Appendix 9-A

Brucejack Project Environmental Assessment - Hydrogeology Baseline Report

ERM

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

PRETIUM RESOURCES INC.

BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT

HYDROGEOLOGY BASELINE REPORT

FINAL

PROJECT NO.:	1008-010
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June 13, 2014
Project No: 1008-010

Ian Chang, P.Eng. Vice President, Project Development
Pretium Resources Inc..
Suite 1600 – 570 Granville Street
Vancouver BC, V6C 3P1

Dear Mr. Chang,

Re: Brucejack Project Environmental Assessment – Hydrogeology Baseline Report

Please find attached a copy of the above-referenced final report, summarizing the baseline hydrogeology study completed in support of the Environmental Assessment (EA) for the Brucejack Project.

We appreciate the continued opportunity to take part in the development of the Brucejack Project; should you have any questions or comments, please do not hesitate to contact me.

Yours sincerely,

BGC ENGINEERING INC.
per:

ISSUED AS DIGITAL DOCUMENT.
SIGNED HARDCOPY ON FILE WITH
BGC ENGINEERING INC.

Trevor Crozier, M.Eng., P.Eng.
Senior Hydrogeological Engineer

EXECUTIVE SUMMARY

BGC Engineering Inc. (BGC) was retained by Pretium Resources Inc. (Pretium) to complete a baseline groundwater hydrology, or hydrogeology, study for the Brucejack Project located in northwestern British Columbia, Canada. The Brucejack Project (the Project) is a proposed gold-silver mine previously explored by Newhawk Gold Mines Ltd. during the 1980's and 1990's (Pretium, 2012).

The objective of this report is to define the current understanding of the baseline hydrogeologic conditions in the local study area for the Project. This report will support the Environmental Assessment (EA) Certificate application, to be submitted for the Brucejack Project during 2014.

SPATIAL AND TEMPORAL BOUNDARIES

The baseline hydrogeology assessment was completed for the local study area (LSA) within the Brucejack Creek watershed. The LSA is defined as "*the Project footprint (all physical structures and activities that comprise the Project) and surrounding area within which there is a reasonable potential for immediate effects on a specific intermediate component or receptor VC [valued component] due to an interaction with a Project component(s) or physical activity*" (Rescan, 2013a). For the purposes of a hydrogeologic assessment, such effects may include drawdown due to dewatering, alteration in the flow regime, changes to groundwater recharge and/or discharge, and changes to groundwater chemistry. It is anticipated that the effects on the groundwater system at the Brucejack Project site will be focused around the underground mine development, and that the LSA from a hydrogeologic perspective will extend over a radial distance of a few kilometres from the proposed mine.

Hydrogeological data specific to the Brucejack Project site have been collected since 2010 by BGC, through site investigations associated with a Preliminary Economic Assessment (PEA), a Feasibility Study (FS) and an Environmental Assessment (EA). The most recent data presented in this report are from September 2013.

APPROACH AND METHODOLOGY

This baseline hydrogeologic assessment for the LSA involved the compilation and review of available geological, geotechnical, hydrogeologic, and geochemical data obtained from investigations of the Brucejack site, comprising:

- The drilling and hydraulic response testing completed in boreholes at the site
- Installation and development of groundwater monitoring wells
- Water level monitoring and groundwater sampling conducted at the site in support of the baseline hydrogeologic assessment.

PHYSICAL HYDROGEOLOGIC RESULTS

Surface topography has a pronounced influence on the groundwater flow system at the site. Measured groundwater elevations suggest that the water table is a subdued replica of

topography, with depths to groundwater typically greater in the uplands relative to lowlands, and greater seasonal variation at higher elevations. It follows that, in general, groundwater flow at the site follows topography, with groundwater recharge occurring at higher elevations and groundwater discharge occuring in the vicinity of Brucejack Creek and Brucejack Lake. A component of groundwater flow also occurs westwards, towards the Sulphurets Glacier.

The hydrostratigraphy of the site is composed of a thin, discontinuous layer of glacial till or colluvium underlain by bedrock. Thicker overburden deposits are confined to local sections of the valley bottom and are not present in the vicinity of the proposed underground mine.

Bedrock of the Brucejack Project area can be broadly divided as follows:

- Triassic marine sedimentary and volcanic rocks of the Stuhini Group.
- Jurassic sediments and volcanics of the Hazelton Group.
- Early Jurassic dikes, sills, and plugs of diorite, monzonite, syenite, and granite, the most common of which are grouped as the “Sulphurets Intrusions”.

Site wide, a general trend of decreasing bedrock hydraulic conductivity with depth is observed, though hydraulic conductivity varies by 2 to 3 orders of magnitude at any given depth. Based on available data, there is no apparent relationship between hydraulic conductivity and the major structure in the immediate vicinity of the Brucejack Project, the Brucejack Fault.

Adit dewatering, which occurred from November 2011 to February 2012 and August 2012 onwards, created a pronounced decrease in groundwater elevation in nearby monitoring wells. Dewatering activities also changed hydraulic head gradients, leading to increasingly large gradients associated with downward groundwater flow in areas affected by dewatering.

GEOCHEMICAL RESULTS

For the purposes of this baseline hydrogeologic assessment, and consistent with the requirements of the Project Application Information Requirements (AIR), concentrations of physical parameters, total metals, and dissolved metals were compared to appropriate regulatory guidelines for the protection of freshwater aquatic life (Canadian Council of Ministers of the Environment Water Quality Guidelines; and British Columbia Ministry of Environment (BC MOE) Water Quality Guidelines) and for drinking water use (BC MOE Water Quality Guidelines). Guideline exceedance does not imply contaminated groundwater, but rather suggests that background concentrations are higher than typically found in groundwater at other natural sites in Canada due to mineralization in the area. Observed concentrations are considered to be reflective of the natural site conditions.

