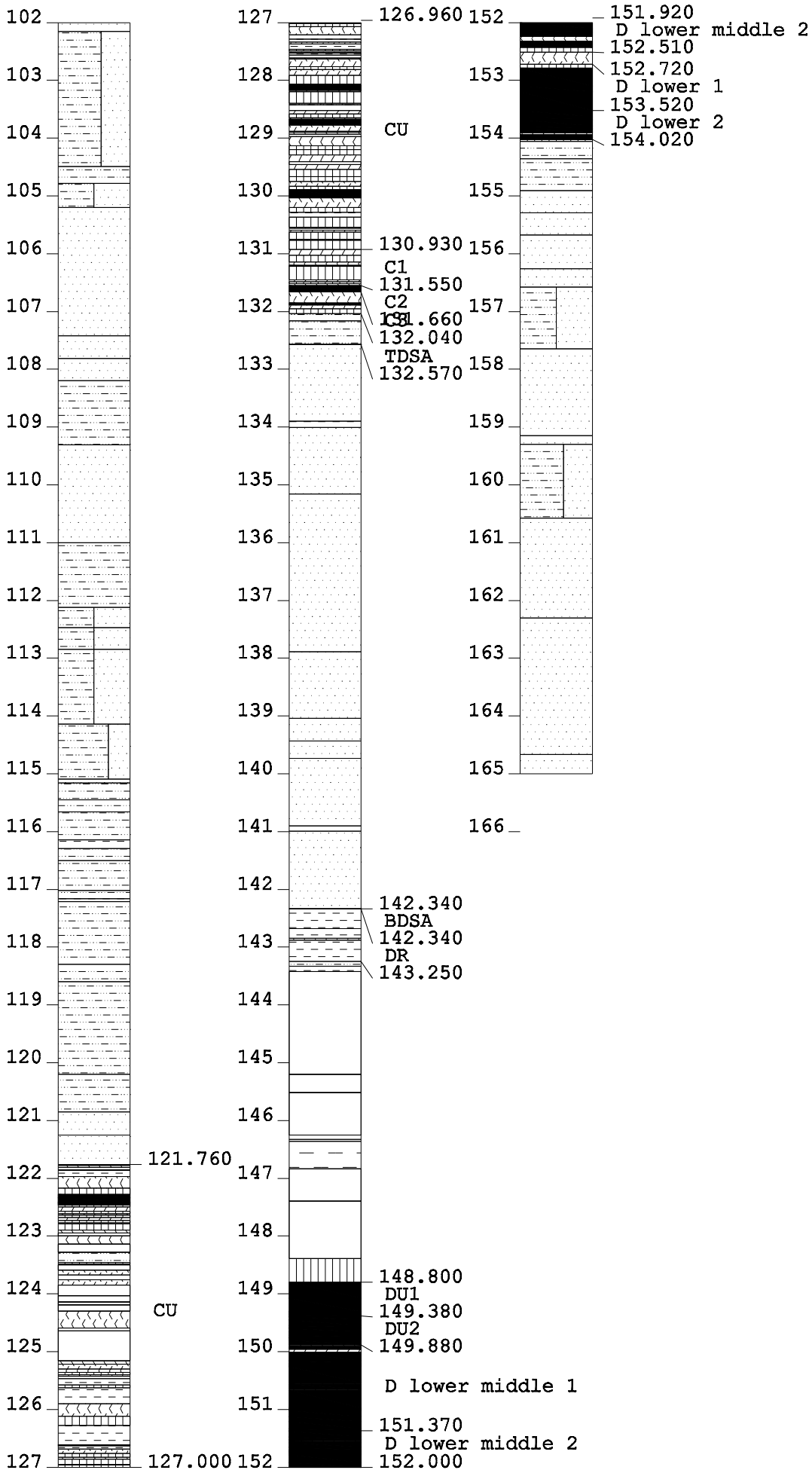

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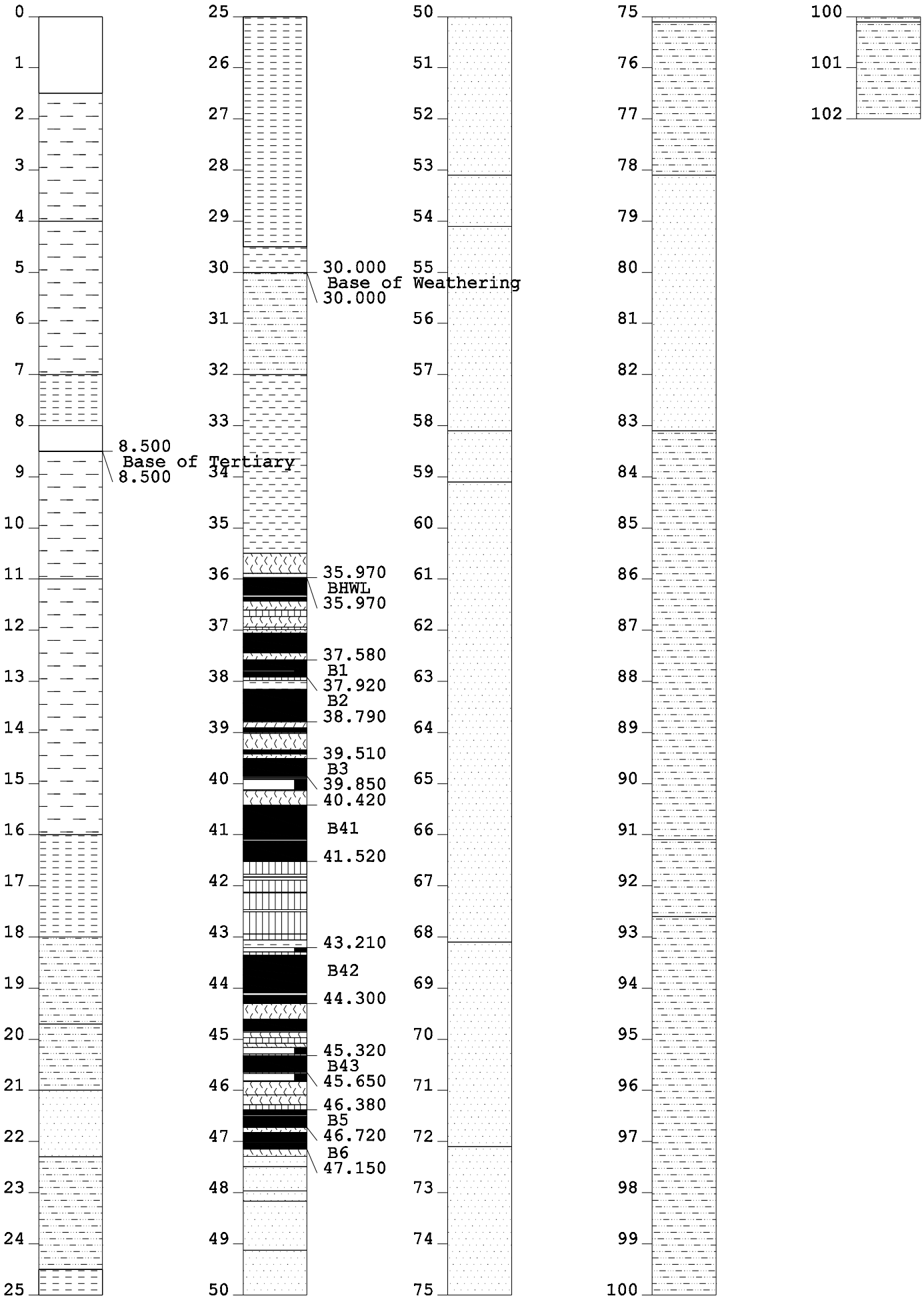

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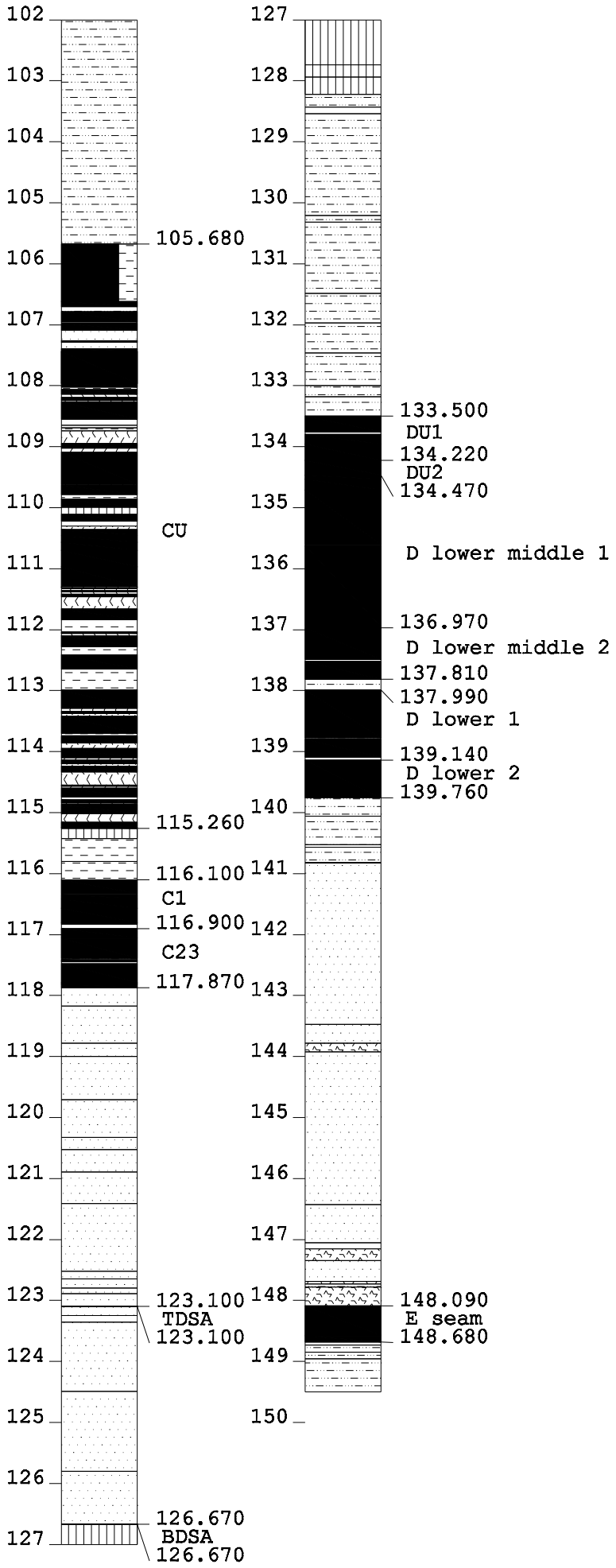

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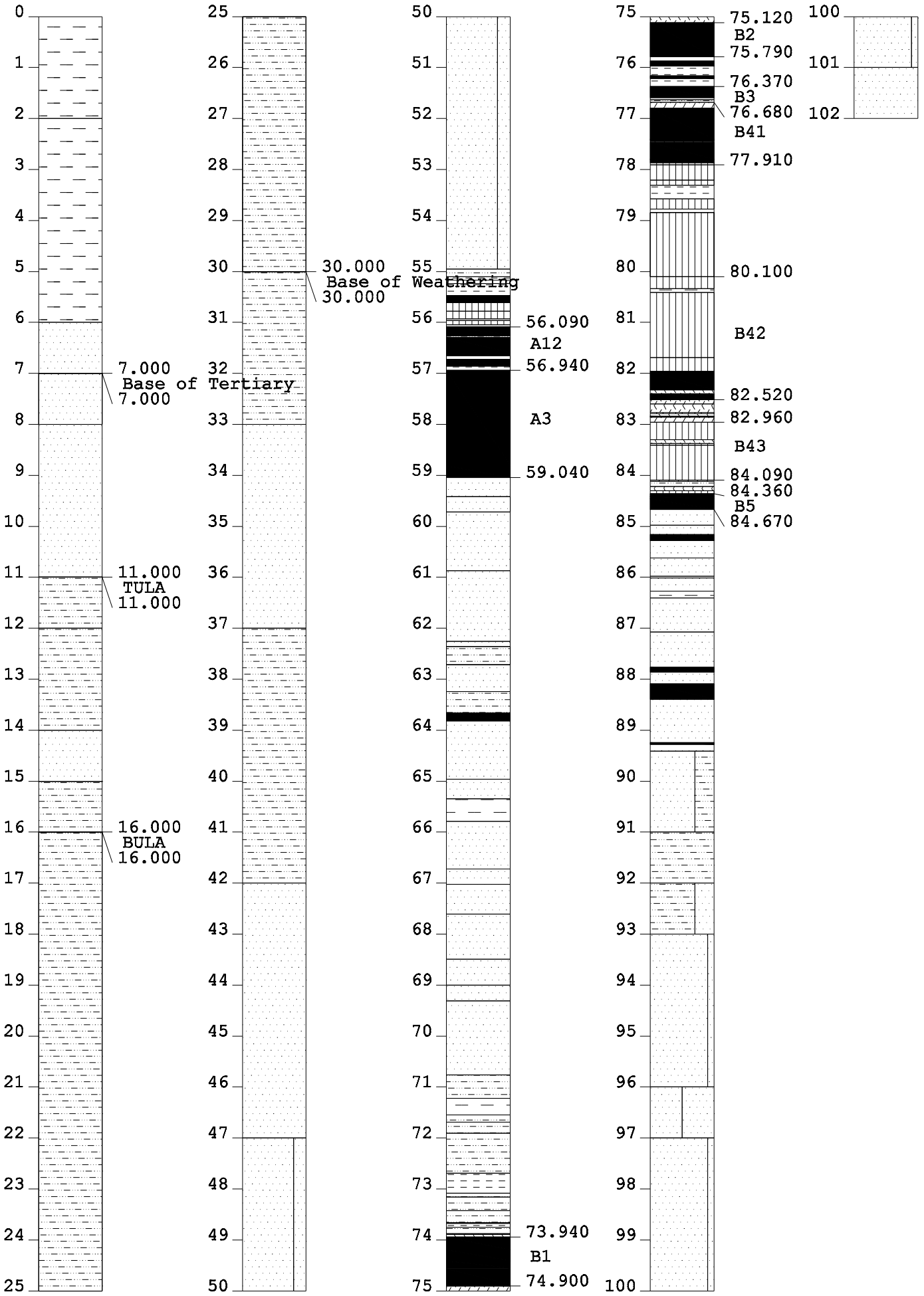

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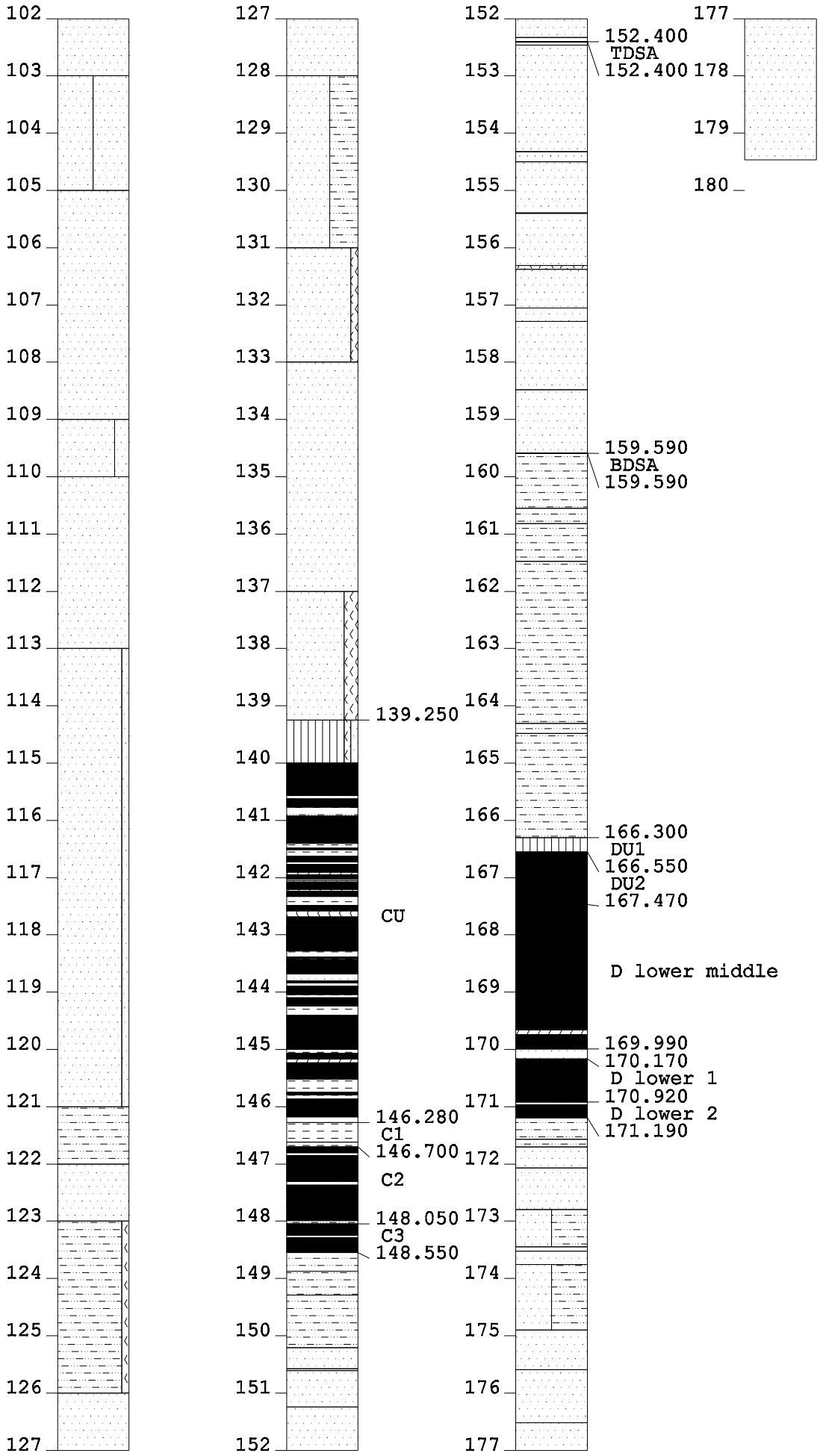

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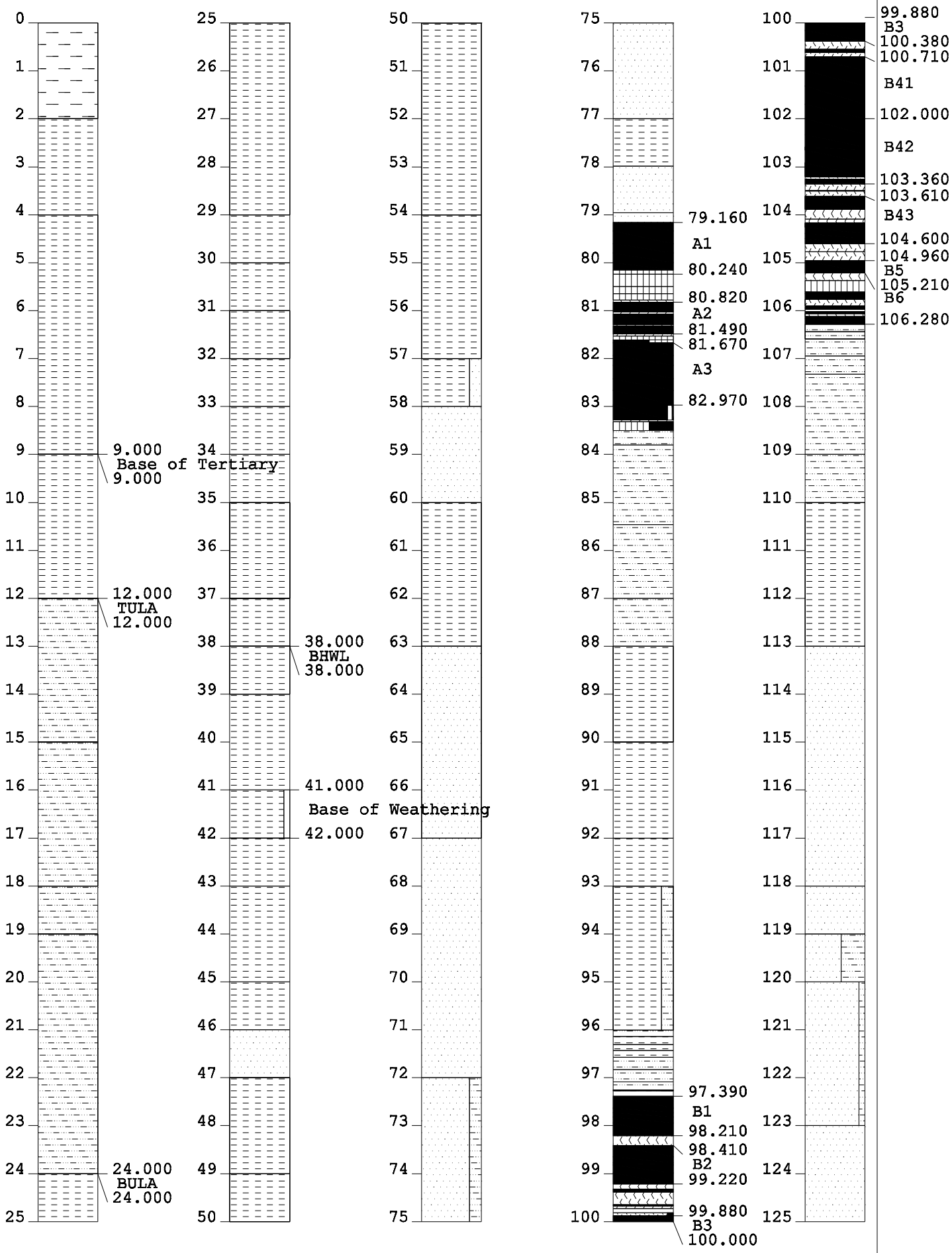

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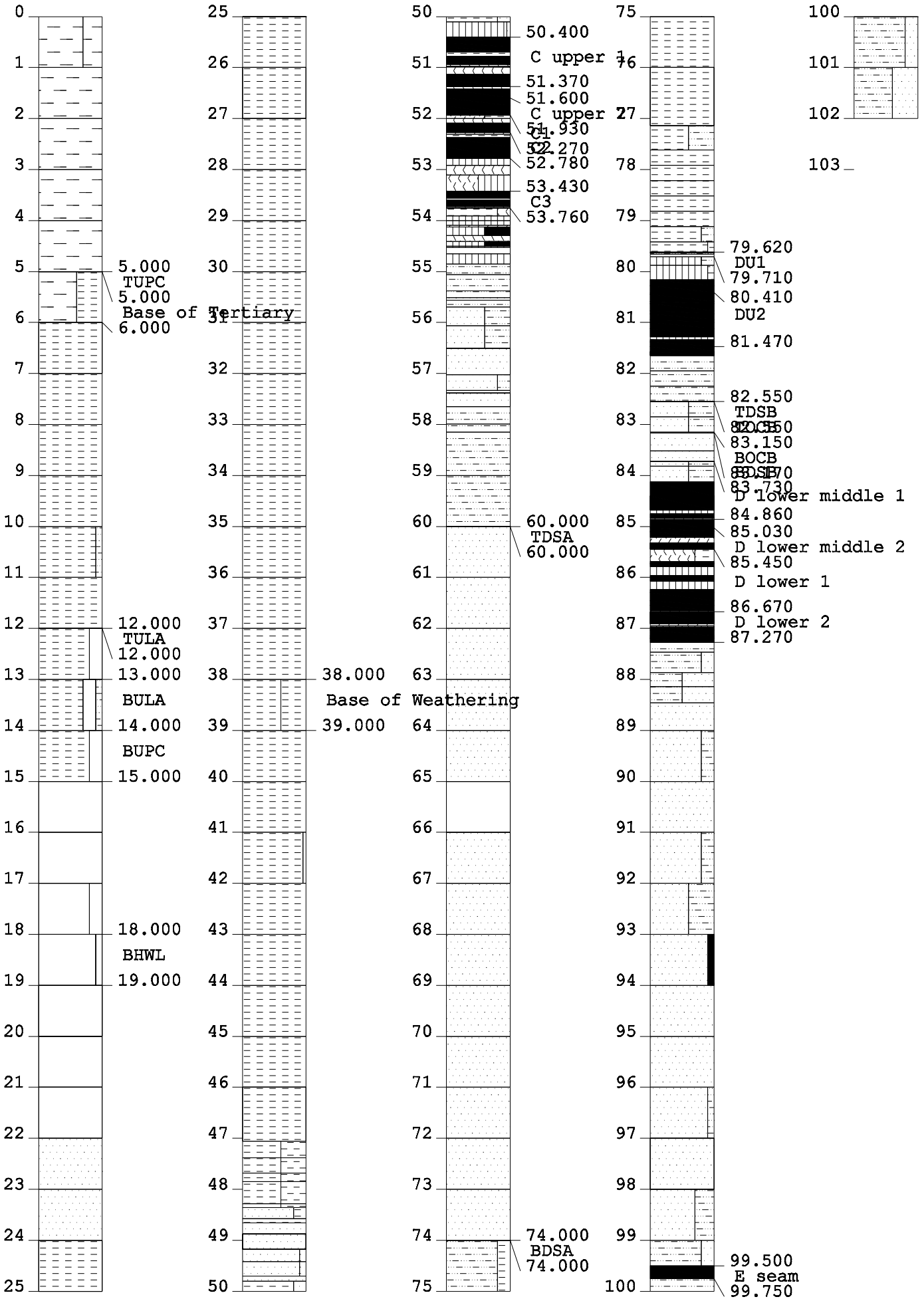

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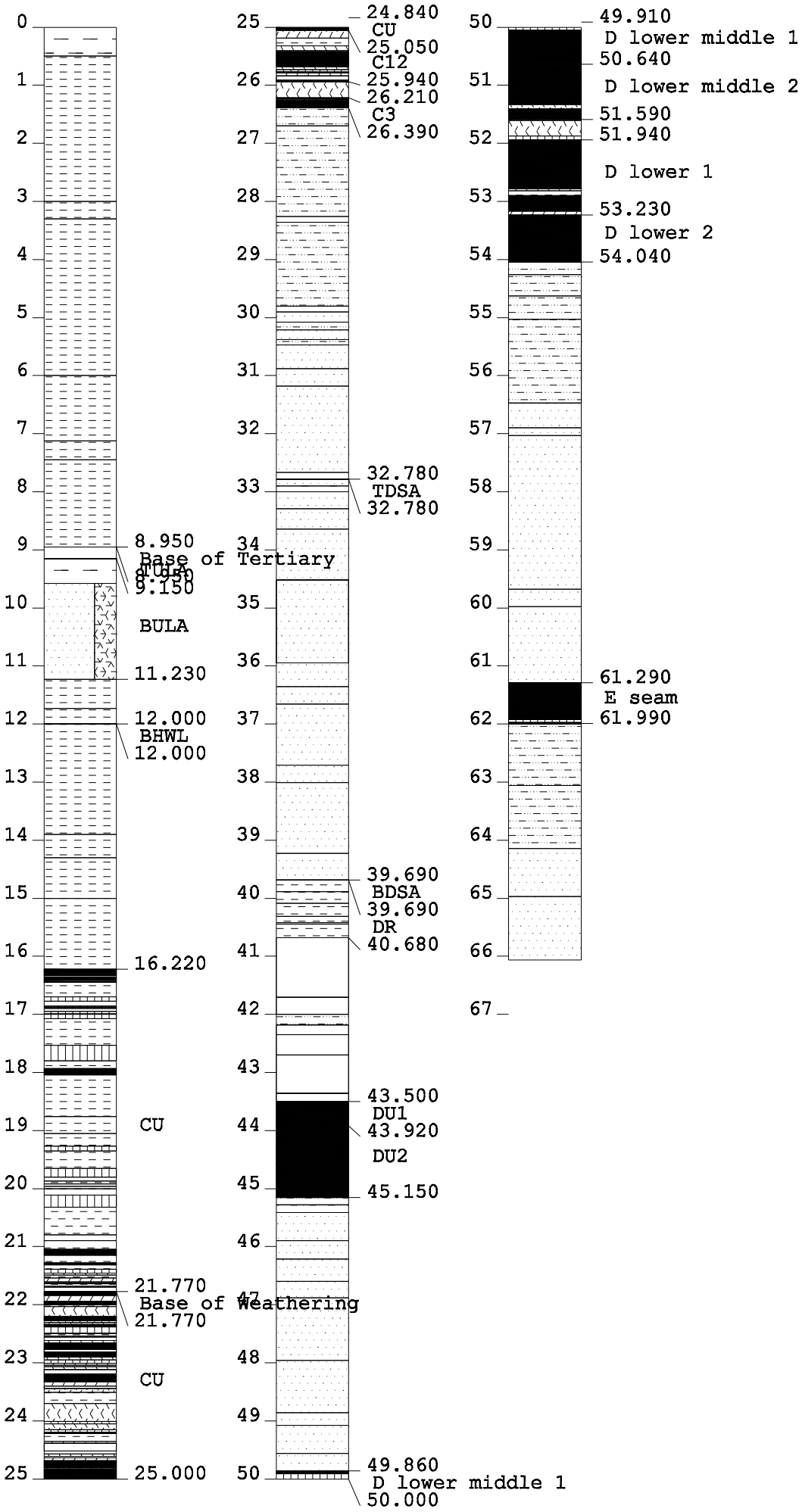

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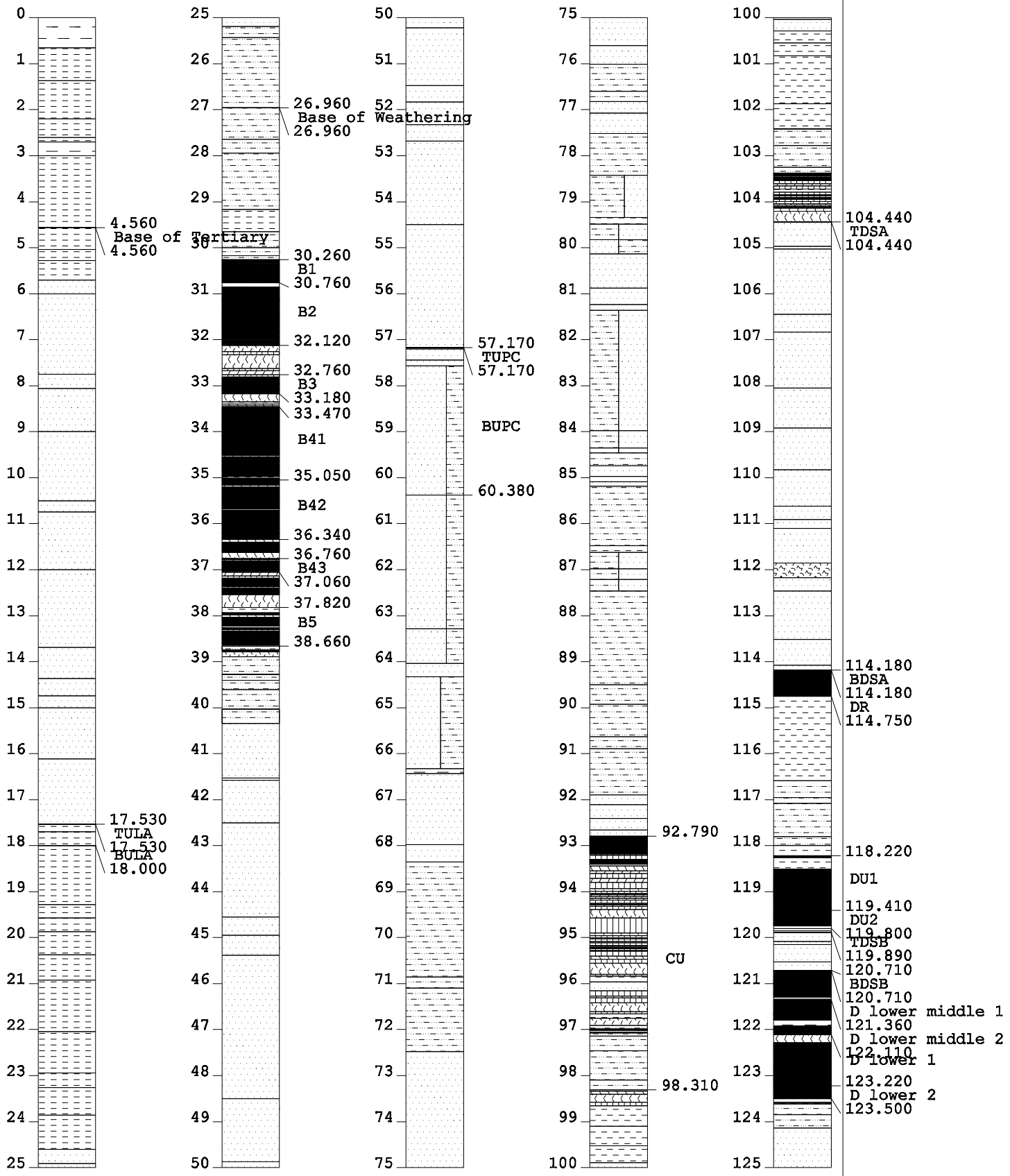

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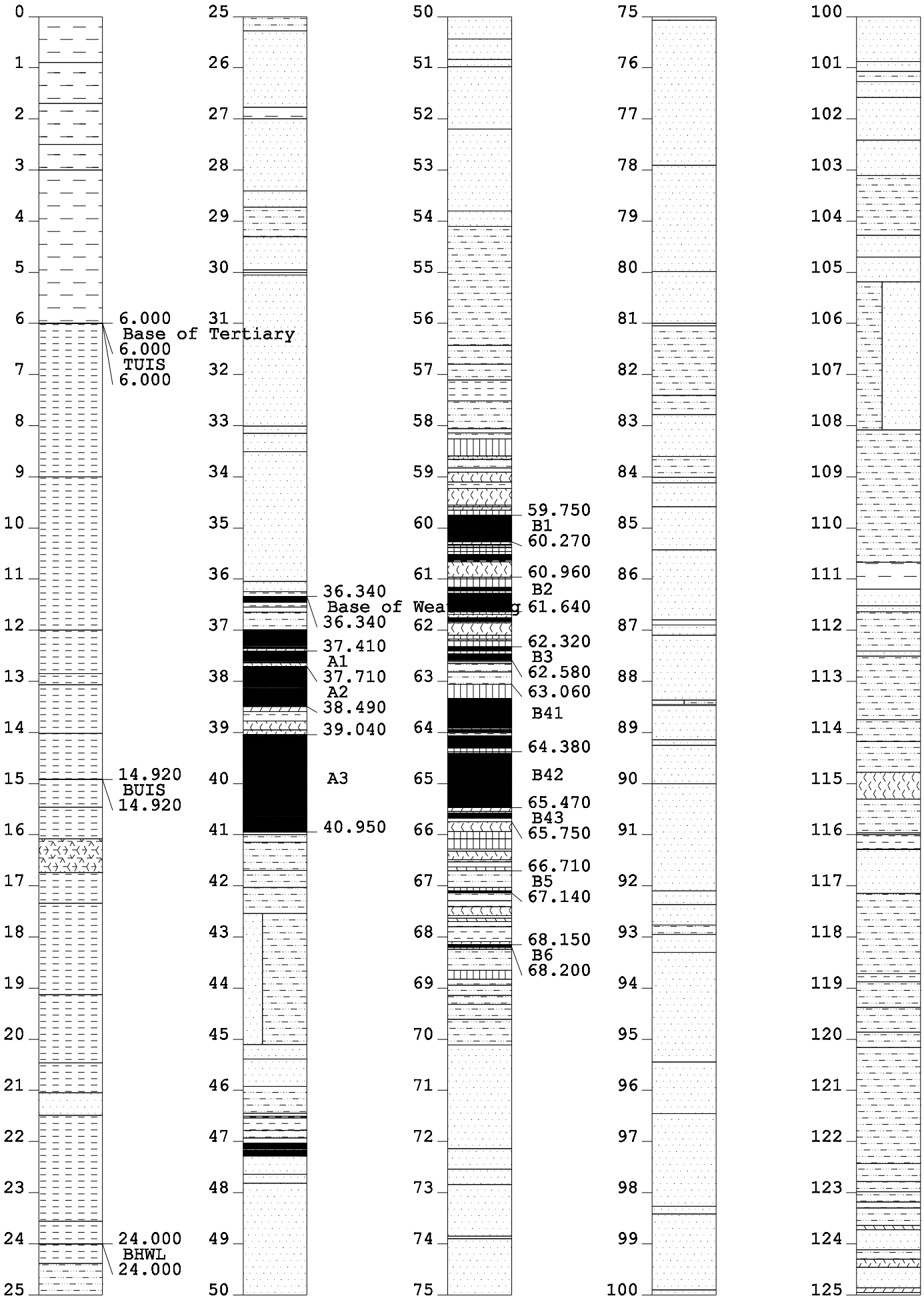

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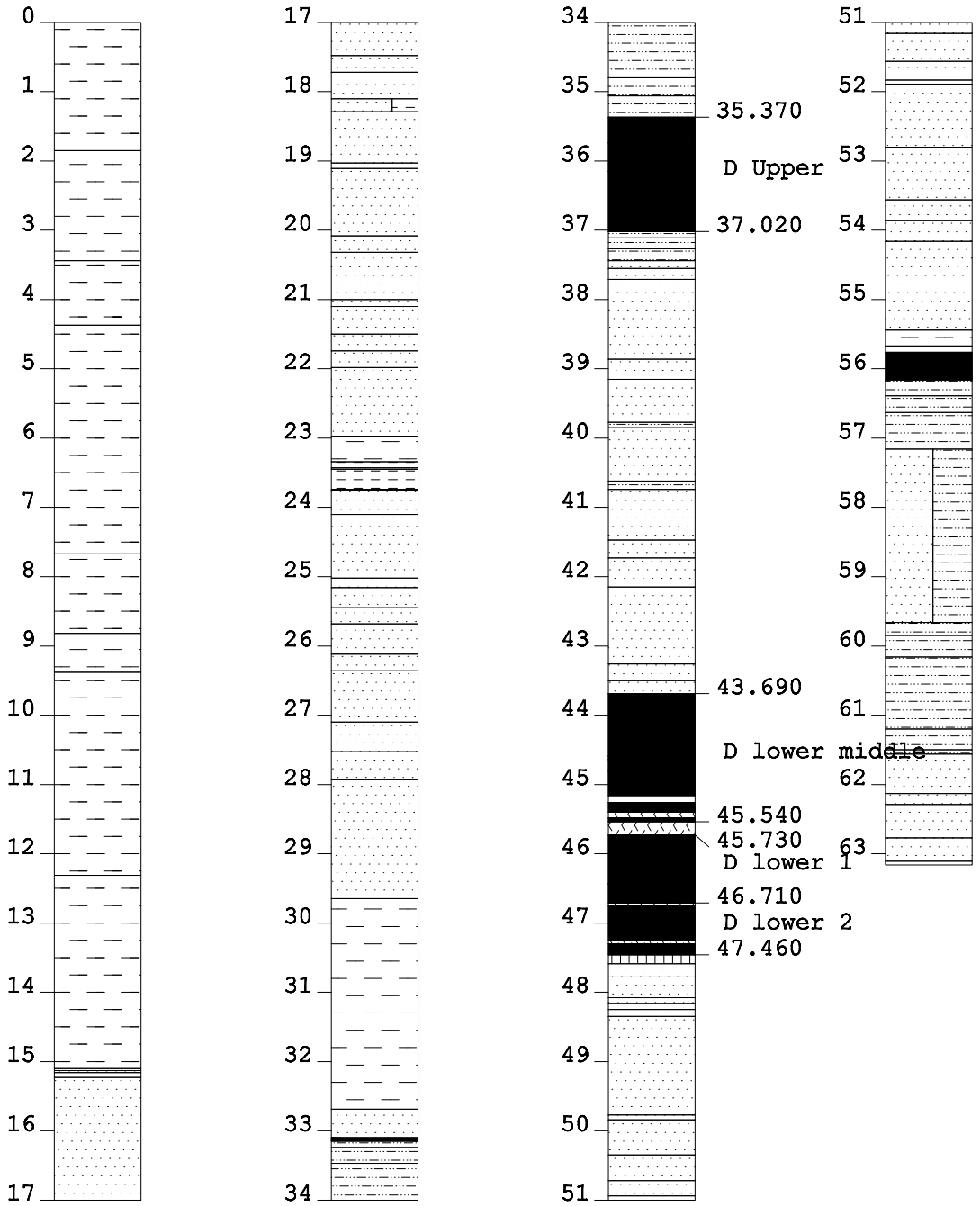


coal
CLAY
SANDSTONE
SAND
CORE LOSS
SOIL
carb
TUFF
siltstone
SILTSTONE

BOREHOLE NO:

PROJECT:

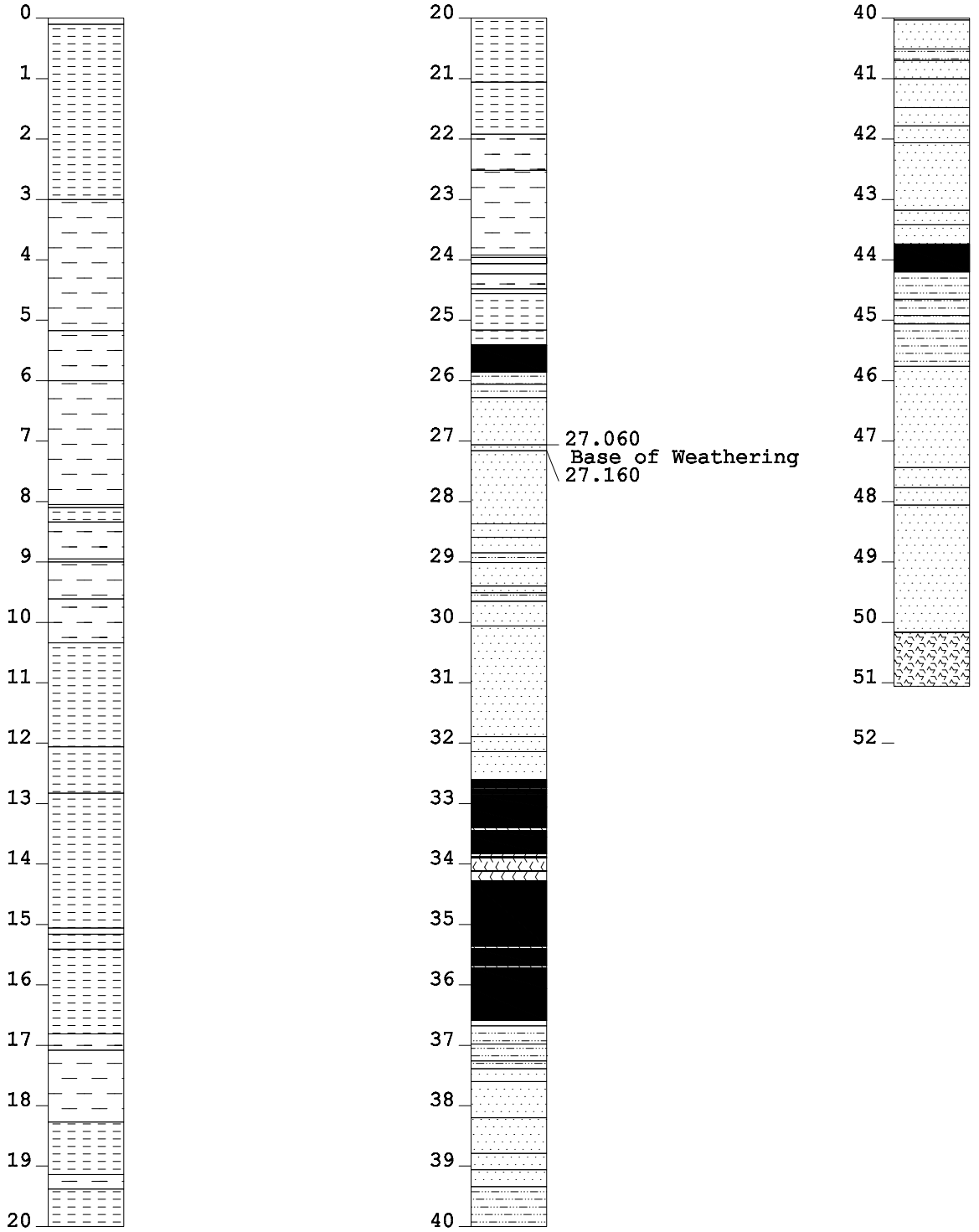
Test Plot

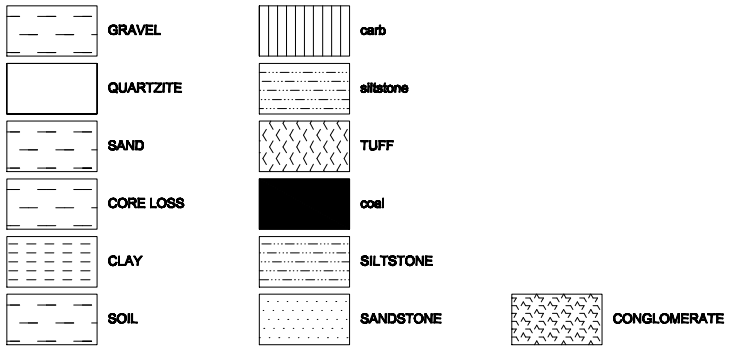
DATE DRILLED:

LOGGED BY:

SCALE:

PLAN NO:





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PROJECT:	
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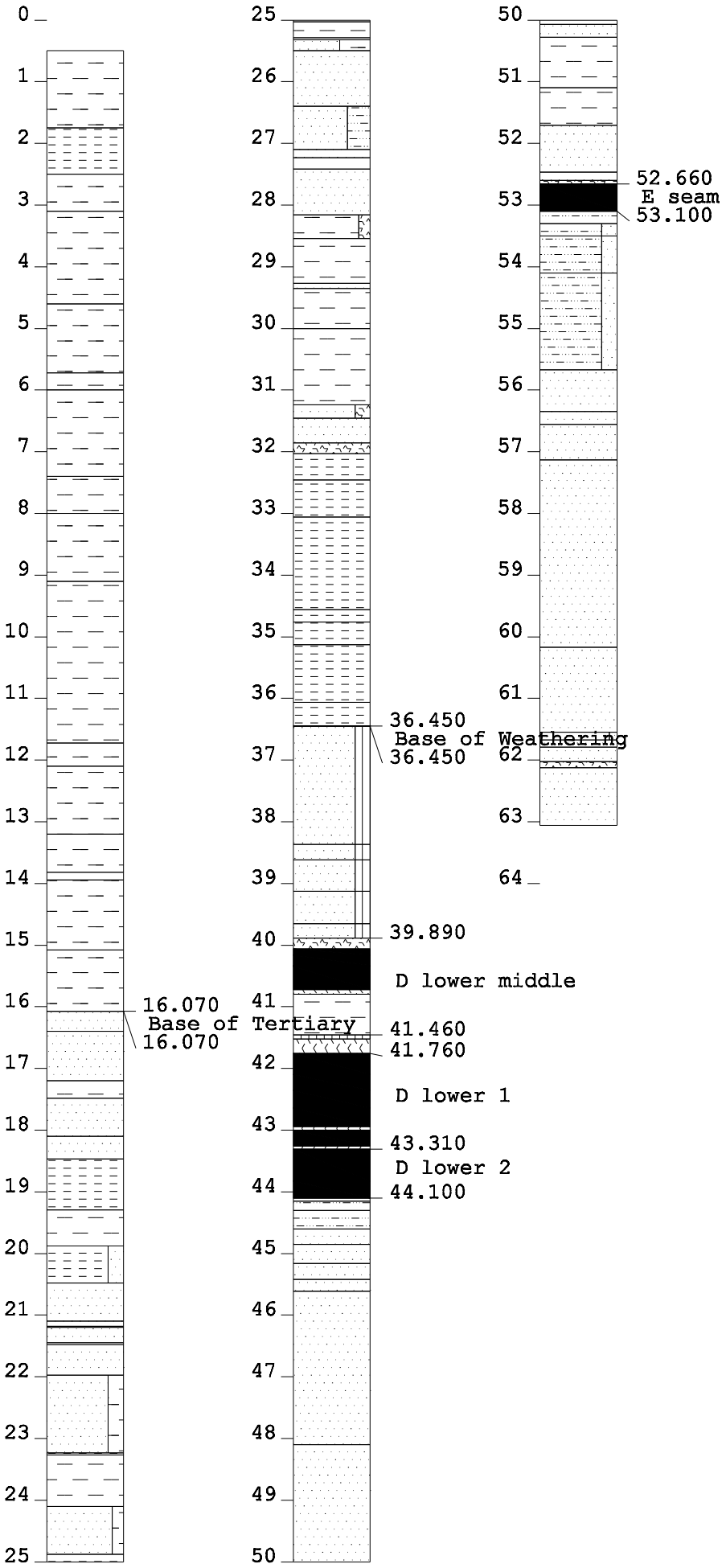

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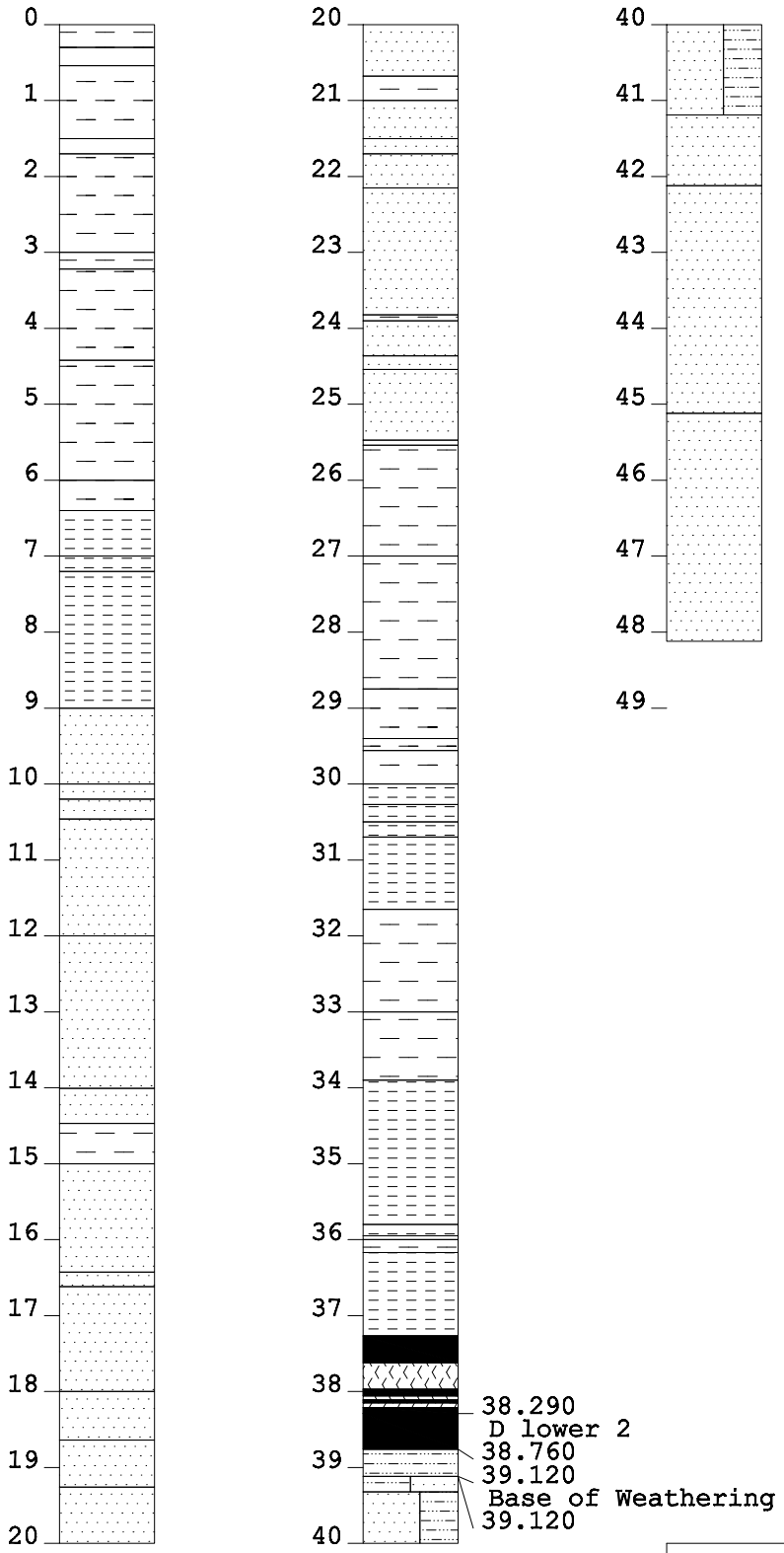

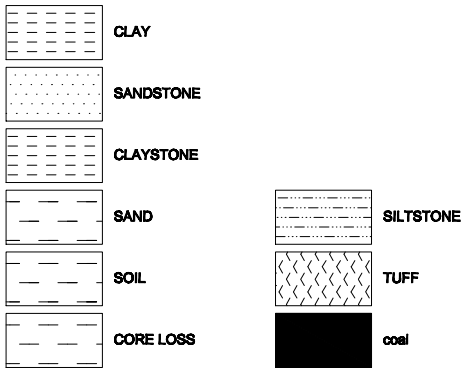

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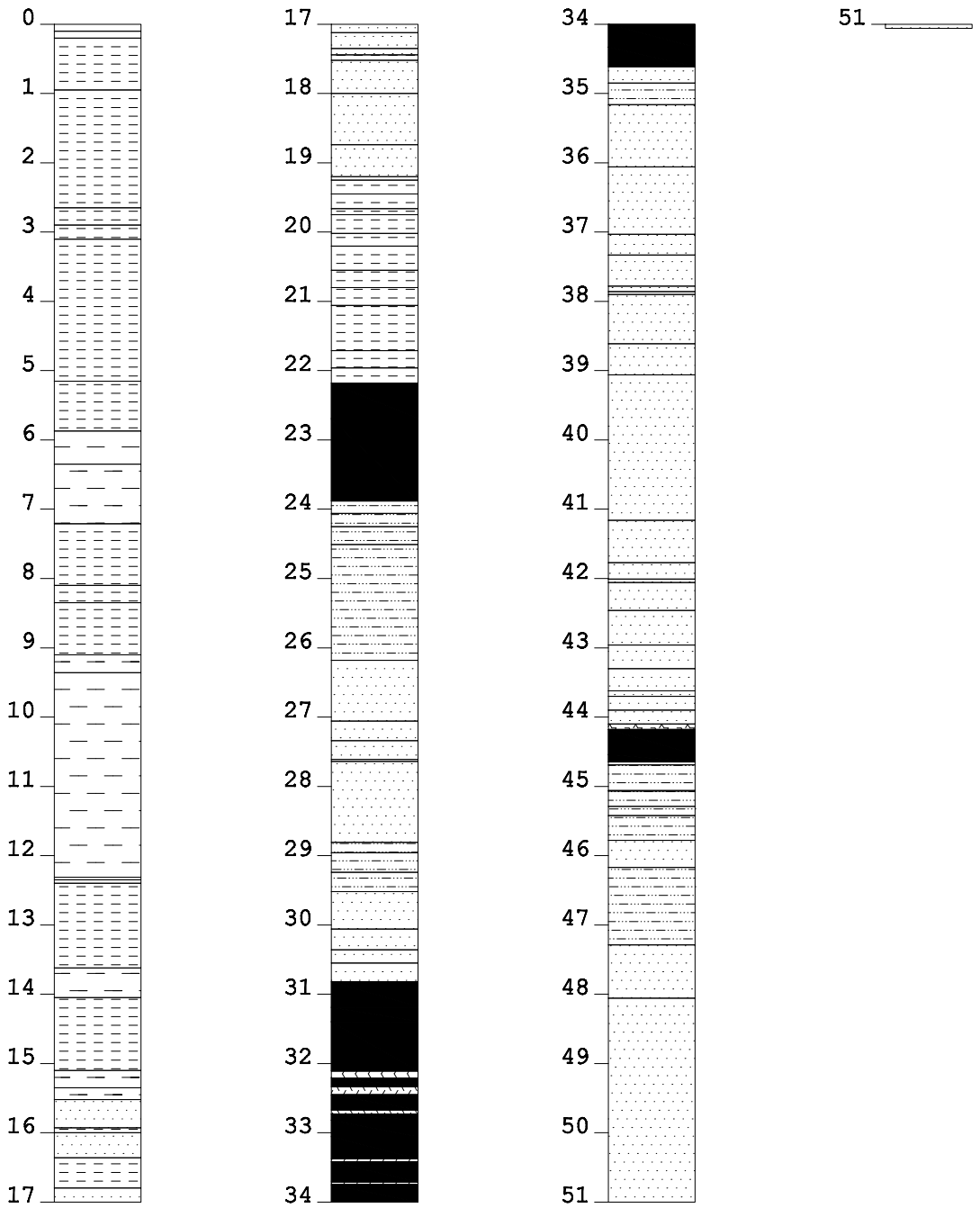

SANDSTONE

GRAVEL

SAND

CLAY

SOIL

CORE LOSS

siltstone

CONGLOMERATE

SILTSTONE

TUFF

coal

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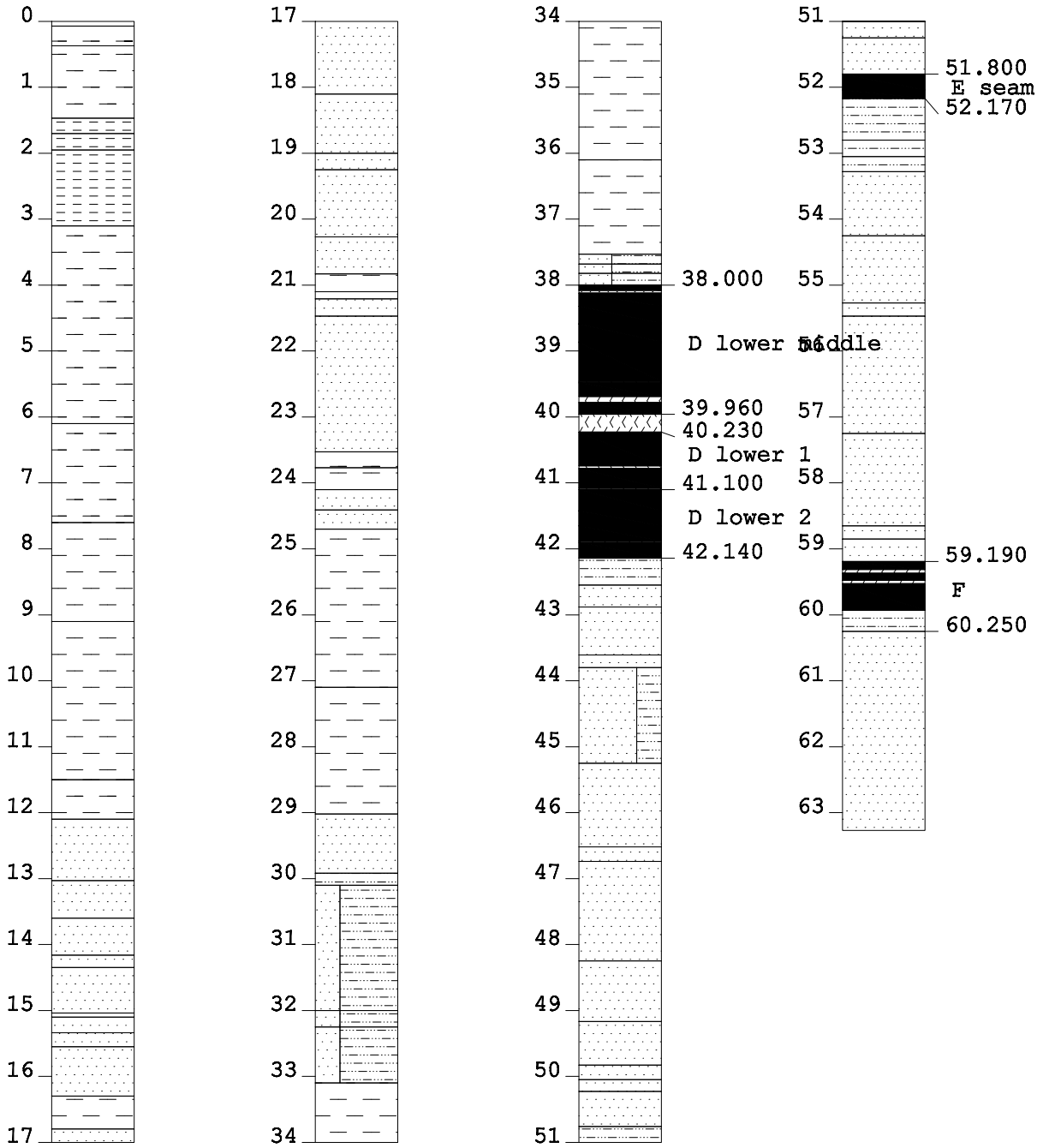

SILTSTONE

SANDSTONE

CLAYSTONE

SAND

SOIL

CORE LOSS

TUFF

siltstone

sandstone

coal

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1693D	
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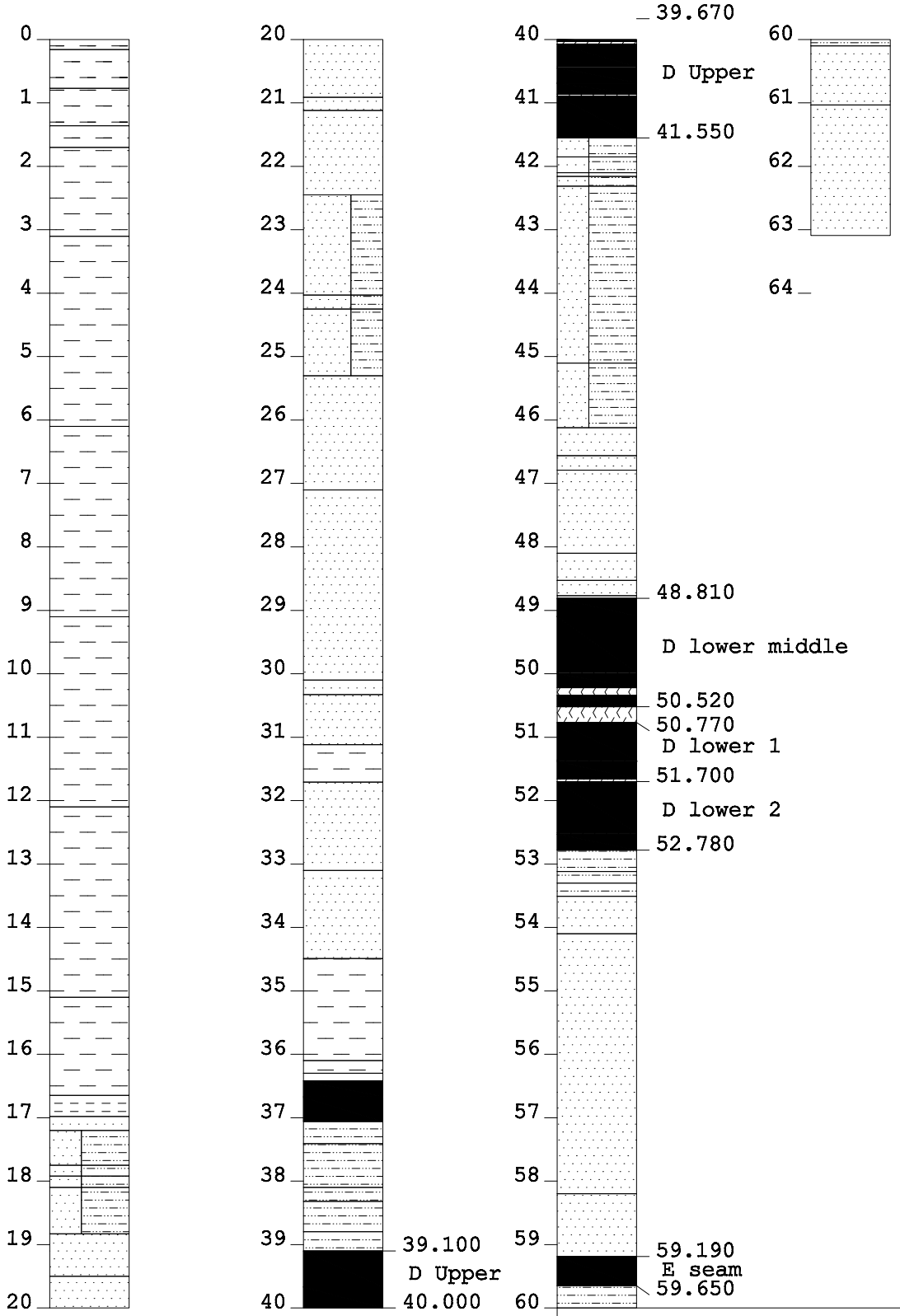


SILTSTONE
SANDSTONE
CLAY
CORE LOSS
SAND
SOIL
TUFF
siltstone
coal

BOREHOLE NO:

PROJECT:

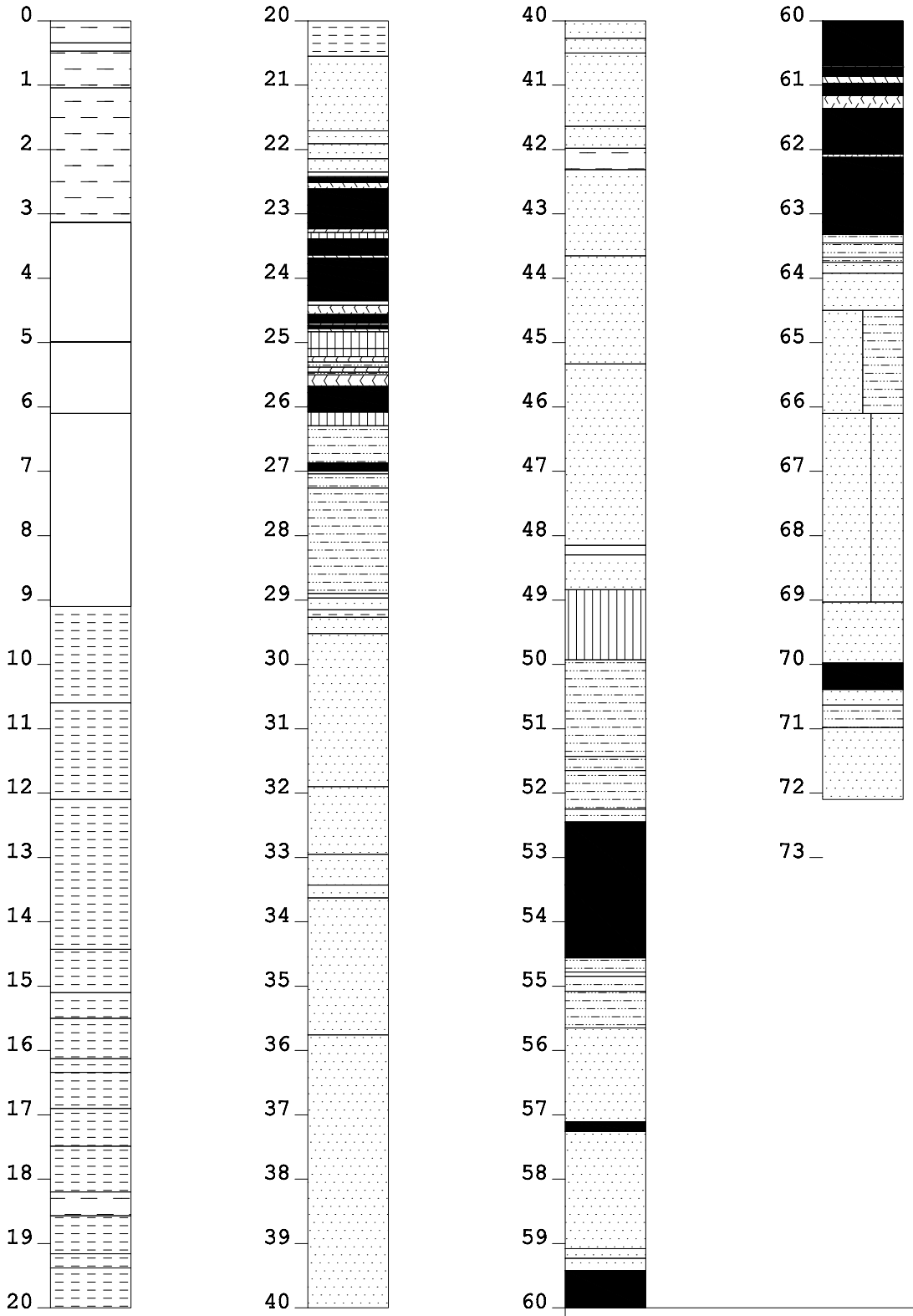
1695D

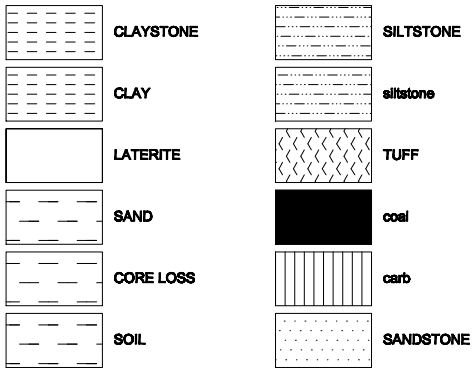
DATE DRILLED:

LOGGED BY:

SCALE:

PLAN NO:





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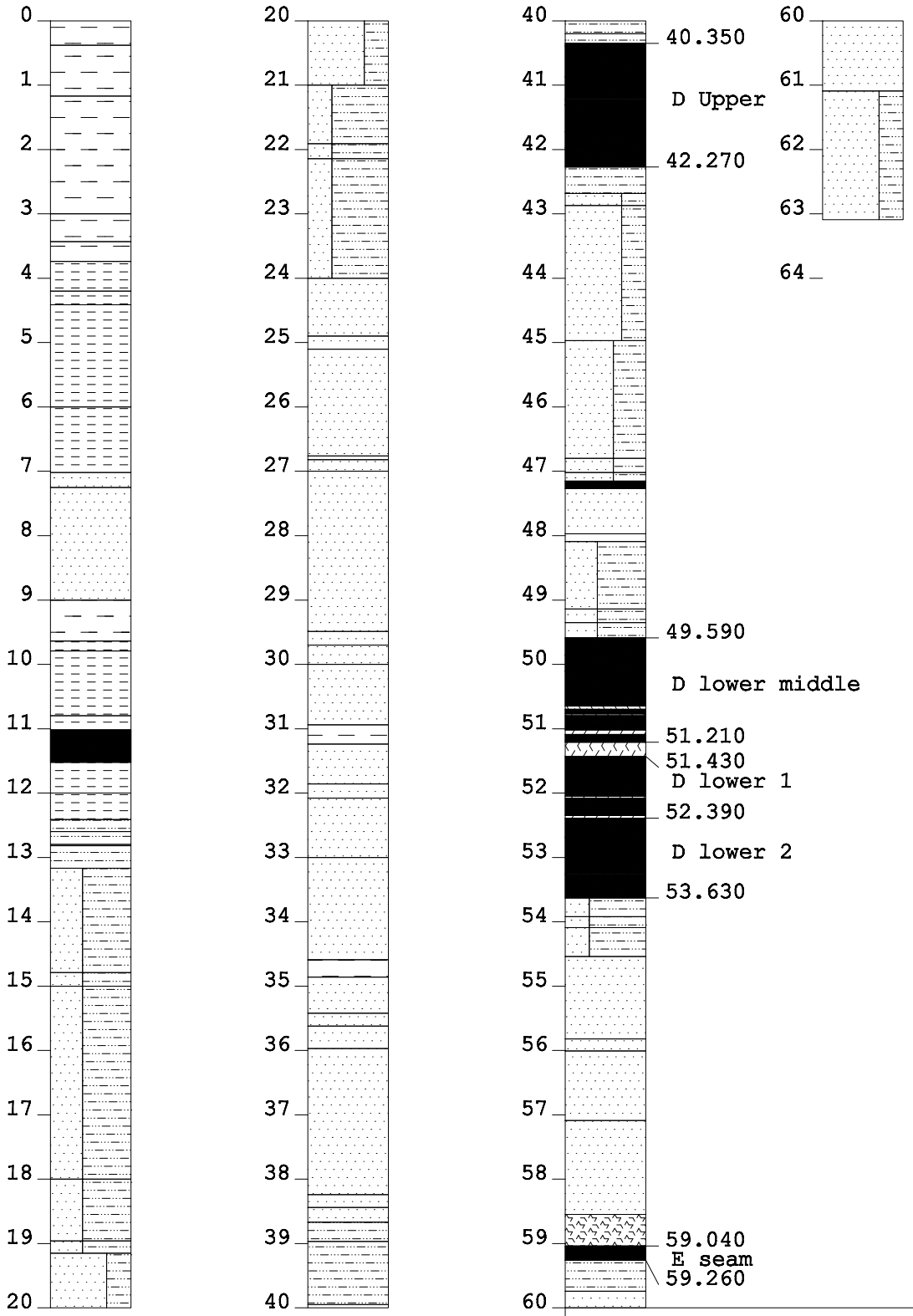

coal
SANDSTONE
CLAY
SAND
SOIL
CORE LOSS
CONGLOMERATE
TUFF
SILTSTONE
siltstone

BOREHOLE NO:

PROJECT:

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DATE DRILLED:

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SCALE:

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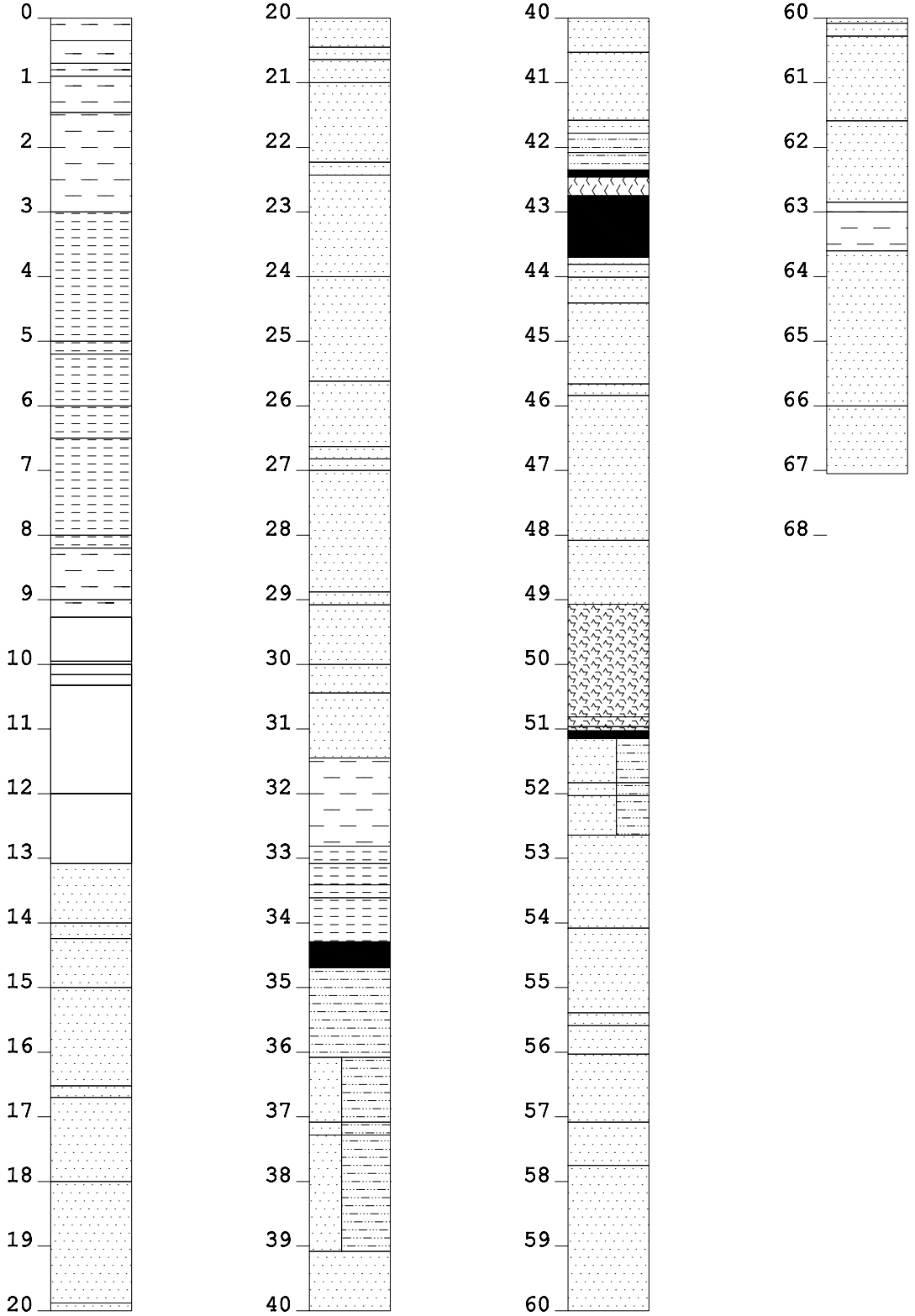

SANDSTONE

LATERITE

CLAY

CORE LOSS

SAND

SOIL

CONGLOMERATE

TUFF

SILTSTONE

coal

BOREHOLE NO:

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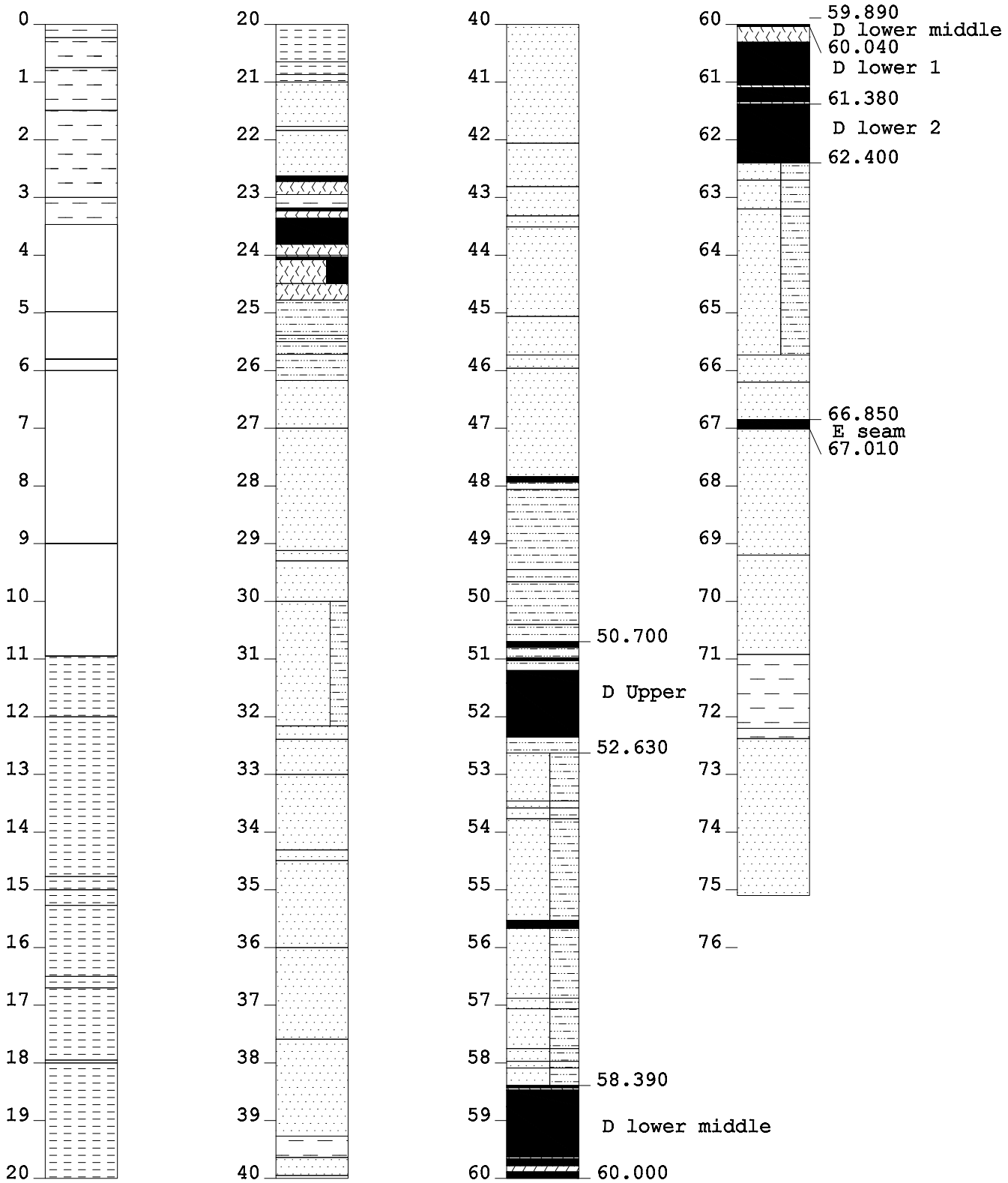


SANDSTONE
CLAY
LATERITE
SAND
SOIL
CORE LOSS
siltstone
SILTSTONE
TUFF
coal

BOREHOLE NO:

PROJECT:

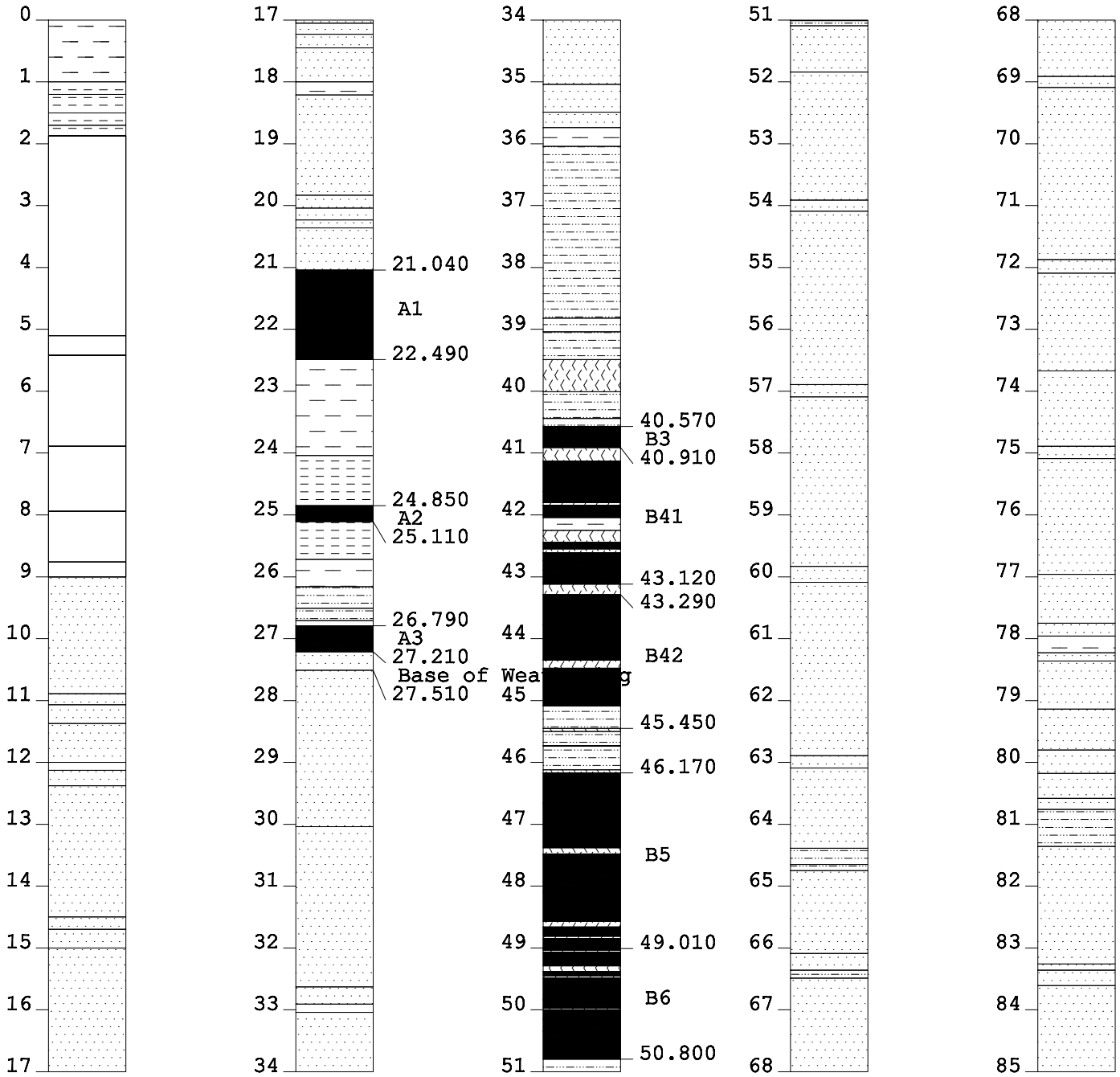
Test Plot

DATE DRILLED:

LOGGED BY:

SCALE:

PLAN NO:



coal

CORE LOSS

SANDSTONE

LATERITE

TUFF

CLAY

siltstone

SOIL

SILTSTONE

BOREHOLE NO:

PROJECT:

1728D

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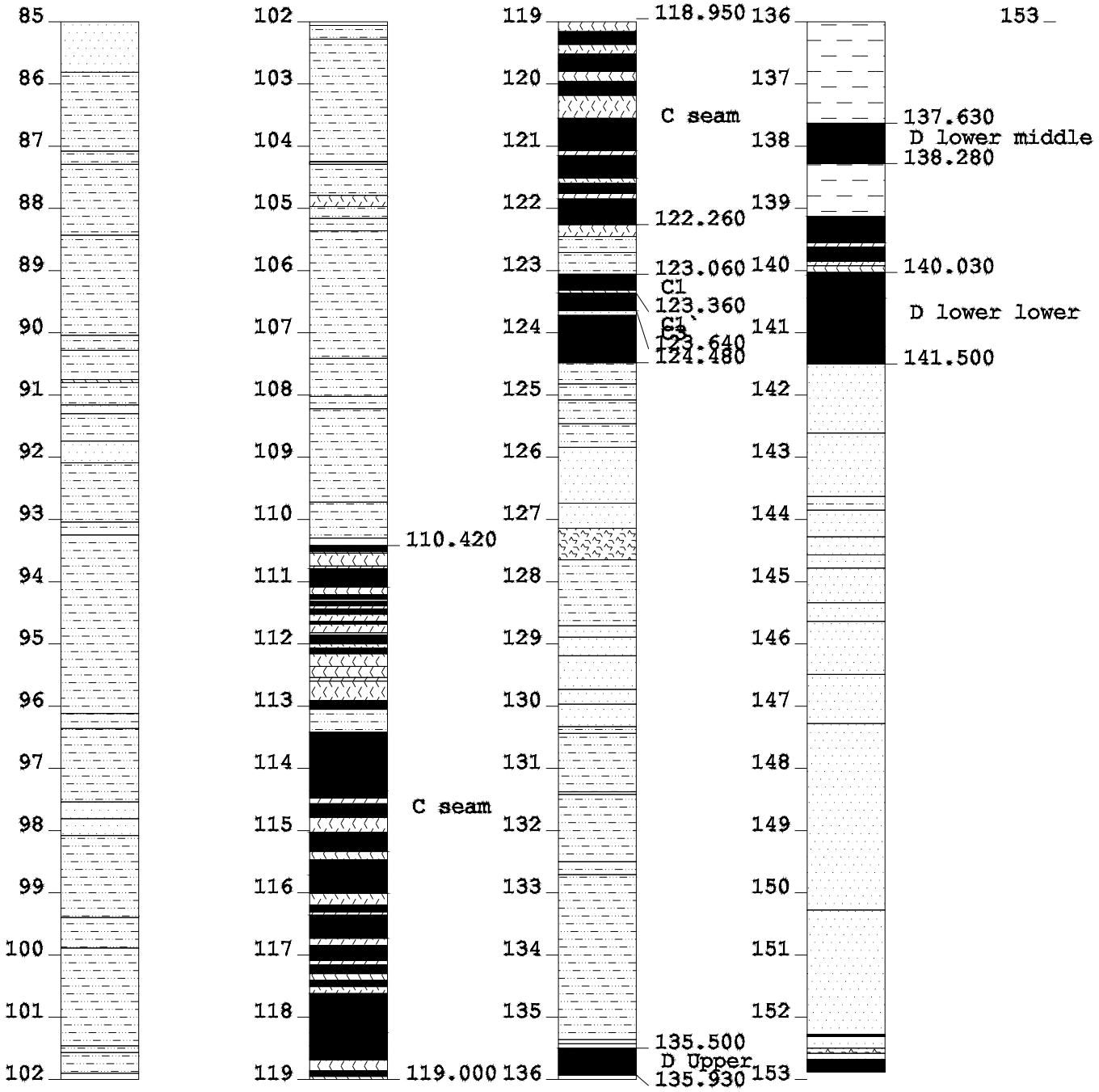

siltstone

coal

QUARTZITE

TUFF

SILTSTONE

CORE LOSS

SANDSTONE

CONGLOMERATE

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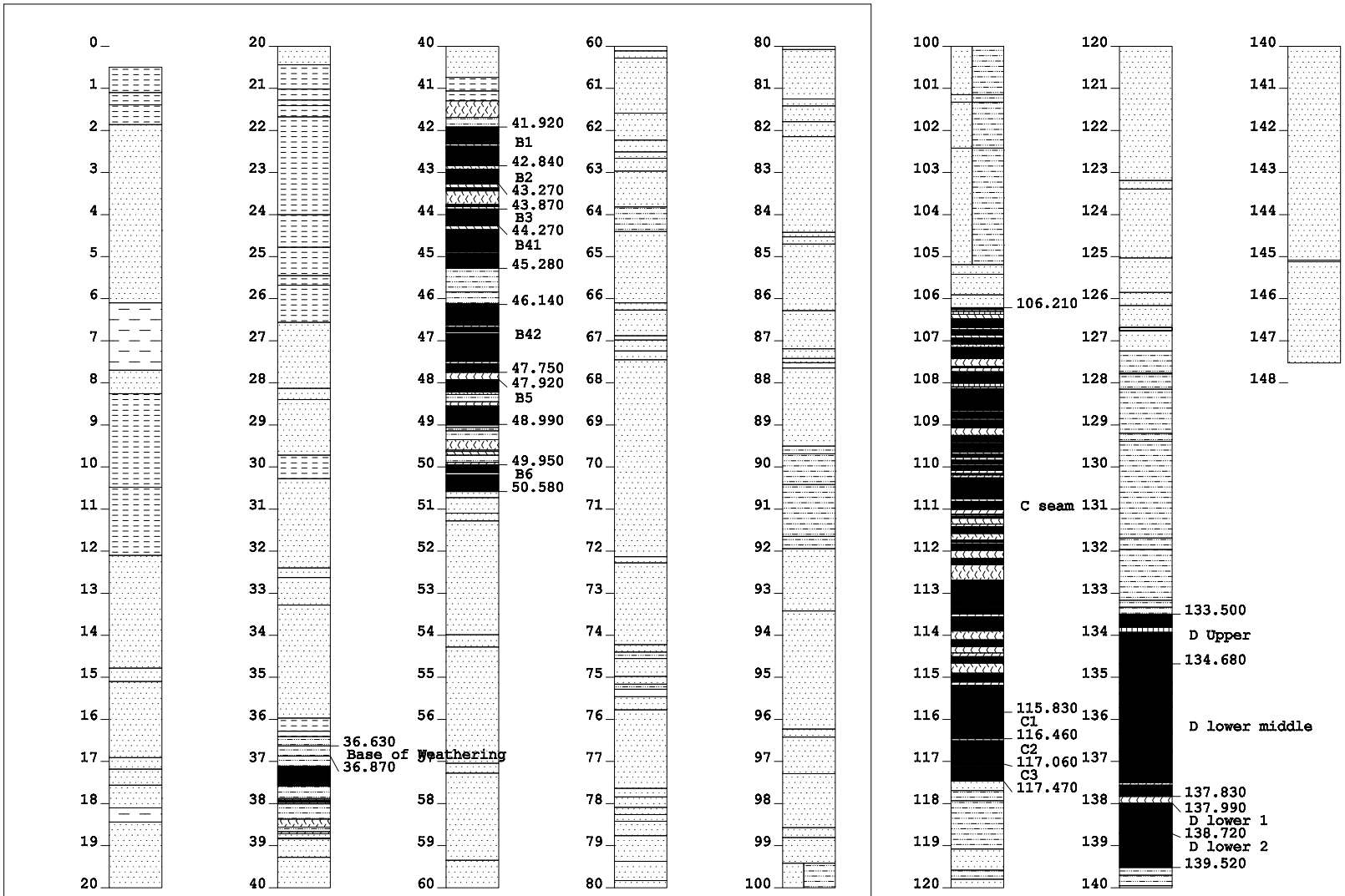

coal
SILTSTONE
CLAYSTONE
CORE LOSS
SANDSTONE
CLAY
QUARTZITE
carb
sandstone
TUFF
siltstone

BOREHOLE NO:	
PROJECT:	
Test Plot	
DATE DRILLED:	
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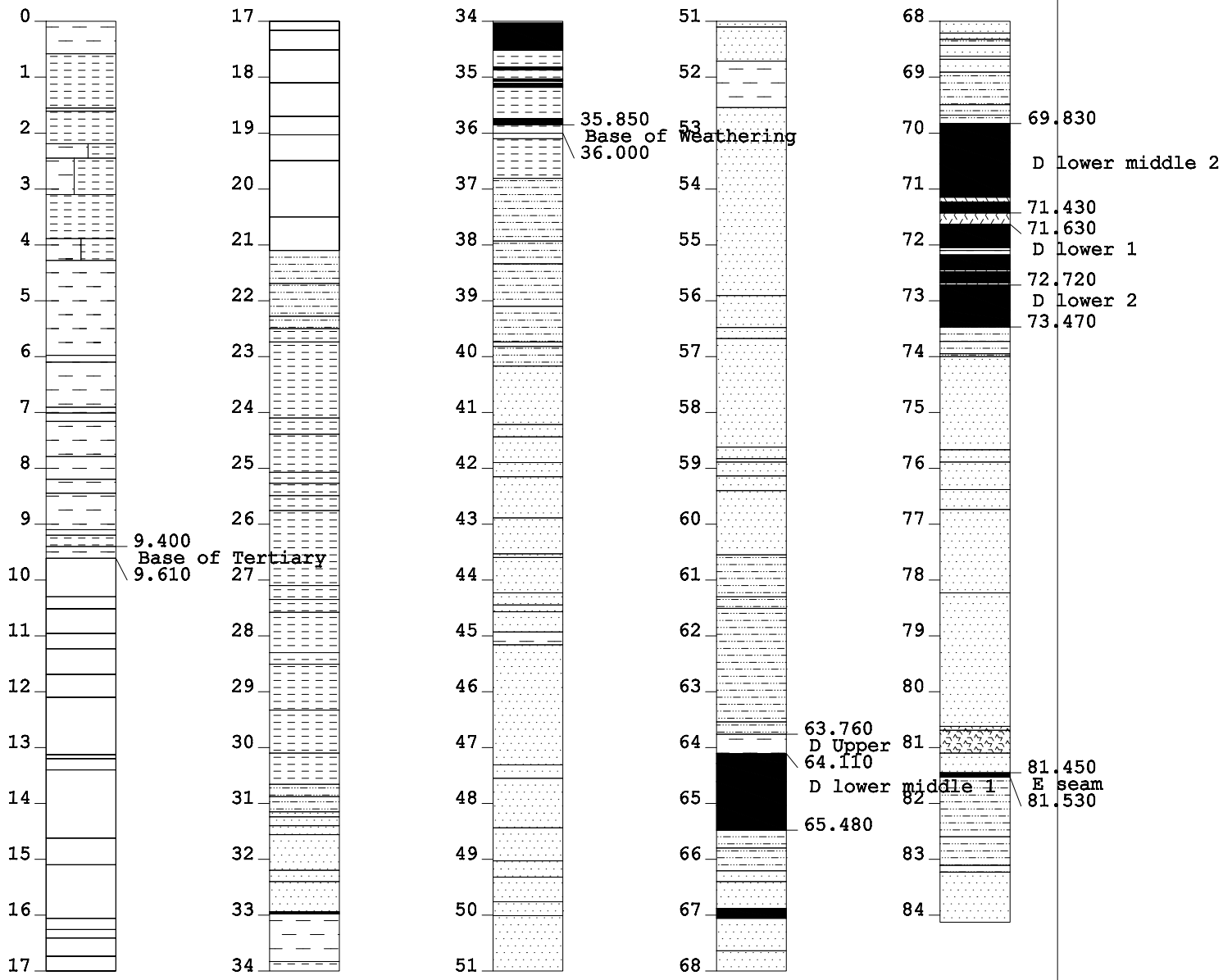