In general, all groundwaters sampled present moderate alkaline pH values (~ pH 8), low to below detection limit chloride and nutrient concentrations (e.g., ammonia, nitrate, nitrate) and temperatures of approximately 2°C, with minimal seasonal variation. The groundwater sampled from the monitoring wells were grouped based on the geological model unit surrounding the well screens, and pertain to four material types: Office P1, P2, VSF and Bridge P1. Piper diagrams show all groundwaters present similar major cation concentrations, however anion constituents appear to show material-specific trends. Office P1 is

representative of one end-member, with low sulphate and high alkalinity, and Bridge P1 is highlighted as the opposite end-member. An analysis of bulk chemistries from the four material types revealed several metals presented common exceedances to guideline values. Specifically, six metals are shown to be enriched in all groundwaters sampled at the Project site (i.e., Al, Ag, As, Cr, Cu, and Fe). In addition to these metals, several material-specific enrichments were noted; by geologic mdel unit type these are: P2 (F, total Hg and Zn), VSF (F, total Cd, Co, Pb, and Zn), and Bridge P1 (F, total Cd, Pb, and Zn). These results, coupled with general groundwater chemistries (observed from Piper diagram results), imply Bridge P1 and Office P1 likely represent baseline groundwater high and low end-members (respectively) present at the Project site.

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LIST OF ACRONYMS & ABBREVIATIONS

AET	actual evapotranspiration
AIR	Application Information Requirements
BC MOE	British Columbia Ministry of Environment
BCWRA	British Columbia Water Resources Atlas
CCME	Canadian Council of Ministers of the Environment
CCME FW	CCME Water Quality Guideline for the Protection of Freshwater Aquatic Life
COC	chain of custody
CSR	Contaminated Sites Regulation
CSR AW	Contaminated Sites Regulation Aquatic Life Standard
DOC	dissolved organic carbon (chemical parameter)
EA	Environmental Assessment
EC	electrical conductivity (chemical parameter)
EIS	Environmental Impact Statement
FS	Feasibility Study
GAL	Galena Zone
K	hydraulic conductivity
KCBL	Klohn Crippen Berger Ltd.
LSA	local study area
mah	metres along hole
m asl	metres above sea level
m bgs	metres below ground surface
m btoc	metres below top of casing
MDRU	Mineral Deposit Research Unit
ML/ARD	metal leaching / acid rock drainage
PEA	Preliminary Economic Assessment
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
RISC	Resource Information Standards Committee
RPD	relative percent difference
RSA	regional study area
SI	site investigation
S_s	specific storage
S_y	specific yield
TDS	total dissolved solids (chemical parameter)

LIST OF ACRONYMS & ABBREVIATIONS CONT'D

TKN	total kjeldahl nitrogen (chemical parameter)
TOC	total organic carbon (chemical parameter)
TSS	total suspended solids (chemical parameter)
VC	valued component
VOK	Valley of Kings Zone
VWP	vibrating wire piezometer
WZ	West Zone

LIMITATIONS

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1.0 INTRODUCTION

BGC Engineering Inc. (BGC) was retained by Pretium Resources Inc. (Pretium) to complete a baseline groundwater hydrology, or hydrogeology, study for the Brucejack Project located in northwestern British Columbia, Canada. The objective of this report is to define the baseline hydrogeologic conditions in the local study area for the proposed Brucejack minse site. This report will support the Environmental Assessment (EA) Certificate application, to be submitted for the Brucejack Project during 2014.

1.1. Project Background

The Brucejack Project is a proposed underground mine targeting a gold-silver deposit in the high alpine in the Sulphurets District of the Iskut River region of British Columbia. The project is located approximately 70 km north-northwest of Stewart and 30 km west of Bowser Lake, at latitude 56°28’20” N and longitude of 130°11’31” W (Drawing 01). Access to the site is via an all-season road that crosses the Knipple Glacier, or via helicopter from one of Bell II, Stewart, B.C., or Grand Duc via Hyder, Alaska.

The Brucejack Project proposes to open a mine in an area previously explored by Newhawk Gold Mines Ltd. during the 1980’s and 1990’s (Pretium, 2012). At the end of Newhawk’s tenure, the project site included camp facilities, shop facilities, a ventilation shaft, an adit, and approximately 5,300 m of exploratory underground development (McLeod, 1999). A major reclamation program was completed in 1999 and the property was placed on a schedule of care and maintenance (McLeod, 1999).

The Brucejack Project was acquired by Silver Standard Resources Inc. in 1999-2000, and subsequently by Pretium Resources Inc. following the discovery of the Valley of Kings Zone in 2009-2010 (Pretium, 2013). Active exploration has been ongoing at the site since that time, including a bulk sample excavation from the Valley of Kings in 2013. A *Feasibility Study and Technical Report* was completed for the project, and submitted in June 2013 (Tetra Tech, 2013).

The proposed underground operation is to be located to the southwest of Brucejack Lake (Drawing 02). The project will include development of a mill adjacent to Brucejack Lake for primary processing of the ore. Flotation tailings from this mill will be deposited in Brucejack Lake along with waste rock from the underground mine. Waste rock and paste thickened tailings will also be used to backfill portions of the underground mine. Concentrate produced at the mine site will be hauled off-site by truck along the 70 km long access road that connects to Highway 37.

2.0 SCOPE OF WORK

This report is based on a review of the results from geological, geotechnical and groundwater quality investigations conducted by BGC on behalf of Pretium, and presents the conceptual understanding of the pre-construction and pre-mining hydrogeologic setting of the Brucejack Project. Predicted effects of the project on groundwater hydrology during construction, operations and closure (decommissioning and reclamation) and post-closure are addressed under separate covers (BGC, 2013a; 2013b).

The assessment was completed in general accordance with the requirements of Section 5 of the *Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators* (British Columbia Ministry of Environment [BC MOE], 2012), and is generally consistent with the document *Groundwater Mapping and Assessment in British Columbia* (Resource Information Standards Committee [RISC], 2013). This report has also considered information requirements outlined in Section 4.1 of the document *Framework for a Hydrogeologic Study in support of an application for an Environmental Assessment Certificate under the Environmental Assessment Act and Regulations* for groundwater extraction projects (BC MOE, 2013). Finally, the study meets requirements in *Brucejack Gold Mine Project: Application Information Requirements for Pretium Resources Inc.'s Application for an Environmental Assessment Certificate* (BC EAO, 2014), the 'AIR', and in *Environmental Impact Statement Guidelines for the Brucejack Gold Mine Project* (CEAA, 2013), the 'EIS'.

2.1. Temporal Boundaries

Hydrogeological data specific to the Brucejack Project site have been collected since 2010 by BGC, through site investigations associated with a Preliminary Economic Assessment (PEA), a Feasibility Study (FS) and an Environmental Assessment (EA). The most recent data presented in this report are from September 2013.

2.2. Spatial Boundaries

There are nine groundwater regions in British Columbia, classified in relation to physiography (Foweraker, 1994). The proposed mine site lies within the Coastal Mountains sub-region of the Insular and Coastal Mountains physiographic region. Parsons and Quinn (1994) provide a general overview of the groundwater occurrence, recharge and quality for the Insular and Coastal Mountains, which extend from the United States border to the Yukon. The extent of the Coastal Mountain sub-region and location of the project area are shown on Drawing 03.

2.2.1. Regional and Local Study Areas

The regional study area (RSA), defined as "*the spatial area within which direct and indirect effects are anticipated to occur*" (Rescan, 2013a), comprises the area selected for numerical hydrogeologic modeling, discussed in more detail in the report entitled *Brucejack Project Environmental Assessment – Numerical Hydrogeologic Model* (BGC, 2014a).

The baseline hydrogeology assessment was completed for the local study area (LSA) within the Brucejack Creek watershed. Catchment boundaries for the Brucejack Creek watershed are shown on Drawing 04.

The LSA is defined as "*the Project footprint (all physical structures and activities that comprise the Project) and surrounding area within which there is a reasonable potential for immediate effects on a specific intermediate component or receptor VC [valued component] due to an interaction with a Project component(s) or physical activity*" (Rescan, 2013a).

For the purposes of a hydrogeologic assessment, such effects may broadly include:

1. Drawdown of the water table or hydraulic heads due to mine dewatering;
2. Accompanying changes in groundwater recharge and/or discharge rates; and/or,
3. Changes to groundwater chemistry from geochemical reactions within the mine or waste materials, or within any zones that are dewatered.

It is anticipated that these stresses to the groundwater system at the Brucejack Project site will be focused around the underground mine development, and that the LSA from a hydrogeologic perspective will extend over an approximately radial distance of a few kilometers from the proposed mine.

3.0 SITE DESCRIPTION

3.1. Physiography

The Brucejack Project is located within the Boundary Range of the Coast Mountain Physiographic Belt along the western margin of the Intermontane Tectonic Belt. The region is characterized by steep mountains and extensive glaciation. Within the local project area, elevations vary from 1,300 to 2,000 m asl. Prominent depositional and erosional features that have resulted from glaciation include melt water channels on sloping surfaces, and small depressions frequently occupied by ponds and lakes. No permafrost conditions have been observed in the Project mine site area.

The tree line is at approximately 1,200 m elevation; therefore the mine site is sparsely vegetated. Sparse fir, spruce, and alder grow along the valley bottoms, and scrub alpine spruce, juniper, alpine grasses, moss, and heather cover the steep valley walls (Rescan, 2011a).

3.2. Climate & Meteorology

The climate at lower elevations in the regional study area is generally that of a temperate or northern coastal rainforest, with subarctic conditions at the high elevations where the Brucejack Project is located. An orographic influence of increased precipitation with increased elevation is often observed in mountainous terrain (Loukas & Quick, 1996). This same effect is expected within the study area, the result being highly variable precipitation and air temperature (Rescan, 2012). Though the Brucejack Project is located more than 200 km inland from the Pacific Ocean, lower mountains near the coast and a corridor created by Behm Canal, Burroughs Bay, and the Unuk River valley allow penetration of maritime air to the mine site area and subsequent abundant precipitation.

Meteorology baseline studies for the Brucejack Project were initiated in 2009, with the installation of an automated meteorological station near the site at an elevation of 1,360 m asl (Rescan, 2012). Precipitation and climate have also been monitored within the region at the Unuk River – Eskay Creek (#1078L3D) and Bob Quinn (#1200R0J) stations. Both stations are operated by Environment Canada from 1989 – present and 1977 – 1994, respectively.

The estimated mean annual adjusted precipitation at the Brucejack meteorological station is 1,589 mm based on data collected from January 2010 to December 2012 (Rescan, 2013b). This may under-predict precipitation, however, as the high wind speeds at the project site may result in under-catch. Average annual precipitation estimated by ClimateBC (Wang, 2012) for an elevation of 1,400 m asl exceeds 2,000 mm, as does annual average precipitation observed at lower-elevation Unuk River – Eskay Creek station. Average monthly precipitation data from the Brucejack Lake, Unuk River – Eskay Creek, and Bob Quinn meteorological stations, as well as estimates from the ClimateBC model, are presented Table 1. Data from all stations indicate that most of the precipitation occurs over the winter months, while the meteorological

station at Brucejack Lake indicates that the highest average monthly precipitation in the LSA occurs during September.

From October to May, most precipitation falls as snow. At higher elevations, snow accumulation can reach between 10 m and 15 m, while snow accumulation in low river valleys ranges from 2 m to 3 m (Rescan, 2011a). Strong winds in all seasons at high elevations in the project area lead to significant redistribution of snow (Rescan, 2012). The length of the snow-free season varies from about May through November at lower elevations and from July through September at higher elevations. Monthly mean air temperatures range from approximately -10°C in December and January to +10°C in July and August for this area (Rescan, 2011a). These temperatures are generally similar to regional climate normals for the Unuk River – Eskay Creek station.

3.3. Hydrology

The local study area contains glaciated areas, as well as several streams, wetlands and lakes, the largest of which is Brucejack Lake. Brucejack Lake is located in the immediate vicinity of the Brucejack Project within a relatively small sub-basin (10.1 km^2) of the Sulphurets Creek watershed (300 km^2). Sulphurets Creek is a tributary to the Unuk River (2,577 km^2) which flows southwest, draining into the Pacific Ocean to the northeast of Ketchikan, Alaska.

The hydrology of the project area is characteristic of a snowmelt dominated regime supplemented by glacier meltwaters in the late summer. Peak flows typically occur in mid-summer and low flow conditions occur during the winter months of January to March (Rescan, 2013a). The long period of snow and ice cover limit evaporation at the site. The local terrain at the Brucejack Project is steep, with elevations ranging from 1,300 to 2,000 m above sea level.

The Brucejack Lake catchment is approximately 41% glaciated (Rescan, 2013c), however, estimates of glacier contributions to streamflow are not yet available.

Data collection for a hydrology baseline study for the Brucejack Project commenced in 2010 (Rescan, 2011b). The baseline study includes data from automated hydrometric stations installed by Rescan during 2007 and 2008 to characterize the hydrology at a neighbouring property. The hydrometric stations relevant for the Brucejack Project are BJL-H1 (Drawing 04) and SL-H1 which collect continuous water level data downstream of Brucejack Lake and Sulphurets Lake, respectively.