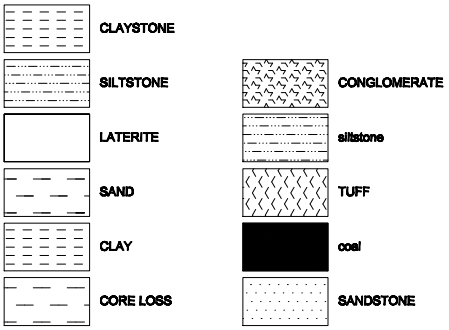

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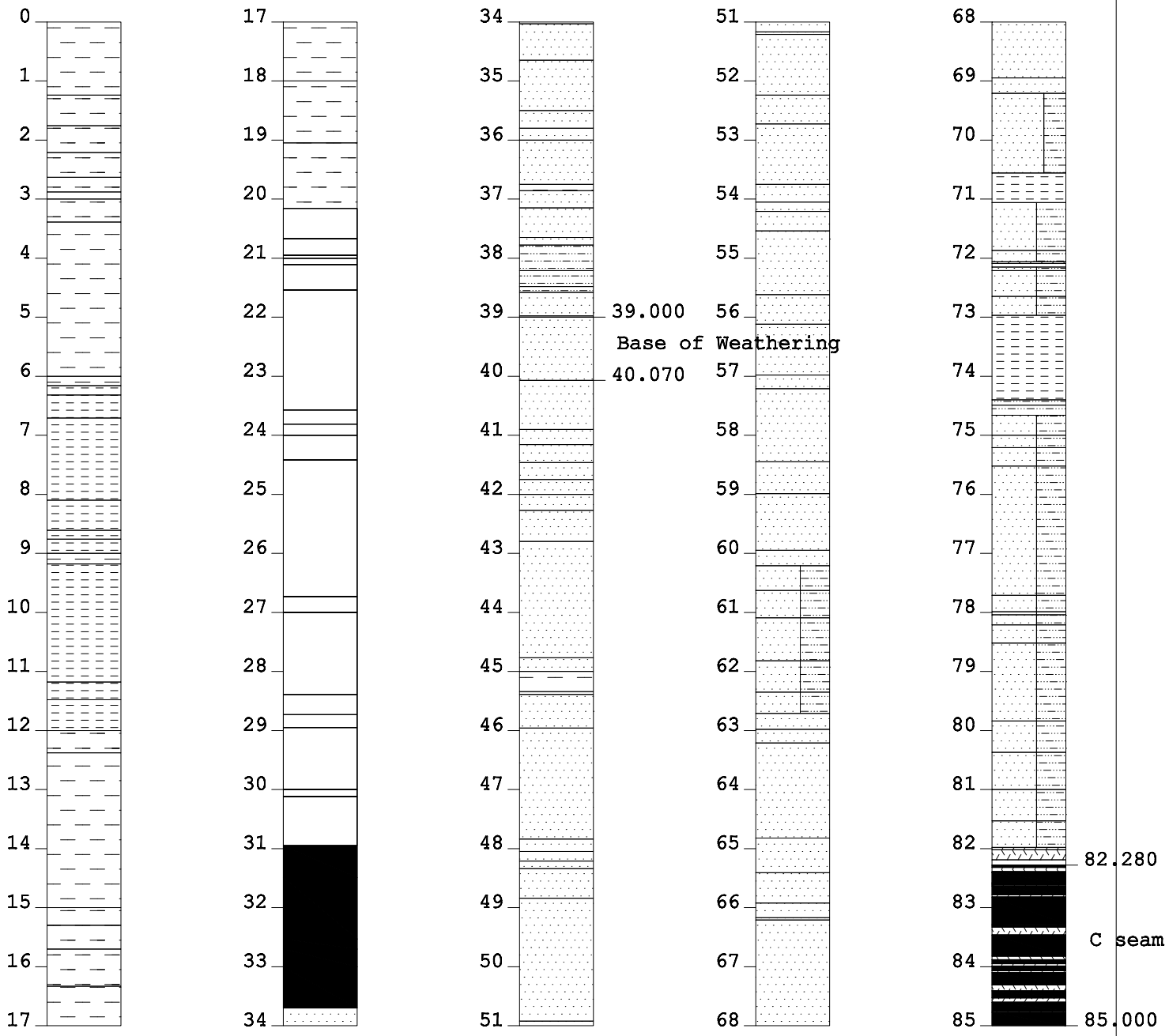

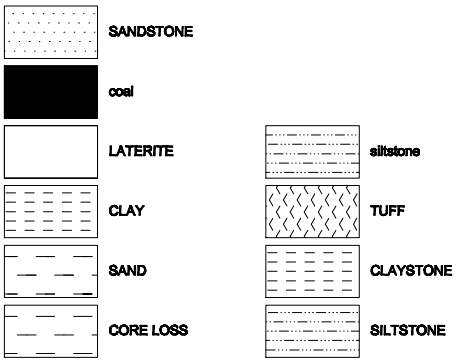

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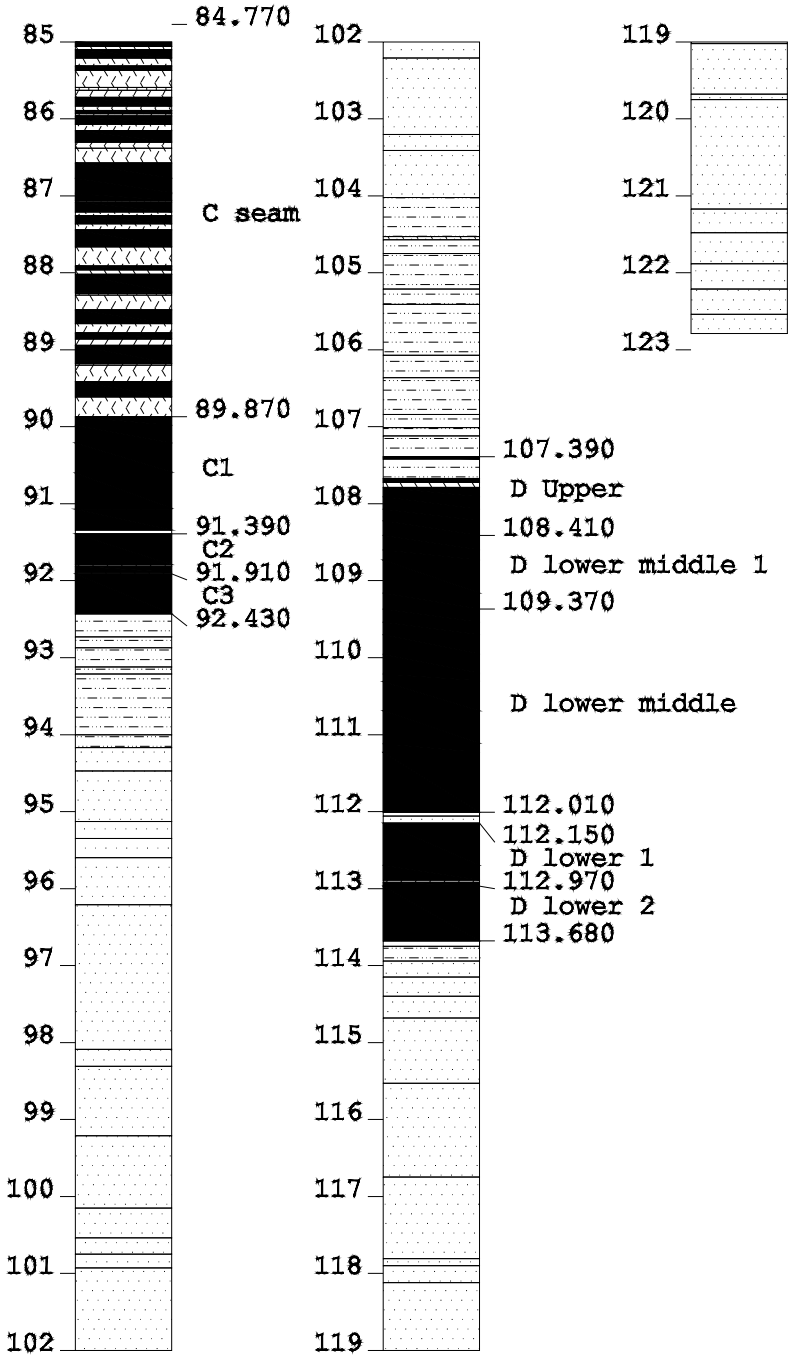


SILTSTONE

SANDSTONE

siltstone

carb

TUFF

coal

BOREHOLE NO:

PROJECT:

1788DG

DATE DRILLED:

LOGGED BY:

SCALE:

PLAN NO:

ATTACHMENT B

Geochemical Assessment of Mine Waste Materials

ATTACHMENT B

GEOCHEMICAL ASSESSMENT OF MINE 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 acid that could be generated by the sample by either directly determining the pyritic S 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.

Determination of pH and EC

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

Total sulfur content and Maximum Potential Acidity (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 is based on the assumption 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.

Acid neutralising capacity (ANC)

By addition of acid to a known weight of sample, then titration with NaOH to determine the amount of residual acid. The ANC measures the capacity of a sample to react with and neutralise acid. The ANC 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 amount of acid consumed and evaluation of the resultant titration curve.

Net Acid Producing Potential

The net acid producing potential (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.

Net Acid Generation (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 provides 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 sometimes be used as a stand-alone test at some hard rock mines, but is recommended that this only be considered for use at coal mines after site specific calibration work is carried out as organic materials can interfere with the test and produce a false positive result (ACARP, 2008).

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 the following elements:

Major elements	Al, Ca, Fe, K, Mg, Na and S.
Minor elements	As, B, Cd, Co, Cr, Cu, F, Hg, Mn, Mo, Ni, Pb, Sb, Se and Zn.

The concentration of these elements in samples can be directly compared with relevant state or national environmental and health based concentration guideline criteria to determine the level of significance. 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-optical emission spectroscopy (OES), and atomic absorption spectrometry (AAS).

Multi-element composition of water extracts (1:5 sample:deionised water).

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

Under some conditions (*eg*. low pH) the solubility and mobility of common environmentally important elements can increase significantly. If element mobility under initial pH conditions is deemed likely and/or subsequent low pH conditions may occur, kinetic leach column test work may be completed on representative samples.

KINETIC LEACH COLUMN TESTS

Kinetic leach column 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 release and drainage/seepage quality; and
- Assess treatment options such as addition of alkaline materials.

The kinetic 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 characteristics and indicate the rate of acid generation, over what period it will occur, and what management controls may be required.

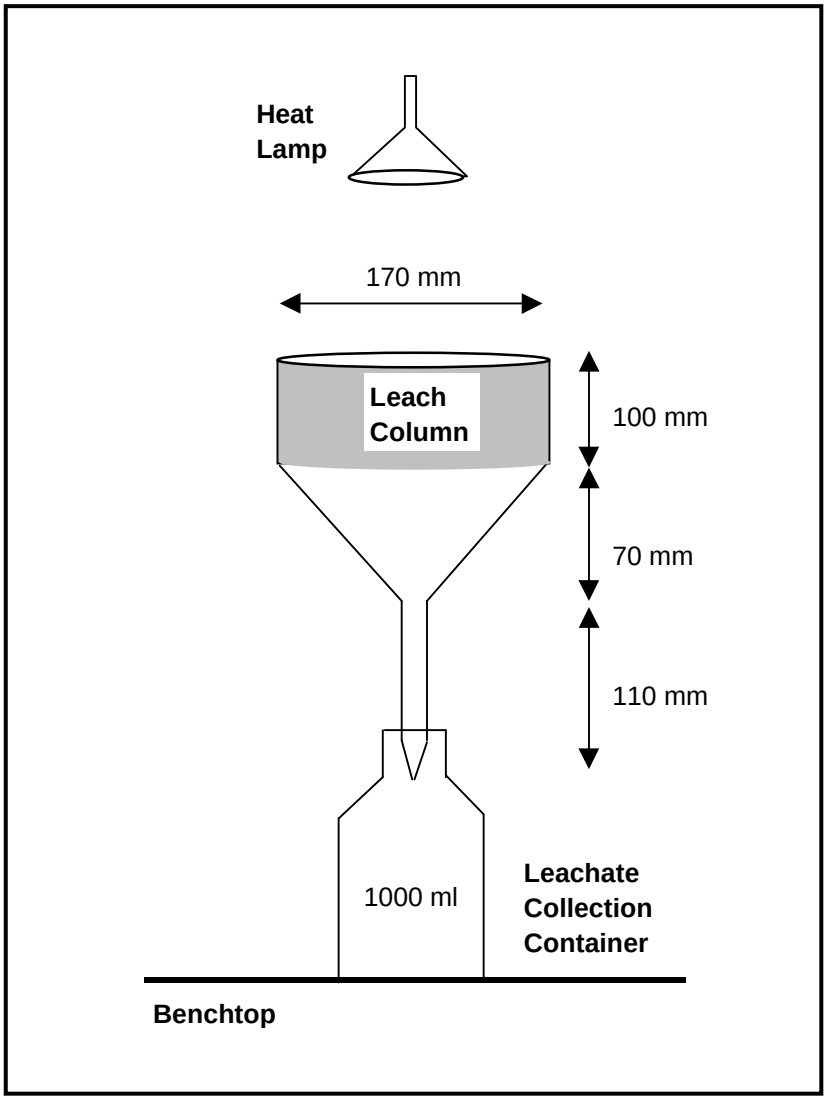
In kinetic column leach tests, water is added to a sample and the mixture allowed to leach products and by-products of acid producing and consuming reactions. Samples of leachate are then collected and analysed. Intermittent water application is applied to simulate rainfall and heat lamps are used to simulate sunshine. These tests provide real-time information and may have to continue for months or years. Monitoring includes trends in pH, sulfate, acidity or alkalinity, and metals, for example. The pH of the collected leachate simulates the acid drainage 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 concentration data provides an assessment of metal solubility and leaching behaviour.

Figure B1 shows the kinetic leach column set up used by RGS adapted from *AMIRA, 2002*. The columns are placed under heat lamps to allow the sample to dry between water additions to ensure adequate oxygen ingress into the sample material.

Approximately 2-3 kg of sample is generally used in the leach columns and depending on the physical nature of the material and particle size can be used on an as-received basis (*i.e.* no crushing as with process residues) or crushed to nominal 5-10 mm particle size (as with overburden). The sample in the column is initially leached with deionised water at a rate of about 500 ml/kg of sample and the initial leachate from the columns collected and analysed. Subsequent column leaching is carried out at a rate of about 500 ml/kg per month and again collected and analysed. The leaching rate can be varied to better simulate expected site conditions or satisfy test program data requirements. The column must be exposed to drying conditions in between watering events. The residual water content and air void content in the column can be determined by comparing the wet and dry column weights. A heat lamp is generally used above the sample during daylight hours to maintain the leach column surface temperature at about 30°C.

Figure B1

Kinetic Leach Column Setup

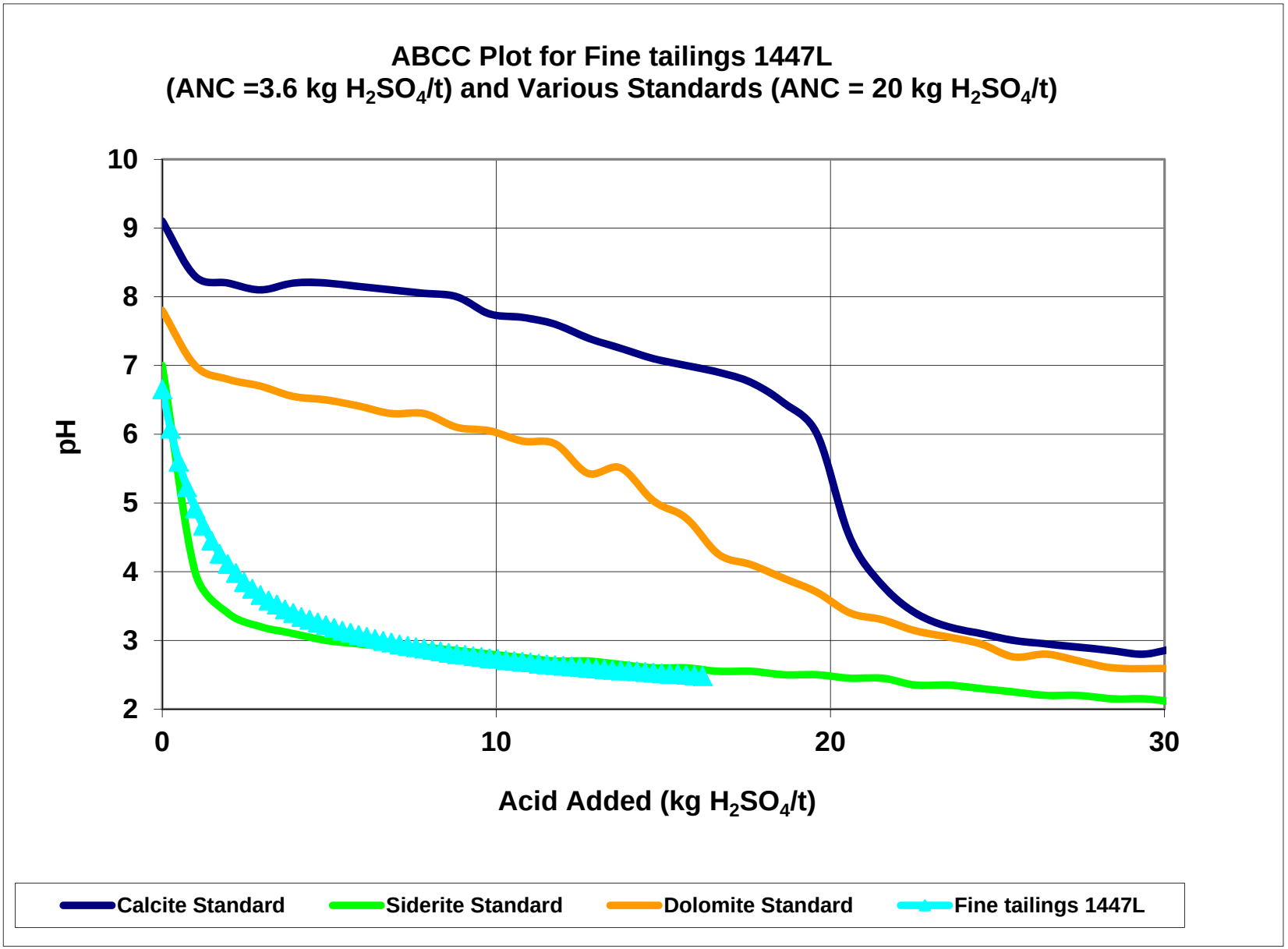


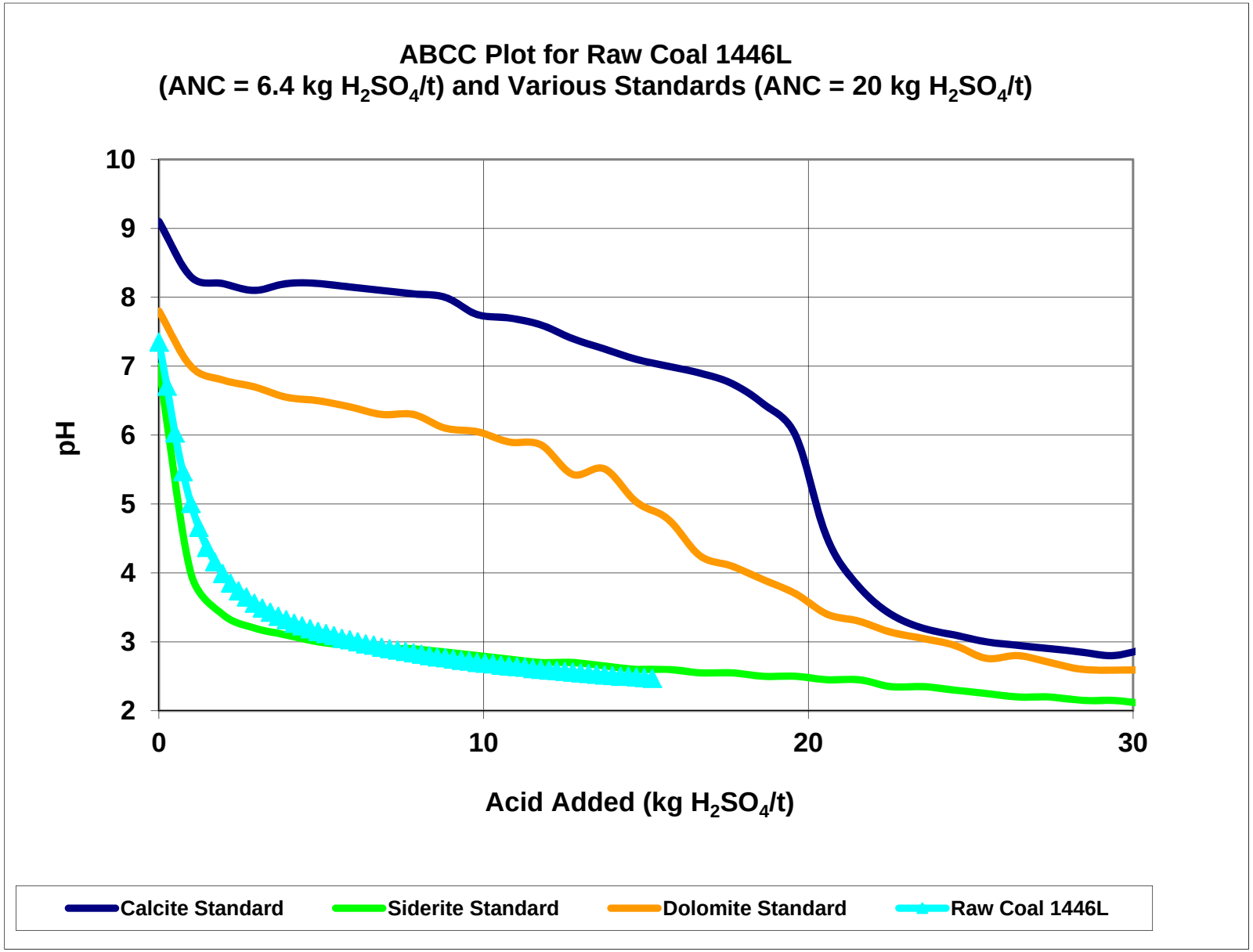
Reference:

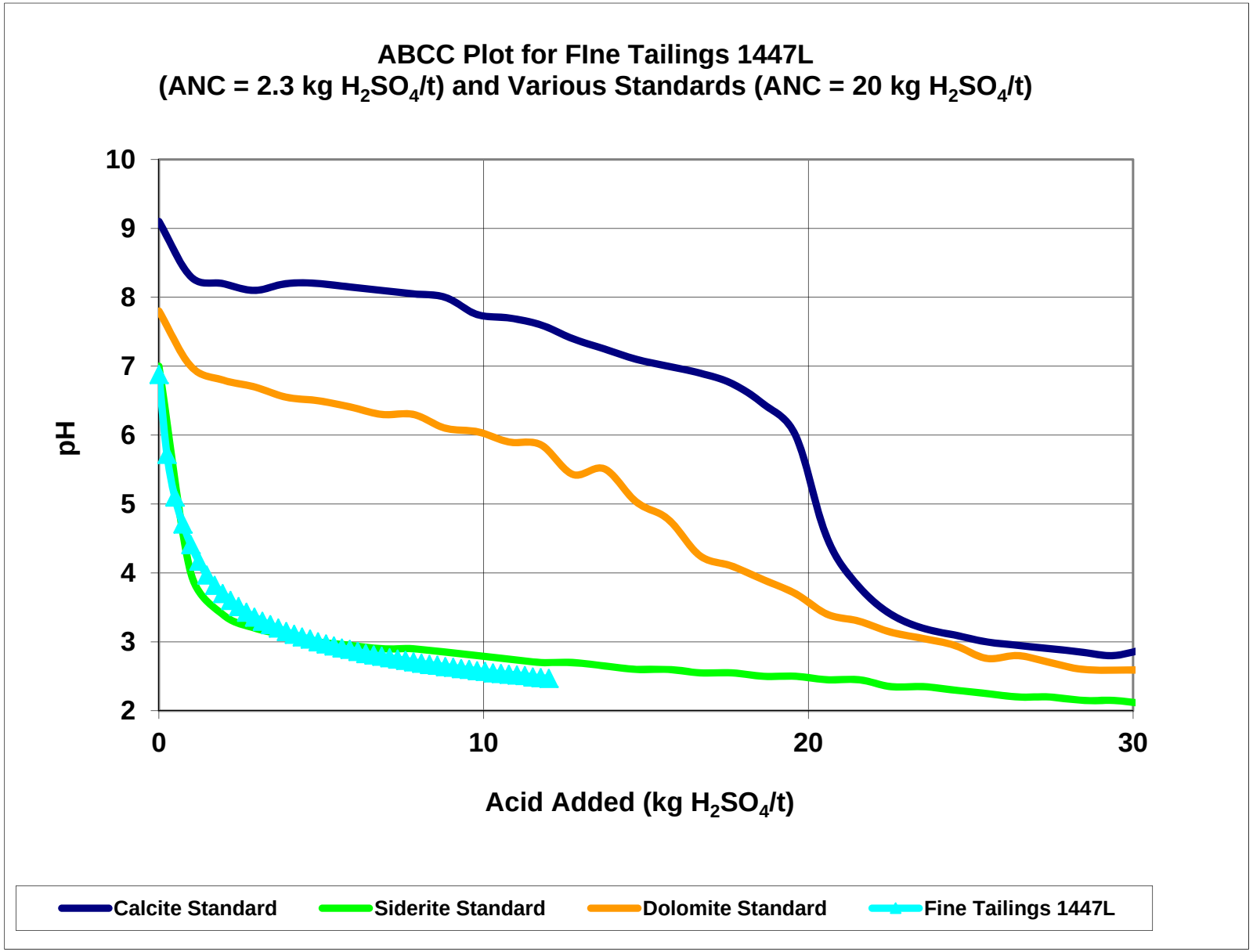
AMIRA (2002). AMIRA International. *ARD Test Handbook. Project P387A Prediction & Kinetic Control of Acid Mine Drainage.* Ian Wark Institute and Environmental Geochemistry International Pty Ltd. May 2002, Melbourne, VIC.

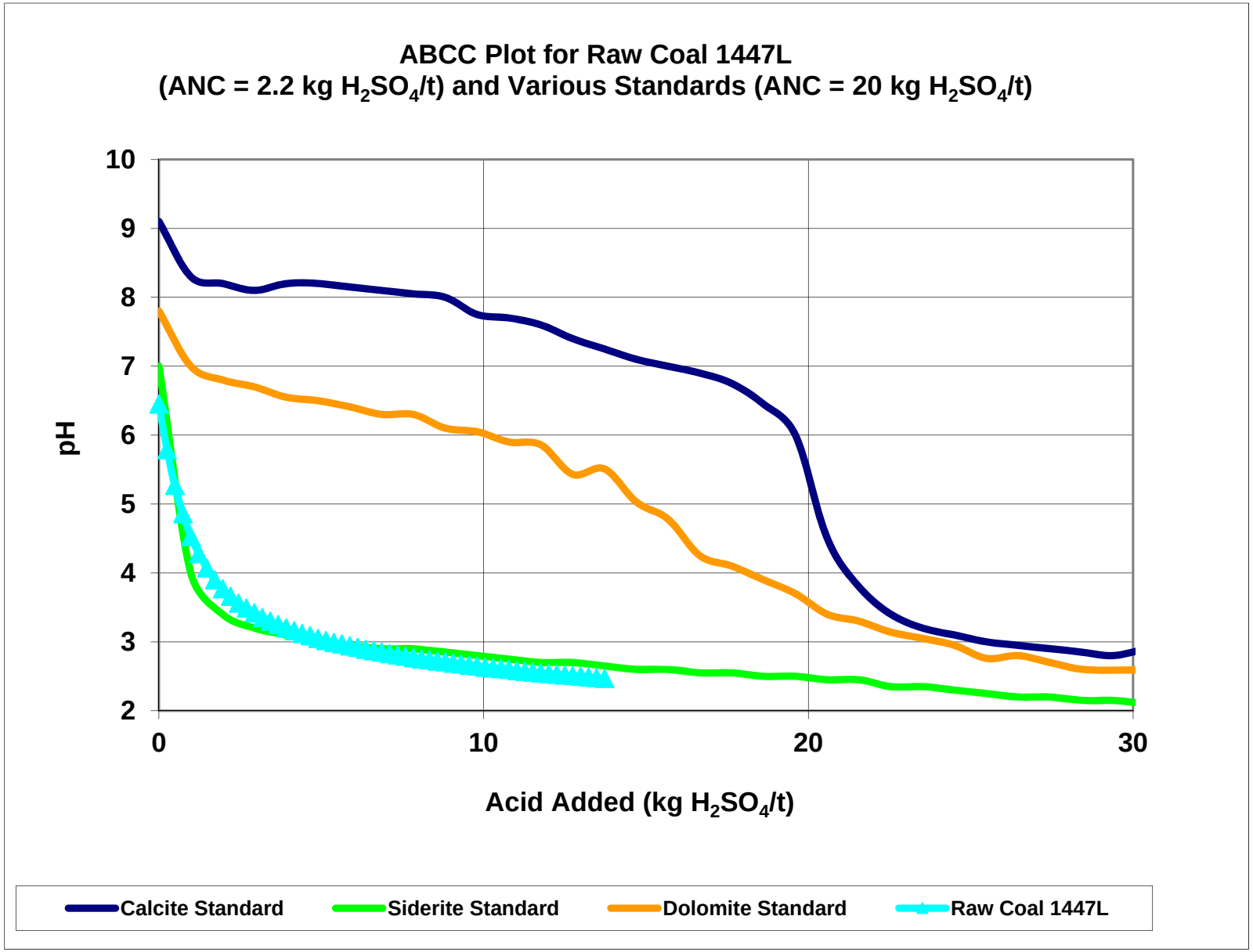
ATTACHMENT C

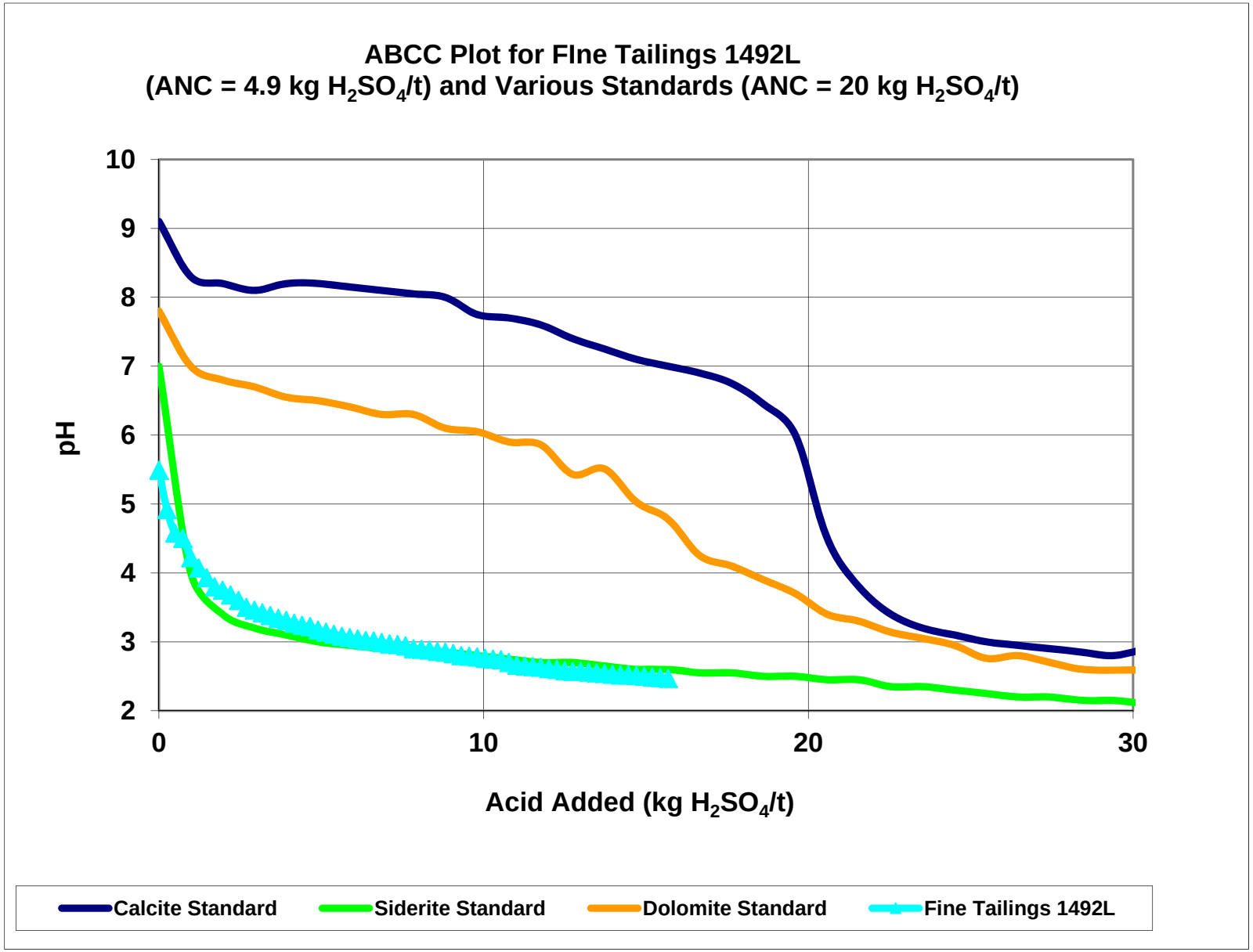
Acid Buffering Characteristic Curve (ABCC) Results

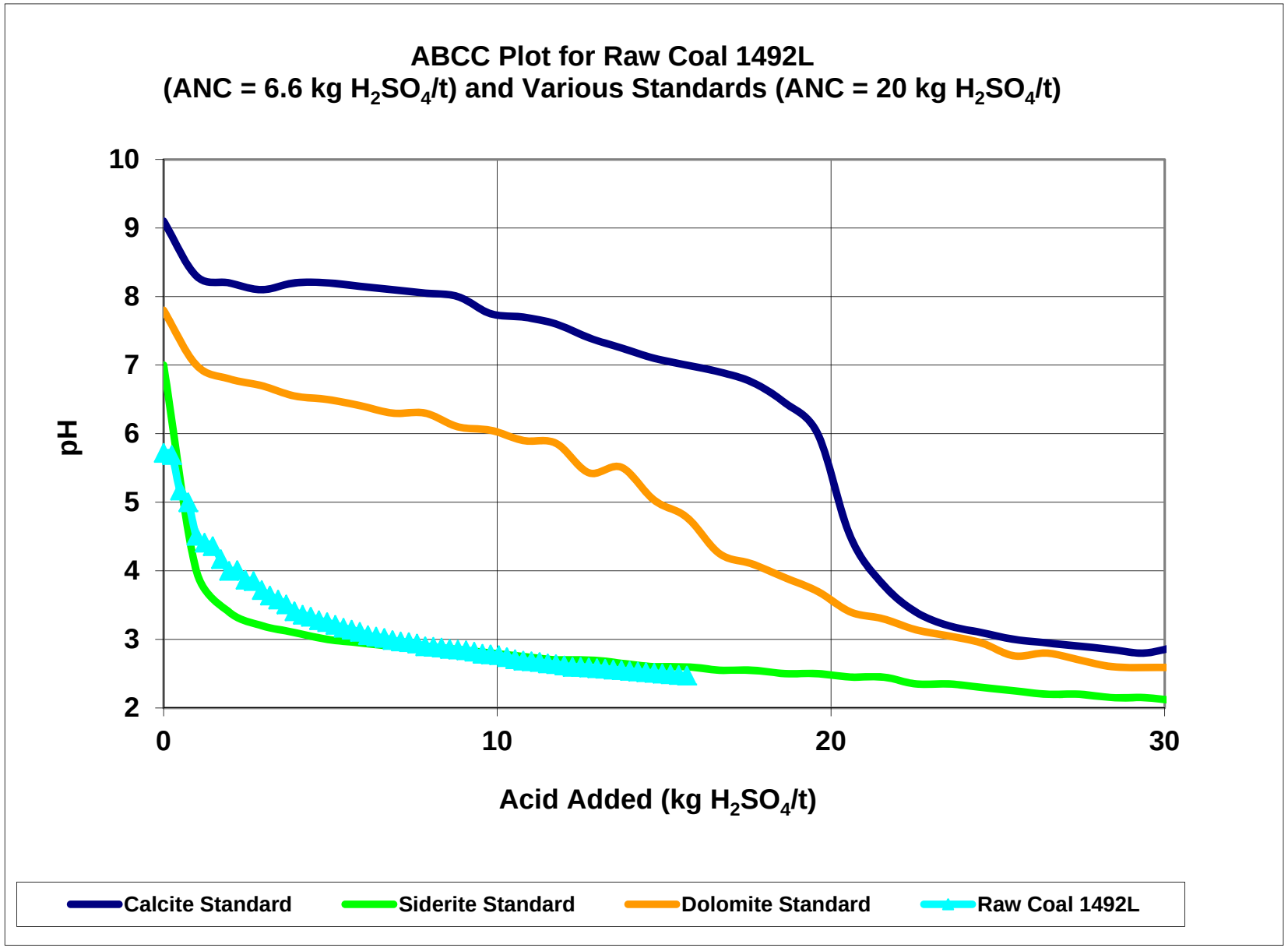

ABCC Plot for Fine tailings 1447L
(ANC =3.6 kg H_2SO_4/t) and Various Standards (ANC = 20 kg H_2SO_4/t)
pH
10
9
8
7
6
5
4
3
2
0
10
20
30
Acid Added (kg H_2SO_4/t)
Calcite Standard
Siderite Standard
Dolomite Standard
Fine tailings 1447L


ABCC Plot for Raw Coal 1446L
(ANC = 6.4 kg H_2SO_4/t) and Various Standards (ANC = 20 kg H_2SO_4/t)
pH
10
9
8
7
6
5
4
3
2
0
10
20
30
Acid Added (kg H_2SO_4/t)
Calcite Standard
Siderite Standard
Dolomite Standard
Raw Coal 1446L


ABCC Plot for FIne Tailings 1447L
(ANC = 2.3 kg H_2SO_4/t) and Various Standards (ANC = 20 kg H_2SO_4/t)
pH
10
9
8
7
6
5
4
3
2
0
10
20
30
Acid Added (kg H_2SO_4/t)
Calcite Standard
Siderite Standard
Dolomite Standard
Fine Tailings 1447L


ABCC Plot for Raw Coal 1447L
(ANC = 2.2 kg H_2SO_4/t) and Various Standards (ANC = 20 kg H_2SO_4/t)
pH
10
9
8
7
6
5
4
3
2
0
10
20
30
Acid Added (kg H_2SO_4/t)
Calcite Standard
Siderite Standard
Dolomite Standard
Raw Coal 1447L


ABCC Plot for FIne Tailings 1492L
(ANC = 4.9 kg H_2SO_4/t) and Various Standards (ANC = 20 kg H_2SO_4/t)
pH
10
9
8
7
6
5
4
3
2
0
10
20
30
Acid Added (kg H_2SO_4/t)
Calcite Standard
Siderite Standard
Dolomite Standard
Fine Tailings 1492L


ABCC Plot for Raw Coal 1492L
(ANC = 6.6 kg H_2SO_4/t) and Various Standards (ANC = 20 kg H_2SO_4/t)
pH
10
9
8
7
6
5
4
3
2
0
10
20
30
Acid Added (kg H_2SO_4/t)
Calcite Standard
Siderite Standard
Dolomite Standard
Raw Coal 1492L

ATTACHMENT D

Kinetic Leaching Column (KLC) Test Results

RKLC-CR001

KLC Test Results: Product Coal 1302L/1303L

Sample Mass (kg)	1.4	**Total S (%)**	0.27	**ANC (kg H_2SO_4/t)**	3.3
pH(1:5)	4.8	**CRS (%)**	0.062	**NAPP (kg H_2SO_4/t)**	-1.4
EC(1:5) (µS/cm)	585	**MPA (kg H_2SO_4/t)**	1.9	**ANC:MPA ratio**	1.7

Date	**17-Dec-10**	**31-Dec-10**	**13-Jan-11**	**27-Jan-11**	**10-Feb-11**	**24-Feb-11**	**10-Mar-11**	**24-Mar-11**	**7-Apr-11**	**21-Apr-11**	**19-May-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**22**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Volume Collected (L)	0.82	0.74	0.65	0.67	0.68	0.66	0.68	0.66	0.68	0.72	0.70
Cum. Volume (L)	0.82	1.56	2.21	2.88	3.56	4.22	4.90	5.56	6.24	6.96	7.66
Pore Volumes	0.6	1.2	1.6	2.1	2.6	3.1	3.6	4.1	4.6	5.2	5.7
pH	5.56	5.35	4.33	4.59	5.62	4.13	4.29	4.25	4.22	4.17	4.19
EC (µS/cm)	292	396	507	425	840	693	375	303	368	1040	515
Acidity (mg/L)*	10	10	7	4	4	8	8	8	14	14	8
Alkalinity (mg/L)*	5	3	<1	<1	1	<1	<1	<1	<1	<1	<1
Net Alkalinity (mg/L)*	-5	-7	-7	-4	-3	-8	-8	-8	-14	-14	-8
Dissolved elements (mg/L)											
Al	0.08	0.12	0.09	0.04	0.06	0.09	0.05	0.05	0.08	0.25	0.17
As	0.002	0.004	0.024	<0.001	0.023	0.009	0.017	<0.001	0.009	0.011	0.018
B	0.07	0.09	0.14	0.13	0.11	0.3	0.2	0.12	0.15	0.64	0.24
Ca	14	19	26	20	26	36	18	16	19	60	32
Cd	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	0.0001	0.0003	0.0002
Cl	43	83	140	115	141	178	89	59	70	275	119
Co	0.008	0.004	0.004	0.003	0.004	0.006	0.004	0.004	0.006	0.023	0.013
Cr	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	<0.001	0.001	0.002	<0.001	0.001	0.001	0.001	<0.001	0.001	0.001	<0.001
Fe	5.66	0.59	0.08	0.26	0.42	0.13	0.49	0.37	0.16	0.26	0.1
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	2	3	3	3	3	3	3	2	2	4	3
Mg	4	6	9	7	9	14	7	5	6	23	12
Mn	0.11	0.205	0.371	0.341	0.491	0.734	0.446	0.394	0.563	2.11	1.15
Mo	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Na	22	34	55	42	50	64	34	24	25	83	37
Ni	0.005	0.002	0.002	0.002	0.002	0.003	0.002	0.002	0.003	0.011	0.006
Pb	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
SO_4	43	34	32	29	41	48	34	37	43	142	71
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.01	0.03	0.10	<0.01	0.10	0.05	0.08	<0.01	0.04	0.08	0.08
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	0.034	0.018	0.02	0.018	0.024	0.039	0.028	0.027	0.037	0.127	0.078
Calculations**											
SO_4 Release Rate	25.2	18.0	14.9	13.9	19.9	22.6	16.5	17.4	20.9	73.0	35.5
Cumulative SO_4 Release	25	43	58	72	92	114	131	148	169	242	278
Ca Release Rate	8.2	10	12	10	13	17	9	8	9	31	16
Cumulative Ca Release	8.2	18	30	40	53	69	78	86	95	126	142
Mg Release Rate	2.3	3.2	4.2	3.4	4.4	6.6	3.4	2.4	2.9	11.8	6.0
Cumulative Mg Release	2.3	5.5	9.7	13.0	17.4	24.0	27.4	29.8	32.7	44.5	50.5
Residual ANC (%)	99	98	97	95	94	92	91	90	89	85	83
Residual Sulfur (%)	100	99	99	99	99	99	98	98	98	97	97
SO_4/(Ca+Mg) molar ratio	0.9	0.5	0.3	0.4	0.4	0.3	0.5	0.6	0.6	0.6	0.6

< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-CR002

KLC Test Results: Coarse Reject 1302L/1303L

Sample Mass (kg)	2.0	**Total S (%)**	2.20	**ANC (kg H_2SO_4/t)**	0.5
pH(1:5)	4.1	**CRS (%)**	2.02	**NAPP (kg H_2SO_4/t)**	61.4
EC(1:5) (µS/cm)	1,950	**MPA (kg H_2SO_4/t)**	61.9	**ANC:MPA ratio**	0.0

Date	**17-Dec-10**	**31-Dec-10**	**13-Jan-11**	**27-Jan-11**	**10-Feb-11**	**24-Feb-11**	**10-Mar-11**	**24-Mar-11**	**7-Apr-11**	**21-Apr-11**	**19-May-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**22**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Volume Collected (L)	0.68	0.66	0.65	0.67	0.66	0.68	0.66	0.68	0.66	0.68	0.69
Cum. Volume (L)	0.68	1.34	1.99	2.66	3.32	4.00	4.66	5.34	6.00	6.68	7.37
Pore Volumes	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.4	4.9	5.5
pH	3.70	3.62	2.97	3.05	3.13	2.86	2.95	3.02	3.08	2.95	3.02
EC (µS/cm)	1,820	2,040	2,220	1,860	1,880	2,620	1690	1550	4230	2710	2530
Acidity (mg/L)*	269	77	85	107	127	330	209	279	396	751	892
Alkalinity (mg/L)*	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Net Alkalinity (mg/L)*	-269	-77	-85	-107	-127	-330	-209	-279	-396	-751	-892
Dissolved elements (mg/L)											
Al	4.46	3.33	5.94	5.54	9.48	27.9	17.7	24.4	39.8	115	127
As	0.024	0.038	0.085	<0.001	0.065	<0.001	0.04	0.005	0.029	<0.001	0.041
B	<0.05	0.06	0.08	0.09	<0.05	0.16	0.1	<0.05	0.22	0.14	0.06
Ca	84	105	126	92	104	121	85	78	80	123	150
Cd	0.0021	0.001	0.0014	0.0015	0.0014	0.0032	0.0017	0.0018	0.0026	0.0094	0.01
Cl	245	528	852	573	558	825	251	165	208	421	306
Co	0.062	0.08	0.125	0.097	0.128	0.237	0.128	0.117	0.15	0.321	0.262
Cr	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.001	0.002	0.004	0.004
Cu	0.065	0.073	0.076	0.079	0.069	0.107	0.084	0.092	0.089	0.217	0.195
Fe	111	12.9	2.67	5.96	11.4	2.83	13	24.5	7.8	8.5	7.48
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	10	12	12	10	8	8	4	3	2	3	2
Mg	25	46	56	45	60	91	50	47	60	106	95
Mn	1.06	2.54	4.53	3.72	6.32	12.2	7.24	7.12	9.65	22.1	18.8
Mo	0.002	0.005	<0.001	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Na	77	150	134	100	107	122	53	38	38	60	38
Ni	0.052	0.082	0.127	0.113	0.15	0.291	0.159	0.142	0.18	0.402	0.334
Pb	0.046	0.046	0.039	0.039	0.024	0.036	0.014	0.015	0.011	0.025	0.016
SO_4	458	182	212	209	316	454	432	504	621	1,110	1,300
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.10	0.16	0.32	<0.01	0.25	<0.01	0.17	0.01	0.12	0.02	0.16
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	0.168	0.496	0.828	0.635	0.781	1.78	0.937	0.977	1.34	3.82	3.16
Calculations**											
SO_4 Release Rate	156	60.1	68.9	70.0	104.3	154.4	142.6	171.4	204.9	377.4	448.5
Cumulative SO_4 Release	156	216	285	355	459	613	756	927	1132	1510	1958
Ca Release Rate	29	35	41	31	34	41	28	27	26	42	52
Cumulative Ca Release	29	63	104	135	169	210	238	265	291	333	385
Mg Release Rate	8.5	15.2	18.2	15.1	19.8	30.9	16.5	16.0	19.8	36.0	32.8
Cumulative Mg Release	8.5	23.7	41.9	57.0	76.8	107.7	124.2	140.2	160.0	196.0	228.8
Residual ANC (%)	79	50	15	0	0	0	0	0	0	0	0
Residual Sulfur (%)	100	100	100	99	99	99	99	99	98	98	97
SO_4/(Ca+Mg) molar ratio	1.5	0.4	0.4	0.5	0.6	0.7	1.1	1.4	1.4	1.6	1.8