Average monthly and annual streamflow, and runoff data for the area are presented in Table 1, along with the precipitation data. Streamflow data are from the hydrometric station BJL-H1 which is located at the discharge point of an approximately 11.7 km^2 catchment area containing the Brucejack Lake sub-basin and three intervening tributaries (Drawing 04). Runoff estimates, which are calculated from streamflow, are expected to represent all of the runoff from the upstream watershed, as baseflow bypassing the hydrometric station is not believed to be susbstantial (BGC, 2014b). The highest average monthly runoff occurs during the months of May through August, and is mostly related to snowmelt in late May and throughout the summer.

This meltwater also appears to act as a significant source for groundwater recharge (discussed further in Section 6.2).

Average annual runoff of 1,746 mm is reported, based on available monthly streamflow data over the period of 2007-2012 (Rescan, 2013d). This estimate exceeds the estimated annual precipitation of 1,589 mm. The discrepancy between annual precipitation and runoff could be related to any one or combination of the following justifications:

1. Prevalent orographic effect causing a difference in precipitation amounts at the two station locations;
2. Precipitation underestimates due to under-catch; or,
3. There is a significant contribution to runoff from glacial melt (BGC, 2014b).

3.4. Geology

The regional geology of the area has previously been described in detail by Grove (1971, 1986), Alldrick (1989), Britton and Alldrick (1988), Alldrick and Britton (1988), Roach and MacDonald (1992), McPherson et al., (1994) and Savell (2008). Regional geology is illustrated on Drawing 05, while site-specific geology is summarized briefly in Sections 3.4.1 though 3.4.4; for more detail on local geology, refer to the FS level rock mechanics assessment completed by BGC and provided under separate cover (BGC, 2013b).

Pretium's geological model units (shown on Drawing 06 and cross-sections 12 and 13) are discussed in Section 3.4.5, in relation to site-specific geology.

3.4.1. Overburden

The overburden in the LSA consists of a veneer of well-graded glacial till over bedrock. Grain size varies from sand to gravel, with some silt and clay, and variable quantities of cobbles and boulders. Clasts are subrounded to rounded, and color varies from orangey brown to grey. Overburden thickness varies but is generally less than 5 m, often less than 1 m, and occasionally absent. A thin (often less than 0.5 m, but occasionally up to 3.0 m) layer of sandy organics overlies the overburden.

3.4.2. Bedrock Geology

The Brucejack Property is underlain by Upper Triassic volcaniclastic and epiclastic sedimentary rocks of the Stuhini Group and Lower to Middle Jurassic volcanic, volcaniclastic, and sedimentary rocks of the Hazelton Group. An angular unconformity marks the contact between the sedimentary rocks of the Stuhini Group and medium- to coarse-grained sandstones of the Jack Formation which is the basal formation of the Hazelton Group and is dated at about 196 million years (Ma).

The sedimentary rocks belonging to the Jack Formation are overlain by a 10-50 m thick unit of mudstone/argillite and cherty argillite belonging to the Unuk River Member of the Betty Creek

Formation. This argillaceous unit is exposed along the southwest side of the West Zone deposit.

Overlying the argillite unit is a 500 m thick package of hornblende and plagioclase-phyric andesitic flows, flow breccias and intermediate tuffaceous rocks intercalated with volcaniclastic conglomerates, sandstones and siltstones. These rocks form the bulk of the Unuk River Member in the Brucejack Property and outcrop extensively within a northwest-trending belt that passes beneath Brucejack Lake. U-Pb geochronology and biochronology done by Mineral Deposit Research Unit (MDRU) geoscientists have determined the age of the Unuk River Member volcanics to be in the range of 196 to 194 Ma.

The rocks of the Unuk River Formation are overlain by a thick sequence of dacitic pyroclastic rocks (tuff-breccia, lapilli tuff, crystal-lithic tuffs, minor ash tuff) and flows with thin argillite interbeds belonging to the Brucejack Lake Member of the Betty Creek Formation. These are exposed on the mountainside north of Brucejack Lake.

The intrusive Unuk River Member andesites are the most important host rocks to the gold and silver bearing quartz veins discovered in the Brucejack Property (P&E Mining Consultants, 2009), and are the focus of the proposed development in the Valley of Kings (VOK) and West Zone (WZ).

3.4.3. Lithologies and Alterations

Multiple stages and zones of alteration have been noted in the project area. The rocks in the VOK and WZ are highly altered, and in many cases stratigraphic relationships must be used on top of lithologic descriptions. The main lithologies include:

- Volcanics: Felsic, intermediate, and mafic volcanics as well as mafic dykes
- Porphyries: Plagioclase-hornblende porphyritic rocks, potassium feldspar-hornblende-plagioclase porphyritic rocks, and plagioclase porphyritic rocks
- Intrusives: Felsic, intermediate, and mafic intrusives
- Sediments: Conglomerates, sandstone/arenite, mudstone/siltstone/pelites, carbonates, cherts/jasperites
- Hydrothermals: Quartz veins, quartz-carbonate veins, quartz-silicate veins, hydrothermal replacement, hydrothermal breccias, and intensely silicified breccia zones
- Metamorphics: Metamorphosed felsic igneous rock, and metamorphosed intermediate to mafic igneous rocks (these lithologies present only at the adjacent Snowfields property)
- Fault zones

Alteration assemblages vary with proximity to deformation events, but sericitic alteration is pervasive throughout the project area. Carbonate, chlorite, and silica alteration are also common.

As summarized by Greig (2012), mid-Cretaceous deformation, which represents the major phase of regional deformation, has deformed both the mineralized zones and the host stratigraphy and therefore post-dates the mineralization event. The regional event led to the development of the predominant WNW to ENE trending and very steeply dipping foliation best displayed in the altered rocks which are the immediate hosts to the mineralization. Late stage brittle faulting has locally disrupted some of the earlier tectonic fabrics. There is evidence for northerly, northwest, and northeast fault trends.

Two major phases of folding are present on the property. Although their origin is uncertain, they may have been developed during the mid-Cretaceous event. One fold axis generally trends northerly but with an arcuate shape, and the other is a tightly folded syncline plunging to the east-southeast with the above-mentioned dominant foliation primarily axially parallel to it. Both fold axes are steeply plunging.

3.4.4. Major Structures and Faulting

The major regional lineaments, as interpreted by ERSi (2010), around the Brucejack area are the Brucejack Fault lineament, the Upper Treaty Glacier lineament and the Treaty Creek lineament. The Bruce Fault, a west-trending fault occupying Brucejack Creek was also identified at earlier stages of exploration as a major feature at the site (McPherson et al., 1994).

The Brucejack Fault truncates several site-scale faults at the western extent of the Brucejack property, and thus has been interpreted as post-dating site-scale deformation events. Orientations parallel to the inferred Brucejack Fault lineament were commonly observed in downhole structural measurements across the property. All interpreted structural domains include sets oriented along the Brucejack Fault with dips ranging from 56˚ to vertical.

The Upper Treaty Glacier lineament is a prominent high angle topographic lineament north of the Brucejack property. Although not associated with a specific fault set, similarities in regional topography and drainages make it likely that parallel structures will be prevalent throughout the study area. The Upper Treaty Glacier appears in drill hole and underground mapping data in the northern regions of the property, and appears locally in the West Zone and VOK 1 domains as a moderately strong shear and joint set. It also aligns with the topographic lineament used to define the VOK 2 – VOK 3 structural domain boundary (BGC, 2013b).

The Treaty Creek lineament strikes east-southeast and extends north to the Iskut River Fault. The lineament marks the contact between the Hazelton Group and Bowser Lake Group rocks to the north of the property, and is a common orientation for valleys and drainages in the region. It is expected that lineament-parallel steep structures will be prevalent throughout the study area. The Treaty Creek lineament was observed in drill hole data as a joint and shear set throughout the property, and parallels the VOK 1 – VOK 2 domain boundary.

The Brucejack Fault lineament is currently the only known major structure that intersects the proposed mining footprint. It is a northerly striking anastomosing fault zone located along the western margin of the study area and extends north to the Iskut River Fault. In places the

lineament appears to be several sub-vertical to moderately (greater than 60°) dipping fault strands braided together. The zone has normal faulting with variable displacement estimated at 500 to 800 m (ERSi, 2010).

3.4.5. Geological Model Units

As discussed above, the Brucejack Property contains a wide range of rock types, with 24 unique rock lithologies identified by Pretivm geologists from drill core. Mapping within the Brucejack area shows many of these rock types are intensely altered and this, in addition to a diverse range of mineral assemblages, adds to the difficulty in relating logged drill core to stratigraphic sequences.

Pretivm developed a geological model to relate these logged lithologies to 7 model units that best categorize the rock composition:

- P2 Model Unit – characterized as megacrystic, plagioclase, K-feldspar and hornblende phyric flow. Sulphide content comprises pyrite with minor sphalerite and trace chalcopyrite.
- Fragmental Model Unit – characterized as Hornblende and/or feldspar phyric latite to andesite fragmental volcanic rocks and subordinate flows with minor ash and lapilli tuff. Sulphide content comprises pyrite with minor sphalerite and trace chalcopyrite.
- Conglomerate Model Unit – characterized as Heterolithic boulder to course cobble conglomerate with sandstone. Sulphide content comprises pyrite with minor sphalerite and trace chalcopyrite.
- Silicified Cap Model Unit – characterized as Silicified rocks; typically poorly sorted heterolithic conglomerate, lesser sandstone and local mudstone; commonly includes rhyolite fragments. Sulphide content comprises pyrite with minor sphalerite and trace chalcopyrite.
- Volcanic Sedimentary Facies (VSF) Model Unit – characterized as Volcanically derived siltstone and sandstone with minor arenite and pebble conglomerate. Sulphide content comprises pyrite with minor sphalerite and trace chalcopyrite.
- Office P1 Model Unit – characterized as Hornblende, feldspar phyric latite flows. Sulphide content comprises pyrite with minor sphalerite and trace chalcopyrite.
- Bridge P1 Model Unit – characterized as Hornblende, feldspar phyric latite flows. The Bridge P1 unit is the same general rock type as Office P1 but with a different age and geochemical signature. Sulphide content comprises pyrite with minor sphalerite and trace chalcopyrite.

For the geochemical characterization of the site, sample materials are classified as one of the seven geological model units based on geochemical assay results (i.e., Ti/V) and/or its proximity to intensely silicified rocks located within the central part of the deposit (BGC, 2014d).

4.0 GROUNDWATER RESOURCES

4.1. Regional Groundwater Resources

Regional groundwater resources were assessed by reviewing information available from the BC Ministry of Environment (MOE) Water Stewardship Division and other online resources.

Groundwater in the mountains generally occurs within voids and fractures in bedrock and can be irregularly distributed due to the variability of the fractures (Parsons and Quinn, 1994). Variations in permeability and topographic relief have a strong effect on the direction of groundwater flow, and mountain springs are common where lower permeability rock impedes the downward movement of groundwater.

Groundwater generally occurs in the intervening valley fill deposits between mountain ranges in granular deposits such as sand and gravel, however, low permeability deposits are often present and are not suitable as sources of groundwater supply. The Insular and Coastal Mountains include significant thicknesses (up to hundreds of metres) of unconsolidated material in the valleys which dissect the mountain ranges due to glacial processes during the Pleistocene ice age (Parsons and Quinn, 1994).

Parsons and Quinn (1994) indicate that groundwater quality is generally dependent on the mineral composition of rocks that the groundwater moves through. In areas with base metal mineralization, groundwater may have high concentrations of these metals and may not be suitable for drinking water. In crystalline bedrock of low solubility, the groundwater is typically good quality for drinking water and other uses. Mountainous terrain is considered especially vulnerable to contamination due to generally sparse soil cover and limited natural attenuation and retardation of flow in crystalline fractures.

4.2. Local Groundwater Resources

The BC MOE online British Columbia Water Resources Atlas (BCWRA) did not show any aquifers mapped in the vicinity of the proposed mine LSA. The nearest wells shown in the BCWRA are located approximately 40 km to the east, northeast and northwest of the project site. A map showing the locations of these wells in relation to the project site and Bowser Lake is included as Appendix A, along with associated well records.

There are a total of six wells within approximately 40 km of the Brucejack project site. One well is mapped to the east of the project site in the Wildfire camp area and is owned by Pretium Exploration. Two wells are mapped to the northeast of the project site and are owned by Vallard Construction and designated for commercial and industrial use. Three wells are mapped to the northwest of the project site and owned by Alta Gas. Of these wells, two are designated for commercial and industrial use and one is designated for “other” uses.