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-CR003

KLC Test Results: Tailings 1302L/1303L

Sample Mass (kg)	1.2	Total S (%)	0.59	ANC (kg H_2SO_4/t)	6.2
pH(1:5)	6.4	CRS (%)	0.257	NAPP (kg H_2SO_4/t)	1.7
EC(1:5) (µS/cm)	356	MPA (kg H_2SO_4/t)	7.9	ANC:MPA ratio	0.8

Date	17-Dec-10	31-Dec-10	13-Jan-11	27-Jan-11	10-Feb-11	24-Feb-11	10-Mar-11	24-Mar-11	7-Apr-11	21-Apr-11	19-May-11
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**22**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Volume Collected (L)	0.55	0.60	0.78	0.70	0.72	0.70	0.72	0.74	0.76	0.80	0.78
Cum. Volume (L)	0.55	1.15	1.93	2.63	3.35	4.05	4.77	5.51	6.27	7.07	7.85
Pore Volumes	0.5	1.0	1.7	2.3	2.9	3.5	4.1	4.8	5.5	6.1	6.8
pH	6.69	5.14	5.30	5.27	5.36	4.62	5.17	5.05	4.88	5.65	4.73
EC (µS/cm)	1,250	917	560	513	548	490	484	487	353	296	568
Acidity (mg/L)*	<1	<1	3	4	4	3	4	5	6	5	8
Alkalinity (mg/L)*	64	<1	1	<1	1	1	<1	<1	<1	3	<1
Net Alkalinity (mg/L)*	64	0	-2	-4	-3	-2	-4	-5	-6	-2	-8
Dissolved elements (mg/L)											
Al	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.02	<0.01	0.09
As	0.014	<0.001	0.003	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B	1.16	0.87	0.75	0.64	0.46	0.66	0.45	0.44	0.24	0.34	0.37
Ca	96	83	58	57	65	55	63	64	43	34	79
Cd	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0002	0.0002	0.0003	0.0002	0.0008
Cl	150	61	8	13	1	6	2	2	<1	1	1
Co	0.012	0.007	<0.001	0.007	0.011	0.013	0.02	0.026	0.021	0.024	0.062
Cr	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001
Fe	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.09
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	10	6	4	4	3	3	3	3	1	2	3
Mg	28	22	15	14	15	12	14	14	8	7	16
Mn	0.457	0.518	0.013	0.471	0.791	0.766	1.2	1.5	1.32	1.34	3.51
Mo	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Na	99	48	31	20	15	13	8	7	3	2	4
Ni	0.009	0.003	0.001	0.003	0.006	0.007	0.012	0.015	0.014	0.016	0.045
Pb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
SO_4	283	315	265	225	243	200	230	230	155	127	265
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.11	0.02	0.02	0.02	0.02	0.01	0.01	0.01	<0.01	<0.01	0.01
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	0.149	0.1	0.07	0.105	0.209	0.241	0.428	0.595	0.746	0.597	1.57
Calculations**											
SO_4 Release Rate	130	157.5	172.3	131.3	145.8	116.7	138.0	141.8	98.2	84.7	172.3
Cumulative SO_4 Release	130	287	459	591	737	853	991	1133	1231	1316	1488
Ca Release Rate	44	42	38	33	39	32	38	39	27	23	51
Cumulative Ca Release	44	86	123	156	195	228	265	305	332	355	406
Mg Release Rate	12.8	11.0	9.8	8.2	9.0	7.0	8.4	8.6	5.1	4.7	10.4
Cumulative Mg Release	12.8	23.8	33.6	41.8	50.8	57.8	66.2	74.8	79.9	84.5	94.9
Residual ANC (%)	97	95	93	91	89	87	85	83	82	81	78
Residual Sulfur (%)	99	98	97	97	96	95	94	94	93	93	92
SO_4/(Ca+Mg) molar ratio	0.8	1.1	1.3	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.0

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-CR004

KLC Test Results: Tailings 1492L

	Sample Mass (kg)		0.8	Total S (%)		1.03	ANC (kg H_2SO_4/t)			4.9
	pH(1:5)		6.2	CRS (%)		0.28	NAPP (kg H_2SO_4/t)			3.7
	EC(1:5) (µS/cm)		256	MPA (kg H_2SO_4/t)		8.6	ANC:MPA ratio			0.6
Date	**24-Feb-11**	**10-Mar-11**	**24-Mar-11**	**7-Apr-11**	**21-Apr-11**	**5-May-11**	**19-May-11**	**2-Jun-11**	**29-Jun-11**	**28-Jul-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**18**	**22**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.60	0.65	0.70	0.68	0.72	0.80	0.75	0.65	0.57	0.54
Cum. Volume (L)	0.60	1.25	1.95	2.63	3.35	4.15	4.90	5.55	6.12	6.66
Pore Volumes	0.4	0.9	1.4	1.9	2.5	3.1	3.6	4.1	4.5	4.9
pH	6.04	5.37	5.03	4.91	5.07	5.91	4.59	5.08	6.41	5.81
EC (µS/cm)	170	490	225	464	278	206	183	66	72	121
Acidity (mg/L)*	5	10	9	8	5	7	7	12	11	17
Alkalinity (mg/L)*	2	<1	<1	<1	<1	<1	<1	2	2	1
Net Alkalinity (mg/L)*	-3	-10	-9	-8	-5	-7	-7	-10	-9	-16
Dissolved elements (mg/L)										
Al	0.08	<0.01	0.01	0.03	0.01	0.06	0.04	0.02	0.02	0.05
As	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B	0.16	0.41	0.13	0.31	0.19	0.17	0.12	<0.05	<0.05	0.06
Ca	1	64	30	63	30	37	24	7	8	13
Cd	<0.0001	0.0001	0.0002	0.0006	0.0004	0.0008	0.0007	0.0004	0.0004	0.0007
Cl	4	4	1	1	<1	<1	<1	<1	<1	<1
Co	<0.001	0.005	0.006	0.018	0.011	0.02	0.013	0.006	0.006	0.01
Cr	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	<0.001	0.001	0.002	0.005	0.002	0.006	0.007	0.005	0.021	0.02
Fe	<0.05	<0.05	<0.05	<0.05	<0.05	0.43	0.20	0.11	0.12	0.15
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	<1	3	1	2	<1	1	<1	<1	<1	<1
Mg	0.5	9	4	8	3	4	3	1	1	2
Mn	0.007	0.605	0.476	1.47	0.793	1.25	0.889	0.494	0.62	0.93
Mo	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Na	30	19	5	9	2	2	1	<1	<1	<1
Ni	<0.001	0.003	0.003	0.011	0.007	0.018	0.012	0.006	0.006	0.01
Pb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
SO_4	58	226	98	222	99	115	71	27	30	49
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.03	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	<0.005	0.383	0.419	1.44	0.899	1.56	1.11	0.630	0.611	0.955
Calculations**										
SO_4 Release Rate	43.5	183.6	85.8	188.7	89.1	115.0	66.6	21.8	21.4	33.1
Cumulative SO_4 Release	43.5	227.1	312.9	501.6	591	706	772	794	815	848
Ca Release Rate	0.8	52.0	26.3	53.6	27.0	37.0	22.5	5.7	5.7	8.8
Cumulative Ca Release	0.8	52.8	79.0	132.6	159.6	196.6	219.1	224.7	230.4	239.2
Mg Release Rate	0.4	7.3	3.5	6.8	2.7	4.0	2.8	0.8	0.7	1.4
Cumulative Mg Release	0.4	7.7	11.2	18.0	20.7	24.7	27.5	28.3	29.0	30.4
Residual ANC (%)	100	97	95	92	90	88	87	86	86	86
Residual Sulfur (%)	100	99	99	98	98	98	97	97	97	97
SO_4/(Ca+Mg) molar ratio	13.3	1.2	1.1	1.2	1.2	1.1	1.0	1.3	1.3	1.3

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-CR005

KLC Test Results: Coarse Reject 1492L

	Sample Mass (kg)		2.0	Total S (%)		1.62	ANC (kg H_2SO_4/t)			1.3
	pH(1:5)		4.2	CRS (%)		0.841	NAPP (kg H_2SO_4/t)			24.5
	EC(1:5) (µS/cm)		1,230	MPA (kg H_2SO_4/t)		25.8	ANC:MPA ratio			0.1
Date	**24-Feb-11**	**10-Mar-11**	**24-Mar-11**	**7-Apr-11**	**21-Apr-11**	**5-May-11**	**19-May-11**	**2-Jun-11**	**29-Jun-11**	**28-Jul-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**18**	**22**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.68	0.65	0.66	0.67	0.71	0.78	0.75	0.57	0.56	0.53
Cum. Volume (L)	0.68	1.33	1.99	2.66	3.37	4.15	4.90	5.47	6.03	6.56
Pore Volumes	0.6	1.2	1.7	2.3	2.9	3.6	4.3	4.8	5.2	5.7
pH	3.70	3.28	3.52	3.41	3.4	3.64	3.61	3.29	3.34	3.30
EC (µS/cm)	2,010	2920	817	1250	2040	834	570	473	513	640
Acidity (mg/L)*	108	96	51	43	101	36	25	40	68	75
Alkalinity (mg/L)*	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Net Alkalinity (mg/L)*	-108	-96	-51	-43	-101	-36	-25	-40	-68	-75
Dissolved elements (mg/L)										
Al	2.06	3.53	0.67	1.41	4.99	1.97	1.06	0.9	1.37	1.96
As	0.008	0.112	0.009	0.028	0.012	0.021	0.017	0.003	0.003	0.009
B	0.27	0.29	<0.05	0.07	0.26	0.07	<0.05	0.07	<0.05	<0.05
Ca	129	239	50	83	133	78	47	37	37	36
Cd	0.0018	0.0023	0.0005	0.001	0.0043	0.0018	0.0009	0.0009	0.0008	0.0009
Cl	720	1250	195	348	523	100	94	57	48	39
Co	0.035	0.084	0.017	0.032	0.074	0.032	0.016	0.012	0.016	0.019
Cr	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	0.032	0.04	0.013	0.014	0.027	0.01	0.007	0.049	0.037	0.03
Fe	38.9	14.2	8.33	1.61	4.94	0.33	0.23	1.33	11.2	16.9
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0001
K	8	13	6	7	8	6	5	4	3	3
Mg	21	42	9	17	27	16	11	7	8	9
Mn	1.88	7.59	2.18	4.79	11.4	6.15	3.59	3.12	4.33	4.46
Mo	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Na	170	192	50	70	89	43	24	15	11	9
Ni	0.013	0.034	0.008	0.018	0.04	0.019	0.01	0.009	0.01	0.01
Pb	0.051	0.113	0.04	0.05	0.103	0.044	0.025	0.033	0.033	0.048
SO_4	227	199	92	132	208	137	91	93	68	184
Sb	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.05	0.48	0.04	0.11	0.06	0.08	0.06	0.01	<0.01	0.03
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	0.113	0.317	0.043	0.08	0.256	0.097	0.045	0.049	0.049	0.072
Calculations**										
SO_4 Release Rate	77.2	64.7	30.4	44.2	73.8	53.4	34.1	26.6	19.0	48.8
Cumulative SO_4 Release	77.2	141.9	172.2	216.4	290	344	378	404	423	472
Ca Release Rate	43.9	77.7	16.5	27.8	47.2	30.4	17.6	10.6	10.4	9.5
Cumulative Ca Release	43.9	121.5	138.0	165.8	213.1	243.5	261.1	271.7	282.0	291.6
Mg Release Rate	7.1	13.7	3.0	5.7	9.6	6.2	4.1	2.0	2.2	2.4
Cumulative Mg Release	7.1	20.8	23.8	29.5	39.0	45.3	49.4	51.4	53.6	56.0
Residual ANC (%)	90	71	67	60	48	40	36	33	30	28
Residual Sulfur (%)	100	100	100	100	99	99	99	99	99	99
SO_4/(Ca+Mg) molar ratio	0.6	0.3	0.6	0.5	0.5	0.5	0.6	0.8	0.6	1.5

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-CR006

KLC Test Results: Raw Coal 1492L

	Sample Mass (kg)		1.4	Total S (%)		0.67	ANC (kg H_2SO_4/t)			5.1
	pH(1:5)		6.6	CRS (%)		0.123	NAPP (kg H_2SO_4/t)			-1.3
	EC(1:5) (µS/cm)		262	MPA (kg H_2SO_4/t)		3.8	ANC:MPA ratio			1.4
Date	**24-Feb-11**	**10-Mar-11**	**24-Mar-11**	**7-Apr-11**	**21-Apr-11**	**5-May-11**	**19-May-11**	**2-Jun-11**	**29-Jun-11**	**28-Jul-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**18**	**22**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.75	0.70	0.68	0.68	0.70	0.74	0.72	0.51	0.46	0.44
Cum. Volume (L)	0.75	1.45	2.13	2.81	3.51	4.25	4.97	5.48	5.94	6.38
Pore Volumes	0.6	1.1	1.6	2.1	2.6	3.1	3.7	4.1	4.4	4.7
pH	7.22	6.67	6.34	6.18	6.61	6.55	6.33	7.24	6.51	6.27
EC (µS/cm)	522	629	297	523	497	255	210	146	145	172
Acidity (mg/L)*	5	3	3	<1	4	3	2	2	2	2
Alkalinity (mg/L)*	36	3	2	1	4	3	2	3	2	<1
Net Alkalinity (mg/L)*	31	0	-1	1	0	0	0	1	0	-2
Dissolved elements (mg/L)										
Al	<0.01	<0.01	0.25	0.01	<0.01	0.01	<0.01	0.2	0.41	0.16
As	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B	0.58	0.41	0.2	0.37	0.51	0.32	0.29	0.34	0.18	0.2
Ca	42	7	2	7	7	3	2	1	3	4
Cd	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001
Cl	41	11	3	5	5	3	2	1	14	<1
Co	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.008	0.002
Fe	<0.05	<0.05	0.09	<0.05	<0.05	<0.05	<0.05	0.05	0.11	0.08
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	4	3	1	2	2	1	1	<1	<1	1
Mg	8	1	0.5	1	1	0.5	0.5	0.5	0.5	0.5
Mn	0.182	0.027	0.013	0.034	0.037	0.019	0.014	0.007	0.02	0.04
Mo	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Na	51	115	55	90	86	53	39	24	25	29
Ni	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Pb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
SO_4	160	253	119	209	196	113	78	52	60	78
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.02	0.05	0.03	0.04	0.04	0.02	0.02	0.01	0.01	0.01
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	0.138	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Calculations**										
SO_4 Release Rate	85.7	126.5	57.8	101.5	98.0	59.7	40.1	19.1	19.7	24.5
Cumulative SO_4 Release	85.7	212.2	270.0	371.5	470	529	569	588	608	633
Ca Release Rate	22.5	3.5	1.0	3.4	3.5	1.6	1.0	0.4	1.0	1.3
Cumulative Ca Release	22.5	26.0	27.0	30.4	33.9	35.5	36.5	36.9	37.8	39.1
Mg Release Rate	4.3	0.5	0.2	0.5	0.5	0.3	0.3	0.2	0.2	0.2
Cumulative Mg Release	4.3	4.8	5.0	5.5	6.0	6.3	6.5	6.7	6.9	7.0
Residual ANC (%)	99	98	98	98	98	98	98	98	98	98
Residual Sulfur (%)	100	99	99	98	98	97	97	97	97	97
SO_4/(Ca+Mg) molar ratio	1.2	12.2	17.6	10.1	9.5	12.3	11.5	11.9	6.5	6.7

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-CR007

KLC Test Results: Tailings 1493L

	Sample Mass (kg)		0.8	Total S (%)		0.68	ANC (kg H_2SO_4/t)			6.6
	pH(1:5)		5.6	CRS (%)		0.322	NAPP (kg H_2SO_4/t)			3.3
	EC(1:5) (µS/cm)		418	MPA (kg H_2SO_4/t)		9.9	ANC:MPA ratio			0.7
Date	**21-Apr-11**	**5-May-11**	**19-May-11**	**2-Jun-11**	**29-Jun-11**	**14-Jul-11**	**28-Jul-11**	**10-Aug-11**	**24-Aug-11**	**23-Sep-11**
Week	**0**	**2**	**4**	**6**	**10**	**12**	**14**	**16**	**18**	**22**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.60	0.80	0.74	0.60	0.50	0.54	0.64	0.61	0.54	0.50
Cum. Volume (L)	0.60	1.40	2.14	2.74	3.24	3.78	4.42	5.03	5.57	6.07
Pore Volumes	0.4	1.0	1.6	2.0	2.4	2.8	3.3	3.7	4.1	4.5
pH	5.4	6.35	5.26	6.10	5.50	5.97	5.17	5.46	5.24	4.80
EC (µS/cm)	1010	376	296	264	311	341	317	253	258	304
Acidity (mg/L)*	12	3	4	5	5	4	5	5	10	10
Alkalinity (mg/L)*	24	4	<1	2	<1	4	<1	4	2	<1
Net Alkalinity (mg/L)*	12	1	-4	-3	-5	0	-5	-1	-8	-10
Dissolved elements (mg/L)										
Al	0.02	<0.01	<0.01	0.01	0.02	0.04	0.05	0.04	0.04	0.07
As	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B	0.62	0.38	0.26	0.25	0.18	0.17	0.25	0.19	0.22	0.26
Ca	68	40	25	22	35	35	35	26	27	33
Cd	0.0003	0.0002	0.0002	<0.0002	0.0004	0.0006	0.0007	0.0005	0.0008	0.0011
Cl	43	20	4	3	2	2	2	1	1	1
Co	0.032	0.016	0.011	0.012	0.02	0.025	0.028	0.02	0.022	0.03
Cr	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	0.004	<0.001	<0.001	<0.001	0.012	0.002	0.007	0.006	0.008	0.01
Fe	0.06	<0.05	<0.05	<0.05	0.05	0.09	0.10	0.11	0.24	0.27
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	15	9	7	5	6	7	6	5	5	7
Mg	18	11	7	6	9	9	9	7	8	8
Mn	0.413	0.348	0.24	0.297	0.574	0.665	0.754	0.615	0.85	1.29
Mo	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Na	93	37	17	11	10	9	7	5	3	3
Ni	0.075	0.029	0.022	0.026	0.044	0.056	0.065	0.047	0.055	0.074
Pb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
SO_4	357	198	118	104	151	142	158	104	110	133
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.06	0.03	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.01
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	0.571	0.316	0.217	0.293	0.497	0.637	0.768	0.577	0.644	0.908
Calculations**										
SO_4 Release Rate	267.8	198.0	109.2	78.1	94.4	95.9	126.4	79.3	74.3	83.1
Cumulative SO_4 Release	267.8	465.8	574.9	653.0	747	843	970	1049	1123	1206
Ca Release Rate	51.0	40.0	23.1	16.5	21.9	23.6	28.0	19.8	18.2	20.6
Cumulative Ca Release	51.0	91.0	114.1	130.7	152.5	176.2	204.2	224.0	242.2	262.8
Mg Release Rate	13.5	11.0	6.5	4.5	5.6	6.1	7.2	5.3	5.4	5.0
Cumulative Mg Release	13.5	24.5	31.0	35.5	41.1	47.2	54.4	59.7	65.1	70.1
Residual ANC (%)	97	95	94	93	92	91	89	88	87	86
Residual Sulfur (%)	99	98	97	97	96	96	95	95	94	94
SO_4/(Ca+Mg) molar ratio	1.5	1.4	1.3	1.4	1.3	1.2	1.3	1.2	1.1	1.2

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-CR008

KLC Test Results: Raw Coal 1493L

	Sample Mass (kg)		1.3	Total S (%)		0.74	ANC (kg H_2SO_4/t)			2.5
	pH(1:5)		5.6	CRS (%)		0.193	NAPP (kg H_2SO_4/t)			3.4
	EC(1:5) (µS/cm)		429	MPA (kg H_2SO_4/t)		5.9	ANC:MPA ratio			0.4
Date	**21-Apr-11**	**5-May-11**	**19-May-11**	**2-Jun-11**	**29-Jun-11**	**14-Jul-11**	**28-Jul-11**	**10-Aug-11**	**24-Aug-11**	**23-Sep-11**
Week	**0**	**2**	**4**	**6**	**10**	**12**	**14**	**16**	**18**	**22**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.58	0.78	0.72	0.57	0.53	0.56	0.58	0.54	0.58	0.54
Cum. Volume (L)	0.58	1.36	2.08	2.65	3.18	3.74	4.32	4.86	5.44	5.98
Pore Volumes	0.4	1.0	1.5	2.0	2.4	2.8	3.2	3.6	4.0	4.4
pH	4.71	5.89	5.11	5.54	4.71	5.30	4.86	5.14	5.19	4.33
EC (µS/cm)	658	844	488	390	335	384	278	264	230	268
Acidity (mg/L)*	18	3	3	3	6	4	5	5	3	9
Alkalinity (mg/L)*	<1	1	<1	<1	<1	<1	<1	<1	2	<1
Net Alkalinity (mg/L)*	-18	-2	-3	-3	-6	-4	-5	-5	-1	-9
Dissolved elements (mg/L)										
Al	0.14	0.03	0.01	<0.01	0.03	0.03	0.03	0.03	0.03	0.07
As	0.001	0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B	0.28	0.52	0.35	0.42	0.25	0.25	0.25	0.26	0.29	0.25
Ca	23	27	11	10	12	15	14	11	10	14
Cd	0.0003	0.0002	<0.0001	<0.0001	<0.0002	0.0002	<0.0002	0.0005	0.0002	0.0003
Cl	4	4	3	2	2	2	1	1	<1	<1
Co	0.031	0.014	0.006	0.004	0.008	0.011	0.012	0.009	0.009	0.011
Cr	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	0.004	<0.001	<0.001	<0.001	0.01	0.001	0.004	0.004	0.003	0.003
Fe	6.16	0.07	<0.05	<0.05	0.71	0.43	0.32	0.24	0.36	1.44
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	5	8	5	4	4	5	4	4	4	5
Mg	7	10	4	4	4	6	5	4	4	5
Mn	0.237	0.404	0.189	0.169	0.348	0.443	0.509	0.439	0.51	0.702
Mo	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Na	85	156	70	54	46	44	38	28	20	18
Ni	0.146	0.039	0.019	0.012	0.035	0.039	0.046	0.031	0.031	0.043
Pb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
SO_4	282	419	197	154	150	157	148	106	93	108
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.05	0.10	0.04	0.02	0.02	0.02	0.02	0.01	0.01	0.01
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	0.043	0.028	0.013	0.012	0.021	0.032	0.04	0.04	0.04	0.042
Calculations**										
SO_4 Release Rate	125.8	251.4	109.1	67.5	61.2	67.6	66.0	44.0	41.5	44.6
Cumulative SO_4 Release	125.8	377.2	486.3	553.8	615	683	749	793	834	879
Ca Release Rate	10.3	16.2	6.1	4.4	4.9	6.5	6.2	4.6	4.5	5.8
Cumulative Ca Release	10.3	26.5	32.6	36.9	41.8	48.3	54.5	59.1	63.6	69.4
Mg Release Rate	3.1	6.0	2.2	1.8	1.6	2.6	2.2	1.7	1.8	2.1
Cumulative Mg Release	3.1	9.1	11.3	13.1	14.7	17.3	19.5	21.2	23.0	25.1
Residual ANC (%)	98	96	95	94	94	92	92	91	90	89
Residual Sulfur (%)	99	98	98	98	97	97	97	96	96	96
SO_4/(Ca+Mg) molar ratio	3.4	4.0	4.7	3.9	3.4	2.6	2.8	2.5	2.3	2.0

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-CR009

KLC Test Results: Coarse Reject 1493L

	Sample Mass (kg)		1.6	Total S (%)		1.20	ANC (kg H_2SO_4/t)			2.9
	pH(1:5)		3.6	CRS (%)		1.04	NAPP (kg H_2SO_4/t)			29.0
	EC(1:5) (µS/cm)		1,720	MPA (kg H_2SO_4/t)		31.9	ANC:MPA ratio			0.1
Date	**21-Apr-11**	**5-May-11**	**19-May-11**	**2-Jun-11**	**29-Jun-11**	**14-Jul-11**	**28-Jul-11**	**10-Aug-11**	**24-Aug-11**	**23-Sep-11**
Week	**0**	**2**	**4**	**6**	**10**	**12**	**14**	**16**	**18**	**22**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.80	0.82	0.80	0.61	0.53	0.55	0.65	0.62	0.55	0.47
Cum. Volume (L)	0.80	1.62	2.42	3.03	3.56	4.11	4.76	5.38	5.93	6.40
Pore Volumes	0.6	1.2	1.8	2.2	2.6	3.0	3.5	4.0	4.4	4.7
pH	3.15	3.12	3.14	3.16	3.11	3.23	3.34	3.33	3.26	3.09
EC (µS/cm)	1390	3690	3070	1,620	1,020	1,890	1,150	793	1,150	1,240
Acidity (mg/L)*	121	284	212	155	86	75	110	96	113	132
Alkalinity (mg/L)*	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Net Alkalinity (mg/L)*	-121	-284	-212	-155	-86	-75	-110	-96	-113	*132
Dissolved elements (mg/L)										
Al	0.71	6.51	3.81	1.36	0.65	2.3	1.3	0.72	1.49	1.92
As	0.015	0.083	0.144	<0.001	<0.001	0.002	0.041	<0.001	<0.001	0.022
B	0.13	0.36	0.25	0.19	0.06	0.17	0.13	0.08	0.14	0.12
Ca	54	292	179	81	49	123	68	42	60	66
Cd	0.0012	0.0028	0.003	0.0032	0.0017	0.0049	0.0031	0.0024	0.0043	0.0045
Cl	324	1430	1890	541	198	698	417	182	312	243
Co	0.076	0.542	0.349	0.142	0.087	0.225	0.132	0.083	0.124	0.142
Cr	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	0.043	0.066	0.051	0.062	0.039	0.048	0.032	0.028	0.031	0.049
Fe	26.3	90	63	39	20	49	31	22	45	35.7
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	12	27	20	11	6	12	7	5	7	8
Mg	19	118	74	31	18	47	25	16	24	28
Mn	0.688	12.6	12.4	8.4	7.9	21	14	10	17.00	24.1
Mo	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Na	96	290	157	57	29	53	28	16	17	16
Ni	0.241	1.34	0.864	0.367	0.239	0.621	0.365	0.234	0.368	0.428
Pb	0.012	0.053	0.034	0.024	0.016	0.024	0.014	0.009	0.016	0.035
SO_4	177	395	187	90	86	151	103	79	97	213
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.17	0.34	0.53	<0.01	<0.01	0.01	0.16	<0.01	<0.01	0.08
V	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	0.27	3.27	2.20	1.20	0.62	1.590	1.03	0.597	0.844	0.79
Calculations**										
SO_4 Release Rate	88.5	202.4	93.5	34.0	28.5	51.9	41.8	30.6	33.3	63.1
Cumulative SO_4 Release	88.5	290.9	384.4	418.5	447	499	541	571	605	668
Ca Release Rate	27.0	149.7	89.5	30.6	16.2	42.3	27.6	16.3	20.6	19.6
Cumulative Ca Release	27.0	176.7	266.2	296.8	313.0	355.3	382.9	399.2	419.8	439.4
Mg Release Rate	9.5	60.5	37.0	11.7	6.0	16.2	10.2	6.2	8.3	8.3
Cumulative Mg Release	9.5	70.0	107.0	118.7	124.7	140.8	151.0	157.2	165.4	173.7
Residual ANC (%)	96	75	63	58	56	50	47	44	42	39
Residual Sulfur (%)	100	99	99	99	99	99	98	98	98	98
SO_4/(Ca+Mg) molar ratio	0.9	0.3	0.3	0.3	0.5	0.3	0.4	0.5	0.4	0.8

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB001

RGS-1 KLC Test Results: 1397D Sandstone

	Sample Mass (kg)		1.8	Total S (%)		0.04	ANC (kg H_2SO_4/t)			2.4
	pH(1:5)		7.1	CRS (%)		-	NAPP (kg H_2SO_4/t)			-1.2
	EC(1:5) (µS/cm)		372	MPA (kg H_2SO_4/t)		1.2	ANC:MPA ratio			2.0
Date	**16-May-11**	**30-May-11**	**15-Jun-11**	**28-Jun-11**	**11-Jul-11**	**26-Jul-11**	**9-Aug-11**	**23-Aug-11**	**7-Sep-11**	**20-Sep-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.61	0.785	0.75	0.75	0.77	0.76	0.77	0.78	0.758	0.76
Cum. Volume (L)	0.61	1.40	2.15	2.90	3.67	4.43	5.20	5.98	6.73	7.49
Pore Volumes	0.5	1.0	1.6	2.1	2.7	3.3	3.8	4.4	5.0	5.6
pH	7.15	5.61	8.01	5.32	5.04	5.61	5.90	5.02	5.03	4.49
EC (µS/cm)	381	236	186	185	113	129	140	115	96	105
Acidity (mg/L)*	8	7	5	4	4	5	6	7	6	10
Alkalinity (mg/L)*	3	<1	3	3	21	<1	3	<1	2	<1
Net Alkalinity (mg/L)*	-5	-7	-2	-1	17	-5	-3	-7	-4	-10
Dissolved elements (mg/L)										
Al	0.11	0.08	0.06	0.08	0.05	<0.10	0.08	0.05	0.06	0.06
As	<0.001	0.002	0.004	0.003	0.002	<0.010	0.003	0.002	0.002	0.003
B	<0.05	<0.05	<0.05	<0.05	<0.05	0.86	<0.05	<0.05	<0.05	<0.05
Ca	10	7	6	5	3	3	3	3	2	3
Cd	0.0003	0.0002	0.0002	0.0002	0.0001	<0.0010	0.0002	0.0002	<0.0001	0.0002
Cl	22	15	9	8	5	5	4	4	3	3
Co	0.102	0.1	0.079	0.093	0.052	0.068	0.091	0.071	0.054	0.065
Cr	<0.001	<0.001	<0.001	<0.001	<0.001	<0.010	<0.001	<0.001	<0.001	<0.001
Cu	0.004	0.003	0.004	0.005	0.004	<0.010	0.007	0.007	0.008	0.012
Fe	0.71	0.26	0.15	0.28	0.15	<0.50	0.24	0.22	0.22	0.23
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0010	<0.0001	<0.0001
K	5	3	3	3	2	2	3	2	2	2
Mg	7	6	4	5	3	4	4	3	2	3
Mn	0.154	0.145	0.106	0.128	0.075	0.088	0.118	0.099	0.078	0.096
Mo	0.001	0.001	<0.001	<0.001	<0.001	<0.010	<0.001	<0.001	<0.001	<0.001
Na	32	24	18	17	11	10	12	8	6	5
Ni	0.179	0.176	0.136	0.172	0.095	0.127	0.168	0.134	0.105	0.12
Pb	0.001	0.001	0.001	0.001	<0.001	<0.010	0.002	<0.001	0.001	0.002
SO_4	86	79	53	60	34	44	47	39	31	32
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.010	<0.001	<0.001	<0.001	<0.001
Se	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.10	<0.01	<0.01	<0.01	<0.01
Zn	0.747	0.726	0.594	0.728	0.452	0.518	0.722	0.747	0.51	0.622
Calculations**										
SO_4 Release Rate	29.1	34.5	22.1	25.0	14.5	18.6	20.1	16.9	13.1	13.5
Cumulative SO_4 Release	29.1	63.6	85.7	110.7	125	144	164	181	194	207
Ca Release Rate	3.4	3.1	2.5	2.1	1.3	1.3	1.3	1.3	0.8	1.3
Cumulative Ca Release	3.4	6.4	8.9	11.0	12.3	13.6	14.9	16.2	17.0	18.3
Mg Release Rate	2.4	2.6	1.7	2.1	1.3	1.7	1.7	1.3	0.8	1.3
Cumulative Mg Release	2.4	5.0	6.7	8.7	10.0	11.7	13.4	14.7	15.6	16.8
Residual ANC (%)	99	99	98	97	97	97	96	96	96	95
Residual Sulfur (%)	98	95	93	91	90	88	86	85	84	83
SO_4/(Ca+Mg) molar ratio	1.7	2.0	1.8	1.9	1.8	1.9	2.0	2.0	2.4	1.7

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB002

RGS-2 KLC Test Results: 1412C/1434D Sandstone

	Sample Mass (kg)	2.0		Total S (%)	0.17		ANC (kg H_2SO_4/t)	2.9		
	pH(1:5)	7.9		CRS (%)	0.154		NAPP (kg H_2SO_4/t)	1.8		
	EC(1:5) (µS/cm)	329		MPA (kg H_2SO_4/t)	4.7		ANC:MPA ratio	0.6		
Date	**16-May-11**	**30-May-11**	**15-Jun-11**	**28-Jun-11**	**11-Jul-11**	**26-Jul-11**	**9-Aug-11**	**23-Aug-11**	**7-Sep-11**	**20-Sep-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.75	0.75	0.7	0.65	0.73	0.61	0.74	0.75	0.75	0.74
Cum. Volume (L)	0.75	1.50	2.20	2.85	3.58	4.19	4.93	5.68	6.43	7.17
Pore Volumes	0.6	1.1	1.6	2.1	2.7	3.1	3.7	4.2	4.8	5.3
pH	7.16	6.41	6.54	6.63	6.3	6.89	6.12	6.44	6.43	5.95
EC (µS/cm)	585	544	196	141	86	60	52	51	57	50
Acidity (mg/L)*	6	4	3	2	7	4	3	5	4	10
Alkalinity (mg/L)*	3	2	4	5	13	5	4	2	2	4
Net Alkalinity (mg/L)*	-3	-2	1	3	6	1	1	-3	-2	-6
Dissolved elements (mg/L)										
Al	<0.01	<0.01	0.04	0.1	0.18	3.04	0.28	0.3	0.18	0.48
As	0.001	0.002	0.006	0.006	0.004	0.011	0.005	0.005	0.002	0.004
B	<0.05	0.07	<0.05	<0.05	0.11	0.07	<0.05	0.06	<0.05	0.07
Ca	11	12	6	2	<1	<1	<1	1	2	2
Cd	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cl	41	38	9	4	2	<1	<1	<1	<1	<1
Co	0.048	0.041	0.011	0.008	0.002	0.01	0.003	0.005	0.009	0.01
Cr	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	0.001	<0.001	<0.001
Cu	<0.001	<0.001	<0.001	0.004	<0.001	0.004	<0.001	0.001	<0.001	0.001
Fe	<0.05	<0.05	<0.05	<0.05	0.05	1.22	0.07	0.44	<0.05	0.18
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	12	11	6	4	4	3	4	3	3	3
Mg	5	5	5	<1	<1	<1	<1	<1	<1	<1
Mn	0.668	0.608	0.144	0.094	0.02	0.067	0.03	0.037	0.097	0.095
Mo	0.002	0.003	0.004	0.006	0.002	0.002	<0.001	<0.001	<0.001	<0.001
Na	72	76	55	20	16	8	7	4	4	3
Ni	0.067	0.061	0.018	0.014	0.003	0.02	0.004	0.011	0.016	0.018
Pb	<0.001	<0.001	<0.001	<0.001	<0.001	0.014	<0.001	0.004	<0.001	0.002
SO_4	142	168	66	43	24	16	14	15	18	17
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	0.289	0.224	0.073	0.047	0.019	0.136	0.019	0.043	0.065	0.051
Calculations**										
SO_4 Release Rate	53.3	63.0	23.1	14.0	8.8	4.9	5.2	5.6	6.8	6.3
Cumulative SO_4 Release	53.3	116.3	139.4	153.3	162	167	172	178	185	191
Ca Release Rate	4.1	4.5	2.1	0.7	0.2	0.2	0.2	0.4	0.8	0.7
Cumulative Ca Release	4.1	8.6	10.7	11.4	11.6	11.7	11.9	12.3	13.0	13.8
Mg Release Rate	1.9	1.9	1.8	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Cumulative Mg Release	1.9	3.8	5.5	5.7	5.8	6.0	6.2	6.4	6.6	6.7
Residual ANC (%)	99	99	98	98	98	98	98	98	98	98
Residual Sulfur (%)	99	98	97	97	97	97	97	97	96	96
SO_4/(Ca+Mg) molar ratio	3.1	3.5	1.9	6.4	7.6	5.0	4.4	3.4	2.7	2.5

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB003

RGS-3 KLC Test Results: 1434D Siltstone

	Sample Mass (kg)	2.0		Total S (%)	0.04		ANC (kg H_2SO_4/t)	21.2		
	pH(1:5)	9.4		CRS (%)	-		NAPP (kg H_2SO_4/t)	-20.0		
	EC(1:5) (µS/cm)	601		MPA (kg H_2SO_4/t)	1.2		ANC:MPA ratio	17.3		
Date	**16-May-11**	**30-May-11**	**15-Jun-11**	**28-Jun-11**	**11-Jul-11**	**26-Jul-11**	**9-Aug-11**	**23-Aug-11**	**7-Sep-11**	**20-Sep-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.478	0.78	0.37	0.43	0.33	0.84	0.79	0.78	0.8	0.80
Cum. Volume (L)	0.48	1.26	1.63	2.06	2.39	3.23	4.02	4.80	5.60	6.40
Pore Volumes	0.4	1.1	1.4	1.8	2.1	2.8	3.5	4.2	4.9	5.6
pH	8.650	9.430	9.010	8.530	8.650	6.350	8.810	9.700	9.280	9.29
EC (µS/cm)	726	183	276	672	534	123	103	86	67	70
Acidity (mg/L)*	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity (mg/L)*	206	54	98	120	217	2	36	38	35	37
Net Alkalinity (mg/L)*	206	54	98	120	217	2	36	38	35	37
Dissolved elements (mg/L)										
Al	<0.10	0.15	0.09	57.1	2.07	0.99	0.66	0.32	0.5	0.52
As	<0.010	0.002	0.001	0.003	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B	<0.50	<0.05	<0.05	0.23	0.11	0.05	<0.05	<0.05	<0.05	0.06
Ca	5	2	6	7	3	6	2	2	2	2
Cd	<0.0010	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cl	39	8	7	27	14	13	1	1	<1	<1
Co	<0.010	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr	<0.010	<0.001	<0.001	0.022	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	<0.010	0.001	<0.001	0.023	0.008	0.003	<0.001	0.002	0.002	0.003
Fe	<0.50	<0.05	<0.05	6.74	1.08	0.54	0.14	0.31	0.31	0.46
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	10	3	6	10	9	7	3	2	2	2
Mg	1	<1	5	2	<1	19	<1	<1	<1	<1
Mn	<0.010	<0.001	<0.001	0.016	0.012	0.005	<0.001	0.003	0.004	0.007
Mo	<0.010	0.002	0.002	0.011	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Na	123	32	85	123	103	174	18	13	10	11
Ni	<0.010	<0.001	<0.001	0.011	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Pb	<0.010	<0.001	<0.001	0.004	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
SO_4	66	12	38	101	67	57	7	6	3	3
Sb	<0.010	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	<0.01	0.02	0.01	0.07	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
V	<0.10	<0.01	<0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	<0.050	<0.005	0.007	0.098	0.069	0.016	<0.005	0.008	0.01	0.014
Calculations**										
SO_4 Release Rate	15.8	4.7	7.0	21.7	11.1	23.9	2.8	2.3	1.2	1.2
Cumulative SO_4 Release	15.8	20.5	27.5	49.2	60	84	87	89	90	92
Ca Release Rate	1.2	0.8	1.1	1.5	0.5	2.5	0.8	0.8	0.8	0.8
Cumulative Ca Release	1.2	2.0	3.1	4.6	5.1	7.6	8.4	9.2	10.0	10.8
Mg Release Rate	0.2	0.2	0.9	0.4	0.1	8.0	0.2	0.2	0.2	0.2
Cumulative Mg Release	0.2	0.4	1.4	1.8	1.9	9.9	10.0	10.2	10.4	10.6
Residual ANC (%)	100	100	100	100	100	100	100	100	100	100
Residual Sulfur (%)	99	98	98	96	95	93	93	93	92	92
SO_4/(Ca+Mg) molar ratio	4.1	1.8	1.1	4.1	7.3	0.6	1.0	0.9	0.4	0.4

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB004

RGS-4 KLC Test Results: 1403D/1434D Claystone

	Sample Mass (kg)	2.0		Total S (%)	0.05			ANC (kg H_2SO_4/t)	3.4	
	pH(1:5)	5.1		CRS (%)	0.026			NAPP (kg H_2SO_4/t)	-2.6	
	EC(1:5) (µS/cm)	1,695		MPA (kg H_2SO_4/t)	0.8			ANC:MPA ratio	4.2	
Date	**16-May-11**	**30-May-11**	**15-Jun-11**	**28-Jun-11**	**11-Jul-11**	**26-Jul-11**	**9-Aug-11**	**23-Aug-11**	**7-Sep-11**	**20-Sep-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.275	0.68	0.25	0.28	0.77	0.77	0.8	0.79	0.805	0.80
Cum. Volume (L)	0.28	0.96	1.21	1.49	2.26	3.03	3.83	4.62	5.42	6.22
Pore Volumes	0.2	0.7	0.9	1.1	1.7	2.2	2.8	3.4	4.0	4.6
pH	7.5	5.89	6.18	6.27	6.38	8.53	6.11	6.32	6.28	6.30
EC (µS/cm)	2650	2580	2810	1610	407	95	127	152	90	144
Acidity (mg/L)*	11	4	10	7	5	3	5	6	4	4
Alkalinity (mg/L)*	4	<1	2	4	4	13	3	2	3	4
Net Alkalinity (mg/L)*	-7	-4	-8	-3	-1	10	-2	-4	-1	0
Dissolved elements (mg/L)										
Al	<0.01	0.01	<0.01	0.02	0.02	1.16	0.09	0.18	0.41	0.34
As	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B	0.06	0.1	0.15	0.06	<0.05	0.06	<0.05	0.06	0.06	0.08
Ca	14	10	20	10	2	<1	<1	<1	<1	<1
Cd	0.001	0.0042	0.0068	0.0035	0.001	0.0001	0.0002	<0.0001	<0.0001	<0.0001
Cl	661	694	603	365	86	12	19	23	11	22
Co	0.043	0.153	0.222	0.112	0.032	0.008	0.008	0.008	0.004	0.011
Cr	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001
Cu	0.002	0.003	0.005	0.005	0.002	0.002	<0.001	0.002	0.002	0.002
Fe	<0.05	<0.05	<0.05	<0.05	<0.05	0.32	<0.05	0.06	0.09	0.09
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	13	14	15	8	2	1	1	1	<1	1
Mg	72	60	84	43	10	2	2	3	2	3
Mn	0.27	0.6	0.94	0.463	0.117	0.036	0.036	0.03	0.019	0.053
Mo	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Na	381	434	457	237	51	14	19	20	12	19
Ni	0.025	0.098	0.146	0.079	0.021	0.006	0.006	0.007	0.004	0.008
Pb	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
SO_4	233	275	469	209	42	19	22	24	16	22
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.02	0.08	0.10	0.04	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	0.325	0.849	1.26	0.671	0.172	0.056	0.045	0.024	0.022	0.042
Calculations**										
SO_4 Release Rate	32.0	93.5	58.6	29.3	16.2	7.3	8.8	9.5	6.4	8.8
Cumulative SO_4 Release	32.0	125.5	184.2	213.4	230	237	246	255	262	270
Ca Release Rate	1.9	3.4	2.5	1.4	0.8	0.2	0.2	0.2	0.2	0.2
Cumulative Ca Release	1.9	5.3	7.8	9.2	10.0	10.2	10.4	10.6	10.8	11.0
Mg Release Rate	9.9	20.4	10.5	6.0	3.9	0.8	0.8	1.2	0.8	1.2
Cumulative Mg Release	9.9	30.3	40.8	46.8	50.7	51.4	52.2	53.4	54.2	55.4
Residual ANC (%)	99	96	95	94	93	93	93	93	93	93
Residual Sulfur (%)	98	92	88	86	85	84	84	83	83	82
SO_4/(Ca+Mg) molar ratio	0.7	1.1	1.2	1.1	0.9	2.1	2.4	1.8	1.8	1.7

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB005

RGS-5 KLC Test Results: 1452D Mudstone

	Sample Mass (kg)		1.7	Total S (%)		0.08	ANC (kg H_2SO_4/t)			14.2
	pH(1:5)		9.8	CRS (%)		-	NAPP (kg H_2SO_4/t)			-11.8
	EC(1:5) (µS/cm)		752	MPA (kg H_2SO_4/t)		2.5	ANC:MPA ratio			5.8
Date	**16-May-11**	**30-May-11**	**15-Jun-11**	**28-Jun-11**	**11-Jul-11**	**26-Jul-11**	**9-Aug-11**	**23-Aug-11**	**7-Sep-11**	**20-Sep-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.76	0.65	0.44	0.47	0.42	0.9	0.82	0.75	0.79	0.80
Cum. Volume (L)	0.76	1.41	1.85	2.32	2.74	3.64	4.46	5.21	6.00	6.80
Pore Volumes	0.7	1.2	1.6	2.0	2.4	3.2	3.9	4.5	5.2	5.9
pH	8.71	8.69	8.01	8.16	8.79	6.34	8.11	9.19	8.43	8.59
EC (µS/cm)	374	668	1160	893	369	103	74	70	49	40
Acidity (mg/L)*	<1	<1	2	1	<1	4	<1	<1	<1	<1
Alkalinity (mg/L)*	40	59	69	84	23	1	20	24	24	15
Net Alkalinity (mg/L)*	40	59	67	83	23	-3	20	24	24	15
Dissolved elements (mg/L)										
Al	0.04	0.32	<0.01	1.18	10.2	0.68	2.82	1.0	0.67	0.84
As	0.006	0.014	0.014	0.015	0.065	0.002	0.004	0.003	0.002	0.003
B	<0.05	0.07	<0.05	<0.05	<0.50	<0.05	<0.05	<0.05	<0.05	0.05
Ca	5	10	33	18	4	3	2	2	<1	<1
Cd	<0.0001	<0.0001	<0.0001	<0.0001	<0.0010	<0.0001	<0.0001	0.0001	<0.0001	<0.0001
Cl	7	14	13	9	4	2	<1	<1	<1	<1
Co	<0.001	<0.001	<0.001	0.001	0.02	<0.001	<0.001	0.002	0.001	0.002
Cr	<0.001	<0.001	<0.001	<0.001	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	<0.001	0.009	0.002	0.023	0.17	0.006	0.004	0.049	0.032	0.04
Fe	<0.05	0.18	<0.05	0.54	3.52	0.22	0.46	0.77	0.45	0.62
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	6	11	20	14	8	2	3	2	2	1
Mg	<1	2	6	3	<1	<1	<1	<1	<1	<1
Mn	<0.001	0.004	<0.001	0.005	<0.010	<0.001	<0.001	0.01	0.006	0.008
Mo	0.174	0.473	0.659	0.461	0.075	0.026	0.015	0.007	0.004	0.004
Na	57	118	197	148	69	10	12	11	8	7
Ni	<0.001	<0.001	<0.001	<0.001	0.015	<0.001	<0.001	<0.001	<0.001	<0.001
Pb	<0.001	<0.001	<0.001	0.001	0.05	<0.001	<0.001	0.003	0.002	0.003
SO_4	92	196	409	265	78	22	12	10	6	5
Sb	<0.001	<0.001	0.001	0.001	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.02	0.04	0.07	0.04	<0.10	<0.01	<0.01	<0.01	<0.01	<0.01
V	0.01	0.02	0.01	0.02	<0.10	<0.01	0.02	0.01	<0.01	0.01
Zn	<0.005	0.015	<0.005	0.037	0.25	0.007	<0.005	0.06	0.044	0.056
Calculations**										
SO_4 Release Rate	41.1	74.9	105.9	73.3	19.3	11.6	5.8	4.4	2.8	2.4
Cumulative SO_4 Release	41.1	116.1	221.9	295.2	314	326	332	336	339	341
Ca Release Rate	2.2	3.8	8.5	5.0	1.0	1.6	1.0	0.9	0.2	0.2
Cumulative Ca Release	2.2	6.1	14.6	19.6	20.6	22.2	23.1	24.0	24.2	24.5
Mg Release Rate	0.2	0.8	1.6	0.8	0.1	0.3	0.2	0.2	0.2	0.2
Cumulative Mg Release	0.2	1.0	2.5	3.4	3.5	3.8	4.0	4.2	4.5	4.7
Residual ANC (%)	100	100	100	100	100	100	99	99	99	99
Residual Sulfur (%)	98	95	91	88	87	86	86	86	86	86
SO_4/(Ca+Mg) molar ratio	6.6	6.1	4.0	4.8	6.7	2.4	1.8	1.5	1.9	1.6