A groundwater supply well is proposed for the Brucejack Project site but this well had not been sited, drilled or tested at the time of report writing. Results from a desktop potable groundwater supply well assessment for Brucejack Mine Camp (BGC, 2014c) indicated that:

1. Selecting a successful location for potable groundwater supply wells for the Brucejack Camp will be difficult, and may not be able to supply the maximum demand (i.e., 500 person camp).
2. A bedrock well may only yield approximately an estimated 20 US gallons per minute. A field of three wells (two operating and one back-up well to be used during maintenance and redevelopment of the main production wells) may be sufficient to supply a 50 person camp.
3. Some treatment of the groundwater from the mineralized area may be required to meet drinking water quality standards.

Based on the absence of public-domain hydrogeologic information, the preliminary evaluation of groundwater resources within the local study area is based entirely on site investigations conducted by BGC. Available information on groundwater occurrence and quality and on aquifer formation parameters are discussed in the subsequent sections of this report.

5.0 APPROACH AND METHODS FOR ASSESSMENT

This baseline hydrogeologic assessment for the LSA involved the compilation and review of available geological, geotechnical, hydrogeologic, and geochemical data obtained from investigations of the Brucejack site. The subsequent sections discuss:

1. The installation and development of groundwater monitoring wells
2. The geotechnical drilling and hydraulic response testing completed in boreholes at the site
3. Water level monitoring and groundwater sampling conducted at the site in support of the baseline hydrogeologic assessment.

5.1. Groundwater Monitoring Wells

In the fall of 2011, nine groundwater monitoring wells were installed at six different locations in the vicinity of the existing underground workings and proposed new development areas (Drawing 06). The monitoring wells were completed as three sets of nested shallow and deep wells (MW-BGC11-BJ-1A/B, MW-BGC11-BJ-3A/B, and MW-BGC11-BJ-5A/B), and three individual wells (MW-BGC11-BJ-2A, MW-BGC11-BJ-4A, and MW-BGC11-BJ-6A).

Between June and August 2012, an additional twelve groundwater monitoring wells at two existing locations (MW-BGC12-BJ-4B, MW-BGC12-BJ-6B) and five new locations were installed at the Brucejack site (MW-BGC12-BJ-8A/B, MW-BGC12-BJ-9A/B, MW-BGC12-BJ-10A/B, MW-BGC12-BJ-11A/B, MW-BGC12-BJ-12A/B). The monitoring wells are identified with either the letters ‘A’ or ‘B’, to differentiate the deep (A) and shallow (B) well in each nest.

The locations for the installation of monitoring wells were selected based on the following considerations:

- Locations of the mineral deposits and surface water receptors (i.e., Brucejack Creek and Brucejack Lake);
- Good spatial distribution of groundwater elevation data;
- Locations of existing vibrating wire piezometer installations;
- Access to wells during the winter; and,
- Proximity to Brucejack Fault.

Originally, nested wells were planned for each site, however, the number of installations and depths were adjusted based on static water levels observed in the field and the presence or absence of water bearing fractures. For example, at MW-BGC11-2A it was determined that a shallow completion was not necessary because the static water level was deeper than 50 m. Installation depths varied from 8.8 to 103.3 m and well screen intervals were selected based on the intersection of water bearing fractures and on the depth to static water level.

Drilling of the PQ-sized holes for monitoring well installations was conducted by Radius Drilling Corporation and Matrix Diamond Drilling using heli-portable diamond drills. Drilling fluid consisted of freshwater obtained from Brucejack Lake, Brucejack Creek, or other nearby

surface bodies of water. No drilling additives or muds were used for the groundwater investigation drill holes, with the exception of MW-BGC12-BJ-12A which was drilled with grease to get past a significant discontinuity at an approximate depth of 50 m bgs. Where overburden thickness exceeded 0.3 m, a short length of surface casing was installed to facilitate drilling and monitoring well installation.

Monitoring wells were constructed using 2" solid pvc, and 0.20 slot PVC screens. Wells were completed with 10/20 silica sand packs placed around the screened intervals, and 3/8" coated bentonite pellet seals placed above the sand packs. The borehole annulus above the bentonite plug was filled with a cement-bentonite grout. The 2011 monitoring wells could not be grouted at the time of installation due to winter drilling conditions and available supplies on site, though the bentonite plugs above the sandpacks in the boreholes and at ground surface are considered sufficient to maintain the integrity of these monitoring wells. Completion of the 2011 wells is documented in the memo entitled *Brucejack Project – Preliminary Summary of October 2011 Groundwater Investigation* (BGC, 2012).

Following installation, BGC developed all monitoring wells by removing approximately 10 well volumes of water from the wells and monitoring the stability of field chemistry parameters, namely pH, electrical conductivity (EC), temperature, and total dissolved solids (TDS). Groundwater was removed from the wells using dedicated Waterra inertial pumps fitted with surge blocks, dedicated bailers, an air compressor, or by removing a length of PVC casing and allowing the well to flow naturally (for artesian wells MW-BGC11-BJ-3A and -3B). Well development was considered to be sufficient once the field parameters stabilized and there was no further visual improvement in water quality.

Following well development, pressure transducers (HOBO data loggers by Onset Corporation) were installed in all monitoring wells which collect continuous water level measurements at 6-hour time intervals.

Well logs and drill hole details for the Brucejack site groundwater monitoring wells are provided in Appendix B and summarized in Table 2. The locations of the monitoring wells are shown on Drawing 06.

5.2. Vibrating Wire Piezometers

Three geotechnical drill holes were completed by BGC at Brucejack in 2010 as part of a geotechnical site investigation that also included borehole televiewer surveys, packer testing and the installation of vibrating wire piezometers (VWPs). Nested shallow and deep VWPs were installed in two of the angled geotechnical drill holes (SU-82, SU-88), with a single VWP installed in the third (SU-77). Continuous single-channel data loggers set to record measurements of pressure and temperature at 6-hour intervals were attached to all VWP installations.

In the spring and fall of 2012, an additional 17 geotechnical drill holes were completed as part of FS-level underground and plant site investigations (Drawing 06). A total of 18 VWPs were

installed in 12 of the drill holes (Table 3) and attached to continuous single-channel data loggers recording at 6-hour intervals. Standpipe piezometers were installed in three of the shallow geotechnical holes (DH-BGC12-28, DH-BGC12-29, and DH-BGC12-30), with the same procedures and materials described above in Section 5.1.

Geotechnical drill hole logs are provided in Appendix C with borehole details summarized in Table 3. Details on the vibrating wire installations, including VWP tip coordinates and depths, are provided in Table 4.