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB006

RGS-6 KLC Test Results: 1398X Sand

	Sample Mass (kg)	2.0		Total S (%)	<0.01		ANC (kg H_2SO_4/t)	0.25		
	pH(1:5)	6.9		CRS (%)	-		NAPP (kg H_2SO_4/t)	-0.1		
	EC(1:5) (µS/cm)	2,280		MPA (kg H_2SO_4/t)	0.2		ANC:MPA ratio	1.7		
Date	**16-May-11**	**30-May-11**	**15-Jun-11**	**28-Jun-11**	**11-Jul-11**	**26-Jul-11**	**9-Aug-11**	**23-Aug-11**	**7-Sep-11**	**20-Sep-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.89	0.86	0.85	0.84	0.84	0.85	0.845	0.85	0.85	0.87
Cum. Volume (L)	0.89	1.75	2.60	3.44	4.28	5.13	5.98	6.83	7.68	8.55
Pore Volumes	0.7	1.3	1.9	2.5	3.2	3.8	4.4	5.1	5.7	6.3
pH	8.09	6.39	6.41	6.11	5.87	6.12	6.07	6.36	6.31	6.19
EC (µS/cm)	400	134	391	674	405	487	633	472	145	246
Acidity (mg/L)*	2	4	2	2	3	2	4	2	2	6
Alkalinity (mg/L)*	3	2	2	4	4	1	2	1	4	4
Net Alkalinity (mg/L)*	1	-2	0	2	1	-1	-2	-1	2	-2
Dissolved elements (mg/L)										
Al	<0.01	0.02	<0.01	0.02	0.03	0.04	<0.01	0.02	0.62	0.58
As	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Ca	2	<1	2	2	2	2	2	2	<1	1
Cd	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cl	105	33	116	203	111	153	190	132	38	66
Co	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Fe	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	0.1
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	1	<1	<1	<1	1	<1	<1	<1	<1	<1
Mg	4	1	2	2	3	1	2	1	<1	1
Mn	0.033	0.016	0.029	0.033	0.024	0.026	0.037	0.024	0.004	0.016
Mo	0.002	0.002	0.004	0.002	0.001	0.001	0.001	<0.001	<0.001	<0.001
Na	56	23	69	119	68	89	120	87	24	43
Ni	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Pb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
SO_4	6	3	4	6	11	6	7	6	3	4
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	0.006
Calculations**										
SO_4 Release Rate	2.7	1.3	1.7	2.5	4.6	2.6	3.0	2.6	1.3	1.7
Cumulative SO_4 Release	2.7	4.0	5.7	8.2	13	15	18	21	22	24
Ca Release Rate	0.9	0.2	0.9	0.8	0.8	0.9	0.8	0.9	0.2	0.4
Cumulative Ca Release	0.9	1.1	2.0	2.8	3.6	4.5	5.3	6.2	6.4	6.8
Mg Release Rate	1.8	0.4	0.9	0.8	1.3	0.4	0.8	0.4	0.2	0.4
Cumulative Mg Release	1.8	2.2	3.1	3.9	5.2	5.6	6.4	6.9	7.1	7.5
Residual ANC (%)	96	95	93	91	88	87	84	83	82	81
Residual Sulfur (%)	98	97	96	95	91	90	88	86	85	84
SO_4/(Ca+Mg) molar ratio	0.3	0.6	0.3	0.5	0.7	0.7	0.6	0.7	0.9	0.6

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB007

RGS-7 KLC Test Results: 1398X/1397D Sand

	Sample Mass (kg)	2.0		Total S (%)	0.13		ANC (kg H_2SO_4/t)	2.3		
	pH(1:5)	5.7		CRS (%)	-		NAPP (kg H_2SO_4/t)	1.8		
	EC(1:5) (µS/cm)	1,540		MPA (kg H_2SO_4/t)	4.1		ANC:MPA ratio	0.6		
Date	**16-May-11**	**30-May-11**	**15-Jun-11**	**28-Jun-11**	**11-Jul-11**	**26-Jul-11**	**9-Aug-11**	**23-Aug-11**	**7-Sep-11**	**20-Sep-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.453	0.65	0.35	0.28	0.27	0.28	0.315	0.335	0.28	0.28
Cum. Volume (L)	0.45	1.10	1.45	1.73	2.00	2.28	2.60	2.93	3.21	3.49
Pore Volumes	0.3	0.8	1.1	1.3	1.5	1.7	1.9	2.2	2.4	2.6
pH	6.95	7.23	7.5	8.02	7.86	7.87	7.57	8.03	7.59	8.13
EC (µS/cm)	6120	4220	211	354	566	290	334	270	263	236
Acidity (mg/L)*	23	6	2	3	8	4	5	4	8	5
Alkalinity (mg/L)*	28	24	16	34	46	36	47	37	32	42
Net Alkalinity (mg/L)*	5	18	14	31	38	32	42	33	24	37
Dissolved elements (mg/L)										
Al	<0.01	<0.01	2.47	2.82	2.97	2.72	0.05	2.15	3.38	1.08
As	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B	0.11	0.12	<0.05	<0.05	0.1	0.07	0.05	0.05	<0.05	0.1
Ca	34	15	<1	<1	<1	<1	<1	<1	<1	<1
Cd	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cl	1800	1250	43	74	99	47	44	33	36	26
Co	0.009	0.002	<0.001	0.001	0.001	0.002	<0.001	0.002	0.002	<0.001
Cr	<0.001	<0.001	0.003	0.004	0.004	0.004	<0.001	0.004	0.004	0.002
Cu	0.002	<0.001	0.002	0.005	0.002	0.005	<0.001	0.004	0.004	0.002
Fe	<0.05	<0.05	1.15	1.12	1.31	1.51	<0.05	1.38	1.42	0.53
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	7	5	<1	<1	<1	<1	<1	<1	<1	<1
Mg	78	34	2	<1	<1	<1	<1	1	<1	<1
Mn	0.135	0.032	0.003	0.005	0.005	0.01	<0.001	0.007	0.008	0.003
Mo	<0.001	0.003	0.002	<0.001	<0.001	<0.001	0.004	<0.001	<0.001	<0.001
Na	1070	890	41	62	103	53	59	50	48	42
Ni	0.012	0.002	0.001	0.001	0.002	0.002	<0.001	0.002	0.002	<0.001
Pb	<0.001	<0.001	<0.001	0.004	0.003	0.007	<0.001	0.006	0.006	0.003
SO_4	155	137	12	20	39	30	34	31	30	23
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
V	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.01	<0.01
Zn	10.4	3.21	0.1	1.08	1.01	3.22	0.019	2.51	3.44	1.49
Calculations**										
SO_4 Release Rate	35.1	44.5	2.1	2.8	5.3	4.2	5.4	5.2	4.2	3.2
Cumulative SO_4 Release	35.1	79.6	81.7	84.5	90	94	99	105	109	112
Ca Release Rate	7.7	4.9	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cumulative Ca Release	7.7	12.6	12.7	12.7	12.8	12.9	12.9	13.0	13.1	13.2
Mg Release Rate	17.7	11.1	0.4	0.1	0.1	0.1	0.1	0.2	0.1	0.1
Cumulative Mg Release	17.7	28.7	29.1	29.1	29.2	29.3	29.4	29.5	29.6	29.7
Residual ANC (%)	96	94	94	94	94	94	93	93	93	93
Residual Sulfur (%)	99	98	98	98	98	98	97	97	97	97
SO_4/(Ca+Mg) molar ratio	0.4	0.8	1.3	6.3	12.3	9.5	10.7	6.0	9.5	7.2

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB008

RGS-8 KLC Test Results: 1453D Carbonaceous Mudstone

	Sample Mass (kg)		1.6	Total S (%)		0.35	ANC (kg H_2SO_4/t)			16.4
	pH(1:5)		9.4	CRS (%)		0.024	NAPP (kg H_2SO_4/t)			-15.7
	EC(1:5) (µS/cm)		1,590	MPA (kg H_2SO_4/t)		0.7	ANC:MPA ratio			22.3
Date	**16-May-11**	**30-May-11**	**15-Jun-11**	**28-Jun-11**	**11-Jul-11**	**26-Jul-11**	**9-Aug-11**	**23-Aug-11**	**7-Sep-11**	**20-Sep-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.62	0.79	0.7	0.74	0.71	0.73	0.73	0.72	0.73	0.70
Cum. Volume (L)	0.62	1.41	2.11	2.85	3.56	4.29	5.02	5.74	6.47	7.17
Pore Volumes	0.5	1.0	1.6	2.1	2.6	3.2	3.7	4.3	4.8	5.3
pH	8.84	8.13	8.39	8.22	7.6	7.61	7.4	8.33	7.76	8.08
EC (µS/cm)	915	341	222	210	180	168	180	172	156	160
Acidity (mg/L)*	<1	1	2	<1	2	2	2	2	3	4
Alkalinity (mg/L)*	76	16	23	30	29	23	25	27	30	29
Net Alkalinity (mg/L)*	76	15	21	30	27	21	23	25	27	25
Dissolved elements (mg/L)										
Al	1.11	0.29	0.45	1.62	2.75	1.38	9.52	0.66	0.74	0.71
As	0.007	<0.001	0.001	0.001	0.002	0.001	0.002	0.001	<0.001	0.002
B	2.03	0.26	0.1	0.19	0.23	0.18	0.25	0.18	0.2	0.25
Ca	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cd	0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cl	162	59	34	28	17	17	18	16	12	14
Co	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Cr	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	0.008	<0.001	<0.001	0.003	0.002	0.002	0.001	0.001	0.002	0.002
Fe	0.77	0.1	0.08	0.4	0.55	0.48	1.21	0.34	0.31	0.42
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0010
K	3	1	1	<1	<1	<1	<1	<1	<1	<1
Mg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Mn	0.038	<0.001	<0.001	0.002	0.003	0.003	0.003	0.002	0.002	0.004
Mo	0.01	0.011	0.006	0.007	0.009	0.006	0.009	0.004	0.004	0.004
Na	141	64	43	39	36	31	36	34	29	31
Ni	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Pb	0.006	0.001	<0.001	0.003	0.004	0.005	0.001	0.003	0.003	0.005
SO_4	97	42	28	26	24	25	27	27	23	26
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.04	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
V	0.02	0.01	0.01	0.02	0.02	0.02	0.03	0.02	0.02	0.03
Zn	0.656	0.047	0.008	0.139	0.229	0.308	0.066	0.166	0.229	0.312
Calculations**										
SO_4 Release Rate	37.6	20.7	12.3	12.0	10.7	11.4	12.3	12.2	10.5	11.4
Cumulative SO_4 Release	37.6	58.3	70.6	82.6	93	105	117	129	140	151
Ca Release Rate	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Cumulative Ca Release	0.4	0.6	0.9	1.1	1.3	1.5	1.8	2.0	2.2	2.4
Mg Release Rate	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Cumulative Mg Release	0.2	0.4	0.7	0.9	1.1	1.3	1.6	1.8	2.0	2.2
Residual ANC (%)	100	100	100	100	100	100	100	100	100	100
Residual Sulfur (%)	100	99	99	99	99	99	99	99	99	99
SO_4/(Ca+Mg) molar ratio	22.2	13.2	8.8	8.2	7.6	7.9	8.5	8.5	7.2	8.2

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB009

RGS-9 KLC Test Results: 1454D Carbonaceous Sandstone

	Sample Mass (kg)		2.0	Total S (%)		0.08	ANC (kg H_2SO_4/t)			8.9
	pH(1:5)		8.8	CRS (%)		-	NAPP (kg H_2SO_4/t)			-6.5
	EC(1:5) (µS/cm)		305	MPA (kg H_2SO_4/t)		2.5	ANC:MPA ratio			3.6
Date	**16-May-11**	**30-May-11**	**15-Jun-11**	**28-Jun-11**	**11-Jul-11**	**26-Jul-11**	**9-Aug-11**	**23-Aug-11**	**7-Sep-11**	**20-Sep-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.86	0.9	0.86	0.88	0.88	0.86	0.855	0.86	0.865	0.85
Cum. Volume (L)	0.86	1.76	2.62	3.50	4.38	5.24	6.10	6.96	7.82	8.67
Pore Volumes	0.6	1.3	1.9	2.6	3.2	3.9	4.5	5.2	5.8	6.4
pH	8.01	7.45	7.05	7.16	6.76	6.45	6.20	6.92	6.71	6.77
EC (µS/cm)	192	49	25	24	21	24	29	23	19	20
Acidity (mg/L)*	2	2	2	2	3	2	3	2	3	4
Alkalinity (mg/L)*	25	7	5	7	7	3	6	4	3	3
Net Alkalinity (mg/L)*	23	5	3	5	4	1	3	2	0	-1
Dissolved elements (mg/L)										
Al	1.68	0.38	5.98	1.16	1.23	0.78	0.53	0.55	0.75	0.39
As	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B	2.12	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ca	3	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cd	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cl	2	<1	<1	<1	<1	<1	<1	<1	<1	<1
Co	0.007	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	0.002	0.001	<0.001
Cr	0.002	<0.001	0.005	0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	0.017	0.002	0.007	0.002	0.001	<0.001	<0.001	0.004	0.002	<0.001
Fe	2.48	0.21	1.7	0.29	0.3	0.2	0.11	0.92	0.53	0.1
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	2	<1	<1	<1	<1	<1	<1	<1	<1	<1
Mg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Mn	0.056	0.005	0.024	0.005	0.008	0.009	0.011	0.017	0.019	0.017
Mo	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Na	29	10	5	5	4	3	4	3	3	3
Ni	0.016	0.002	0.007	0.001	0.002	0.001	<0.001	0.004	0.003	<0.001
Pb	0.006	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001
SO_4	61	16	6	6	5	6	6	5	5	5
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
V	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	0.629	0.026	0.172	0.018	0.024	0.021	0.014	0.083	0.06	0.022
Calculations**										
SO_4 Release Rate	26.2	7.2	2.6	2.6	2.2	2.6	2.6	2.2	2.2	2.1
Cumulative SO_4 Release	26.2	33.4	36.0	38.7	41	43	46	48	50	52
Ca Release Rate	1.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Cumulative Ca Release	1.3	1.5	1.7	2.0	2.2	2.4	2.6	2.8	3.0	3.2
Mg Release Rate	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Cumulative Mg Release	0.2	0.4	0.7	0.9	1.1	1.3	1.5	1.7	2.0	2.2
Residual ANC (%)	100	100	100	100	100	100	100	100	100	100
Residual Sulfur (%)	99	99	98	98	98	98	98	98	98	98
SO_4/(Ca+Mg) molar ratio	6.7	5.0	1.9	1.9	1.6	1.9	1.9	1.6	1.6	1.6

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB010

RGS-10 KLC Test Results: 1429R/1397D Clay

	Sample Mass (kg)	2.0		Total S (%)	0.09		ANC (kg H_2SO_4/t)	2.3		
	pH(1:5)	7.4		CRS (%)	-		NAPP (kg H_2SO_4/t)	0.6		
	EC(1:5) (µS/cm)	1,450		MPA (kg H_2SO_4/t)	2.8		ANC:MPA ratio	0.8		
Date	**16-May-11**	**30-May-11**	**15-Jun-11**	**28-Jun-11**	**11-Jul-11**	**26-Jul-11**	**9-Aug-11**	**23-Aug-11**	**7-Sep-11**	**20-Sep-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.47	0.77	0.75	0.76	0.77	0.78	0.79	0.8	0.8	0.80
Cum. Volume (L)	0.47	1.24	1.99	2.75	3.52	4.30	5.09	5.89	6.69	7.49
Pore Volumes	0.3	0.9	1.5	2.0	2.6	3.2	3.8	4.4	5.0	5.5
pH	8.8	8.47	8.11	7.54	7.08	6.91	7.55	7.86	7.52	7.85
EC (µS/cm)	378	298	304	306	240	275	232	210	163	182
Acidity (mg/L)*	<1	<1	1	4	2	2	2	2	3	1
Alkalinity (mg/L)*	74	14	14	10	15	7	10	8	13	12
Net Alkalinity (mg/L)*	74	14	13	6	13	5	8	6	10	11
Dissolved elements (mg/L)										
Al	1.79	0.34	0.06	1.08	2.28	1.23	0.39	0.61	0.62	0.78
As	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B	2.11	0.11	<0.05	0.06	<0.05	0.06	<0.05	<0.05	<0.05	0.08
Ca	<1	<1	1	1	1	1	1	1	<1	1
Cd	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cl	71	76	81	80	58	72	55	45	36	36
Co	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Cr	0.002	<0.001	<0.001	0.001	0.002	0.001	<0.001	<0.001	<0.001	<0.001
Cu	0.013	<0.001	0.008	<0.001	0.001	0.001	<0.001	0.002	0.001	0.002
Fe	1.61	0.23	<0.05	0.51	0.88	0.54	0.18	0.65	0.35	0.52
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Mg	<1	<1	1	1	1	1	2	2	1	1
Mn	0.034	0.004	<0.001	0.004	0.006	0.006	<0.001	0.009	0.008	0.015
Mo	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Na	64	55	54	52	43	45	42	36	26	32
Ni	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Pb	0.004	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.002	<0.001	0.002
SO_4	6	6	6	6	6	8	8	8	6	7
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
V	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	1.04	0.052	<0.005	0.048	0.108	0.086	0.014	0.169	0.182	0.239
Calculations**										
SO_4 Release Rate	1.4	2.3	2.3	2.3	2.3	3.1	3.2	3.2	2.4	2.8
Cumulative SO_4 Release	1.4	3.7	6.0	8.3	11	14	17	20	22	25
Ca Release Rate	0.1	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.4
Cumulative Ca Release	0.1	0.3	0.7	1.1	1.5	1.8	2.2	2.6	2.8	3.2
Mg Release Rate	0.1	0.2	0.4	0.4	0.4	0.4	0.8	0.8	0.4	0.4
Cumulative Mg Release	0.1	0.3	0.7	1.1	1.5	1.8	2.6	3.4	3.8	4.2
Residual ANC (%)	100	100	100	100	100	99	99	99	99	99
Residual Sulfur (%)	100	100	100	100	100	100	99	99	99	99
SO_4/(Ca+Mg) molar ratio	1.9	1.9	0.9	0.9	0.9	1.3	0.8	0.8	1.2	1.1

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB011

RGS-11 KLC Test Results: 1400X/1402C Clay

	Sample Mass (kg)	2.0		Total S (%)	0.35			ANC (kg H_2SO_4/t)	2.7
	pH(1:5)	6.0		CRS (%)	-			NAPP (kg H_2SO_4/t)	8.1
	EC(1:5) (µS/cm)	2,005		MPA (kg H_2SO_4/t)	10.8			ANC:MPA ratio	0.2
Date	**16-May-11**	**30-May-11**	**15-Jun-11**	**28-Jun-11**	**11-Jul-11**	**26-Jul-11**	**9-Aug-11**	**23-Aug-11**	**7-Sep-11**	**20-Sep-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.322	0.88	0.54	0.85	0.8	0.78	0.81	0.83	0.86	0.85
Cum. Volume (L)	0.32	1.20	1.74	2.59	3.39	4.17	4.98	5.81	6.67	7.52
Pore Volumes	0.2	0.9	1.3	1.9	2.5	3.1	3.7	4.3	4.9	5.6
pH	7.55	6.03	5.87	6.09	6.06	6.00	6.14	6.14	6.17	6.04
EC (µS/cm)	4550	477	2950	1420	423	223	138	155	93	114
Acidity (mg/L)*	11	4	7	10	6	4	10	5	5	4
Alkalinity (mg/L)*	3	<1	<1	4	3	1	2	1	3	4
Net Alkalinity (mg/L)*	-8	-4	-7	-6	-3	-3	-8	-4	-2	0
Dissolved elements (mg/L)										
Al	<0.01	0.28	<0.01	0.02	5.19	2.78	1.28	0.37	0.67	0.74
As	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B	0.25	0.09	0.23	0.12	<0.05	0.06	<0.05	<0.05	0.06	0.08
Ca	74	5	75	24	6	2	1	1	<1	1
Cd	0.0005	<0.0001	0.0011	0.0004	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cl	1090	122	688	352	101	46	22	25	12	18
Co	0.244	0.037	0.408	0.136	0.049	0.027	0.01	0.014	0.009	0.015
Cr	<0.001	<0.001	<0.001	<0.001	0.004	0.002	<0.001	<0.001	<0.001	<0.001
Cu	0.003	<0.001	0.004	0.001	0.008	0.008	<0.001	0.005	0.005	0.006
Fe	<0.05	0.11	<0.05	<0.05	1.46	0.97	0.46	0.36	0.25	0.32
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	24	3	17	8	3	2	2	1	1	1
Mg	89	6	74	26	6	3	2	2	<1	1
Mn	0.076	0.012	0.133	0.044	0.018	0.01	0.005	0.004	0.002	0.005
Mo	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Na	633	74	431	196	58	36	22	22	14	16
Ni	0.273	0.047	0.541	0.186	0.064	0.032	0.014	0.015	0.01	0.017
Pb	<0.001	<0.001	<0.001	<0.001	0.003	0.003	<0.001	0.002	0.001	0.002
SO_4	416	42	401	119	34	28	18	20	15	17
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.04	0.01	0.08	0.03	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	0.085	0.023	0.043	0.018	0.093	0.083	<0.005	0.019	0.021	0.056
Calculations**										
SO_4 Release Rate	67.0	18.5	108.3	50.6	13.6	10.9	7.3	8.3	6.5	7.2
Cumulative SO_4 Release	67.0	85.5	193.7	244.3	258	269	276	284	291	298
Ca Release Rate	11.9	2.2	20.3	10.2	2.4	0.8	0.4	0.4	0.2	0.4
Cumulative Ca Release	11.9	14.1	34.4	44.6	47.0	47.7	48.1	48.6	48.8	49.2
Mg Release Rate	14.3	2.6	20.0	11.1	2.4	1.2	0.8	0.8	0.2	0.4
Cumulative Mg Release	14.3	17.0	36.9	48.0	50.4	51.6	52.4	53.2	53.4	53.8
Residual ANC (%)	97	96	91	89	88	88	88	87	87	87
Residual Sulfur (%)	99	99	98	98	98	97	97	97	97	97
SO_4/(Ca+Mg) molar ratio	0.8	1.2	0.8	0.7	0.9	1.7	1.7	1.9	4.7	2.7

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB012

RGS-12 KLC Test Results: 1410C Coal

	Sample Mass (kg)		1.5	Total S (%)		0.25	ANC (kg H_2SO_4/t)			11.3
	pH(1:5)		6.8	CRS (%)		0.08	NAPP (kg H_2SO_4/t)			-8.9
	EC(1:5) (µS/cm)		490	MPA (kg H_2SO_4/t)		2.5	ANC:MPA ratio			4.6
Date	**16-May-11**	**30-May-11**	**15-Jun-11**	**28-Jun-11**	**11-Jul-11**	**26-Jul-11**	**9-Aug-11**	**23-Aug-11**	**7-Sep-11**	**20-Sep-11**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.33	0.7	0.49	0.54	0.505	0.52	0.53	0.53	0.54	0.52
Cum. Volume (L)	0.33	1.03	1.52	2.06	2.57	3.09	3.62	4.15	4.69	5.21
Pore Volumes	0.2	0.8	1.1	1.5	1.9	2.3	2.7	3.1	3.5	3.9
pH	7.8	6.64	6.78	6.61	6.59	6.37	6.53	6.56	6.56	6.52
EC (µS/cm)	417	332	555	467	446	438	353	290	262	234
Acidity (mg/L)*	4	4	3	3	4	3	7	4	4	2
Alkalinity (mg/L)*	29	4	5	4	7	3	3	3	5	3
Net Alkalinity (mg/L)*	25	0	2	1	3	0	-4	-1	1	1
Dissolved elements (mg/L)										
Al	0.02	0.02	<0.01	1.74	1.95	1.02	<0.01	0.22	0.31	0.36
As	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B	0.17	0.24	0.29	0.28	0.24	0.26	0.26	0.17	0.11	0.17
Ca	15	9	20	16	17	15	16	11	9	8
Cd	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cl	3	3	3	2	2	24	2	1	<1	<1
Co	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	<0.001	<0.001	0.003	0.002	0.002	0.001	<0.001	0.001	<0.001	0.001
Fe	<0.05	<0.05	<0.05	0.44	0.39	0.27	<0.05	0.22	0.15	0.23
Hg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
K	6	5	9	7	7	6	7	4	4	4
Mg	5	4	9	7	7	7	7	5	4	4
Mn	0.054	0.01	0.022	0.045	0.047	0.051	0.022	0.023	0.015	0.016
Mo	0.009	0.005	0.006	0.003	0.002	0.002	0.002	<0.001	<0.001	<0.001
Na	47	46	72	54	52	49	45	33	28	26
Ni	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Pb	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	0.001	<0.001	0.001
SO_4	143	135	230	181	179	180	161	120	100	96
Sb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Se	0.02	0.02	0.03	0.02	0.02	0.02	0.01	<0.01	<0.01	<0.01
V	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	<0.005	0.015	<0.005	0.041	0.042	0.035	0.005	0.008	0.009	0.019
Calculations**										
SO_4 Release Rate	31.5	63.0	75.1	65.2	60.3	62.4	56.9	42.4	36.0	33.3
Cumulative SO_4 Release	31.5	94.5	169.6	234.8	295	357	414	457	493	526
Ca Release Rate	3.3	4.2	6.5	5.8	5.7	5.2	5.7	3.9	3.2	2.8
Cumulative Ca Release	3.3	7.5	14.0	19.8	25.5	30.7	36.4	40.3	43.5	46.3
Mg Release Rate	1.1	1.9	2.9	2.5	2.4	2.4	2.5	1.8	1.4	1.4
Cumulative Mg Release	1.1	3.0	5.9	8.4	10.8	13.2	15.7	17.5	18.9	20.3
Residual ANC (%)	100	100	99	99	99	99	99	99	98	98
Residual Sulfur (%)	100	99	98	97	96	95	94	94	93	93
SO_4/(Ca+Mg) molar ratio	2.6	3.6	2.8	2.7	2.6	2.8	2.4	2.6	2.7	2.7

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB013

RGS-1 KLC Test Results: 1693D Sandstone

	Sample Mass (kg)		2.0	Total S (%)		0.01	ANC (kg H_2SO_4/t)			4.2
	pH(1:5)		7.8	CRS (%)		-	NAPP (kg H_2SO_4/t)			-4.0
	EC(1:5) (µS/cm)		732	MPA (kg H_2SO_4/t)		0.2	ANC:MPA ratio			22.9
Date	**27-Jan-12**	**9-Feb-12**	**24-Feb-12**	**9-Mar-12**	**23-Mar-12**	**6-Apr-12**	**20-Apr-12**	**4-May-12**	**18-May-12**	**1-Jun-12**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.648	0.812	0.838	0.816						
Cum. Volume (L)	0.65	1.46	2.30	3.11	3.11	3.11	3.11	3.11	3.11	3.11
Pore Volumes	0.5	1.1	1.7	2.3	2.3	2.3	2.3	2.3	2.3	2.3
pH	6.82	6.82	7.08	6.83						
EC (µS/cm)	627	1120	586	795						
Acidity (mg/L)*	2	2	2	2						
Alkalinity (mg/L)*	6	5	5	6						
Net Alkalinity (mg/L)*	4	3	3	4						
Dissolved elements (mg/L)										
Al	<0.01	<0.01	<0.01	<0.01						
As	<0.001	<0.001	<0.001	<0.001						
B	<0.05	<0.05	<0.05	<0.05						
Ca	2	6	3	2						
Cd	<0.0001	<0.0001	<0.0001	<0.0001						
Cl	193	340	204	145						
Co	<0.001	<0.001	<0.001	<0.001						
Cr	<0.001	<0.001	<0.001	<0.001						
Cu	<0.001	<0.001	<0.001	<0.001						
Fe	<0.05	<0.05	<0.05	<0.05						
Hg	-	-	-	-						
K	1	3	1	<1						
Mg	5	12	7	6						
Mn	0.002	0.002	<0.001	<0.001						
Mo	<0.001	<0.001	<0.001	<0.001						
Na	117	178	122	85						
Ni	<0.001	<0.001	<0.001	<0.001						
Pb	<0.001	<0.001	<0.001	<0.001						
SO_4	10	18	12	10						
Sb	<0.001	<0.001	<0.001	<0.001						
Se	<0.01	<0.01	<0.01	<0.01						
V	<0.01	<0.01	<0.01	<0.01						
Zn	<0.005	<0.005	<0.005	<0.005						
Calculations**										
SO_4 Release Rate	3.2	7.3	5.0	4.1	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative SO_4 Release	3.2	10.5	15.6	19.7	20	20	20	20	20	20
Ca Release Rate	0.6	2.4	1.3	0.8	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative Ca Release	0.6	3.1	4.3	5.2	5.2	5.2	5.2	5.2	5.2	5.2
Mg Release Rate	1.6	4.9	2.9	2.4	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative Mg Release	1.6	6.5	9.4	11.9	11.9	11.9	11.9	11.9	11.9	11.9
Residual ANC (%)	100	99	99	99	99	99	99	99	99	99
Residual Sulfur (%)	98	94	91	89	89	89	89	89	89	89
SO_4/(Ca+Mg) molar ratio	0.4	0.3	0.3	0.4	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.
** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur
MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB014

RGS-2 KLC Test Results: 1728D Sandstone

	Sample Mass (kg)		2.0	Total S (%)		0.04	ANC (kg H_2SO_4/t)			79.2
	pH(1:5)		9.6	CRS (%)		-	NAPP (kg H_2SO_4/t)			-78.1
	EC(1:5) (µS/cm)		740	MPA (kg H_2SO_4/t)		1.1	ANC:MPA ratio			73.9
Date	**27-Jan-12**	**9-Feb-12**	**24-Feb-12**	**9-Mar-12**	**23-Mar-12**	**6-Apr-12**	**20-Apr-12**	**4-May-12**	**18-May-12**	**1-Jun-12**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.594	0.501	0.476	0.682						
Cum. Volume (L)	0.59	1.10	1.57	2.25	2.25	2.25	2.25	2.25	2.25	2.25
Pore Volumes	0.4	0.8	1.2	1.7	1.7	1.7	1.7	1.7	1.7	1.7
pH	9.79	9.48	8.78	9.03						
EC (µS/cm)	101	391	507	220						
Acidity (mg/L)*	<1	<1	<1	<1						
Alkalinity (mg/L)*	45	64	64	43						
Net Alkalinity (mg/L)*	45	64	64	64						
Dissolved elements (mg/L)										
Al	0.32	0.04	<0.01	0.06						
As	0.005	0.008	0.006	0.004						
B	<0.05	<0.05	<0.05	<0.05						
Ca	<1	<1	<1	<1						
Cd	<0.0001	<0.0001	<0.0001	<0.0001						
Cl	5	60	86	26						
Co	<0.001	<0.001	<0.001	<0.001						
Cr	<0.001	<0.001	<0.001	<0.001						
Cu	<0.001	<0.001	0.002	<0.001						
Fe	0.07	<0.05	<0.05	<0.05						
Hg	-	-	-	-						
K	<1	2	3	2						
Mg	<1	<1	<1	<1						
Mn	<0.001	<0.001	<0.001	<0.001						
Mo	0.005	0.075	0.081	0.030						
Na	20	74	101	44						
Ni	<0.001	<0.001	<0.001	<0.001						
Pb	<0.001	<0.001	<0.001	<0.001						
SO_4	1	24	44	21						
Sb	<0.001	<0.001	<0.001	<0.001						
Se	<0.01	<0.01	<0.01	<0.01						
V	<0.01	<0.01	<0.01	<0.01						
Zn	<0.005	<0.005	<0.005	<0.005						
Calculations**										
SO_4 Release Rate	0.3	6.0	10.5	7.2	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative SO_4 Release	0.3	6.3	16.8	23.9	24	24	24	24	24	24
Ca Release Rate	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative Ca Release	0.1	0.3	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Mg Release Rate	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative Mg Release	0.1	0.3	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Residual ANC (%)	100	100	100	100	100	100	100	100	100	100
Residual Sulfur (%)	100	99	99	98	98	98	98	98	98	98
SO_4/(Ca+Mg) molar ratio	0.3	7.6	13.9	6.6	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.
** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur
MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB015

RGS-3 KLC Test Results: 1720D Sandstone/Carb. Sandstone

	Sample Mass (kg)		2.0	Total S (%)		0.02	ANC (kg H_2SO_4/t)			4.4
	pH(1:5)		7.8	CRS (%)		-	NAPP (kg H_2SO_4/t)			-3.9
	EC(1:5) (µS/cm)		63	MPA (kg H_2SO_4/t)		0.5	ANC:MPA ratio			9.5
Date	**27-Jan-12**	**9-Feb-12**	**24-Feb-12**	**9-Mar-12**	**23-Mar-12**	**6-Apr-12**	**20-Apr-12**	**4-May-12**	**18-May-12**	**1-Jun-12**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.646	0.592	0.778	0.738						
Cum. Volume (L)	0.65	1.24	2.02	2.75	2.75	2.75	2.75	2.75	2.75	2.75
Pore Volumes	0.6	1.1	1.8	2.4	2.4	2.4	2.4	2.4	2.4	2.4
pH	7.34	7.33	7.39	7.14						
EC (µS/cm)	84	103	108	115.2						
Acidity (mg/L)*	2	2	4	2						
Alkalinity (mg/L)*	5	12	13	10						
Net Alkalinity (mg/L)*	3	10	9	8						
Dissolved elements (mg/L)										
Al	0.97	4.02	0.74	1.22						
As	0.002	0.009	0.006	0.007						
B	<0.05	<0.05	<0.05	<0.05						
Ca	<1	<1	<1	<1						
Cd	<0.0001	<0.0001	<0.0001	<0.0001						
Cl	11	8	10	7						
Co	0.002	0.003	0.002	0.004						
Cr	<0.001	0.003	<0.001	<0.001						
Cu	<0.001	0.002	<0.001	<0.001						
Fe	0.17	0.67	0.13	0.20						
Hg	-	-	-	-						
K	<1	1	1	1						
Mg	<1	<1	<1	<1						
Mn	0.003	0.003	0.002	0.003						
Mo	0.003	0.01	0.007	0.007						
Na	14	19	24	19						
Ni	0.003	0.004	0.002	0.005						
Pb	<0.001	0.003	<0.001	0.001						
SO_4	16	23	34	30						
Sb	<0.001	0.001	<0.001	0.001						
Se	<0.01	<0.01	<0.01	<0.01						
V	<0.01	<0.01	<0.01	<0.01						
Zn	0.019	0.046	0.016	0.038						
Calculations**										
SO_4 Release Rate	5.2	6.8	13.2	11.1	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative SO_4 Release	5.2	12.0	25.2	36.3	36	36	36	36	36	36
Ca Release Rate	0.2	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative Ca Release	0.2	0.3	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Mg Release Rate	0.2	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative Mg Release	0.2	0.3	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Residual ANC (%)	100	100	100	100	100	100	100	100	100	100
Residual Sulfur (%)	99	98	96	94	94	94	94	94	94	94
SO_4/(Ca+Mg) molar ratio	5.0	7.2	10.7	9.5	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB016

RGS-4 KLC Test Results: 1587D Sandstone/Claystone

	Sample Mass (kg)		2.0	Total S (%)		0.07	ANC (kg H_2SO_4/t)			3.6
	pH(1:5)		7.4	CRS (%)		-	NAPP (kg H_2SO_4/t)			-1.5
	EC(1:5) (µS/cm)		313	MPA (kg H_2SO_4/t)		2.0	ANC:MPA ratio			1.8
Date	**27-Jan-12**	**9-Feb-12**	**24-Feb-12**	**9-Mar-12**	**23-Mar-12**	**6-Apr-12**	**20-Apr-12**	**4-May-12**	**18-May-12**	**1-Jun-12**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.506	0.706	0.846	0.716						
Cum. Volume (L)	0.51	1.21	2.06	2.77	2.77	2.77	2.77	2.77	2.77	2.77
Pore Volumes	0.4	0.9	1.5	2.1	2.1	2.1	2.1	2.1	2.1	2.1
pH	6.59	6.7	6.9	6.71						
EC (µS/cm)	195	331	131	139.6						
Acidity (mg/L)*	3	4	2	2						
Alkalinity (mg/L)*	7	5	4	4						
Net Alkalinity (mg/L)*	4	1	2	2						
Dissolved elements (mg/L)										
Al	0.17	0.02	0.13	0.13						
As	<0.001	<0.001	<0.001	<0.001						
B	<0.05	<0.05	<0.05	<0.05						
Ca	<1	1	<1	<1						
Cd	<0.0001	<0.0001	<0.0001	<0.0001						
Cl	45	87	39	31						
Co	<0.001	<0.001	<0.001	<0.001						
Cr	<0.001	<0.001	<0.001	<0.001						
Cu	0.001	<0.001	<0.001	<0.001						
Fe	0.21	0.06	0.28	0.25						
Hg	-	-	-	-						
K	<1	1	<1	<1						
Mg	<1	2	<1	<1						
Mn	<0.001	0.002	<0.001	0.001						
Mo	<0.001	<0.001	<0.001	<0.001						
Na	32	57	31	24						
Ni	<0.001	<0.001	<0.001	<0.001						
Pb	<0.001	<0.001	<0.001	<0.001						
SO_4	6	6	5	6						
Sb	<0.001	<0.001	<0.001	<0.001						
Se	<0.01	<0.01	<0.01	<0.01						
V	<0.01	<0.01	<0.01	<0.01						
Zn	<0.005	<0.005	<0.005	<0.005						
Calculations**										
SO_4 Release Rate	1.5	2.1	2.1	2.1	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative SO_4 Release	1.5	3.6	5.8	7.9	8	8	8	8	8	8
Ca Release Rate	0.1	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative Ca Release	0.1	0.5	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Mg Release Rate	0.1	0.7	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative Mg Release	0.1	0.8	1.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Residual ANC (%)	100	100	100	100	100	100	100	100	100	100
Residual Sulfur (%)	100	100	100	100	100	100	100	100	100	100
SO_4/(Ca+Mg) molar ratio	1.9	0.6	1.6	1.9	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.
** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur
MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB017

RGS-5 KLC Test Results: 1696D Siltstone/Sandstone

	Sample Mass (kg)		2.0	Total S (%)		0.15	ANC (kg H_2SO_4/t)			4.1
	pH(1:5)		5.5	CRS (%)		-	NAPP (kg H_2SO_4/t)			0.5
	EC(1:5) (µS/cm)		290	MPA (kg H_2SO_4/t)		4.5	ANC:MPA ratio			0.9
Date	**27-Jan-12**	**9-Feb-12**	**24-Feb-12**	**9-Mar-12**	**23-Mar-12**	**6-Apr-12**	**20-Apr-12**	**4-May-12**	**18-May-12**	**1-Jun-12**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.594	0.656	0.656	0.71						
Cum. Volume (L)	0.59	1.25	1.91	2.62	2.62	2.62	2.62	2.62	2.62	2.62
Pore Volumes	0.5	1.1	1.7	2.3	2.3	2.3	2.3	2.3	2.3	2.3
pH	5.94	5.05	4.99	5.03						
EC (µS/cm)	137	335	302	261						
Acidity (mg/L)*	9	5	6	7						
Alkalinity (mg/L)*	5	2	2	4						
Net Alkalinity (mg/L)*	-4	-3	-4	-3						
Dissolved elements (mg/L)										
Al	0.04	<0.01	0.08	0.06						
As	<0.001	<0.001	<0.001	<0.001						
B	<0.05	<0.05	<0.05	<0.05						
Ca	4	10	17	10						
Cd	<0.0001	<0.0001	0.0003	0.0004						
Cl	3	3	2	2						
Co	0.028	<0.001	0.078	0.077						
Cr	<0.001	<0.001	<0.001	<0.001						
Cu	<0.001	<0.001	0.015	0.015						
Fe	<0.05	<0.05	0.53	0.14						
Hg	-	-	-	-						
K	2	4	5	3						
Mg	1	3	5	4						
Mn	0.07	<0.001	0.293	0.320						
Mo	<0.001	<0.001	<0.001	<0.001						
Na	17	46	56	31						
Ni	0.047	<0.001	0.129	0.130						
Pb	<0.001	<0.001	<0.001	<0.001						
SO_4	46	136	180	101						
Sb	<0.001	<0.001	<0.001	<0.001						
Se	<0.01	<0.01	0.03	0.03						
V	<0.01	<0.01	<0.01	<0.01						
Zn	0.024	<0.005	0.148	0.142						
Calculations**										
SO_4 Release Rate	13.7	44.6	59.0	35.9	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative SO_4 Release	13.7	58.3	117.3	153.2	153	153	153	153	153	153
Ca Release Rate	1.2	3.3	5.6	3.6	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative Ca Release	1.2	4.5	10.0	13.6	13.6	13.6	13.6	13.6	13.6	13.6
Mg Release Rate	0.3	1.0	1.6	1.4	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative Mg Release	0.3	1.3	2.9	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Residual ANC (%)	100	100	99	99	99	99	99	99	99	99
Residual Sulfur (%)	100	99	97	97	97	97	97	97	97	97
SO_4/(Ca+Mg) molar ratio	3.4	3.8	3.0	2.5	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.

** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur

MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

RKLC-OB018

RGS-6 KLC Test Results: 1727D Silty/Sandstone

	Sample Mass (kg)		2.0	Total S (%)		0.04	ANC (kg H_2SO_4/t)			107
	pH(1:5)		9.5	CRS (%)		-	NAPP (kg H_2SO_4/t)			-106
	EC(1:5) (µS/cm)		493	MPA (kg H_2SO_4/t)		1.1	ANC:MPA ratio			100
Date	**27-Jan-12**	**9-Feb-12**	**24-Feb-12**	**9-Mar-12**	**23-Mar-12**	**6-Apr-12**	**20-Apr-12**	**4-May-12**	**18-May-12**	**1-Jun-12**
Week	**0**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**
Leach Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Volume Collected (L)	0.636	0.664	0.845	0.822						
Cum. Volume (L)	0.64	1.30	2.15	2.97	2.97	2.97	2.97	2.97	2.97	2.97
Pore Volumes	0.5	1.0	1.6	2.2	2.2	2.2	2.2	2.2	2.2	2.2
pH	9.8	9.81	9.48	9.28						
EC (µS/cm)	225	192	124	129.4						
Acidity (mg/L)*	<1	<1	<1	<1						
Alkalinity (mg/L)*	205	76	69	46						
Net Alkalinity (mg/L)*	205	76	69	69						
Dissolved elements (mg/L)										
Al	0.32	0.77	0.2	0.18						
As	0.057	0.015	0.009	0.010						
B	<0.05	<0.05	<0.05	<0.05						
Ca	<1	<1	<1	1						
Cd	<0.0001	<0.0001	<0.0001	<0.0001						
Cl	9	14	16	9						
Co	<0.001	<0.001	<0.001	<0.001						
Cr	<0.001	<0.001	<0.001	<0.001						
Cu	<0.001	<0.001	0.001	0.003						
Fe	0.06	0.17	0.05	<0.05						
Hg	-	-	-	-						
K	2	2	<1	2						
Mg	<1	<1	<1	<1						
Mn	<0.001	0.002	<0.001	0.001						
Mo	0.009	0.006	0.004	0.003						
Na	49	35	22	25						
Ni	<0.001	<0.001	<0.001	<0.001						
Pb	<0.001	<0.001	<0.001	<0.001						
SO_4	2	3	4	8						
Sb	0.002	<0.001	<0.001	<0.001						
Se	<0.01	<0.01	<0.01	<0.01						
V	0.02	<0.01	<0.01	<0.01						
Zn	<0.005	<0.005	<0.005	<0.005						
Calculations**										
SO_4 Release Rate	0.6	1.0	1.7	3.3	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative SO_4 Release	0.6	1.6	3.3	6.6	7	7	7	7	7	7
Ca Release Rate	0.2	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative Ca Release	0.2	0.3	0.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Mg Release Rate	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative Mg Release	0.2	0.3	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Residual ANC (%)	100	100	100	100	100	100	100	100	100	100
Residual Sulfur (%)	100	100	100	99	99	99	99	99	99	99
SO_4/(Ca+Mg) molar ratio	0.6	0.9	1.3	1.8	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

< indicates less than the analytical detecti< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCO3/L.
** SO4, Ca and Mg release rates calculated** SO4, Ca and Mg release rates calculated in mg/kg/flush. Total S = total sulfur; CRS = Chromium reducible sulfur
MPA = Maximum Potential Acidity, ANC = AMPA = Maximum Potential Acidity, ANC = Acid Neutralising Capacity, and NAPP = Net Acid Producing Potential

ATTACHMENT E

ALS Laboratory Results

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1023365**	Page	: 1 of 3
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7123
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: Kevins Corner Project	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 17-DEC-2010
Sampler	: A. Robertson	Issue Date	: 18-JAN-2011
Site	: Kevins Corner		
		No. of samples received	: 3
Quote number	: BN/567/10	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Bne Acid Sulphate Soils
Kim McCabe	Senior Inorganic Chemist	Inorganics
Myles.Clark	Acid Sulfate Soils Supervisor	Bne Acid Sulphate Soils
Myles.Clark	Acid Sulfate Soils Supervisor	Inorganics
Myles.Clark	Acid Sulfate Soils Supervisor	Stafford Minerals - AY

General Comments

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Where moisture determination has been performed, results are reported on a dry weight basis.

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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.

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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

- **ANC Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong.**

Analytical Results

Sub-Matrix: SOIL			Client sample ID	Tailings - 250	Rejects + 250	Product + 250	----	----
			Client sampling date / time	[17-DEC-2010]	[17-DEC-2010]	[17-DEC-2010]	----	----
Compound	CAS Number	LOR	Unit	EB1023365-001	EB1023365-002	EB1023365-003	----	----
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.4	4.1	4.8	----	----
EA009: Nett Acid Production Potential								
^ Acid Production Potential (APP)	----	0.5	kg H2SO4/t	18.0	67.3	8.3	----	----
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	11.8	66.8	5.0	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	356	1950	585	----	----
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	6.2	0.5	3.3	----	----
^ ANC as CaCO3	----	0.1	% CaCO3	0.6	<0.1	0.3	----	----
Fizz Rating	----	0	Fizz Unit	0	0	0	----	----
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	0.257	2.02	0.062	----	----
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.59	2.20	0.27	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1103269**	Page	: 1 of 6
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: C/- RGS ENVIRONMENTAL 18 INGLIS ST GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 7 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: ----	Facsimile	: +61 7 3243 7218
Project	: Kevins Corner Project	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 22-FEB-2011
Sampler	: ----	Issue Date	: 06-APR-2011
Site	: Kevins Corner		
		No. of samples received	: 6
Quote number	: BN/644/10	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
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Signatories

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

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Metals Production Chemist	Brisbane Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Brisbane Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Stafford Minerals - AY
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Myles.Clark	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils

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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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.

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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

- **$$: NATA accreditation does not cover performance of this service.**
- **ANC Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong.**
- **EG020-F (Dissolved Metals): LCS recovery for Sb falls outside Dynamic Control Limits. It is however within ALS Static Control Limits and hence deemed acceptable.**

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Fine Tailings 1492L	Coarse Reject 1492L	Raw Coal 1492L	----	----
			Client sampling date / time	01-MAR-2011 14:00	01-MAR-2011 14:00	01-MAR-2011 14:00	----	----
Compound	CAS Number	LOR	Unit	EB1103269-001	EB1103269-002	EB1103269-003	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.09	5.58	7.18	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	54	48	39	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	8	204	3	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	15	42	2	----	----
Magnesium	7439-95-4	1	mg/L	2	7	<1	----	----
Sodium	7440-23-5	1	mg/L	18	54	27	----	----
Potassium	7440-09-7	1	mg/L	1	6	1	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.03	0.03	0.27	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Boron	7440-42-8	0.05	mg/L	0.39	0.44	0.35	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	0.151	1.02	0.007	----	----
Barium	7440-39-3	0.001	mg/L	0.162	0.360	0.109	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0005	<0.0001	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.011	<0.001	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.003	0.003	0.002	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Rubidium	7440-17-7	0.001	mg/L	<0.001	0.008	<0.001	----	----
Lithium	7439-93-2	0.001	mg/L	0.007	0.084	0.004	----	----

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Fine Tailings 1492L	Coarse Reject 1492L	Raw Coal 1492L	----	----
			Client sampling date / time	01-MAR-2011 14:00	01-MAR-2011 14:00	01-MAR-2011 14:00	----	----
Compound	CAS Number	LOR	Unit	EB1103269-001	EB1103269-002	EB1103269-003	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	**0.002**	----	----
Manganese	7439-96-5	0.001	mg/L	**0.054**	**0.984**	**0.004**	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	**0.002**	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	**0.005**	<0.001	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	**0.002**	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	**0.02**	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	**0.002**	<0.001	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	**0.017**	**0.569**	**0.019**	----	----
Iron	7439-89-6	0.05	mg/L	**0.07**	**6.51**	**0.69**	----	----
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	**0.4**	**0.5**	**0.6**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	**0.02**	----	----

Analytical Results

Sub-Matrix: PULP			Client sample ID	Fine Tailings 1492L	Coarse Reject 1492L	Raw Coal 1492L	----	----
			Client sampling date / time	22-FEB-2011 11:00	22-FEB-2011 11:00	22-FEB-2011 11:00	----	----
Compound	CAS Number	LOR	Unit	EB1103269-001	EB1103269-002	EB1103269-003	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	1230	262	----	----
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	4.9	1.3	5.1	----	----
^ ANC as CaCO3	----	0.1	% CaCO3	0.5	0.1	0.5	----	----
Fizz Rating	----	0	Fizz Unit	0	0	0	----	----
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	0.280	0.841	0.123	----	----
EA046 Acid Buffering Characterisation Curves								
Dummy Analyte	----	-	-	----	----	----	----	----
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	1.03	1.62	0.67	----	----

Analytical Results

Sub-Matrix: SOIL			Client sample ID	Fine Tailings 1492L	Coarse Reject 1492L	Raw Coal 1492L	----	----
			Client sampling date / time	22-FEB-2011 11:00	22-FEB-2011 11:00	22-FEB-2011 11:00	----	----
Compound	CAS Number	LOR	Unit	EB1103269-001	EB1103269-002	EB1103269-003	----	----
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.2	4.2	6.6	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	256	----	----	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1106504**	Page	: 1 of 4
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: C/- RGS ENVIRONMENTAL 18 INGLIS ST GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 7 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: ----	Facsimile	: +61 7 3243 7218
Project	: Kevins Corner Project - 43626669	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 04-APR-2011
Sampler	: Alan Robertson	Issue Date	: 14-APR-2011
Site	: Kevins Corne4r		
		No. of samples received	: 3
Quote number	: BN/644/10	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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Signatories

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Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

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Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Tailings -250 1302L/1303/L	Rejects +250 1302L/1303/L	Product Coal +250 1302L/1303/L	----	----
			Client sampling date / time	06-APR-2011 14:00	06-APR-2011 14:00	06-APR-2011 14:00	----	----
Compound	CAS Number	LOR	Unit	EB1106504-001	EB1106504-002	EB1106504-003	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.89	4.24	5.47	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	53	538	92	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	36	253	136	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	23	114	39	----	----
Magnesium	7439-95-4	1	mg/L	6	39	12	----	----
Sodium	7440-23-5	1	mg/L	23	54	61	----	----
Potassium	7440-09-7	1	mg/L	2	8	5	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.44	17.2	0.45	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	0.006	<0.001	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.015	<0.001	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	0.003	<0.001	----	----
Boron	7440-42-8	0.05	mg/L	1.51	1.28	1.74	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	0.216	1.79	0.494	----	----
Barium	7440-39-3	0.001	mg/L	0.830	0.208	1.86	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	0.005	<0.001	----	----
Titanium	7440-32-6	0.01	mg/L	0.02	<0.01	<0.01	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	0.010	<0.001	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0079	0.0004	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Cobalt	7440-48-4	0.001	mg/L	0.004	0.100	0.010	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	0.001	<0.001	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	0.002	<0.001	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	0.001	----	----
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.011	0.196	0.010	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	0.016	<0.001	----	----
Rubidium	7440-17-7	0.001	mg/L	0.004	0.032	0.013	----	----

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Tailings -250 1302L/1303/L	Rejects +250 1302L/1303/L	Product Coal +250 1302L/1303/L	----	----
			Client sampling date / time	06-APR-2011 14:00	06-APR-2011 14:00	06-APR-2011 14:00	----	----
Compound	CAS Number	LOR	Unit	EB1106504-001	EB1106504-002	EB1106504-003	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Lithium	7439-93-2	0.001	mg/L	**0.013**	**0.135**	**0.022**	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	**0.025**	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	**0.274**	**3.26**	**0.863**	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	**0.013**	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	**0.003**	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	**0.004**	**0.072**	**0.005**	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	**0.004**	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	**0.008**	**0.001**	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	**0.04**	**0.01**	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	**0.002**	<0.001	----	----
Tin	7440-31-5	0.001	mg/L	**0.003**	**0.001**	<0.001	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	**0.028**	<0.001	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	**0.002**	<0.001	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	**0.709**	**2.54**	**1.31**	----	----
Iron	7439-89-6	0.05	mg/L	**0.18**	**109**	**0.39**	----	----
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	**0.3**	**1.6**	**0.4**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	**0.03**	**0.02**	----	----

Finalized Date: 22- MAR- 2011
Account: URSAUS

Australian Laboratory Services Pty. Ltd.
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www.alsglobal.com

ALS Minerals

CERTIFICATE BR11025922

Project: Kevins Corner
P.O. No.:
This report is for 3 Pulp samples submitted to our lab in Brisbane, QLD, Australia on 25- FEB- 2011.
The following have access to data associated with this certificate:

TONY JONG	ALAN ROBERTSON 2	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
LOG- 22	Sample login - Rcd w/o BarCode
LEV- 01	Waste Disposal Levy
ASH- 01	Ashing of carbons/soils

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME- MS42	Up to 34 elements by ICP- MS	ICP- MS
C- IR07	Total Carbon (Leco)	LECO
ME- MS61	48 element four acid ICP- MS	

To: URS AUSTRALIA PTY LTD
ATTN: ALAN ROBERTSON 2
LEVEL 14
240 QUEEN STREET
BRISBANE QLD 4000

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 *****

Comments: All samples were ashed prior to ME- MS61 digestion.

Signature: Shaun Kenny, Brisbane Laboratory Manager

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ALS Minerals

Finalized Date: 22- MAR- 2011
Account: URSAUS

Project: Kevins Corner

CERTIFICATE OF ANALYSIS BR11025922

Sample Description	Method / Analyte / Units / LOR	ME- MS61 Ag ppm 0.01	ME- MS61 Al % 0.01	ME- MS61 As ppm 0.2	ME- MS61 Ba ppm 10	ME- MS61 Be ppm 0.05	ME- MS61 Bi ppm 0.01	ME- MS61 Ca % 0.01	ME- MS61 Cd ppm 0.02	ME- MS61 Ce ppm 0.01	ME- MS61 Co ppm 0.1	ME- MS61 Cr ppm 1	ME- MS61 Cs ppm 0.05	ME- MS61 Cu ppm 0.2	ME- MS61 Fe % 0.01	ME- MS61 Ga ppm 0.05
Fine Tailings 1492L		0.43	2.09	3.9	40	0.95	0.31	0.14	0.30	17.15	2.6	13	0.21	27.7	3.32	8.52
Coarse Reject 1492L		7.58	9.91	28.9	70	0.62	0.49	0.11	0.24	9.84	1.6	4	0.65	15.1	6.14	21.8
Raw Coal 1492L		1.23	4.26	2.3	50	1.43	0.45	0.10	0.24	9.29	4.1	7	0.35	15.4	2.62	13.45

Comments: All samples were ashed prior to ME- MS61 digestion.

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

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ALS Minerals

Finalized Date: 22- MAR- 2011
Account: URSAUS

Project: Kevins Corner

CERTIFICATE OF ANALYSIS BR11025922

Sample Description	Method / Analyte / Units / LOR	ME- MS61 Ge ppm 0.05	ME- MS61 Hf ppm 0.1	ME- MS61 In ppm 0.005	ME- MS61 K % 0.01	ME- MS61 La ppm 0.5	ME- MS61 Li ppm 0.2	ME- MS61 Mg % 0.01	ME- MS61 Mn ppm 5	ME- MS61 Mo ppm 0.05	ME- MS61 Na % 0.01	ME- MS61 Nb ppm 0.1	ME- MS61 Ni ppm 0.2	ME- MS61 P ppm 10	ME- MS61 Pb ppm 0.5	ME- MS61 Rb ppm 0.1
Fine Tailings 1492L		0.49	2.4	0.031	0.04	7.2	8.9	0.05	329	4.14	0.02	4.3	5.0	40	17.1	1.8
Coarse Reject 1492L		0.21	3.1	0.056	0.22	3.6	40.9	0.08	497	2.73	0.04	8.9	1.9	160	33.0	6.2
Raw Coal 1492L		0.24	2.8	0.041	0.12	3.3	20.2	0.05	244	1.99	0.04	5.5	6.4	70	23.2	2.9

Comments: All samples were ashed prior to ME- MS61 digestion.

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

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ALS Minerals

Finalized Date: 22- MAR- 2011
Account: URSAUS

Project: Kevins Corner

CERTIFICATE OF ANALYSIS BR11025922

Sample Description	Method / Analyte / Units / LOR	ME- MS61 Re ppm 0.002	ME- MS61 S % 0.01	ME- MS61 Sb ppm 0.05	ME- MS61 Sc ppm 0.1	ME- MS61 Se ppm 1	ME- MS61 Sn ppm 0.2	ME- MS61 Sr ppm 0.2	ME- MS61 Ta ppm 0.05	ME- MS61 Te ppm 0.05	ME- MS61 Th ppm 0.2	ME- MS61 Ti % 0.005	ME- MS61 Tl ppm 0.02	ME- MS61 U ppm 0.1	ME- MS61 V ppm 1	ME- MS61 W ppm 0.1
Fine Tailings 1492L		<0.002	0.12	0.74	3.8	<1	1.4	18.5	0.23	0.08	5.4	0.099	1.32	1.6	26	1.1
Coarse Reject 1492L		<0.002	0.07	0.39	4.7	1	3.3	22.4	0.92	0.09	5.9	0.351	3.79	3.6	16	2.7
Raw Coal 1492L		<0.002	0.08	0.60	4.8	1	1.9	20.4	0.48	0.07	5.3	0.185	0.60	2.4	24	1.6

Comments: All samples were ashed prior to ME- MS61 digestion.

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

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ALS Minerals

Finalized Date: 22- MAR- 2011
Account: URSAUS

Project: Kevins Corner

CERTIFICATE OF ANALYSIS BR11025922

Sample Description	Method / Analyte / Units / LOR	ME- MS61 Y ppm 0.1	ME- MS61 Zn ppm 2	ME- MS61 Zr ppm 0.5	ME- MS42 Hg ppm 0.005	ME- MS42 As ppm 0.1	ME- MS42 Sb ppm 0.05	ME- MS42 Se ppm 0.2	ME- MS42 Te ppm 0.01	ME- MS42 Tl ppm 0.02	C- IR07 C % 0.01
Fine Tailings 1492L		9.5	69	105.5	0.113	4.2	0.20	1.9	0.06	0.25	>50
Coarse Reject 1492L		4.8	16	62.9	0.526	28.1	0.21	4.5	0.07	2.52	11.30
Raw Coal 1492L		6.0	17	88.3	0.059	1.6	0.19	1.8	0.07	0.10	45.6

Comments: All samples were ashed prior to ME- MS61 digestion.

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

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Finalized Date: 22- MAR- 2011
Account: URSAUS

Project: Kevins Corner

CERTIFICATE OF ANALYSIS BR11025922

Method	CERTIFICATE COMMENTS
ME- MS61	REE's may not be totally soluble in this method.

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Finalized Date: 24-JAN-2011
Account: RGSENV

CERTIFICATE BR11003504

Project: Kevins Corner Project
P.O. No.:
This report is for 3 Pulp samples submitted to our lab in Brisbane, QLD, Australia on 14-JAN-2011.
The following have access to data associated with this certificate:

TONY JONG	ALAN ROBERTSON	

SAMPLE PREPARATION

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

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME-MS61	48 element four acid ICP-MS

To: RGS ENVIRONMENTAL PTY LTD
ATTN: ALAN ROBERTSON
18 INGLIS STREET
GRANGE QLD 4051

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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ALS Minerals

Finalized Date: 24- JAN- 2011
Account: RGSENV

Project: Kevins Corner Project

CERTIFICATE OF ANALYSIS BR11003504

Sample Description	Method / Analyte / Units / LOR	ME- MS61 Ag ppm 0.01	ME- MS61 Al % 0.01	ME- MS61 As ppm 0.2	ME- MS61 Ba ppm 10	ME- MS61 Be ppm 0.05	ME- MS61 Bi ppm 0.01	ME- MS61 Ca % 0.01	ME- MS61 Cd ppm 0.02	ME- MS61 Ce ppm 0.01	ME- MS61 Co ppm 0.1	ME- MS61 Cr ppm 1	ME- MS61 Cs ppm 0.05	ME- MS61 Cu ppm 0.2	ME- MS61 Fe % 0.01	ME- MS61 Ga ppm 0.05
Tailings - 250		0.04	2.56	1.9	60	1.45	0.21	0.12	0.10	27.1	3.3	32	0.36	12.7	2.20	8.43
Rejects + 250		0.11	13.50	64.6	140	0.98	0.75	0.14	0.23	73.6	2.3	16	1.30	19.7	4.75	29.7
Product + 250		0.02	1.88	1.3	40	3.41	0.30	0.12	0.08	30.3	5.6	28	0.23	12.9	0.77	6.62

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

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Finalized Date: 24- JAN- 2011
Account: RGSENV

Project: Kevins Corner Project

CERTIFICATE OF ANALYSIS BR11003504

Sample Description	Method / Analyte / Units / LOR	ME- MS61 Ge ppm 0.05	ME- MS61 Hf ppm 0.1	ME- MS61 In ppm 0.005	ME- MS61 K % 0.01	ME- MS61 La ppm 0.5	ME- MS61 Li ppm 0.2	ME- MS61 Mg % 0.01	ME- MS61 Mn ppm 5	ME- MS61 Mo ppm 0.05	ME- MS61 Na % 0.01	ME- MS61 Nb ppm 0.1	ME- MS61 Ni ppm 0.2	ME- MS61 P ppm 10	ME- MS61 Pb ppm 0.5	ME- MS61 Rb ppm 0.1
Tailings - 250		0.11	1.9	0.030	0.09	12.8	11.3	0.05	237	0.88	0.02	3.7	10.2	50	10.7	5.2
Rejects +250		0.22	4.1	0.086	0.38	34.6	66.1	0.13	244	4.19	0.06	10.8	6.0	210	32.2	20.7
Product +250		0.09	1.9	0.029	0.04	14.4	10.6	0.04	82	1.01	0.03	3.1	15.6	30	9.7	2.6

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

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Finalized Date: 24- JAN- 2011
Account: RGSENV

Project: Kevins Corner Project

CERTIFICATE OF ANALYSIS BR11003504

Sample Description	Method / Analyte / Units / LOR	ME- MS61 Re ppm 0.002	ME- MS61 S % 0.01	ME- MS61 Sb ppm 0.05	ME- MS61 Sc ppm 0.1	ME- MS61 Se ppm 1	ME- MS61 Sn ppm 0.2	ME- MS61 Sr ppm 0.2	ME- MS61 Ta ppm 0.05	ME- MS61 Te ppm 0.05	ME- MS61 Th ppm 0.2	ME- MS61 Ti % 0.005	ME- MS61 Tl ppm 0.02	ME- MS61 U ppm 0.1	ME- MS61 V ppm 1	ME- MS61 W ppm 0.1
Tailings - 250		<0.002	0.30	0.53	4.1	1	1.1	16.8	0.24	0.07	5.1	0.106	0.87	1.5	21	0.9
Rejects + 250		0.002	2.43	0.51	7.8	6	4.8	34.9	1.20	0.16	14.5	0.477	5.05	4.5	25	2.9
Product + 250		0.002	0.39	0.83	5.0	2	1.0	18.5	0.22	0.11	5.5	0.101	0.53	1.6	23	0.7

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

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Finalized Date: 24- JAN- 2011
Account: RGSENV

Project: Kevins Corner Project

CERTIFICATE OF ANALYSIS BR11003504

Sample Description	Method Analyte Units LOR	ME- MS61 Y ppm 0.1	ME- MS61 Zn ppm 2	ME- MS61 Zr ppm 0.5
Tailings - 250		11.2	56	65.5
Rejects + 250		20.2	23	95.5
Product + 250		15.9	15	67.3

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

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Finalized Date: 24- JAN- 2011
Account: RGSENV

Project: Kevins Corner Project

CERTIFICATE OF ANALYSIS BR11003504

Method	CERTIFICATE COMMENTS
ME- MS61	REE's may not be totally soluble in this method.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1100418**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7123
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 10-JAN-2011
Sampler	: ----	Issue Date	: 27-JAN-2011
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/567/10	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Spectroscopist	Inorganics
Herman Lin	Laboratory Coordinator	Inorganics
Luke Witham	Senior Inorganic Chemist	Inorganics
Nanthini Coilparampil	Senior Inorganic Chemist	Inorganics
Nikki Stepniewski	Non-metallic Supervisor	Inorganics
Sarah Millington	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EG020: An unpreserved aliquot from the natural bottle was used for analysis**

Analytical Results

Sub-Matrix: WATER			Client sample ID	kevins Corner (Product Coal)	kevins Corner (Rejects)	kevins Corner (Tailings)	kevins Corner (Product Coal)	kevins Corner (Rejects)
			Client sampling date / time	17-DEC-2009 15:00	17-DEC-2009 15:00	17-DEC-2009 15:00	31-DEC-2010 15:00	31-DEC-2010 15:00
Compound	CAS Number	LOR	Unit	EB1100418-001	EB1100418-002	EB1100418-003	EB1100418-004	EB1100418-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.56	3.70	6.69	5.35	3.62
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	292	1820	1250	396	2040
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	5	<1	64	3	<1
Total Alkalinity as CaCO3	----	1	mg/L	5	<1	64	3	<1
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	10	269	<1	10	77
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	43	458	283	34	182
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	43	245	150	83	528
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	14	84	96	19	105
Magnesium	7439-95-4	1	mg/L	4	25	28	6	46
Sodium	7440-23-5	1	mg/L	22	77	99	34	150
Potassium	7440-09-7	1	mg/L	2	10	10	3	12
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.08	4.46	<0.01	0.12	3.33
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.002	0.024	0.014	0.004	0.038
Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0021	0.0001	<0.0001	0.0010
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	0.065	0.002	0.001	0.073
Cobalt	7440-48-4	0.001	mg/L	0.008	0.062	0.012	0.004	0.080
Nickel	7440-02-0	0.001	mg/L	0.005	0.052	0.009	0.002	0.082
Lead	7439-92-1	0.001	mg/L	<0.001	0.046	<0.001	0.001	0.046
Zinc	7440-66-6	0.005	mg/L	0.034	0.168	0.149	0.018	0.496
Manganese	7439-96-5	0.001	mg/L	0.110	1.06	0.457	0.205	2.54
Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.002	0.002	<0.001	0.005
Selenium	7782-49-2	0.01	mg/L	0.01	0.10	0.11	0.03	0.16
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.07	<0.05	1.16	0.09	0.06
Iron	7439-89-6	0.05	mg/L	5.66	111	<0.05	0.59	12.9

Analytical Results

Sub-Matrix: WATER			Client sample ID	kevins Corner (Product Coal)	kevins Corner (Rejects)	kevins Corner (Tailings)	kevins Corner (Product Coal)	kevins Corner (Rejects)
			Client sampling date / time	17-DEC-2009 15:00	17-DEC-2009 15:00	17-DEC-2009 15:00	31-DEC-2010 15:00	31-DEC-2010 15:00
Compound	CAS Number	LOR	Unit	EB1100418-001	EB1100418-002	EB1100418-003	EB1100418-004	EB1100418-005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	**2.21**	**16.4**	**11.4**	----	**18.7**
Total Anions	----	0.01	meq/L	----	----	----	**3.11**	----
^ Total Cations	----	0.01	meq/L	**2.03**	----	**11.7**	----	----
Total Cations	----	0.01	meq/L	----	**15.8**	----	**3.00**	**16.9**
^ Ionic Balance	----	0.01	%	----	----	**1.17**	----	----
Ionic Balance	----	0.01	%	----	**1.95**	----	**1.83**	**4.95**

Analytical Results

Sub-Matrix: WATER			Client sample ID	kevins Corner (Tailings)	----	----	----	----
			Client sampling date / time	31-DEC-2010 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1100418-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.14	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	917	----	----	----	----
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	<1	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	315	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	61	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	83	----	----	----	----
Magnesium	7439-95-4	1	mg/L	22	----	----	----	----
Sodium	7440-23-5	1	mg/L	48	----	----	----	----
Potassium	7440-09-7	1	mg/L	6	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	0.007	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.003	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.100	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.518	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	0.02	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	0.87	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER			Client sample ID	kevins Corner (Tailings)	----	----	----	----
			Client sampling date / time	31-DEC-2010 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1100418-006	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	**8.28**	----	----	----	----
^ Total Cations	----	0.01	meq/L	**8.21**	----	----	----	----
^ Ionic Balance	----	0.01	%	**0.37**	----	----	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1101253**	Page	: 1 of 4
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7123
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 24-JAN-2011
Sampler	: A. Robertson	Issue Date	: 07-FEB-2011
Site	: ----		
		No. of samples received	: 3
Quote number	: BN/567/10	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Ionic Balance out of acceptable limits for sample 2 (Coarse Reject 2) due to analytes not quantified in this report.**
- **LCS recovery for ED045G Chloride fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable. No further action is required.**

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Product Coal 1	Coarse Reject 2	Taillings 3	----	----
			Client sampling date / time	13-JAN-2011 15:00	13-JAN-2011 15:00	13-JAN-2011 15:00	----	----
Compound	CAS Number	LOR	Unit	EB1101253-001	EB1101253-002	EB1101253-003	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	4.33	2.97	5.30	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	507	2220	560	----	----
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	<1	<1	1	----	----
Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	1	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	7	85	3	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	32	212	265	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	140	852	8	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	26	126	58	----	----
Magnesium	7439-95-4	1	mg/L	9	56	15	----	----
Sodium	7440-23-5	1	mg/L	55	134	31	----	----
Potassium	7440-09-7	1	mg/L	3	12	4	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.09	5.94	<0.01	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	0.024	0.085	0.003	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0014	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.002	0.076	<0.001	----	----
Cobalt	7440-48-4	0.001	mg/L	0.004	0.125	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	0.002	0.127	0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	0.039	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	0.020	0.828	0.070	----	----
Manganese	7439-96-5	0.001	mg/L	0.371	4.53	0.013	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	0.10	0.32	0.02	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Boron	7440-42-8	0.05	mg/L	0.14	0.08	0.75	----	----
Iron	7439-89-6	0.05	mg/L	0.08	2.67	<0.05	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Product Coal 1	Coarse Reject 2	Taillings 3	----	----
			Client sampling date / time	13-JAN-2011 15:00	13-JAN-2011 15:00	13-JAN-2011 15:00	----	----
Compound	CAS Number	LOR	Unit	EB1101253-001	EB1101253-002	EB1101253-003	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	**4.62**	**28.4**	**5.76**	----	----
^ Total Cations	----	0.01	meq/L	**4.51**	**17.0**	**5.57**	----	----
^ Ionic Balance	----	0.01	%	**1.16**	**25.0**	**1.66**	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1102118**	Page	: 1 of 4
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Carsten Emrich
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7123
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 07-FEB-2011
Sampler	: ----	Issue Date	: 24-FEB-2011
Site	: ----		
		No. of samples received	: 3
Quote number	: BN/567/10	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

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Signatories

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

Signatories	*Position*	*Accreditation Category*
Herman Lin	Laboratory Coordinator	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

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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

Analytical Results

Sub-Matrix: WATER			Client sample ID	Product Coal 1	Coarse Reject 2	Tailings 3	----	----
			Client sampling date / time	27-JAN-2011 15:00	27-JAN-2011 15:00	27-JAN-2011 15:00	----	----
Compound	CAS Number	LOR	Unit	EB1102118-001	EB1102118-002	EB1102118-003	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	4.59	3.05	5.27	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	425	1860	513	----	----
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	<1	<1	<1	----	----
Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	<1	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	4	107	4	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	29	209	225	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	115	573	13	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	20	92	57	----	----
Magnesium	7439-95-4	1	mg/L	7	45	14	----	----
Sodium	7440-23-5	1	mg/L	42	100	20	----	----
Potassium	7440-09-7	1	mg/L	3	10	4	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.04	5.54	<0.01	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0015	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	0.079	<0.001	----	----
Cobalt	7440-48-4	0.001	mg/L	0.003	0.097	0.007	----	----
Nickel	7440-02-0	0.001	mg/L	0.002	0.113	0.003	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	0.039	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	0.018	0.635	0.105	----	----
Manganese	7439-96-5	0.001	mg/L	0.341	3.72	0.471	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.002	0.005	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.02	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Boron	7440-42-8	0.05	mg/L	0.13	0.09	0.64	----	----
Iron	7439-89-6	0.05	mg/L	0.26	5.96	<0.05	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER			Client sample ID	Product Coal 1	Coarse Reject 2	Tailings 3	----	----
			Client sampling date / time	27-JAN-2011 15:00	27-JAN-2011 15:00	27-JAN-2011 15:00	----	----
Compound	CAS Number	LOR	Unit	EB1102118-001	EB1102118-002	EB1102118-003	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1103167**	Page	: 1 of 4
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 091040		
C-O-C number	: ----	Date Samples Received	: 21-FEB-2011
Sampler	: A Robertson	Issue Date	: 03-MAR-2011
Site	: ----		
		No. of samples received	: 3
Quote number	: BN/567/10	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

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WORLD RECOGNISED ACCREDITATION

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

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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.

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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

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Product Coal 1	Coarse Reject 2	Tailings 3	----	----
			Client sampling date / time	10-FEB-2011 15:00	10-FEB-2011 15:00	10-FEB-2011 15:00	----	----
Compound	CAS Number	LOR	Unit	EB1103167-001	EB1103167-002	EB1103167-003	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.62	3.13	5.36	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	840	1880	548	----	----
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	1	<1	1	----	----
Total Alkalinity as CaCO3	----	1	mg/L	1	<1	1	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	4	127	4	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	41	316	243	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	141	558	1	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	26	104	65	----	----
Magnesium	7439-95-4	1	mg/L	9	60	15	----	----
Sodium	7440-23-5	1	mg/L	50	107	15	----	----
Potassium	7440-09-7	1	mg/L	3	8	3	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.06	9.48	<0.01	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	0.023	0.065	0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0014	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.001	0.069	<0.001	----	----
Cobalt	7440-48-4	0.001	mg/L	0.004	0.128	0.011	----	----
Nickel	7440-02-0	0.001	mg/L	0.002	0.150	0.006	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	0.024	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	0.024	0.781	0.209	----	----
Manganese	7439-96-5	0.001	mg/L	0.491	6.32	0.791	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	0.10	0.25	0.02	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Boron	7440-42-8	0.05	mg/L	0.11	<0.05	0.46	----	----
Iron	7439-89-6	0.05	mg/L	0.42	11.4	<0.05	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Product Coal 1	Coarse Reject 2	Tailings 3	----	----
			Client sampling date / time	10-FEB-2011 15:00	10-FEB-2011 15:00	10-FEB-2011 15:00	----	----
Compound	CAS Number	LOR	Unit	EB1103167-001	EB1103167-002	EB1103167-003	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1104286**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 07-MAR-2011
Sampler	: A.Robertson	Issue Date	: 18-MAR-2011
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/567/10	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
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NATA Accredited Laboratory 825

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Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EG020A-F (Dissolved Metals): LCS recovery for Sb falls outside Dynamic Control Limits. It is however within ALS Static Control Limits and hence deemed acceptable.**
- **EG020F (Dissolved Metals): Sample EB1104281-010 shows poor matrix spike recovery due to matrix interference. Confirmed by re-extraction and re-analysis.**
- **Ionic Balance out of acceptable limits for samples Kevins Corner Coarse Reject 2 and Kevins Corner 5 due to analytes not quantified in this report.**
- **Ionic balances are within acceptable limits as detailed in the 21st Ed. APHA "Standard Methods for the Examination of Water and Wastewater".**

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Kevins Corner Product Coal 1	Kevins Corner Coarse Reject 2	Kevins Corner Fine Rejects 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	24-FEB-2011 15:00	24-FEB-2011 15:00	24-FEB-2011 15:00	24-FEB-2011 15:00	24-FEB-2011 15:00
Compound	CAS Number	LOR	Unit	EB1104286-001	EB1104286-002	EB1104286-003	EB1104286-004	EB1104286-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	4.13	2.86	4.62	7.22	3.70
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	693	2620	490	522	2010
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	<1	<1	1	36	<1
Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	1	36	<1
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	8	330	3	5	108
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	48	454	200	160	227
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	178	825	6	41	720
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	36	121	55	42	129
Magnesium	7439-95-4	1	mg/L	14	91	12	8	21
Sodium	7440-23-5	1	mg/L	64	122	13	51	170
Potassium	7440-09-7	1	mg/L	3	8	3	4	8
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.09	27.9	0.01	<0.01	2.06
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.009	<0.001	<0.001	<0.001	0.008
Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0032	0.0001	<0.0001	0.0018
Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.001	0.107	<0.001	<0.001	0.032
Cobalt	7440-48-4	0.001	mg/L	0.006	0.237	0.013	0.001	0.035
Nickel	7440-02-0	0.001	mg/L	0.003	0.291	0.007	0.001	0.013
Lead	7439-92-1	0.001	mg/L	<0.001	0.036	<0.001	<0.001	0.051
Zinc	7440-66-6	0.005	mg/L	0.039	1.78	0.241	0.138	0.113
Manganese	7439-96-5	0.001	mg/L	0.734	12.2	0.766	0.182	1.88
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	0.05	<0.01	0.01	0.02	0.05
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.30	0.16	0.66	0.58	0.27
Iron	7439-89-6	0.05	mg/L	0.13	2.83	<0.05	<0.05	38.9

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Kevins Corner Product Coal 1	Kevins Corner Coarse Reject 2	Kevins Corner Fine Rejects 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	24-FEB-2011 15:00	24-FEB-2011 15:00	24-FEB-2011 15:00	24-FEB-2011 15:00	24-FEB-2011 15:00
Compound	CAS Number	LOR	Unit	EB1104286-001	EB1104286-002	EB1104286-003	EB1104286-004	EB1104286-005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	**6.01**	**32.7**	**4.35**	**5.20**	**25.0**
^ Total Cations	----	0.01	meq/L	**5.82**	**19.0**	**4.41**	**5.08**	**15.8**
^ Ionic Balance	----	0.01	%	**1.62**	**26.5**	**0.76**	**1.19**	**22.7**

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Kevins Corner 6	----	----	----	----
			Client sampling date / time	24-FEB-2011 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1104286-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.04	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	170	----	----	----	----
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	2	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	2	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	5	----	----	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	58	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	4	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	1	----	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
Sodium	7440-23-5	1	mg/L	30	----	----	----	----
Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.08	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.007	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	0.03	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	0.16	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Kevins Corner 6	----	----	----	----
			Client sampling date / time	24-FEB-2011 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1104286-006	----	----	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	**1.37**	----	----	----	----
^ Total Cations	----	0.01	meq/L	**1.38**	----	----	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1106504**	Page	: 1 of 4
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: C/- RGS ENVIRONMENTAL 18 INGLIS ST GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 7 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: ----	Facsimile	: +61 7 3243 7218
Project	: Kevins Corner Project - 43626669	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 04-APR-2011
Sampler	: Alan Robertson	Issue Date	: 14-APR-2011
Site	: Kevins Corne4r		
		No. of samples received	: 3
Quote number	: BN/644/10	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

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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.

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^ = This result is computed from individual analyte detections at or above the level of reporting

- **$$: NATA accreditation does not cover performance of this service.**

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Tailings -250 1302L/1303/L	Rejects +250 1302L/1303/L	Product Coal +250 1302L/1303/L	----	----
			Client sampling date / time	06-APR-2011 14:00	06-APR-2011 14:00	06-APR-2011 14:00	----	----
Compound	CAS Number	LOR	Unit	EB1106504-001	EB1106504-002	EB1106504-003	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.89	4.24	5.47	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	53	538	92	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	36	253	136	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	23	114	39	----	----
Magnesium	7439-95-4	1	mg/L	6	39	12	----	----
Sodium	7440-23-5	1	mg/L	23	54	61	----	----
Potassium	7440-09-7	1	mg/L	2	8	5	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.44	17.2	0.45	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	0.006	<0.001	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.015	<0.001	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	0.003	<0.001	----	----
Boron	7440-42-8	0.05	mg/L	1.51	1.28	1.74	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	0.216	1.79	0.494	----	----
Barium	7440-39-3	0.001	mg/L	0.830	0.208	1.86	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	0.005	<0.001	----	----
Titanium	7440-32-6	0.01	mg/L	0.02	<0.01	<0.01	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	0.010	<0.001	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0079	0.0004	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Cobalt	7440-48-4	0.001	mg/L	0.004	0.100	0.010	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	0.001	<0.001	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	0.002	<0.001	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	0.001	----	----
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.011	0.196	0.010	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	0.016	<0.001	----	----
Rubidium	7440-17-7	0.001	mg/L	0.004	0.032	0.013	----	----

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Tailings -250 1302L/1303/L	Rejects +250 1302L/1303/L	Product Coal +250 1302L/1303/L	----	----
			Client sampling date / time	06-APR-2011 14:00	06-APR-2011 14:00	06-APR-2011 14:00	----	----
Compound	CAS Number	LOR	Unit	EB1106504-001	EB1106504-002	EB1106504-003	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Lithium	7439-93-2	0.001	mg/L	**0.013**	**0.135**	**0.022**	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	**0.025**	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	**0.274**	**3.26**	**0.863**	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	**0.013**	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	**0.003**	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	**0.004**	**0.072**	**0.005**	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	**0.004**	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	**0.008**	**0.001**	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	**0.04**	**0.01**	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	**0.002**	<0.001	----	----
Tin	7440-31-5	0.001	mg/L	**0.003**	**0.001**	<0.001	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	**0.028**	<0.001	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	**0.002**	<0.001	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	**0.709**	**2.54**	**1.31**	----	----
Iron	7439-89-6	0.05	mg/L	**0.18**	**109**	**0.39**	----	----
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	**0.3**	**1.6**	**0.4**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	**0.03**	**0.02**	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1103269**	Page	: 1 of 6
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: C/- RGS ENVIRONMENTAL 18 INGLIS ST GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 7 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: ----	Facsimile	: +61 7 3243 7218
Project	: Kevins Corner Project	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 22-FEB-2011
Sampler	: ----	Issue Date	: 06-APR-2011
Site	: Kevins Corner		
		No. of samples received	: 6
Quote number	: BN/644/10	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Metals Production Chemist	Brisbane Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Brisbane Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Stafford Minerals - AY
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Myles.Clark	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils

General Comments

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Where moisture determination has been performed, results are reported on a dry weight basis.

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **$$: NATA accreditation does not cover performance of this service.**
- **ANC Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong.**
- **EG020-F (Dissolved Metals): LCS recovery for Sb falls outside Dynamic Control Limits. It is however within ALS Static Control Limits and hence deemed acceptable.**

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Fine Tailings 1492L	Coarse Reject 1492L	Raw Coal 1492L	----	----
			Client sampling date / time	01-MAR-2011 14:00	01-MAR-2011 14:00	01-MAR-2011 14:00	----	----
Compound	CAS Number	LOR	Unit	EB1103269-001	EB1103269-002	EB1103269-003	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.09	5.58	7.18	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	54	48	39	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	8	204	3	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	15	42	2	----	----
Magnesium	7439-95-4	1	mg/L	2	7	<1	----	----
Sodium	7440-23-5	1	mg/L	18	54	27	----	----
Potassium	7440-09-7	1	mg/L	1	6	1	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.03	0.03	0.27	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Boron	7440-42-8	0.05	mg/L	0.39	0.44	0.35	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	0.151	1.02	0.007	----	----
Barium	7440-39-3	0.001	mg/L	0.162	0.360	0.109	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0005	<0.0001	----	----
Hafnium	7440-58-6	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.011	<0.001	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.003	0.003	0.002	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Rubidium	7440-17-7	0.001	mg/L	<0.001	0.008	<0.001	----	----
Lithium	7439-93-2	0.001	mg/L	0.007	0.084	0.004	----	----

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Fine Tailings 1492L	Coarse Reject 1492L	Raw Coal 1492L	----	----
			Client sampling date / time	01-MAR-2011 14:00	01-MAR-2011 14:00	01-MAR-2011 14:00	----	----
Compound	CAS Number	LOR	Unit	EB1103269-001	EB1103269-002	EB1103269-003	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	**0.002**	----	----
Manganese	7439-96-5	0.001	mg/L	**0.054**	**0.984**	**0.004**	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	**0.002**	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	**0.005**	<0.001	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	**0.002**	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	**0.02**	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	**0.002**	<0.001	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	**0.017**	**0.569**	**0.019**	----	----
Iron	7439-89-6	0.05	mg/L	**0.07**	**6.51**	**0.69**	----	----
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	**0.4**	**0.5**	**0.6**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	**0.02**	----	----

Analytical Results

Sub-Matrix: PULP			Client sample ID	Fine Tailings 1492L	Coarse Reject 1492L	Raw Coal 1492L	----	----
			Client sampling date / time	22-FEB-2011 11:00	22-FEB-2011 11:00	22-FEB-2011 11:00	----	----
Compound	CAS Number	LOR	Unit	EB1103269-001	EB1103269-002	EB1103269-003	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	1230	262	----	----
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	4.9	1.3	5.1	----	----
^ ANC as CaCO3	----	0.1	% CaCO3	0.5	0.1	0.5	----	----
Fizz Rating	----	0	Fizz Unit	0	0	0	----	----
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	0.280	0.841	0.123	----	----
EA046 Acid Buffering Characterisation Curves								
Dummy Analyte	----	-	-	----	----	----	----	----
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	1.03	1.62	0.67	----	----

Analytical Results

Sub-Matrix: SOIL			Client sample ID	Fine Tailings 1492L	Coarse Reject 1492L	Raw Coal 1492L	----	----
			Client sampling date / time	22-FEB-2011 11:00	22-FEB-2011 11:00	22-FEB-2011 11:00	----	----
Compound	CAS Number	LOR	Unit	EB1103269-001	EB1103269-002	EB1103269-003	----	----
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.2	4.2	6.6	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	256	----	----	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1108015**	Page	: 1 of 5
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: Kevins Corner Project	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 21-APR-2011
Sampler	: ----	Issue Date	: 13-MAY-2011
Site	: Kevins Corner		
		No. of samples received	: 3
Quote number	: BN/057/11 V2	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY

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 insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **$$: NATA accreditation does not cover performance of this service.**
- **ANC Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong.**
- **ED040W/ED093W - The LOR for EB1108015 - 001 has been raised due to Insufficient sample volume provided.**

Analytical Results

Sub-Matrix: SOIL			Client sample ID	Fine Tailings 1493L	Coarse Reject 1493L	Raw Coal 1493L	----	----
			Client sampling date / time	[21-APR-2011]	[21-APR-2011]	[21-APR-2011]	----	----
Compound	CAS Number	LOR	Unit	EB1108015-001	EB1108015-002	EB1108015-003	----	----
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	5.6	3.6	5.6	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	418	1720	429	----	----
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	6.6	2.9	2.5	----	----
^ ANC as CaCO3	----	0.1	% CaCO3	0.7	0.3	0.2	----	----
Fizz Rating	----	0	Fizz Unit	0	0	0	----	----
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	0.322	1.04	0.193	----	----
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.68	1.20	0.74	----	----

Analytical Results

Sub-Matrix: TCLP LEACHATE			Client sample ID	Fine Tailings 1493L	Coarse Reject 1493L	Raw Coal 1493L	----	----
			Client sampling date / time	[05-MAY-2011]	[05-MAY-2011]	[05-MAY-2011]	----	----
Compound	CAS Number	LOR	Unit	EB1108015-001	EB1108015-002	EB1108015-003	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.67	4.42	5.93	----	----
ED040W: Water Leachable Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	1	mg/L	134	240	225	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	15	915	3	----	----
ED093W: Water Leachable Major Cations								
Calcium	7440-70-2	1	mg/L	28	134	18	----	----
Magnesium	7439-95-4	1	mg/L	<10	46	6	----	----
Sodium	7440-23-5	1	mg/L	42	123	88	----	----
Potassium	7440-09-7	1	mg/L	<10	17	4	----	----
EG020T: Total Metals by ICP-MS								
Gold	7440-57-5	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Tungsten	7440-33-7	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Tantalum	7440-25-7	0.001	mg/L	<0.010	<0.001	<0.001	----	----
EG020W: Water Leachable Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.49	2.22	0.12	----	----
Germanium	7440-56-4	0.001	mg/L	<0.010	0.003	0.001	----	----
Antimony	7440-36-0	0.001	mg/L	0.086	<0.001	<0.001	----	----
Niobium	7440-03-1	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	0.083	0.075	0.010	----	----
Palladium	7440-05-3	0.001	mg/L	--	--	--	----	----
Beryllium	7440-41-7	0.001	mg/L	0.078	0.015	<0.001	----	----
Platinum	7440-06-4	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Barium	7440-39-3	0.001	mg/L	3.14	2.37	1.84	----	----
Rhenium	7440-15-5	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Bismuth	7440-69-9	0.001	mg/L	0.086	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0906	0.0086	0.0042	----	----
Cerium	7440-45-1	0.001	mg/L	<0.010	0.006	<0.001	----	----
Caesium	7440-46-2	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	0.090	0.002	0.007	----	----
Cobalt	7440-48-4	0.001	mg/L	0.090	0.212	0.024	----	----
Copper	7440-50-8	0.001	mg/L	0.179	0.114	0.010	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.010	0.001	<0.001	----	----
Erbium	7440-52-0	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Europium	7440-53-1	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.010	0.001	<0.001	----	----
Gallium	7440-55-3	0.001	mg/L	<0.010	<0.001	<0.001	----	----

Analytical Results

Sub-Matrix: TCLP LEACHATE			Client sample ID	Fine Tailings 1493L	Coarse Reject 1493L	Raw Coal 1493L	----	----
			Client sampling date / time	[05-MAY-2011]	[05-MAY-2011]	[05-MAY-2011]	----	----
Compound	CAS Number	LOR	Unit	EB1108015-001	EB1108015-002	EB1108015-003	----	----
EG020W: Water Leachable Metals by ICP-MS - Continued								
Hafnium	7440-58-6	0.01	mg/L	<0.10	<0.01	<0.01	----	----
Holmium	7440-60-0	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Indium	7440-74-6	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.010	**0.004**	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	**0.083**	**0.056**	**0.008**	----	----
Lithium	7439-93-2	0.001	mg/L	**0.032**	**0.073**	**0.016**	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	**0.254**	**4.08**	**0.239**	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.084**	<0.001	<0.001	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.010	**0.003**	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	**0.099**	**0.556**	**0.054**	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Rubidium	7440-17-7	0.001	mg/L	<0.010	**0.093**	**0.012**	----	----
Samarium	7440-19-9	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.10	**0.30**	**0.04**	----	----
Silver	7440-22-4	0.001	mg/L	**0.081**	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	**0.738**	**2.13**	**0.238**	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.052	<0.005	<0.005	----	----
Terbium	7440-27-9	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Thallium	7440-28-0	0.001	mg/L	**0.103**	**0.001**	<0.001	----	----
Thorium	7440-29-1	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Thulium	7440-30-4	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Tin	7440-31-5	0.001	mg/L	**0.085**	**0.001**	<0.001	----	----
Titanium	7440-32-6	0.01	mg/L	**0.11**	<0.01	<0.01	----	----
Uranium	7440-61-1	0.001	mg/L	<0.010	**0.001**	<0.001	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.10	<0.01	<0.01	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.010	<0.001	<0.001	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.010	**0.007**	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	**1.61**	**4.18**	**0.543**	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.052	<0.005	<0.005	----	----
Boron	7440-42-8	0.05	mg/L	**2.42**	**2.58**	**1.62**	----	----
Iron	7439-89-6	0.05	mg/L	<0.52	**116**	**0.47**	----	----
EG035W: Water Leachable 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	**0.4**	**1.1**	**0.4**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1108720**	Page	: 1 of 8
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: Kevins Corner Project	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: RGS to pay		
C-O-C number	: ----	Date Samples Received	: 05-MAY-2011
Sampler	: ----	Issue Date	: 27-MAY-2011
Site	: Kevins Corner		
		No. of samples received	: 6
Quote number	: BN/057/11 V2	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Myles.Clark	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Stafford Minerals - AY

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 insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **ANC Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong.**
- **EA046: NATA accreditation does not cover performance of this service.**