5.3. Hydraulic Response Testing

5.3.1. Packer Tests

Packer testing is a method for obtaining hydraulic conductivity estimates in rock, and may be performed using a single or double packer set-up. There are three different types of packer tests that can be performed:

1. Constant head tests (i.e., constant pressure)
2. Falling head tests
3. Flow recession tests.

Of these, constant head packer tests are preferred, as information can be gained on both the permeability of the tested interval and the rock and fracture behaviour.

The general procedure for conducting a packer test involves isolation of a predetermined testing interval within a borehole by lowering packers down the hole inside drill rods and inflating them with nitrogen gas or water. After isolation, a constant pressure head is applied to the test interval and maintained using a pump located at the surface. For each test, three ascending and two descending pressure stages were applied. A flow totalizer was used to record the total volume of water that is pumped down the hole during each test over a given time (generally 5 to 10 minutes per stage). The bulk hydraulic conductivity across the test interval may then be estimated using a formula involving the applied pressure differential, the observed steady-state flow rate, and an empirical shape factor based on the geometry of the test interval.

A falling head test may be conducted if the hydraulic conductivity is found to be too low to perform a constant head test (i.e., hydraulic conductivity less than ~$1x10^{-8}$ m/s at which flows are generally too low for measurement using commercially available, non-specialized, flow metres). This type of test typically involves addition of water to a predetermined level within the drill rods and recording the rate at which the water level drops, and is very similar to the procedure described below in Section 5.3.2.

A flow recession test may be performed if the sealed packer interval is found to be flowing artesian. For this test, the artesian interval is sealed and the pressure buildup over time is recorded. After the pressure has stabilized, the interval is unsealed and the discharge rate monitored until pressure in the interval returns to pre-test conditions.

Hydraulic conductivity data from a total of 52 packer tests carried out in the bedrock at the Brucejack Site were available for analysis and review. Six packer test results were available from 2010 investigations at the site, with an additional 46 results obtained during the 2012 site investigations. Hydraulic conductivity values estimated from packer tests are summarized in Table 5.

5.3.2. Slug Tests

Rising and falling head tests were carried out by BGC in 2012 to obtain estimates of the hydraulic conductivity of the near-surface, fractured rock zone in which the monitoring wells are completed. Generally, the procedure for these tests involves bailing water from, or adding a displacement slug to, a monitoring well and measuring the resulting water level recovery with time. Test results were analyzed using the Hvorslev (1951) method to estimate the hydraulic conductivity of the formation around the test interval.

A total of 15 falling or rising head tests were conducted in monitoring wells at the Brucejack Site during the 2012 site investigations. Results of the rising and falling head slug test analyses are summarized in Table 6.

5.4. Water Level Monitoring

Hydraulic head data were collected by the network of data loggers attached to VWPs and pressure transducers deployed in groundwater monitoring wells (Sections 5.1 and 5.2). These data loggers were downloaded during each site visit, depending on accessibility and status of the water column (i.e., frozen or unfrozen). Hydraulic head data were corrected for barometric pressure and are plotted as groundwater hydrographs along with climate data in Appendix D.

Hydraulic head data from data loggers were supplemented by manual water level measurements in standpipe piezometers. Static groundwater levels and total well depth were measured from a notch cut at the top of the PVC pipe at each monitoring well using a water level tape, and well stick-up height was measured using a measuring tape. Given the topographic relief, the measurement accuracy of 0.01 m for groundwater levels is considered adequate for baseline characterization of the groundwater flow system in the Brucejack Project LSA. Water level measurements were not always possible during the winter months due to deep snow cover prohibiting access to the wells, or due to frozen water columns. Manual water level measurements from groundwater monitoring wells are presented along with installation and lithologic data in Table 2.

5.5. Groundwater Sampling

Groundwater samples have been collected from monitoring wells at the Brucejack site on a quarterly basis since installation, though weather and site access occasionally prevented a monitoring well from being sampled during a given sampling event, particularly during the winter. The general methodology for groundwater sampling is summarized below.

In general, at least three well volumes were purged from monitoring wells to remove stagnant water from the well and filter pack prior to collection of groundwater samples. For wells screened in low permeability formations, less than tree well volumes may have been purged prior to sampling due to slow well recovery. Purging was conducted using Waterra inertial pumps, dedicated polyethylene bailers, mini-monsoon pumps, or for later sampling events Grundfos Redi-Flo 2 pumps. All pumps were used with dedicated tubing for each monitoring well. Purge volumes were measured in 20 L pails, and discarded at ground surface away from the borehole annulus. For all purging methods an effort was made to minimize agitation of the water column, to reduce sediment suspension in sample water.

During purging, in-situ parameters (pH, temperature, and EC) were monitored until relatively constant readings were observed (i.e., constant temperature, 0.1 pH variation, 2-5% EC variation). It was assumed that water in the well was formation water representative of in-situ groundwater conditions when these parameters were determined to be stable.

Samples were collected from each well using dedicated Waterra tubing with inertial or mechanical pumps, or dedicated single-use polyethylene bailers and placed into the appropriate sterile sample containers provided by the laboratory. Samples were filtered and/or preserved as required and were stored in coolers with ice packs at approximately 4°C until they were transported under chain of custody to ALS Environmental Laboratories in Burnaby, BC for analysis.

The samples were submitted for analysis of physical parameters, anions, nutrients, cyanides, organic carbon, total metals, and dissolved metals. Quality assurance and quality control (QA/QC) samples including field blanks, travel blanks and field duplicates were submitted as required, and were tested for the same parameters as the groundwater samples. In general, one set of field blanks and one set of travel blanks were included with each sampling event, along with one set of duplicates, which equates approximately to a 1:10 ratio. Results of groundwater sampling are summarized in Appendix E and lab certificates are compiled in Appendix F.

6.0 PHYSICAL HYDROGEOLOGY RESULTS

Results of the physical hydrogeologic investigations based on the approach and methods for data collection described in Sections 5.1 to 5.4 are described in the subsections that follow. Specifically, this includes discussion of:

1. Hydraulic conductivities in the LSA;
2. Groundwater elevation data;
3. Groundwater flow directions;
4. Hydraulic gradients and groundwater recharge and discharge; and,
5. The occurrence of groundwater springs and seeps.

6.1. Hydraulic Conductivity

Hydraulic conductivity data from a total of 67 hydraulic tests (15 slug tests and 52 packer tests) carried out in bedrock at the Brucejack Site were available for analysis and review. Six packer tests results were available from 2010 investigations at the site, with an additional 46 results obtained during the 2012 site investigations. Slug tests completed in monitoring wells at the Brucejack project in 2012 provide another 15 estimates of hydraulic conductivity. Hydraulic conductivity data are presented in Tables 5 and 6.