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Fine Tailings 1446L	Coarse Reject 1446L	Raw Coal 1446L	Fine Tailings 1447L	Coarse Reject 1447L
			Client sampling date / time	[12-MAY-2011]	[12-MAY-2011]	[12-MAY-2011]	[12-MAY-2011]	[12-MAY-2011]
Compound	CAS Number	LOR	Unit	EB1108720-001	EB1108720-002	EB1108720-003	EB1108720-004	EB1108720-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.95	5.29	6.83	7.03	4.94
ED040W: Water Leachable Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	1	mg/L	72	54	105	14	68
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	102	689	5	10	648
ED093W: Water Leachable Major Cations								
Calcium	7440-70-2	1	mg/L	53	112	3	3	105
Magnesium	7439-95-4	1	mg/L	7	11	<1	<1	26
Sodium	7440-23-5	1	mg/L	50	130	64	22	90
Potassium	7440-09-7	1	mg/L	3	9	1	2	12
EG020T: Total Metals by ICP-MS								
Gold	7440-57-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Tungsten	7440-33-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Tantalum	7440-25-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
EG020W: Water Leachable Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.07	0.12	0.80	1.51	0.62
Germanium	7440-56-4	0.001	mg/L	0.006	0.002	0.003	<0.001	<0.001
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.002	<0.001	<0.001
Niobium	7440-03-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.009	0.025	<0.001	0.005	0.015
Palladium	7440-05-3	0.001	mg/L	<0.001	0.002	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	0.001	<0.001	<0.001	0.004
Platinum	7440-06-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	1.98	2.60	1.36	1.49	2.28
Rhenium	7440-15-5	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
Cadmium	7440-43-9	0.0001	mg/L	0.0003	0.0044	0.0002	0.0001	0.0033
Cerium	7440-45-1	0.001	mg/L	<0.001	<0.001	0.003	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	0.003	<0.001
Cobalt	7440-48-4	0.001	mg/L	0.006	0.075	<0.001	<0.001	0.083
Copper	7440-50-8	0.001	mg/L	0.007	0.012	0.004	0.004	0.029
Dysprosium	7429-91-6	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
Europium	7440-53-1	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
Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Fine Tailings 1446L	Coarse Reject 1446L	Raw Coal 1446L	Fine Tailings 1447L	Coarse Reject 1447L
			Client sampling date / time	[12-MAY-2011]	[12-MAY-2011]	[12-MAY-2011]	[12-MAY-2011]	[12-MAY-2011]
Compound	CAS Number	LOR	Unit	EB1108720-001	EB1108720-002	EB1108720-003	EB1108720-004	EB1108720-005
EG020W: Water Leachable Metals by ICP-MS - Continued								
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
Indium	7440-74-6	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lanthanum	7439-91-0	0.001	mg/L	**0.001**	**0.003**	**0.001**	**0.004**	**0.004**
Lead	7439-92-1	0.001	mg/L	<0.001	**0.002**	**0.002**	**0.004**	**0.005**
Lithium	7439-93-2	0.001	mg/L	**0.018**	**0.159**	**0.006**	**0.012**	**0.100**
Lutetium	7439-94-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	**0.392**	**4.43**	**0.024**	**0.019**	**1.96**
Molybdenum	7439-98-7	0.001	mg/L	**0.003**	<0.001	**0.012**	**0.004**	<0.001
Neodymium	7440-00-8	0.001	mg/L	<0.001	<0.001	<0.001	**0.003**	<0.001
Nickel	7440-02-0	0.001	mg/L	**0.005**	**0.065**	**0.001**	**0.002**	**0.256**
Praseodymium	7440-10-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Rubidium	7440-17-7	0.001	mg/L	**0.005**	**0.019**	**0.003**	**0.007**	**0.044**
Samarium	7440-19-9	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	**0.04**	**0.11**	**0.04**	**0.01**	**0.06**
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	**0.580**	**1.97**	**0.036**	**0.032**	**1.10**
Tellurium	22541-49-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Terbium	7440-27-9	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
Thorium	7440-29-1	0.001	mg/L	<0.001	<0.001	<0.001	**0.002**	<0.001
Thulium	7440-30-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L	<0.001	**0.006**	<0.001	<0.001	**0.001**
Titanium	7440-32-6	0.01	mg/L	<0.01	<0.01	**0.03**	**0.02**	<0.01
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	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
Yttrium	7440-65-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	**0.002**
Zinc	7440-66-6	0.005	mg/L	**0.730**	**2.32**	**0.298**	**0.215**	**2.54**
Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Boron	7440-42-8	0.05	mg/L	**1.77**	**1.56**	**1.39**	**1.30**	**1.64**
Iron	7439-89-6	0.05	mg/L	**0.08**	**3.53**	**0.87**	**1.78**	**18.6**
EG035W: Water Leachable 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**	**0.4**	**0.6**	**0.8**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.03**	**0.07**	<0.01	<0.01	**0.03**

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Raw Coal 1447L	----	----	----	----
			Client sampling date / time	[12-MAY-2011]	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1108720-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**6.83**	----	----	----	----
ED040W: Water Leachable Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	1	mg/L	**138**	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**5**	----	----	----	----
ED093W: Water Leachable Major Cations								
Calcium	7440-70-2	1	mg/L	**6**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**2**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**70**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**3**	----	----	----	----
EG020T: Total Metals by ICP-MS								
Gold	7440-57-5	0.001	mg/L	<0.001	----	----	----	----
Tungsten	7440-33-7	0.001	mg/L	<0.001	----	----	----	----
Tantalum	7440-25-7	0.001	mg/L	<0.001	----	----	----	----
EG020W: Water Leachable Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.62**	----	----	----	----
Germanium	7440-56-4	0.001	mg/L	**0.002**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Niobium	7440-03-1	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Palladium	7440-05-3	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Platinum	7440-06-4	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**1.23**	----	----	----	----
Rhenium	7440-15-5	0.001	mg/L	<0.001	----	----	----	----
Bismuth	7440-69-9	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0002**	----	----	----	----
Cerium	7440-45-1	0.001	mg/L	<0.001	----	----	----	----
Caesium	7440-46-2	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	----	----	----	----
Dysprosium	7429-91-6	0.001	mg/L	<0.001	----	----	----	----
Erbium	7440-52-0	0.001	mg/L	<0.001	----	----	----	----
Europium	7440-53-1	0.001	mg/L	<0.001	----	----	----	----
Gadolinium	7440-54-2	0.001	mg/L	<0.001	----	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Raw Coal 1447L	----	----	----	----
			Client sampling date / time	[12-MAY-2011]	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1108720-006	----	----	----	----
EG020W: Water Leachable Metals by ICP-MS - Continued								
Hafnium	7440-58-6	0.01	mg/L	<0.01	----	----	----	----
Holmium	7440-60-0	0.001	mg/L	<0.001	----	----	----	----
Indium	7440-74-6	0.001	mg/L	<0.001	----	----	----	----
Lanthanum	7439-91-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.014**	----	----	----	----
Lutetium	7439-94-3	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.032**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Neodymium	7440-00-8	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	----	----	----	----
Praseodymium	7440-10-0	0.001	mg/L	<0.001	----	----	----	----
Rubidium	7440-17-7	0.001	mg/L	**0.007**	----	----	----	----
Samarium	7440-19-9	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	**0.04**	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.057**	----	----	----	----
Tellurium	22541-49-7	0.005	mg/L	<0.005	----	----	----	----
Terbium	7440-27-9	0.001	mg/L	<0.001	----	----	----	----
Thallium	7440-28-0	0.001	mg/L	<0.001	----	----	----	----
Thorium	7440-29-1	0.001	mg/L	<0.001	----	----	----	----
Thulium	7440-30-4	0.001	mg/L	<0.001	----	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	----	----	----
Titanium	7440-32-6	0.01	mg/L	**0.02**	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Ytterbium	7440-64-4	0.001	mg/L	<0.001	----	----	----	----
Yttrium	7440-65-5	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.266**	----	----	----	----
Zirconium	7440-67-7	0.005	mg/L	<0.005	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**1.44**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.21**	----	----	----	----
EG035W: Water Leachable 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	**0.5**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.03**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL			Client sample ID	Fine Tailings 1446L	Coarse Reject 1446L	Raw Coal 1446L	Fine Tailings 1447L	Coarse Reject 1447L
			Client sampling date / time	[05-MAY-2011]	[05-MAY-2011]	[05-MAY-2011]	[05-MAY-2011]	[05-MAY-2011]
Compound	CAS Number	LOR	Unit	EB1108720-001	EB1108720-002	EB1108720-003	EB1108720-004	EB1108720-005
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.1	4.1	6.6	6.9	3.8
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	367	1290	129	81	1330
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	3.6	3.6	6.4	2.3	2.2
^ ANC as CaCO3	----	0.1	% CaCO3	0.4	0.4	0.6	0.2	0.2
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	0.246	0.415	0.175	0.028	0.533
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.58	0.44	0.52	0.06	0.68

Analytical Results

Sub-Matrix: SOIL			Client sample ID	Raw Coal 1447L	----	----	----	----
			Client sampling date / time	[05-MAY-2011]	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1108720-006	----	----	----	----
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.3	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	192	----	----	----	----
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	4.7	----	----	----	----
^ ANC as CaCO3	----	0.1	% CaCO3	0.5	----	----	----	----
Fizz Rating	----	0	Fizz Unit	0	----	----	----	----
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	0.072	----	----	----	----
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.41	----	----	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1107194**	Page	: 1 of 8
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 12-APR-2011
Sampler	: A Robertson	Issue Date	: 29-APR-2011
Site	: ----		
		No. of samples received	: 12
Quote number	: BN/567/10	No. of samples analysed	: 12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	10-MAR-2011 15:00	10-MAR-2011 15:00	10-MAR-2011 15:00	10-MAR-2011 15:00	10-MAR-2011 15:00
Compound	CAS Number	LOR	Unit	EB1107194-001	EB1107194-002	EB1107194-003	EB1107194-004	EB1107194-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	4.29	2.95	5.17	5.37	3.28
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	375	1690	484	490	2920
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	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	<1	<1	<1
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	8	209	4	10	96
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	34	432	230	226	199
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	89	251	2	4	1250
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	18	85	63	64	239
Magnesium	7439-95-4	1	mg/L	7	50	14	9	42
Sodium	7440-23-5	1	mg/L	34	53	8	19	192
Potassium	7440-09-7	1	mg/L	3	4	3	3	13
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.05	17.7	<0.01	<0.01	3.53
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.001
Arsenic	7440-38-2	0.001	mg/L	0.017	0.040	<0.001	<0.001	0.112
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0017	0.0002	0.0001	0.0023
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.001	0.084	<0.001	0.001	0.040
Cobalt	7440-48-4	0.001	mg/L	0.004	0.128	0.020	0.005	0.084
Nickel	7440-02-0	0.001	mg/L	0.002	0.159	0.012	0.003	0.034
Lead	7439-92-1	0.001	mg/L	<0.001	0.014	<0.001	<0.001	0.113
Zinc	7440-66-6	0.005	mg/L	0.028	0.937	0.428	0.383	0.317
Manganese	7439-96-5	0.001	mg/L	0.446	7.24	1.20	0.605	7.59
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	0.08	0.17	0.01	0.01	0.48
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.20	0.10	0.45	0.41	0.29
Iron	7439-89-6	0.05	mg/L	0.49	13.0	<0.05	<0.05	14.2
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	10-MAR-2011 15:00	10-MAR-2011 15:00	10-MAR-2011 15:00	10-MAR-2011 15:00	10-MAR-2011 15:00
Compound	CAS Number	LOR	Unit	EB1107194-001	EB1107194-002	EB1107194-003	EB1107194-004	EB1107194-005
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 6	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4
			Client sampling date / time	10-MAR-2011 15:00	24-MAR-2011 15:00	24-MAR-2011 15:00	24-MAR-2011 15:00	24-MAR-2011 15:00
Compound	CAS Number	LOR	Unit	EB1107194-006	EB1107194-007	EB1107194-008	EB1107194-009	EB1107194-010
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.67	4.25	3.02	5.05	5.03
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	629	303	1550	487	225
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	3	<1	<1	<1	<1
Total Alkalinity as CaCO3	----	1	mg/L	3	<1	<1	<1	<1
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	3	8	279	5	9
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	253	37	504	230	98
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	11	59	165	2	1
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	7	16	78	64	30
Magnesium	7439-95-4	1	mg/L	1	5	47	14	4
Sodium	7440-23-5	1	mg/L	115	24	38	7	5
Potassium	7440-09-7	1	mg/L	3	2	3	3	1
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.05	24.4	<0.01	0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.005	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0018	0.0002	0.0002
Chromium	7440-47-3	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	0.092	<0.001	0.002
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.004	0.117	0.026	0.006
Nickel	7440-02-0	0.001	mg/L	<0.001	0.002	0.142	0.015	0.003
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.015	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	0.027	0.977	0.595	0.419
Manganese	7439-96-5	0.001	mg/L	0.027	0.394	7.12	1.50	0.476
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	0.05	<0.01	0.01	0.01	<0.01
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.41	0.12	<0.05	0.44	0.13
Iron	7439-89-6	0.05	mg/L	<0.05	0.37	24.5	<0.05	<0.05
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 6	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4
			Client sampling date / time	10-MAR-2011 15:00	24-MAR-2011 15:00	24-MAR-2011 15:00	24-MAR-2011 15:00	24-MAR-2011 15:00
Compound	CAS Number	LOR	Unit	EB1107194-006	EB1107194-007	EB1107194-008	EB1107194-009	EB1107194-010
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 5	Kevins Corner 6	----	----	----
			Client sampling date / time	24-MAR-2011 15:00	24-MAR-2011 15:00	----	----	----
Compound	CAS Number	LOR	Unit	EB1107194-011	EB1107194-012	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	3.52	6.34	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	817	297	----	----	----
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	<1	2	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	<1	2	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	51	3	----	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	92	119	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	195	3	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	50	2	----	----	----
Magnesium	7439-95-4	1	mg/L	9	<1	----	----	----
Sodium	7440-23-5	1	mg/L	50	55	----	----	----
Potassium	7440-09-7	1	mg/L	6	1	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.67	0.25	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.009	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0005	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	0.013	<0.001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	0.017	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.008	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	0.040	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.043	<0.005	----	----	----
Manganese	7439-96-5	0.001	mg/L	2.18	0.013	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	0.04	0.03	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	0.20	----	----	----
Iron	7439-89-6	0.05	mg/L	8.33	0.09	----	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 5	Kevins Corner 6	----	----	----
			Client sampling date / time	24-MAR-2011 15:00	24-MAR-2011 15:00	----	----	----
Compound	CAS Number	LOR	Unit	EB1107194-011	EB1107194-012	----	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1108008**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 21-APR-2011
Sampler	: A Robertson	Issue Date	: 11-MAY-2011
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/057/11 V2	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	07-APR-2011 15:00	07-APR-2011 15:00	07-APR-2011 15:00	07-APR-2011 15:00	07-APR-2011 15:00
Compound	CAS Number	LOR	Unit	EB1108008-001	EB1108008-002	EB1108008-003	EB1108008-004	EB1108008-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	4.22	3.08	4.88	4.91	3.41
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	368	4230	353	464	1250
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	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	<1	<1	<1
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	14	396	6	8	43
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	43	621	155	222	132
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	70	208	<1	1	348
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	19	80	43	63	83
Magnesium	7439-95-4	1	mg/L	6	60	8	8	17
Sodium	7440-23-5	1	mg/L	25	38	3	9	70
Potassium	7440-09-7	1	mg/L	2	2	1	2	7
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.08	39.8	0.02	0.03	1.41
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.009	0.029	<0.001	<0.001	0.028
Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0026	0.0003	0.0006	0.0010
Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.001	0.089	0.001	0.005	0.014
Cobalt	7440-48-4	0.001	mg/L	0.006	0.150	0.021	0.018	0.032
Nickel	7440-02-0	0.001	mg/L	0.003	0.180	0.014	0.011	0.018
Lead	7439-92-1	0.001	mg/L	<0.001	0.011	<0.001	<0.001	0.050
Zinc	7440-66-6	0.005	mg/L	0.037	1.34	0.746	1.44	0.080
Manganese	7439-96-5	0.001	mg/L	0.563	9.65	1.32	1.47	4.79
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	0.04	0.12	<0.01	0.01	0.11
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.15	0.22	0.24	0.31	0.07
Iron	7439-89-6	0.05	mg/L	0.16	7.80	<0.05	<0.05	1.61
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	07-APR-2011 15:00	07-APR-2011 15:00	07-APR-2011 15:00	07-APR-2011 15:00	07-APR-2011 15:00
Compound	CAS Number	LOR	Unit	EB1108008-001	EB1108008-002	EB1108008-003	EB1108008-004	EB1108008-005
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 6	----	----	----	----
			Client sampling date / time	07-APR-2011 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1108008-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**6.18**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**523**	----	----	----	----
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	**1**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**1**	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	**209**	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**5**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**7**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**1**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**90**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**2**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.01**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.034**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	**0.04**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.37**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 6	----	----	----	----
			Client sampling date / time	07-APR-2011 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1108008-006	----	----	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1108123**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 27-APR-2011
Sampler	: A. Robertson	Issue Date	: 11-MAY-2011
Site	: ----		
		No. of samples received	: 9
Quote number	: BN/057/11 V2	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	21-APR-2011 15:00	21-APR-2011 15:00	21-APR-2011 15:00	21-APR-2011 15:00	21-APR-2011 15:00
Compound	CAS Number	LOR	Unit	EB1108123-001	EB1108123-002	EB1108123-003	EB1108123-004	EB1108123-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	4.17	2.95	5.65	5.07	3.40
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1040	2710	296	278	2040
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	<1	<1	3	<1	<1
Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	3	<1	<1
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	14	751	5	5	101
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	142	1110	127	99	208
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	275	421	1	<1	523
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	60	123	34	30	133
Magnesium	7439-95-4	1	mg/L	23	106	7	3	27
Sodium	7440-23-5	1	mg/L	83	60	2	2	89
Potassium	7440-09-7	1	mg/L	4	3	2	<1	8
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.25	115	<0.01	0.01	4.99
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.011	<0.001	<0.001	<0.001	0.012
Cadmium	7440-43-9	0.0001	mg/L	0.0003	0.0094	0.0002	0.0004	0.0043
Chromium	7440-47-3	0.001	mg/L	<0.001	0.004	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.001	0.217	<0.001	0.002	0.027
Cobalt	7440-48-4	0.001	mg/L	0.023	0.321	0.024	0.011	0.074
Nickel	7440-02-0	0.001	mg/L	0.011	0.402	0.016	0.007	0.040
Lead	7439-92-1	0.001	mg/L	0.001	0.025	<0.001	<0.001	0.103
Zinc	7440-66-6	0.005	mg/L	0.127	3.82	0.597	0.899	0.256
Manganese	7439-96-5	0.001	mg/L	2.11	22.1	1.34	0.793	11.4
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	0.08	0.02	<0.01	<0.01	0.06
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.64	0.14	0.34	0.19	0.26
Iron	7439-89-6	0.05	mg/L	0.26	8.50	<0.05	<0.05	4.94
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	21-APR-2011 15:00	21-APR-2011 15:00	21-APR-2011 15:00	21-APR-2011 15:00	21-APR-2011 15:00
Compound	CAS Number	LOR	Unit	EB1108123-001	EB1108123-002	EB1108123-003	EB1108123-004	EB1108123-005
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 6	Kevins Corner 7	Kevins Corner 8	Kevins Corner 9	----
			Client sampling date / time	21-APR-2011 15:00	21-APR-2011 15:00	21-APR-2011 15:00	21-APR-2011 15:00	----
Compound	CAS Number	LOR	Unit	EB1108123-006	EB1108123-007	EB1108123-008	EB1108123-009	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.61	5.40	4.71	3.15	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	497	1010	658	1390	----
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	4	24	<1	<1	----
Total Alkalinity as CaCO3	----	1	mg/L	4	24	<1	<1	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	4	12	18	121	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	196	357	282	177	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	5	43	4	324	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	7	68	23	54	----
Magnesium	7439-95-4	1	mg/L	1	18	7	19	----
Sodium	7440-23-5	1	mg/L	86	93	85	96	----
Potassium	7440-09-7	1	mg/L	2	15	5	12	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.02	0.14	0.71	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.001	0.015	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0003	0.0003	0.0012	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	<0.001	0.004	0.004	0.043	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.032	0.031	0.076	----
Nickel	7440-02-0	0.001	mg/L	<0.001	0.075	0.146	0.241	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.012	----
Zinc	7440-66-6	0.005	mg/L	<0.005	0.571	0.043	0.272	----
Manganese	7439-96-5	0.001	mg/L	0.037	0.413	0.237	0.688	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L	0.04	0.06	0.05	0.17	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	0.01	----
Boron	7440-42-8	0.05	mg/L	0.51	0.62	0.28	0.13	----
Iron	7439-89-6	0.05	mg/L	<0.05	0.06	6.16	26.3	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 6	Kevins Corner 7	Kevins Corner 8	Kevins Corner 9	----
			Client sampling date / time	21-APR-2011 15:00	21-APR-2011 15:00	21-APR-2011 15:00	21-APR-2011 15:00	----
Compound	CAS Number	LOR	Unit	EB1108123-006	EB1108123-007	EB1108123-008	EB1108123-009	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1108898**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040 KEVINS CORNER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 09-MAY-2011
Sampler	: ----	Issue Date	: 23-MAY-2011
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/057/11 V2	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **ED045G Chlorides; Sample EB1108898 002 (Kevins Corner 5) shows poor spike recovery due to matrix interference. This was confirmed by repreparation and reanalysis.**
- **EG020A-F (Dissolved Metals): LCS recovery for Se falls outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**
- **LCS recovery for EA010-P (Conductivity), ED037-P (Alkalinity) analyses fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	KEVINS CORNER 4	KEVINS CORNER 5	KEVINS CORNER 6	KEVINS CORNER 7	KEVINS CORNER 8
			Client sampling date / time	05-MAY-2011 15:00	05-MAY-2011 15:00	05-MAY-2011 15:00	05-MAY-2011 15:00	05-MAY-2011 15:00
Compound	CAS Number	LOR	Unit	EB1108898-001	EB1108898-002	EB1108898-003	EB1108898-004	EB1108898-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.91	3.64	6.55	6.35	5.89
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	206	834	255	376	844
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	<1	<1	3	4	1
Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	3	4	1
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	7	36	3	3	3
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	115	137	113	198	419
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	<1	<1	3	20	4
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	37	78	3	40	27
Magnesium	7439-95-4	1	mg/L	4	16	<1	11	10
Sodium	7440-23-5	1	mg/L	2	43	53	37	156
Potassium	7440-09-7	1	mg/L	1	6	1	9	8
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.06	1.97	0.01	<0.01	0.03
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.021	<0.001	<0.001	0.001
Cadmium	7440-43-9	0.0001	mg/L	0.0008	0.0018	<0.0001	0.0002	0.0002
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.006	0.010	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	0.020	0.032	<0.001	0.016	0.014
Nickel	7440-02-0	0.001	mg/L	0.018	0.019	<0.001	0.029	0.039
Lead	7439-92-1	0.001	mg/L	<0.001	0.044	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	1.56	0.097	<0.005	0.316	0.028
Manganese	7439-96-5	0.001	mg/L	1.25	6.15	0.019	0.348	0.404
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	0.08	0.02	0.03	0.10
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.17	0.07	0.32	0.38	0.52
Iron	7439-89-6	0.05	mg/L	0.43	0.33	<0.05	<0.05	0.07
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	KEVINS CORNER 4	KEVINS CORNER 5	KEVINS CORNER 6	KEVINS CORNER 7	KEVINS CORNER 8
			Client sampling date / time	05-MAY-2011 15:00	05-MAY-2011 15:00	05-MAY-2011 15:00	05-MAY-2011 15:00	05-MAY-2011 15:00
Compound	CAS Number	LOR	Unit	EB1108898-001	EB1108898-002	EB1108898-003	EB1108898-004	EB1108898-005
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	KEVINS CORNER 9	----	----	----	----
			Client sampling date / time	05-MAY-2011 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1108898-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	3.12	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	3690	----	----	----	----
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	<1	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	284	----	----	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	395	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	1430	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	292	----	----	----	----
Magnesium	7439-95-4	1	mg/L	118	----	----	----	----
Sodium	7440-23-5	1	mg/L	290	----	----	----	----
Potassium	7440-09-7	1	mg/L	27	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	6.51	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.083	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0028	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.066	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	0.542	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	1.34	----	----	----	----
Lead	7439-92-1	0.001	mg/L	0.053	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	3.27	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	12.6	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	0.34	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	0.36	----	----	----	----
Iron	7439-89-6	0.05	mg/L	90.0	----	----	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: **LIQUID**			Client sample ID	**KEVINS CORNER 9**	----	----	----	----
			Client sampling date / time	05-MAY-2011 15:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB1108898-006**	**----**	**----**	**----**	**----**
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1110005**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 23-MAY-2011
Sampler	: A Robertson	Issue Date	: 03-JUN-2011
Site	: ----		
		No. of samples received	: 9
Quote number	: BN/057/11 V2	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	19-MAY-2011 15:00	19-MAY-2011 15:00	19-MAY-2011 15:00	19-MAY-2011 15:00	19-MAY-2011 15:00
Compound	CAS Number	LOR	Unit	EB1110005-001	EB1110005-002	EB1110005-003	EB1110005-004	EB1110005-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	4.19	3.02	4.73	4.59	3.61
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	515	2530	568	183	570
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	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	<1	<1	<1
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	8	892	8	7	25
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	71	1300	265	71	91
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	119	306	1	<1	94
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	32	150	79	24	47
Magnesium	7439-95-4	1	mg/L	12	95	16	3	11
Sodium	7440-23-5	1	mg/L	37	38	4	1	24
Potassium	7440-09-7	1	mg/L	3	2	3	<1	5
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.17	127	0.09	0.04	1.06
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.018	0.041	<0.001	<0.001	0.017
Cadmium	7440-43-9	0.0001	mg/L	0.0002	0.0100	0.0008	0.0007	0.0009
Chromium	7440-47-3	0.001	mg/L	<0.001	0.004	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	0.195	<0.001	0.007	0.007
Cobalt	7440-48-4	0.001	mg/L	0.013	0.262	0.062	0.013	0.016
Nickel	7440-02-0	0.001	mg/L	0.006	0.334	0.045	0.012	0.010
Lead	7439-92-1	0.001	mg/L	<0.001	0.016	<0.001	<0.001	0.025
Zinc	7440-66-6	0.005	mg/L	0.078	3.16	1.57	1.11	0.045
Manganese	7439-96-5	0.001	mg/L	1.15	18.8	3.51	0.889	3.59
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	0.08	0.16	0.01	<0.01	0.06
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.24	0.06	0.37	0.12	<0.05
Iron	7439-89-6	0.05	mg/L	0.10	7.48	0.09	0.20	0.23
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	19-MAY-2011 15:00	19-MAY-2011 15:00	19-MAY-2011 15:00	19-MAY-2011 15:00	19-MAY-2011 15:00
Compound	CAS Number	LOR	Unit	EB1110005-001	EB1110005-002	EB1110005-003	EB1110005-004	EB1110005-005
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 6	Kevins Corner 7	Kevins Corner 8	Kevins Corner 9	----
			Client sampling date / time	19-MAY-2011 15:00	19-MAY-2011 15:00	19-MAY-2011 15:00	19-MAY-2011 15:00	----
Compound	CAS Number	LOR	Unit	EB1110005-006	EB1110005-007	EB1110005-008	EB1110005-009	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.33	5.26	5.11	3.14	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	210	296	488	3070	----
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	2	<1	<1	<1	----
Total Alkalinity as CaCO3	----	1	mg/L	2	<1	<1	<1	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	2	4	3	212	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	78	118	197	187	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	2	4	3	1890	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	2	25	11	179	----
Magnesium	7439-95-4	1	mg/L	<1	7	4	74	----
Sodium	7440-23-5	1	mg/L	39	17	70	157	----
Potassium	7440-09-7	1	mg/L	1	7	5	20	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.01	3.81	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	0.144	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	<0.0001	0.0030	----
Chromium	7440-47-3	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	0.051	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.011	0.006	0.349	----
Nickel	7440-02-0	0.001	mg/L	<0.001	0.022	0.019	0.864	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.034	----
Zinc	7440-66-6	0.005	mg/L	<0.005	0.217	0.013	2.20	----
Manganese	7439-96-5	0.001	mg/L	0.014	0.240	0.189	12.4	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L	0.02	0.02	0.04	0.53	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Boron	7440-42-8	0.05	mg/L	0.29	0.26	0.35	0.25	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	63.0	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 6	Kevins Corner 7	Kevins Corner 8	Kevins Corner 9	----
			Client sampling date / time	19-MAY-2011 15:00	19-MAY-2011 15:00	19-MAY-2011 15:00	19-MAY-2011 15:00	----
Compound	CAS Number	LOR	Unit	EB1110005-006	EB1110005-007	EB1110005-008	EB1110005-009	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1110961**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 06-JUN-2011
Sampler	: A.Robertson	Issue Date	: 14-JUN-2011
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/057/11 V2	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Ionic Balance out of acceptable limits for sample Kevins Corner 9 due to analytes not quantified in this report.**

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Kevins Corner 4	Kevins Corner 5	Kevins Corner 6	Kevins Corner 7	Kevins Corner 8
			Client sampling date / time	02-JUN-2011 15:00	02-JUN-2011 15:00	02-JUN-2011 15:00	02-JUN-2011 15:00	02-JUN-2011 15:00
Compound	CAS Number	LOR	Unit	EB1110961-001	EB1110961-002	EB1110961-003	EB1110961-004	EB1110961-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.06	3.46	6.67	5.10	5.54
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	65	518	146	365	390
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	2	<1	3	2	<1
Total Alkalinity as CaCO3	----	1	mg/L	2	<1	3	2	<1
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	118	40	2	5	3
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	27	93	52	104	154
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	<1	57	1	3	2
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	7	37	1	22	10
Magnesium	7439-95-4	1	mg/L	1	7	<1	6	4
Sodium	7440-23-5	1	mg/L	<1	15	24	11	54
Potassium	7440-09-7	1	mg/L	<1	4	<1	5	4
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.02	0.90	0.20	0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.003	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	0.0004	0.0009	<0.0001	0.0002	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.005	0.049	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	0.006	0.012	<0.001	0.012	0.004
Nickel	7440-02-0	0.001	mg/L	0.006	0.009	<0.001	0.026	0.012
Lead	7439-92-1	0.001	mg/L	<0.001	0.033	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	0.630	0.049	<0.005	0.293	0.012
Manganese	7439-96-5	0.001	mg/L	0.494	3.12	0.007	0.297	0.169
Molybdenum	7439-98-7	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	0.02
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	<0.05	0.07	0.34	0.26	0.42
Iron	7439-89-6	0.05	mg/L	0.11	1.33	0.05	<0.05	<0.05
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Kevins Corner 4	Kevins Corner 5	Kevins Corner 6	Kevins Corner 7	Kevins Corner 8
			Client sampling date / time	02-JUN-2011 15:00	02-JUN-2011 15:00	02-JUN-2011 15:00	02-JUN-2011 15:00	02-JUN-2011 15:00
Compound	CAS Number	LOR	Unit	EB1110961-001	EB1110961-002	EB1110961-003	EB1110961-004	EB1110961-005
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	**0.60**	**3.54**	**1.17**	**2.29**	**3.26**
^ Total Cations	----	0.01	meq/L	**0.43**	----	**1.09**	**2.20**	**3.28**
Total Cations	----	0.01	meq/L	----	**3.56**	----	----	----
^ Ionic Balance	----	0.01	%	----	----	----	----	**0.23**
Ionic Balance	----	0.01	%	----	**0.28**	----	----	----

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Kevins Corner 9	----	----	----	----
			Client sampling date / time	02-JUN-2011 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1110961-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	3.16	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1620	----	----	----	----
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	<1	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	155	----	----	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	90	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	541	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	81	----	----	----	----
Magnesium	7439-95-4	1	mg/L	31	----	----	----	----
Sodium	7440-23-5	1	mg/L	57	----	----	----	----
Potassium	7440-09-7	1	mg/L	11	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	1.36	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0032	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.062	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	0.142	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.367	----	----	----	----
Lead	7439-92-1	0.001	mg/L	0.024	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	1.18	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	8.35	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	0.19	----	----	----	----
Iron	7439-89-6	0.05	mg/L	39.0	----	----	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Kevins Corner 9	----	----	----	----
			Client sampling date / time	02-JUN-2011 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1110961-006	----	----	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	**17.1**	----	----	----	----
Total Cations	----	0.01	meq/L	**12.2**	----	----	----	----
Ionic Balance	----	0.01	%	**16.7**	----	----	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1112733**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040-Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 30-JUN-2011
Sampler	: A. Robertson	Issue Date	: 13-JUL-2011
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/057/11 V2	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 4	Kevins Corner 5	Kevins Corner 6	Kevins Corner 7	Kevins Corner 8
			Client sampling date / time	30-JUN-2011 09:00	30-JUN-2011 09:00	30-JUN-2011 09:00	30-JUN-2011 09:00	30-JUN-2011 09:00
Compound	CAS Number	LOR	Unit	EB1112733-001	EB1112733-002	EB1112733-003	EB1112733-004	EB1112733-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.41	3.36	5.96	5.12	4.62
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	82	570	156	345	368
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	2	<1	2	<1	<1
Total Alkalinity as CaCO3	----	1	mg/L	2	<1	2	<1	<1
ED038A: Acidity								
^ Acidity as CaCO3	----	1	mg/L	11	68	2	5	6
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	30	145	60	151	150
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	<1	48	14	2	2
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	8	37	3	35	12
Magnesium	7439-95-4	1	mg/L	1	8	<1	9	4
Sodium	7440-23-5	1	mg/L	<1	11	25	10	46
Potassium	7440-09-7	1	mg/L	<1	3	<1	6	4
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.02	1.37	0.41	0.02	0.03
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.003	<0.001	0.001	0.001
Cadmium	7440-43-9	0.0001	mg/L	0.0004	0.0008	<0.0001	0.0004	0.0002
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.021	0.037	0.008	0.012	0.010
Cobalt	7440-48-4	0.001	mg/L	0.006	0.015	<0.001	0.020	0.008
Nickel	7440-02-0	0.001	mg/L	0.006	0.010	<0.001	0.044	0.035
Lead	7439-92-1	0.001	mg/L	<0.001	0.033	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	0.611	0.049	<0.005	0.497	0.021
Manganese	7439-96-5	0.001	mg/L	0.619	4.33	0.018	0.574	0.348
Molybdenum	7439-98-7	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	0.02	0.02
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.18	0.18	0.25
Iron	7439-89-6	0.05	mg/L	0.12	11.2	0.11	0.05	0.71
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 4	Kevins Corner 5	Kevins Corner 6	Kevins Corner 7	Kevins Corner 8
			Client sampling date / time	30-JUN-2011 09:00	30-JUN-2011 09:00	30-JUN-2011 09:00	30-JUN-2011 09:00	30-JUN-2011 09:00
Compound	CAS Number	LOR	Unit	EB1112733-001	EB1112733-002	EB1112733-003	EB1112733-004	EB1112733-005
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 9	----	----	----	----
			Client sampling date / time	30-JUN-2011 09:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1112733-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	3.11	----	----	----	----
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	<1	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED038A: Acidity								
^ Acidity as CaCO3	----	1	mg/L	86	----	----	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	86	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	198	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	49	----	----	----	----
Magnesium	7439-95-4	1	mg/L	18	----	----	----	----
Sodium	7440-23-5	1	mg/L	29	----	----	----	----
Potassium	7440-09-7	1	mg/L	6	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.65	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0017	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.039	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	0.087	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.239	----	----	----	----
Lead	7439-92-1	0.001	mg/L	0.016	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.615	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	7.85	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	0.06	----	----	----	----
Iron	7439-89-6	0.05	mg/L	20.1	----	----	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 9	----	----	----	----
			Client sampling date / time	30-JUN-2011 09:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1112733-006	----	----	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1113861**	Page	: 1 of 4
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040-Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 15-JUL-2011
Sampler	: A. Robertson	Issue Date	: 28-JUL-2011
Site	: ----		
		No. of samples received	: 3
Quote number	: BN/057/11 V2	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Greg Vogel	Laboratory Manager	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Ionic Balance out of acceptable limits for EB1113861-003 due to the extremely low pH of the sample.**

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 7	Kevins Corner 8	Kevins Corner 9	----	----
			Client sampling date / time	14-JUL-2011 15:00	14-JUL-2011 15:00	14-JUL-2011 15:00	----	----
Compound	CAS Number	LOR	Unit	EB1113861-001	EB1113861-002	EB1113861-003	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.97	5.30	3.23	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	341	384	1890	----	----
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	4	<1	<1	----	----
Total Alkalinity as CaCO3	----	1	mg/L	4	<1	<1	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	4	4	<1	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	142	157	151	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	2	2	698	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	35	15	123	----	----
Magnesium	7439-95-4	1	mg/L	9	6	47	----	----
Sodium	7440-23-5	1	mg/L	9	44	53	----	----
Potassium	7440-09-7	1	mg/L	7	5	12	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.04	0.03	2.30	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.002	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0005	0.0002	0.0049	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.002	0.001	0.048	----	----
Cobalt	7440-48-4	0.001	mg/L	0.025	0.011	0.225	----	----
Nickel	7440-02-0	0.001	mg/L	0.056	0.039	0.621	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.024	----	----
Zinc	7440-66-6	0.005	mg/L	0.637	0.032	1.59	----	----
Manganese	7439-96-5	0.001	mg/L	0.665	0.443	21.3	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	0.01	0.02	0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Boron	7440-42-8	0.05	mg/L	0.17	0.25	0.17	----	----
Iron	7439-89-6	0.05	mg/L	0.09	0.43	48.5	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 7	Kevins Corner 8	Kevins Corner 9	----	----
			Client sampling date / time	14-JUL-2011 15:00	14-JUL-2011 15:00	14-JUL-2011 15:00	----	----
Compound	CAS Number	LOR	Unit	EB1113861-001	EB1113861-002	EB1113861-003	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1114833**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 28-JUL-2011
Sampler	: A ROBERTSON	Issue Date	: 11-AUG-2011
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/567/10	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

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Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: WATER			Client sample ID	1 Kevins Corner 4	2 Kevins Corner 5	3 Kevins Corner 6	4 Kevins Corner 7	5 Kevins Corner 8
			Client sampling date / time	[28-JUL-2011]	[28-JUL-2011]	[28-JUL-2011]	[28-JUL-2011]	[28-JUL-2011]
Compound	CAS Number	LOR	Unit	EB1114833-001	EB1114833-002	EB1114833-003	EB1114833-004	EB1114833-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.81	3.30	5.35	4.97	4.70
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	121	640	183	340	330
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	1	<1	<1	<1	<1
Total Alkalinity as CaCO3	----	1	mg/L	1	<1	<1	<1	<1
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	17	75	2	5	5
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	49	184	78	158	148
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	<1	39	<1	2	1
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	13	36	4	35	14
Magnesium	7439-95-4	1	mg/L	2	9	<1	9	5
Sodium	7440-23-5	1	mg/L	<1	9	29	7	38
Potassium	7440-09-7	1	mg/L	<1	3	1	6	4
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.05	1.95	0.16	0.05	0.03
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.009	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	0.0007	0.0009	<0.0001	0.0007	0.0002
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.020	0.030	0.002	0.007	0.004
Cobalt	7440-48-4	0.001	mg/L	0.010	0.019	<0.001	0.028	0.012
Nickel	7440-02-0	0.001	mg/L	0.010	0.011	<0.001	0.065	0.046
Lead	7439-92-1	0.001	mg/L	<0.001	0.048	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	0.955	0.072	<0.005	0.768	0.040
Manganese	7439-96-5	0.001	mg/L	0.925	4.45	0.038	0.754	0.509
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	0.03	0.01	0.02	0.02
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.06	<0.05	0.20	0.25	0.33
Iron	7439-89-6	0.05	mg/L	0.15	16.9	0.08	0.10	0.32

Analytical Results

Sub-Matrix: WATER			Client sample ID	1 Kevins Corner 4	2 Kevins Corner 5	3 Kevins Corner 6	4 Kevins Corner 7	5 Kevins Corner 8
			Client sampling date / time	[28-JUL-2011]	[28-JUL-2011]	[28-JUL-2011]	[28-JUL-2011]	[28-JUL-2011]
Compound	CAS Number	LOR	Unit	EB1114833-001	EB1114833-002	EB1114833-003	EB1114833-004	EB1114833-005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Analytical Results

Sub-Matrix: WATER			Client sample ID	6 Kevins Corner 9	----	----	----	----
			Client sampling date / time	[28-JUL-2011]	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1114833-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	3.21	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1230	----	----	----	----
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	<1	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	110	----	----	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	103	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	417	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	68	----	----	----	----
Magnesium	7439-95-4	1	mg/L	25	----	----	----	----
Sodium	7440-23-5	1	mg/L	28	----	----	----	----
Potassium	7440-09-7	1	mg/L	7	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	1.27	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.041	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0031	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.032	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	0.132	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.365	----	----	----	----
Lead	7439-92-1	0.001	mg/L	0.014	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	1.03	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	13.6	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	0.16	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	0.13	----	----	----	----
Iron	7439-89-6	0.05	mg/L	31.2	----	----	----	----

Analytical Results

Sub-Matrix: **WATER**			Client sample ID	6 Kevins Corner 9	----	----	----	----
			Client sampling date / time	[28-JUL-2011]	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1114833-006	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1116216**	Page	: 1 of 4
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 11-AUG-2011
Sampler	: ----	Issue Date	: 25-AUG-2011
Site	: Kevin's Corner		
		No. of samples received	: 3
Quote number	: BN/057/11 V2	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Greg Vogel	Laboratory Manager	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 7	Kevins Corner 8	Kevins Corner 9	----	----
			Client sampling date / time	11-AUG-2011 15:00	11-AUG-2011 15:00	11-AUG-2011 15:00	----	----
Compound	CAS Number	LOR	Unit	EB1116216-001	EB1116216-002	EB1116216-003	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.46	5.14	3.33	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	253	264	793	----	----
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	4	<1	<1	----	----
Total Alkalinity as CaCO3	----	1	mg/L	4	<1	<1	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	5	5	96	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	104	106	79	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	1	1	182	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	26	11	42	----	----
Magnesium	7439-95-4	1	mg/L	7	4	16	----	----
Sodium	7440-23-5	1	mg/L	5	28	16	----	----
Potassium	7440-09-7	1	mg/L	5	4	5	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.04	0.03	0.72	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0005	0.0002	0.0024	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.006	0.004	0.028	----	----
Cobalt	7440-48-4	0.001	mg/L	0.020	0.009	0.083	----	----
Nickel	7440-02-0	0.001	mg/L	0.047	0.031	0.234	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.009	----	----
Zinc	7440-66-6	0.005	mg/L	0.577	0.039	0.597	----	----
Manganese	7439-96-5	0.001	mg/L	0.615	0.439	10.3	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	0.01	0.01	<0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Boron	7440-42-8	0.05	mg/L	0.19	0.26	0.08	----	----
Iron	7439-89-6	0.05	mg/L	0.11	0.24	22.0	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 7	Kevins Corner 8	Kevins Corner 9	----	----
			Client sampling date / time	11-AUG-2011 15:00	11-AUG-2011 15:00	11-AUG-2011 15:00	----	----
Compound	CAS Number	LOR	Unit	EB1116216-001	EB1116216-002	EB1116216-003	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1117132**	Page	: 1 of 4
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040-Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 24-AUG-2011
Sampler	: A. Robertson	Issue Date	: 06-SEP-2011
Site	: ----		
		No. of samples received	: 3
Quote number	: BN/057/11 V2	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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Signatories	*Position*	*Accreditation Category*
Greg Vogel	Laboratory Manager	Brisbane Inorganics
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

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- **Ionic Balance out of acceptable limits for sample EB1117132-003 (Kevins Corner 9) due to analytes not quantified in this report.**
- **Ionic balances are within acceptable limits as detailed in the 21st Ed. APHA "Standard Methods for the Examination of Water and Wastewater".**

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 7	Kevins Corner 8	Kevins Corner 9	----	----
			Client sampling date / time	24-AUG-2011 12:00	24-AUG-2011 12:00	24-AUG-2011 12:00	----	----
Compound	CAS Number	LOR	Unit	EB1117132-001	EB1117132-002	EB1117132-003	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.24	5.19	3.26	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	258	230	1150	----	----
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	2	2	<1	----	----
Total Alkalinity as CaCO3	----	1	mg/L	2	2	<1	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	10	3	113	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	110	93	97	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	1	<1	312	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	27	10	60	----	----
Magnesium	7439-95-4	1	mg/L	8	4	24	----	----
Sodium	7440-23-5	1	mg/L	3	20	17	----	----
Potassium	7440-09-7	1	mg/L	5	4	7	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.04	0.03	1.49	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0008	0.0002	0.0043	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.008	0.003	0.031	----	----
Cobalt	7440-48-4	0.001	mg/L	0.022	0.009	0.124	----	----
Nickel	7440-02-0	0.001	mg/L	0.055	0.031	0.368	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.016	----	----
Zinc	7440-66-6	0.005	mg/L	0.644	0.035	0.844	----	----
Manganese	7439-96-5	0.001	mg/L	0.850	0.510	16.6	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	0.01	0.01	<0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Boron	7440-42-8	0.05	mg/L	0.22	0.29	0.14	----	----
Iron	7439-89-6	0.05	mg/L	0.24	0.36	44.6	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER			Client sample ID	Kevins Corner 7	Kevins Corner 8	Kevins Corner 9	----	----
			Client sampling date / time	24-AUG-2011 12:00	24-AUG-2011 12:00	24-AUG-2011 12:00	----	----
Compound	CAS Number	LOR	Unit	EB1117132-001	EB1117132-002	EB1117132-003	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	2.36	1.98	10.8	----	----
^ Total Cations	----	0.01	meq/L	2.26	1.80	----	----	----
Total Cations	----	0.01	meq/L	----	----	8.26	----	----
Ionic Balance	----	0.01	%	----	----	13.4	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1119771**	Page	: 1 of 4
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 091040 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 26-SEP-2011
Sampler	: A Robertson	Issue Date	: 05-OCT-2011
Site	: ----		
		No. of samples received	: 3
Quote number	: BN/057/11 V2	No. of samples analysed	: 3

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Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics

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LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner KLC 7	Kevins Corner KLC 8	Kevins Corner KLC 9	----	----
			Client sampling date / time	23-SEP-2011 15:00	23-SEP-2011 15:00	23-SEP-2011 15:00	----	----
Compound	CAS Number	LOR	Unit	EB1119771-001	EB1119771-002	EB1119771-003	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	4.80	4.33	3.09	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	304	268	1240	----	----
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	<1	<1	<1	----	----
Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	<1	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	10	9	132	----	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	133	108	213	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	1	<1	243	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	33	14	66	----	----
Magnesium	7439-95-4	1	mg/L	8	5	28	----	----
Sodium	7440-23-5	1	mg/L	3	18	16	----	----
Potassium	7440-09-7	1	mg/L	7	5	8	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.07	0.07	1.92	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.022	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0011	0.0003	0.0045	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.010	0.003	0.049	----	----
Cobalt	7440-48-4	0.001	mg/L	0.030	0.011	0.142	----	----
Nickel	7440-02-0	0.001	mg/L	0.074	0.043	0.428	----	----
Lead	7439-92-1	0.001	mg/L	0.002	0.001	0.035	----	----
Zinc	7440-66-6	0.005	mg/L	0.908	0.042	0.790	----	----
Manganese	7439-96-5	0.001	mg/L	1.29	0.702	24.1	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	0.01	0.01	0.08	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Boron	7440-42-8	0.05	mg/L	0.26	0.25	0.12	----	----
Iron	7439-89-6	0.05	mg/L	0.27	1.44	35.7	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner KLC 7	Kevins Corner KLC 8	Kevins Corner KLC 9	----	----
			Client sampling date / time	23-SEP-2011 15:00	23-SEP-2011 15:00	23-SEP-2011 15:00	----	----
Compound	CAS Number	LOR	Unit	EB1119771-001	EB1119771-002	EB1119771-003	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1200803**	Page	: 1 of 28
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: Kevins Corner Project Infill Drilling	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 12-JAN-2012
Sampler	: David Ash	Issue Date	: 27-JAN-2012
Site	: Kevins Corner Project		
		No. of samples received	: 126
Quote number	: BN/567/10	No. of samples analysed	: 126

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Signatories	*Position*	*Accreditation Category*
Myles.Clark	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils
Myles.Clark	Acid Sulfate Soils Supervisor	Brisbane Inorganics
Myles.Clark	Acid Sulfate Soils Supervisor	Stafford Minerals - AY
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

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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: ROCK			Client sample ID	EA001 1693D KC_11_GT_003	EA002 1693D KC_11_GT_003	EA003 1693D KC_11_GT_003	EA004 1693D KC_11_GT_003	EA005 1693D KC_11_GT_003
			Client sampling date / time	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-001	EB1200803-002	EB1200803-003	EB1200803-004	EB1200803-005
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	8.6	9.3	7.9	7.8	7.6
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-8.2	-5.9	-3.8	-3.8	-4.0
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	320	578	361	772	733
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	8.8	6.2	3.8	3.8	4.0
^ ANC as CaCO3	----	0.1	% CaCO3	0.9	0.6	0.4	0.4	0.4
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.02	0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA006 1693D KC_11_GT_003	EA007 1693D KC_11_GT_003	EA008 1693D KC_11_GT_003	EA009 1728D KC_11_GT_021	EA010 1728D KC_11_GT_021
			Client sampling date / time	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-006	EB1200803-007	EB1200803-008	EB1200803-009	EB1200803-010
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	8.0	7.4	8.2	5.6	6.3
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-4.9	-4.5	-3.7	-4.4	-5.4
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	1060	648	54	618	1050
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	5.2	5.4	4.0	5.0	5.7
^ ANC as CaCO3	----	0.1	% CaCO3	0.5	0.6	0.4	0.5	0.6
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.01	0.03	0.01	0.02	0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA011 1728D KC_11_GT_021	EA012 1728D KC_11_GT_021	EA013 1728D KC_11_GT_021	EA014 1728D KC_11_GT_021	EA015 1728D KC_11_GT_021
			Client sampling date / time	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-011	EB1200803-012	EB1200803-013	EB1200803-014	EB1200803-015
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	7.1	7.3	7.5	8.2	7.2
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-4.9	-4.7	-4.7	-9.2	-11.5
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	1320	693	704	1230	1580
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	5.2	4.7	5.0	9.8	18.2
^ ANC as CaCO3	----	0.1	% CaCO3	0.5	0.5	0.5	1.0	1.8
Fizz Rating	----	0	Fizz Unit	0	0	0	0	1
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.01	<0.01	0.01	0.02	0.22

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA016 1728D KC_11_GT_021	EA017 1728D KC_11_GT_021	EA018 1728D KC_11_GT_021	EA019 1728D KC_11_GT_021	EA020 1728D KC_11_GT_021
			Client sampling date / time	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-016	EB1200803-017	EB1200803-018	EB1200803-019	EB1200803-020
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	9.7	9.6	9.6	9.5	10.0
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-39.9	-28.1	-25.7	-24.7	-118
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	1040	793	1130	875	750
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	40.5	29.0	26.6	25.3	118
^ ANC as CaCO3	----	0.1	% CaCO3	4.1	3.0	2.7	2.6	12.1
Fizz Rating	----	0	Fizz Unit	2	2	1	1	2
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.02	0.03	0.03	0.02	0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA021 1728D KC_11_GT_021	EA022 1728D KC_11_GT_021	EA023 1728D KC_11_GT_021	EA024 1728D KC_11_GT_021	EA025 1728D KC_11_GT_021
			Client sampling date / time	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-021	EB1200803-022	EB1200803-023	EB1200803-024	EB1200803-025
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	9.6	9.5	9.6	9.6	9.5
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-94.6	-56.8	-43.5	-246	-44.7
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	506	471	432	378	356
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	96.1	58.0	44.7	247	45.9
^ ANC as CaCO3	----	0.1	% CaCO3	9.8	5.9	4.6	25.2	4.7
Fizz Rating	----	0	Fizz Unit	2	2	2	3	2
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.05	0.04	0.04	0.02	0.04

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA026 1728D KC_11_GT_021	EA027 1728D KC_11_GT_021	EA028 1728D KC_11_GT_021	EA029 1728D KC_11_GT_021	EA030 1728D KC_11_GT_021
			Client sampling date / time	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-026	EB1200803-027	EB1200803-028	EB1200803-029	EB1200803-030
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	9.5	8.8	9.4	9.2	9.0
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-92.5	-92.2	-31.7	-30.2	-15.4
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	423	380	490	438	335
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	93.1	93.1	32.6	31.4	16.6
^ ANC as CaCO3	----	0.1	% CaCO3	9.5	9.5	3.3	3.2	1.7
Fizz Rating	----	0	Fizz Unit	2	2	2	2	1
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.02	0.03	0.03	0.04	0.04

Analytical Results

Sub-Matrix: **ROCK**

			Client sample ID	EA031 1728D KC_11_GT_021	EA032 1728D KC_11_GT_021	EA033 1728D KC_11_GT_021	EA034 1728D KC_11_GT_021	EA035 1579D KC_11_GT_014
			Client sampling date / time	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-031	EB1200803-032	EB1200803-033	EB1200803-034	EB1200803-035
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	8.9	9.0	9.1	8.7	6.3
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-33.8	-42.6	-30.2	-11.6	-7.3
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	371	331	296	204	1250
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	35.0	43.5	31.4	12.5	7.9
^ ANC as CaCO3	----	0.1	% CaCO3	3.6	4.4	3.2	1.3	0.8
Fizz Rating	----	0	Fizz Unit	2	2	2	1	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.04	0.03	0.04	0.03	0.02

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA036 1579D KC_11_GT_014	EA037 1579D KC_11_GT_014	EA038 1579D KC_11_GT_014	EA039 1721D KC_11_GT_008	EA040 1721D KC_11_GT_008
			Client sampling date / time	17-DEC-2011 15:00	17-DEC-2011 15:00	17-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-036	EB1200803-037	EB1200803-038	EB1200803-039	EB1200803-040
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	8.4	7.9	7.6	8.5	8.2
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-6.2	-4.1	-4.6	-4.7	-6.3
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	1000	1220	1280	578	406
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	6.2	4.4	4.6	5.0	6.3
^ ANC as CaCO3	----	0.1	% CaCO3	0.6	0.4	0.5	0.5	0.6
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.01	<0.01	0.01	<0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA041 1721D KC_11_GT_008	EA042 1721D KC_11_GT_008	EA043 1721D KC_11_GT_008	EA044 1721D KC_11_GT_008	EA045 1721D KC_11_GT_008
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-041	EB1200803-042	EB1200803-043	EB1200803-044	EB1200803-045
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	8.1	8.0	7.4	7.8	7.5
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-5.9	-5.0	-5.8	-4.4	-5.6
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	265	243	314	230	119
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	5.9	5.0	5.8	4.4	5.6
^ ANC as CaCO3	----	0.1	% CaCO3	0.6	0.5	0.6	0.4	0.6
Fizz Rating	----	0	Fizz Unit	0	0	1	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	<0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA046 1721D KC_11_GT_008	EA047 1721D KC_11_GT_008	EA048 1721D KC_11_GT_008	EA049 1720D KC_11_GT_004	EA050 1720D KC_11_GT_004
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-046	EB1200803-047	EB1200803-048	EB1200803-049	EB1200803-050
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	7.1	7.5	7.9	8.5	8.3
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-4.7	-7.4	-6.2	-4.6	-6.3
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	142	75	31	272	500
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	5.6	7.4	6.2	4.6	6.3
^ ANC as CaCO3	----	0.1	% CaCO3	0.6	0.8	0.6	0.5	0.6
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.03	<0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA051 1720D KC_11_GT_004	EA052 1720D KC_11_GT_004	EA053 1720D KC_11_GT_004	EA054 1720D KC_11_GT_004	EA055 1720D KC_11_GT_004
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-051	EB1200803-052	EB1200803-053	EB1200803-054	EB1200803-055
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	8.0	7.4	8.1	8.1	8.2
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-4.1	-3.2	-3.0	-4.7	-5.1
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	419	95	39	81	38
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	4.1	3.8	3.0	5.6	5.1
^ ANC as CaCO3	----	0.1	% CaCO3	0.4	0.4	0.3	0.6	0.5
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.02	<0.01	0.03	<0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA056 1720D KC_11_GT_004	EA057 1720D KC_11_GT_004	EA058 1589D KC_11_GT_006	EA059 1589D KC_11_GT_006	EA060 1589D KC_11_GT_006
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-056	EB1200803-057	EB1200803-058	EB1200803-059	EB1200803-060
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	8.0	7.2	8.2	7.9	8.7
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-5.4	-4.6	-5.0	-5.3	-6.2
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	39	151	139	339	327
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	5.4	6.4	5.0	5.3	6.2
^ ANC as CaCO3	----	0.1	% CaCO3	0.6	0.6	0.5	0.5	0.6
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.06	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA061 1589D KC_11_GT_006	EA062 1589D KC_11_GT_006	EA063 1589D KC_11_GT_006	EA064 1589D KC_11_GT_006	EA065 1587D KC_11_GT_011
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-061	EB1200803-062	EB1200803-063	EB1200803-064	EB1200803-065
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	7.9	7.4	7.6	6.6	7.4
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-3.8	-3.4	-4.7	-9.6	-4.4
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	393	468	422	335	58
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	3.8	3.4	5.6	12.4	4.4
^ ANC as CaCO3	----	0.1	% CaCO3	0.4	0.3	0.6	1.3	0.4
Fizz Rating	----	0	Fizz Unit	0	0	0	1	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	<0.01	0.03	0.09	<0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA066 1587D KC_11_GT_011	EA067 1587D KC_11_GT_011	EA068 1587D KC_11_GT_011	EA069 1587D KC_11_GT_011	EA070 1587D KC_11_GT_011
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-066	EB1200803-067	EB1200803-068	EB1200803-069	EB1200803-070
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	8.3	8.2	7.5	7.6	7.5
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-6.8	-5.0	-4.2	-3.9	-2.5
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	297	263	439	329	207
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	6.8	5.0	4.2	3.9	2.5
^ ANC as CaCO3	----	0.1	% CaCO3	0.7	0.5	0.4	0.4	0.2
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	<0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA071 1587D KC_11_GT_011	EA072 1587D KC_11_GT_011	EA073 1587D KC_11_GT_011	EA074 1695D KC_11_GT_001	EA075 1695D KC_11_GT_001
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-071	EB1200803-072	EB1200803-073	EB1200803-074	EB1200803-075
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	7.1	7.5	4.4	7.7	8.5
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-2.5	-5.0	<0.5	-6.7	-27.0
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	271	444	330	239	672
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	2.5	5.3	3.2	6.7	27.6
^ ANC as CaCO3	----	0.1	% CaCO3	0.2	0.5	0.3	0.7	2.8
Fizz Rating	----	0	Fizz Unit	0	0	0	0	1
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.01	0.12	<0.01	0.02

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA076 1695D KC_11_GT_001	EA077 1695D KC_11_GT_001	EA078 1695D KC_11_GT_001	EA079 1695D KC_11_GT_001	EA080 1695D KC_11_GT_001
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-076	EB1200803-077	EB1200803-078	EB1200803-079	EB1200803-080
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	7.6	8.2	8.2	8.0	7.9
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-3.5	-3.4	-3.8	-5.6	-5.6
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	256	87	34	51	128
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	5.0	3.4	3.8	5.6	7.4
^ ANC as CaCO3	----	0.1	% CaCO3	0.5	0.3	0.4	0.6	0.8
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.05	<0.01	<0.01	<0.01	0.06

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA081 1695D KC_11_GT_001	EA082 1578D KC_11_GT_009	EA083 1578D KC_11_GT_009	EA084 1578D KC_11_GT_009	EA085 1578D KC_11_GT_009
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-081	EB1200803-082	EB1200803-083	EB1200803-084	EB1200803-085
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	3.2	7.6	7.1	7.0	7.0
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	32.1	-3.8	-5.0	-3.9	-2.4
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	1310	189	388	588	436
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	2.5	3.8	5.0	3.9	2.4
^ ANC as CaCO3	----	0.1	% CaCO3	0.2	0.4	0.5	0.4	0.2
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	1.13	<0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA086 1578D KC_11_GT_009	EA087 1578D KC_11_GT_009	EA088 1578D KC_11_GT_009	EA089 1578D KC_11_GT_009	EA090 1696D KC_11_GT_005
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-086	EB1200803-087	EB1200803-088	EB1200803-089	EB1200803-090
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	8.2	7.7	7.4	6.9	7.3
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-8.6	-7.9	-0.9	-3.1	-7.4
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	192	178	463	398	364
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	8.6	8.2	4.0	6.5	7.4
^ ANC as CaCO3	----	0.1	% CaCO3	0.9	0.8	0.4	0.7	0.8
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.01	0.10	0.11	<0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA091 1696D KC_11_GT_005	EA092 1696D KC_11_GT_005	EA093 1696D KC_11_GT_005	EA094 1696D KC_11_GT_005	EA095 1696D KC_11_GT_005
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-091	EB1200803-092	EB1200803-093	EB1200803-094	EB1200803-095
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	5.4	5.8	7.3	7.8	7.5
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-5.4	-5.7	-8.2	-3.3	-2.5
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	560	763	585	308	87
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	6.3	6.3	8.2	3.6	3.4
^ ANC as CaCO3	----	0.1	% CaCO3	0.6	0.6	0.8	0.4	0.3
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.03	0.02	<0.01	0.01	0.03

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA096 1696D KC_11_GT_005	EA097 1696D KC_11_GT_005	EA098 1696D KC_11_GT_005	EA099 1696D KC_11_GT_005	EA100 1696D KC_11_GT_005
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-096	EB1200803-097	EB1200803-098	EB1200803-099	EB1200803-100
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	7.6	8.0	8.0	6.5	5.0
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-2.7	-2.4	-1.7	1.5	1.8
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	43	36	75	389	268
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	2.7	2.4	1.7	1.9	2.5
^ ANC as CaCO3	----	0.1	% CaCO3	0.3	0.2	0.2	0.2	0.2
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	<0.01	<0.01	0.11	0.14

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA101 1696D KC_11_GT_005	EA102 1727D KC_11_GT_022	EA103 1727D KC_11_GT_022	EA104 1727D KC_11_GT_022	EA105 1727D KC_11_GT_022
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-101	EB1200803-102	EB1200803-103	EB1200803-104	EB1200803-105
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.6	5.7	5.2	7.2	8.1
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-1.4	<0.5	0.7	-1.8	-3.4
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	83	419	579	67	66
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	3.9	8.0	9.4	2.4	3.4
^ ANC as CaCO3	----	0.1	% CaCO3	0.4	0.8	1.0	0.2	0.3
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.08	0.26	0.33	0.02	<0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA106 1727D KC_11_GT_022	EA107 1727D KC_11_GT_022	EA108 1727D KC_11_GT_022	EA109 1727D KC_11_GT_022	EA110 1727D KC_11_GT_022
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-106	EB1200803-107	EB1200803-108	EB1200803-109	EB1200803-110
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	9.4	9.3	9.2	9.4	9.6
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-174	-13.2	-23.8	-68.0	-259
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	254	458	409	457	524
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	176	15.7	25.3	68.9	260
^ ANC as CaCO3	----	0.1	% CaCO3	17.9	1.6	2.6	7.0	26.5
Fizz Rating	----	0	Fizz Unit	3	1	1	2	3
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.07	0.08	0.05	0.03	0.03

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA111 1727D KC_11_GT_022	EA112 1727D KC_11_GT_022	EA113 1727D KC_11_GT_022	EA114 1727D KC_11_GT_022	EA115 1727D KC_11_GT_022
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-111	EB1200803-112	EB1200803-113	EB1200803-114	EB1200803-115
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	9.4	9.6	9.5	9.6	9.5
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-72.8	-80.4	-130	-70.4	-101
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	581	533	532	525	622
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	73.7	81.0	131	71.3	106
^ ANC as CaCO3	----	0.1	% CaCO3	7.5	8.3	13.4	7.3	10.8
Fizz Rating	----	0	Fizz Unit	2	2	3	2	2
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.03	0.02	0.03	0.03	0.15

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA116 1727D KC_11_GT_022	EA117 1727D KC_11_GT_022	EA118 1727D KC_11_GT_022	EA119 1727D KC_11_GT_022	EA120 1727D KC_11_GT_022
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-116	EB1200803-117	EB1200803-118	EB1200803-119	EB1200803-120
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	10.0	9.7	8.8	7.6	5.2
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-45.9	-49.0	-9.7	-6.8	-4.8
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	583	859	626	1320	674
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	46.5	49.6	10.0	6.8	5.1
^ ANC as CaCO3	----	0.1	% CaCO3	4.7	5.0	1.0	0.7	0.5
Fizz Rating	----	0	Fizz Unit	2	2	1	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.02	0.02	0.01	<0.01	0.01

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA121 1727D KC_11_GT_022	EA122 1727D KC_11_GT_022	EA123 1727D KC_11_GT_022	EA001 1959D A_11_E_001	EA002 1959D A_11_E_001
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1200803-121	EB1200803-122	EB1200803-123	EB1200803-124	EB1200803-125
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	7.6	5.9	6.8	7.7	5.7
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-5.3	-6.8	-6.6	-3.5	0.8
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	1400	1130	775	134	568
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	5.6	7.4	7.2	3.5	4.7
^ ANC as CaCO3	----	0.1	% CaCO3	0.6	0.8	0.7	0.4	0.5
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.01	0.02	0.02	<0.01	0.18

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA003 1959D A_11_E_001	----	----	----	----
			Client sampling date / time	18-DEC-2011 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1200803-126	----	----	----	----
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	5.3	----	----	----	----
EA009: Nett Acid Production Potential								
^ Net Acid Production Potential	----	0.5	kg H2SO4/t	-0.7	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	228	----	----	----	----
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	3.8	----	----	----	----
^ ANC as CaCO3	----	0.1	% CaCO3	0.4	----	----	----	----
Fizz Rating	----	0	Fizz Unit	0	----	----	----	----
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.10	----	----	----	----

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1206468**	Page	: 1 of 5
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: Kevins Corner Project Infill Drilling	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 29-FEB-2012
Sampler	: Salva Resources	Issue Date	: 22-MAR-2012
Site	: Kevins Corner Project		
		No. of samples received	: 11
Quote number	: BN/057/11 V2	No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Jonathon Angell	Inorganic Coordinator	Brisbane Inorganics
Myles.Clark	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils
Myles.Clark	Acid Sulfate Soils Supervisor	Stafford Minerals - AY

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.

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

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

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA-01	EA-02	EA-03	EA-04	EA-05
			Client sampling date / time	[28-FEB-2012]	[28-FEB-2012]	[28-FEB-2012]	[28-FEB-2012]	[28-FEB-2012]
Compound	CAS Number	LOR	Unit	EB1206468-001	EB1206468-002	EB1206468-003	EB1206468-004	EB1206468-005
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.5	8.4	7.8	7.5	7.6
EA009: Nett Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	-1.9	-4.4	-3.7	-1.6	-4.6
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	255	339	764	453	504
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	1.9	4.4	3.7	1.6	5.2
ANC as CaCO3	----	0.1	% CaCO3	0.2	0.4	0.4	0.2	0.5
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	<0.01	<0.01	<0.01	0.02

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA-06	EA-07	EA-08	EA-09	EA-010
			Client sampling date / time	[28-FEB-2012]	[28-FEB-2012]	[28-FEB-2012]	[28-FEB-2012]	[28-FEB-2012]
Compound	CAS Number	LOR	Unit	EB1206468-006	EB1206468-007	EB1206468-008	EB1206468-009	EB1206468-010
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	5.3	8.3	8.0	6.3	8.2
EA009: Nett Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	1.2	-1.3	-1.9	<0.5	-1.5
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	247	35	32	54	40
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	1.9	1.3	1.9	<0.5	2.1
ANC as CaCO3	----	0.1	% CaCO3	0.2	0.1	0.2	<0.1	0.2
Fizz Rating	----	0	Fizz Unit	0	0	0	0	0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.10	<0.01	<0.01	<0.01	0.02

Analytical Results

Sub-Matrix: ROCK			Client sample ID	EA-011	----	----	----	----
			Client sampling date / time	[28-FEB-2012]	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1206468-011	----	----	----	----
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.9	----	----	----	----
EA009: Nett Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	<0.5	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	57	----	----	----	----
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	1.1	----	----	----	----
ANC as CaCO3	----	0.1	% CaCO3	0.1	----	----	----	----
Fizz Rating	----	0	Fizz Unit	0	----	----	----	----
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.02	----	----	----	----

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1202487**	Page	: 1 of 11
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: Kevin s Corner Infill Drilling Project	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 30-JAN-2012
Sampler	: ----	Issue Date	: 08-FEB-2012
Site	: Kevin's Corner		
		No. of samples received	: 156
Quote number	: BN/057/11 V2	No. of samples analysed	: 25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Jonathon Angell	Inorganic Coordinator	Brisbane Inorganics
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Myles.Clark	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils

General Comments

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LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: **PULP**

Client sample ID				EA008_1693D_42.50-42.83 ex-EB1200803008	EA015_1728D_26.67-27.00 ex-EB1200803015	EA073_1587D_38.66-39.10 ex-EB1200803073	EA081_1695D_45.10-45.60 ex-EB1200803081	EA089_1578D_41.68-42.10 ex-EB1200803089
Client sampling date / time				17-DEC-2011 15:00	17-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1202487-008	EB1202487-015	EB1202487-073	EB1202487-081	EB1202487-089
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	7.9	----	----	3.6	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	56	----	----	1150	----
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	----	0.026	0.070	0.674	0.064
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	1.0	----	----	1.3	----
Exchangeable Magnesium	----	0.1	meq/100g	0.4	----	----	1.8	----
Exchangeable Potassium	----	0.1	meq/100g	0.3	----	----	<0.1	----
Exchangeable Sodium	----	0.1	meq/100g	0.4	----	----	<0.1	----
Cation Exchange Capacity	----	0.1	meq/100g	2.2	----	----	3.2	----
Exchangeable Sodium Percent	----	0.1	%	17.6	----	----	0.6	----
ED037: Alkalinity								
Total Alkalinity as CaCO3	----	1	mg/kg	96	----	----	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/kg	96	----	----	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/kg	<1	----	----	<1	----
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	10	----	----	2590	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	10	mg/kg	30	----	----	<10	----
ED093S: Soluble Major Cations								
Calcium	7440-70-2	10	mg/kg	<10	----	----	220	----
Magnesium	7439-95-4	10	mg/kg	<10	----	----	210	----
Sodium	7440-23-5	10	mg/kg	40	----	----	<10	----
Potassium	7440-09-7	10	mg/kg	<10	----	----	<10	----
ED093T: Total Major Cations								
Sodium	7440-23-5	10	mg/kg	100	----	----	160	----
Potassium	7440-09-7	10	mg/kg	760	----	----	1020	----
Calcium	7440-70-2	10	mg/kg	220	----	----	300	----
Magnesium	7439-95-4	10	mg/kg	270	----	----	1660	----
EG005S : Soluble Metals by ICPAES								
Aluminium	7429-90-5	1	mg/kg	2	----	----	126	----
Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	<0.1	----
Arsenic	7440-38-2	0.1	mg/kg	<0.1	----	----	0.1	----

Analytical Results

Sub-Matrix: **PULP**

			Client sample ID	EA008_1693D_42.50-42.83 ex-EB1200803008	EA015_1728D_26.67-27.00 ex-EB1200803015	EA073_1587D_38.66-39.10 ex-EB1200803073	EA081_1695D_45.10-45.60 ex-EB1200803081	EA089_1578D_41.68-42.10 ex-EB1200803089
			Client sampling date / time	17-DEC-2011 15:00	17-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1202487-008	EB1202487-015	EB1202487-073	EB1202487-081	EB1202487-089
EG005S : Soluble Metals by ICPAES - Continued								
Boron	7440-42-8	1	mg/kg	<1	----	----	<1	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	----	----	<0.1	----
Chromium	7440-47-3	0.1	mg/kg	<0.1	----	----	**0.2**	----
Cobalt	7440-48-4	0.1	mg/kg	<0.1	----	----	**3.7**	----
Copper	7440-50-8	0.1	mg/kg	<0.1	----	----	**0.6**	----
Iron	7439-89-6	1	mg/kg	<1	----	----	**312**	----
Lead	7439-92-1	0.1	mg/kg	<0.1	----	----	<0.1	----
Manganese	7439-96-5	0.1	mg/kg	**0.1**	----	----	**69.2**	----
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	<0.1	----
Nickel	7440-02-0	0.1	mg/kg	<0.1	----	----	**10.0**	----
Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	**0.1**	----
Vanadium	7440-62-2	0.1	mg/kg	<0.1	----	----	<0.1	----
Zinc	7440-66-6	0.1	mg/kg	<0.1	----	----	**35.2**	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**1580**	----	----	**4450**	----
Antimony	7440-36-0	5	mg/kg	<5	----	----	<5	----
Arsenic	7440-38-2	5	mg/kg	<5	----	----	**58**	----
Boron	7440-42-8	50	mg/kg	<50	----	----	<50	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	<1	----
Chromium	7440-47-3	2	mg/kg	**15**	----	----	**14**	----
Cobalt	7440-48-4	2	mg/kg	<2	----	----	**6**	----
Copper	7440-50-8	5	mg/kg	**5**	----	----	**10**	----
Iron	7439-89-6	50	mg/kg	**880**	----	----	**24800**	----
Lead	7439-92-1	5	mg/kg	**10**	----	----	**16**	----
Manganese	7439-96-5	5	mg/kg	<5	----	----	**202**	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	<2	----
Nickel	7440-02-0	2	mg/kg	**3**	----	----	**18**	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	<5	----
Vanadium	7440-62-2	5	mg/kg	<5	----	----	**19**	----
Zinc	7440-66-6	5	mg/kg	**15**	----	----	**73**	----

Analytical Results

Sub-Matrix: PULP			Client sample ID	EA099_1696D_51.10-51.43 ex-EB1200803099	EA100_1696D_54.85-55.15 ex-EB1200803100	EA102_1727D_137.3-137.75 ex-EB1200803102	EA103_1727D_134.29-134.67 ex-EB1200803103	EA115_1727D_58.81-59.26 ex-EB1200803115
			Client sampling date / time	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00	18-DEC-2011 15:00
Compound	CAS Number	LOR	Unit	EB1202487-099	EB1202487-100	EB1202487-102	EB1202487-103	EB1202487-115
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	**0.055**	**0.085**	**0.116**	**0.144**	**0.009**

Analytical Results

Sub-Matrix: PULP			Client sample ID	EA002*_1959D_26.16-27.08 ex-EB1200803125	Composite 1 ALS Pulp Composite	Composite 3 ALS Pulp Composite	Composite 4 ALS Pulp Composite	Composite 5 ALS Pulp Composite
			Client sampling date / time	18-DEC-2011 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00
Compound	CAS Number	LOR	Unit	EB1202487-125	EB1202487-127	EB1202487-128	EB1202487-129	EB1202487-130
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	7.5	5.7	8.1	9.4
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	805	909	1900	882
EA026 : Chromium Reducible Sulfur								
Chromium Reducible Sulphur	----	0.005	%	0.057	----	----	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	0.6	1.0	23.6	33.2
Exchangeable Magnesium	----	0.1	meq/100g	----	1.9	3.4	13.2	8.6
Exchangeable Potassium	----	0.1	meq/100g	----	0.2	0.2	0.8	0.9
Exchangeable Sodium	----	0.1	meq/100g	----	3.5	5.7	17.0	12.4
Cation Exchange Capacity	----	0.1	meq/100g	----	6.3	10.3	54.6	55.1
Exchangeable Sodium Percent	----	0.1	%	----	56.2	55.0	31.2	22.6
ED037: Alkalinity								
Total Alkalinity as CaCO3	----	1	mg/kg	----	96	32	728	984
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/kg	----	96	32	621	513
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/kg	----	<1	<1	107	471
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	----	60	40	210	30
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	10	mg/kg	----	1080	1460	680	140
ED093S: Soluble Major Cations								
Calcium	7440-70-2	10	mg/kg	----	<10	<10	<10	<10
Magnesium	7439-95-4	10	mg/kg	----	10	<10	<10	<10
Sodium	7440-23-5	10	mg/kg	----	680	880	830	200
Potassium	7440-09-7	10	mg/kg	----	10	10	20	<10
ED093T: Total Major Cations								
Sodium	7440-23-5	10	mg/kg	----	780	1320	3730	2500
Potassium	7440-09-7	10	mg/kg	----	390	510	680	650
Calcium	7440-70-2	10	mg/kg	----	160	220	7950	47900
Magnesium	7439-95-4	10	mg/kg	----	370	740	2840	11400
EG005S : Soluble Metals by ICPAES								
Aluminium	7429-90-5	1	mg/kg	----	<1	<1	<1	<1
Antimony	7440-36-0	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
Arsenic	7440-38-2	0.1	mg/kg	----	<0.1	<0.1	0.7	0.1

Analytical Results

Sub-Matrix: **PULP**

			Client sample ID	EA002*_1959D_26.16-27.08 ex-EB1200803125	Composite 1 ALS Pulp Composite	Composite 3 ALS Pulp Composite	Composite 4 ALS Pulp Composite	Composite 5 ALS Pulp Composite
			Client sampling date / time	18-DEC-2011 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00
Compound	CAS Number	LOR	Unit	EB1202487-125	EB1202487-127	EB1202487-128	EB1202487-129	EB1202487-130
EG005S : Soluble Metals by ICPAES - Continued								
Boron	7440-42-8	1	mg/kg	----	<1	<1	**1**	<1
Cadmium	7440-43-9	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
Copper	7440-50-8	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
Iron	7439-89-6	1	mg/kg	----	<1	<1	<1	<1
Lead	7439-92-1	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
Manganese	7439-96-5	0.1	mg/kg	----	<0.1	**0.1**	<0.1	<0.1
Molybdenum	7439-98-7	0.1	mg/kg	----	<0.1	<0.1	<0.1	**0.1**
Nickel	7440-02-0	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
Selenium	7782-49-2	0.1	mg/kg	----	<0.1	<0.1	**0.4**	<0.1
Vanadium	7440-62-2	0.1	mg/kg	----	<0.1	<0.1	**0.4**	<0.1
Zinc	7440-66-6	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	**2150**	**2780**	**4780**	**6280**
Antimony	7440-36-0	5	mg/kg	----	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	----	**8**	<5	**5**	<5
Boron	7440-42-8	50	mg/kg	----	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	**15**	**15**	**8**	**9**
Cobalt	7440-48-4	2	mg/kg	----	<2	**4**	**62**	**11**
Copper	7440-50-8	5	mg/kg	----	**14**	**15**	**48**	**16**
Iron	7439-89-6	50	mg/kg	----	**9260**	**37700**	**2350**	**27000**
Lead	7439-92-1	5	mg/kg	----	**14**	**7**	**12**	**10**
Manganese	7439-96-5	5	mg/kg	----	<5	**73**	**78**	**837**
Molybdenum	7439-98-7	2	mg/kg	----	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	----	<2	**7**	**50**	**10**
Selenium	7782-49-2	5	mg/kg	----	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	----	**20**	**46**	**18**	**29**
Zinc	7440-66-6	5	mg/kg	----	<5	**22**	**91**	**45**

Analytical Results

Sub-Matrix: PULP			Client sample ID	Composite 6 ALS Pulp Composite	Composite 7 ALS Pulp Composite	Composite 8 ALS Pulp Composite	Composite 9 ALS Pulp Composite	Composite 10 ALS Pulp Composite
			Client sampling date / time	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00
Compound	CAS Number	LOR	Unit	EB1202487-131	EB1202487-132	EB1202487-133	EB1202487-134	EB1202487-135
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	9.0	8.1	7.9	7.9	7.5
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	340	1150	266	68	319
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	23.8	1.2	0.5	0.6	0.8
Exchangeable Magnesium	----	0.1	meq/100g	2.2	3.0	1.6	0.9	1.5
Exchangeable Potassium	----	0.1	meq/100g	0.9	0.2	0.1	0.2	0.3
Exchangeable Sodium	----	0.1	meq/100g	3.5	7.8	1.5	0.4	1.7
Cation Exchange Capacity	----	0.1	meq/100g	30.4	12.2	3.7	2.2	4.2
Exchangeable Sodium Percent	----	0.1	%	11.5	64.1	39.7	20.0	40.0
ED037: Alkalinity								
Total Alkalinity as CaCO3	----	1	mg/kg	567	54	96	86	75
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/kg	460	54	96	86	75
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/kg	107	<1	<1	<1	<1
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	130	110	20	40	40
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	10	mg/kg	60	1600	280	20	390
ED093S: Soluble Major Cations								
Calcium	7440-70-2	10	mg/kg	<10	<10	<10	<10	<10
Magnesium	7439-95-4	10	mg/kg	<10	<10	<10	<10	<10
Sodium	7440-23-5	10	mg/kg	300	1060	220	50	280
Potassium	7440-09-7	10	mg/kg	30	<10	<10	<10	10
ED093T: Total Major Cations								
Sodium	7440-23-5	10	mg/kg	800	1730	340	110	410
Potassium	7440-09-7	10	mg/kg	1240	320	270	620	640
Calcium	7440-70-2	10	mg/kg	9280	250	110	180	180
Magnesium	7439-95-4	10	mg/kg	3940	920	350	670	280
EG005S : Soluble Metals by ICPAES								
Aluminium	7429-90-5	1	mg/kg	<1	<1	<1	4	<1
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Arsenic	7440-38-2	0.1	mg/kg	0.4	<0.1	<0.1	0.2	<0.1
Boron	7440-42-8	1	mg/kg	<1	<1	<1	<1	<1
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: **PULP**

			Client sample ID	Composite 6 ALS Pulp Composite	Composite 7 ALS Pulp Composite	Composite 8 ALS Pulp Composite	Composite 9 ALS Pulp Composite	Composite 10 ALS Pulp Composite
			Client sampling date / time	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00
Compound	CAS Number	LOR	Unit	EB1202487-131	EB1202487-132	EB1202487-133	EB1202487-134	EB1202487-135
EG005S : Soluble Metals by ICPAES - Continued								
Cobalt	7440-48-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	7440-50-8	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Iron	7439-89-6	1	mg/kg	<1	<1	<1	<1	<1
Lead	7439-92-1	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese	7439-96-5	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	7439-98-7	0.1	mg/kg	**0.2**	<0.1	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	7782-49-2	0.1	mg/kg	**0.2**	<0.1	<0.1	<0.1	**0.1**
Vanadium	7440-62-2	0.1	mg/kg	**0.2**	<0.1	<0.1	<0.1	<0.1
Zinc	7440-66-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**9330**	**3550**	**1860**	**2190**	**2190**
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	**6**	<5	<5	<5	<5
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**14**	**12**	**17**	**17**	**14**
Cobalt	7440-48-4	2	mg/kg	**10**	**2**	<2	**6**	<2
Copper	7440-50-8	5	mg/kg	**34**	<5	<5	**10**	**9**
Iron	7439-89-6	50	mg/kg	**23000**	**8980**	**6680**	**4000**	**15000**
Lead	7439-92-1	5	mg/kg	**13**	<5	<5	**8**	**7**
Manganese	7439-96-5	5	mg/kg	**488**	**7**	<5	**48**	**38**
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	**18**	**3**	<2	**9**	<2
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	**34**	**18**	**12**	**5**	**14**
Zinc	7440-66-6	5	mg/kg	**69**	**5**	**78**	**92**	**7**

Analytical Results

Sub-Matrix: PULP			Client sample ID	Composite 12 ALS Pulp Composite	Composite 13 ALS Pulp Composite	Composite 14 ALS Pulp Composite	Composite 15 ALS Pulp Composite	Composite 16 ALS Pulp Composite
			Client sampling date / time	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00
Compound	CAS Number	LOR	Unit	EB1202487-136	EB1202487-137	EB1202487-138	EB1202487-139	EB1202487-140
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	7.5	7.4	5.4	9.2	6.4
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	417	54	505	585	355
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	0.5	0.2	6.4	34.6	0.9
Exchangeable Magnesium	----	0.1	meq/100g	2.0	0.2	2.1	3.0	1.6
Exchangeable Potassium	----	0.1	meq/100g	0.2	0.1	0.6	1.2	0.3
Exchangeable Sodium	----	0.1	meq/100g	2.5	0.2	2.1	10.1	1.5
Cation Exchange Capacity	----	0.1	meq/100g	5.2	0.9	11.1	48.9	4.3
Exchangeable Sodium Percent	----	0.1	%	48.5	28.3	18.7	20.7	35.0
ED037: Alkalinity								
Total Alkalinity as CaCO3	----	1	mg/kg	75	107	54	963	54
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/kg	75	107	54	685	54
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/kg	<1	<1	<1	278	<1
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	40	10	920	10	430
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	10	mg/kg	500	30	<10	100	170
ED093S: Soluble Major Cations								
Calcium	7440-70-2	10	mg/kg	<10	<10	70	<10	<10
Magnesium	7439-95-4	10	mg/kg	<10	<10	20	<10	10
Sodium	7440-23-5	10	mg/kg	360	40	360	90	280
Potassium	7440-09-7	10	mg/kg	<10	<10	50	<10	40
ED093T: Total Major Cations								
Sodium	7440-23-5	10	mg/kg	600	60	550	2140	370
Potassium	7440-09-7	10	mg/kg	510	300	1070	1090	730
Calcium	7440-70-2	10	mg/kg	100	60	2230	41600	220
Magnesium	7439-95-4	10	mg/kg	500	70	2120	4260	530
EG005S : Soluble Metals by ICPAES								
Aluminium	7429-90-5	1	mg/kg	<1	3	2	<1	<1
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	7440-38-2	0.1	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Boron	7440-42-8	1	mg/kg	<1	<1	<1	<1	<1
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: PULP			Client sample ID	Composite 12 ALS Pulp Composite	Composite 13 ALS Pulp Composite	Composite 14 ALS Pulp Composite	Composite 15 ALS Pulp Composite	Composite 16 ALS Pulp Composite
			Client sampling date / time	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00	30-JAN-2012 15:00
Compound	CAS Number	LOR	Unit	EB1202487-136	EB1202487-137	EB1202487-138	EB1202487-139	EB1202487-140
EG005S : Soluble Metals by ICPAES - Continued								
Cobalt	7440-48-4	0.1	mg/kg	<0.1	<0.1	0.3	<0.1	0.1
Copper	7440-50-8	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Iron	7439-89-6	1	mg/kg	<1	<1	<1	<1	<1
Lead	7439-92-1	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese	7439-96-5	0.1	mg/kg	<0.1	0.1	1.4	0.1	0.3
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	<0.1	<0.1	0.4	<0.1	0.2
Selenium	7782-49-2	0.1	mg/kg	<0.1	<0.1	0.2	<0.1	0.2
Vanadium	7440-62-2	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	7440-66-6	0.1	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	2690	750	8010	8620	2720
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	<5	<5	14	8	6
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	18	27	13	10	10
Cobalt	7440-48-4	2	mg/kg	2	<2	26	8	11
Copper	7440-50-8	5	mg/kg	<5	<5	72	29	20
Iron	7439-89-6	50	mg/kg	6070	760	13400	23900	4450
Lead	7439-92-1	5	mg/kg	<5	<5	28	9	12
Manganese	7439-96-5	5	mg/kg	10	6	194	955	14
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	2	2	44	12	18
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	15	<5	46	29	16
Zinc	7440-66-6	5	mg/kg	277	<5	93	58	36

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1202458**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 101142 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 30-JAN-2012
Sampler	: A Robertson	Issue Date	: 07-FEB-2012
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/057/11 V2	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Ionic Balance out of acceptable limits for sample EB1202458-006 (Kevins Corner 6) due to analytes not quantified in this report.**

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	27-JAN-2012 15:00	27-JAN-2012 15:00	27-JAN-2012 15:00	27-JAN-2012 15:00	27-JAN-2012 15:00
Compound	CAS Number	LOR	Unit	EB1202458-001	EB1202458-002	EB1202458-003	EB1202458-004	EB1202458-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.82	9.79	7.34	6.59	5.94
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	627	101	84	195	137
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	27	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	6	18	5	7	5
Total Alkalinity as CaCO3	----	1	mg/L	6	45	5	7	5
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	2	<1	2	3	9
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	10	1	16	6	46
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	193	5	11	45	3
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	2	<1	<1	<1	4
Magnesium	7439-95-4	1	mg/L	5	<1	<1	<1	1
Sodium	7440-23-5	1	mg/L	117	20	14	32	17
Potassium	7440-09-7	1	mg/L	1	<1	<1	<1	2
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.32	0.97	0.17	0.04
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.005	0.002	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	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
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.002	<0.001	0.028
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.003	<0.001	0.047
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.019	<0.005	0.024
Manganese	7439-96-5	0.001	mg/L	0.002	<0.001	0.003	<0.001	0.070
Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.005	0.003	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
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	0.07	0.17	0.21	<0.05

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	27-JAN-2012 15:00	27-JAN-2012 15:00	27-JAN-2012 15:00	27-JAN-2012 15:00	27-JAN-2012 15:00
Compound	CAS Number	LOR	Unit	EB1202458-001	EB1202458-002	EB1202458-003	EB1202458-004	EB1202458-005
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**5.77**	**1.06**	**0.74**	**1.53**	**1.14**
Total Cations	----	0.01	meq/L	**5.63**	**0.87**	**0.61**	**1.39**	**1.07**
Ionic Balance	----	0.01	%	**1.30**	----	----	----	----

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Kevins Corner 6	----	----	----	----
			Client sampling date / time	27-JAN-2012 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1202458-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	9.80	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	225	----	----	----	----
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	82	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	123	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	205	----	----	----	----
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	2	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	9	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
Sodium	7440-23-5	1	mg/L	49	----	----	----	----
Potassium	7440-09-7	1	mg/L	2	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.32	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	0.002	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.057	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.009	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	0.02	----	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.06	----	----	----	----

Analytical Results

Sub-Matrix: **LIQUID**			Client sample ID	Kevins Corner 6	----	----	----	----
			Client sampling date / time	27-JAN-2012 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1202458-006	----	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**4.39**	----	----	----	----
Total Cations	----	0.01	meq/L	**2.18**	----	----	----	----
Ionic Balance	----	0.01	%	**33.6**	----	----	----	----

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1203861**	Page	: 1 of 4
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 101142 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 10-FEB-2012
Sampler	: A Robertson	Issue Date	: 23-FEB-2012
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/057/11 V2	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Greg Vogel	Laboratory Manager	Brisbane Inorganics
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	09-FEB-2012 15:00	09-FEB-2012 15:00	09-FEB-2012 15:00	09-FEB-2012 15:00	09-FEB-2012 15:00
Compound	CAS Number	LOR	Unit	EB1203861-001	EB1203861-002	EB1203861-003	EB1203861-004	EB1203861-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.82	9.48	7.33	6.70	5.05
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1120	391	103	331	335
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	27	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	5	36	12	5	2
Total Alkalinity as CaCO3	----	1	mg/L	5	64	12	5	2
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	2	<1	2	4	5
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	18	24	23	6	136
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	340	60	8	87	3
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	6	<1	<1	1	10
Magnesium	7439-95-4	1	mg/L	12	<1	<1	2	3
Sodium	7440-23-5	1	mg/L	178	74	19	57	46
Potassium	7440-09-7	1	mg/L	3	2	1	1	4
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.04	4.02	0.02	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.008	0.009	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.003	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.002	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.003	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.004	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.003	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.046	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.002	<0.001	0.003	0.002	<0.001
Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.075	0.010	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
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	0.67	0.06	<0.05

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 6	----	----	----	----
			Client sampling date / time	09-FEB-2012 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1203861-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**9.81**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**192**	----	----	----	----
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	**43**	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**33**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**76**	----	----	----	----
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	**3**	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**14**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
Sodium	7440-23-5	1	mg/L	**35**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**2**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.77**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.015**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.002**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.006**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.17**	----	----	----	----

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1205613**	Page	: 1 of 4
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 101142 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 28-FEB-2012
Sampler	: A.Robertson	Issue Date	: 09-MAR-2012
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/057/11 V2	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

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LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	24-FEB-2012 15:00	24-FEB-2012 15:00	24-FEB-2012 15:00	24-FEB-2012 15:00	24-FEB-2012 15:00
Compound	CAS Number	LOR	Unit	EB1205613-001	EB1205613-002	EB1205613-003	EB1205613-004	EB1205613-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.08	8.78	7.39	6.90	4.99
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	586	507	108	131	302
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	11	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	5	53	13	4	2
Total Alkalinity as CaCO3	----	1	mg/L	5	64	13	4	2
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	2	<1	4	2	6
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	12	44	34	5	180
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	204	86	10	39	2
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	3	<1	<1	<1	17
Magnesium	7439-95-4	1	mg/L	7	<1	<1	<1	5
Sodium	7440-23-5	1	mg/L	122	101	24	31	56
Potassium	7440-09-7	1	mg/L	1	3	1	<1	5
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.74	0.13	0.08
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.006	0.006	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	0.0003
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	0.002	<0.001	<0.001	0.015
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.002	<0.001	0.078
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.002	<0.001	0.129
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.016	<0.005	0.148
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.002	<0.001	0.293
Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.081	0.007	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.03
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
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	0.13	0.28	0.53

Analytical Results

Sub-Matrix: LIQUID			Client sample ID	Kevins Corner 6	----	----	----	----
			Client sampling date / time	24-FEB-2012 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1205613-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**9.48**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**124**	----	----	----	----
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	**9**	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**60**	----	----	----	----
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	**4**	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**16**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
Sodium	7440-23-5	1	mg/L	**22**	----	----	----	----
Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.20**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.009**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.004**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.05**	----	----	----	----

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1206998**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 101142 Kevins Corner	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 12-MAR-2012
Sampler	: A Robertson	Issue Date	: 23-MAR-2012
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/057/11 V2	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Metals Production Chemist	Brisbane Inorganics
Jonathon Angell	Inorganic Coordinator	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	09-MAR-2012 15:00	09-MAR-2012 15:00	09-MAR-2012 15:00	09-MAR-2012 15:00	09-MAR-2012 15:00
Compound	CAS Number	LOR	Unit	EB1206998-001	EB1206998-002	EB1206998-003	EB1206998-004	EB1206998-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.88	9.39	7.38	6.82	5.61
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	514	229	110	144	279
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	19	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	6	24	10	4	4
Total Alkalinity as CaCO3	----	1	mg/L	6	43	10	4	4
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	2	<1	2	2	7
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	10	21	30	6	101
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	145	26	7	31	2
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	2	<1	<1	<1	10
Magnesium	7439-95-4	1	mg/L	6	<1	<1	<1	4
Sodium	7440-23-5	1	mg/L	85	44	19	24	31
Potassium	7440-09-7	1	mg/L	<1	2	1	<1	3
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.06	1.22	0.13	0.06
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.004	0.007	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	0.0004
Chromium	7440-47-3	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	0.015
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.004	<0.001	0.077
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.005	<0.001	0.130
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.038	<0.005	0.142
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.003	0.001	0.320
Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.030	0.007	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.03
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
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	0.20	0.25	0.14

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 1	Kevins Corner 2	Kevins Corner 3	Kevins Corner 4	Kevins Corner 5
			Client sampling date / time	09-MAR-2012 15:00	09-MAR-2012 15:00	09-MAR-2012 15:00	09-MAR-2012 15:00	09-MAR-2012 15:00
Compound	CAS Number	LOR	Unit	EB1206998-001	EB1206998-002	EB1206998-003	EB1206998-004	EB1206998-005
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**4.42**	**2.03**	**1.02**	**1.08**	**2.24**
Total Cations	----	0.01	meq/L	**4.29**	**1.97**	**0.85**	**1.04**	**2.25**
Ionic Balance	----	0.01	%	**1.48**	----	----	----	----

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 6	----	----	----	----
			Client sampling date / time	09-MAR-2012 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1206998-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**9.48**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**132**	----	----	----	----
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	**20**	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**26**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**46**	----	----	----	----
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	**8**	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**9**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**1**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
Sodium	7440-23-5	1	mg/L	**25**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**2**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.18**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.010**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.003**	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.001**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.003**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: LEACHATE			Client sample ID	Kevins Corner 6	----	----	----	----
			Client sampling date / time	09-MAR-2012 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1206998-006	----	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**1.34**	----	----	----	----
Total Cations	----	0.01	meq/L	**1.19**	----	----	----	----