Hydraulic conductivity data are illustrated schematically versus depth by test type (i.e., packer test or slug test) in Drawing 07, by lithology in Drawing 08, and by discontinuity class (i.e., 0-1 discontinuities, 2+ discontinuities, or fault zone) in Drawing 09. The general trend of decreasing hydraulic conductivity with depth (or with increasing confining stress) shown is commonly observed within bedrock, and is illustrated in Figure 6-1 from Rutqvist and Stephansson (2003).

Though a general trend of decreasing hydraulic conductivity with depth is observed in site data, hydraulic conductivity is observed to vary by two to three orders of magnitude at any given depth. The geometric mean of hydraulic conductivity estimates from slug tests (8.3×10^{-7} m/s) is higher than the geometric mean of estimates from packer tests (1.5×10^{-7} m/s). This is expected, as site monitoring wells have well screens within 100 m of ground surface, and were installed to target conductive zones in order to facilitate groundwater quality sampling for the purposes of the EA baseline monitoring program. Packer tests, while generally targeting conductive features as well, were completed over intervals at depths reaching up to 500 m below ground surface.

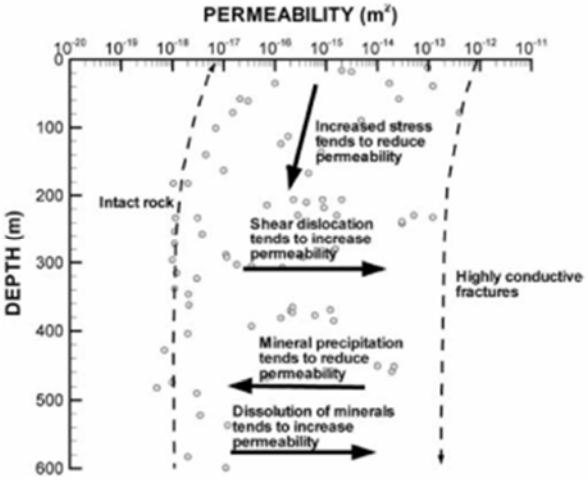

Figure 11. Permeability measured in short-interval well tests fractured crystalline rocks in Gidea, Sweden. Effects of shear dislocation and mineral precipitation/dissolution processes obscure the dependency of permeability on depth (stress). The permeability values on the left-hand side represent intact rock granite, whereas the permeability values on the right-hand side represent highly conductive fractures.

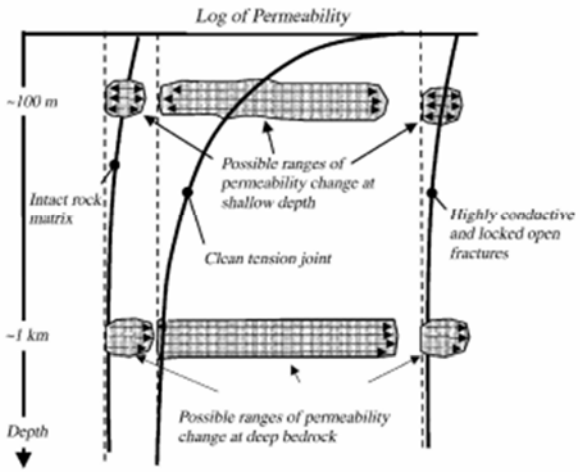

Figure 23. Schematic representation of possible permeability changes at shallow and deep locations in fractured bedrock. The solid lines represent the depth-(or stress-) permeability function for intact rock, clean tension joints and highly conductive and locked-open fractures.

Figure 6-1. Permeability vs. Depth - from Rutqvist and Stephansson, 2003.

Overburden permeability data are not available in the immediate vicinity of the Brucejack Project, though estimated hydraulic conductivity from falling head tests conducted within boreholes and in standpipe piezometers in the overburden during the 2008 and 2009 drilling programs by Rescan and KCBL at a neighbouring property ranged from $1x10^{-5}$ m/s to $3x10^{-9}$ m/s, with a geometric mean of $2x10^{-7}$ m/s (BGC, 2010b).

6.2. Groundwater Elevation

As described in Section 5.4, hydraulic head data are collected by the network of data loggers attached to VWPs and pressure transducers deployed in monitoring wells, and supplemented by manual water level measurements in standpipe piezometers. Plots of groundwater elevation through time for instruments installed at the Brucejack site are included in Appendix D.

The VWPs installed in 2010 have the longest continuous record of groundwater elevation at the site, with data extending back to September of 2010. These hydrographs show pronounced annual variation in groundwater elevation for a given location, with water levels slowly decreasing over the course of the winter season, and recovering rapidly with the recharge that occurs during snowmelt. In general, groundwater elevations are observed to mimic topography (i.e., higher groundwater elevations in instrumentation completed at higher elevations and vice versa), and show greater seasonal variation at higher elevations.

Groundwater levels in the monitoring wells varied over the monitoring period by over 30 m at higher elevations (MW-BGC11-BJ-5A/B) and less than 5 m at lower elevations (MW-BGC11/12-BJ-4A/B and MW-BGC11/12-BJ-6A/B). Observed hydraulic heads at the Brucejack Project site ranged from at or just above ground surface, typically at lower elevations (e.g., MW-BGC11-BJ-3A/B), to 60-80 m below ground surface (e.g., MW-BGC12-BJ-12A).

Interpretation of hydraulic head data at the Brucejack Project is complicated by dewatering and drilling activity at the site. Adit dewatering, which occurred from November 2011 to February 2012, created a very pronounced decrease in the water table in nearby wells, with some water levels dropping below the level of the pressure transducers (e.g., greater than 30 m decrease in groundwater elevation in MW-BGC11-BJ-1A, with water level dropping below the level of the data logger in December 2011). Dewatering recommenced in August 2012, and has been ongoing on a continuous basis, though at a variable pumping rate since that time, maintaining the groundwater elevation at approximately the 1300L in the WZ.

Drilling associated with mineral exploration and geotechnical investigations has also impacted groundwater levels within the LSA, as drilling involves the rapid, localized injection of water on a sporadic basis throughout the Brucejack Project area. This is reflected in the groundwater hydrographs as a spiky pattern of rapidly fluctuating water levels in some wells (e.g., MW-BGC11-BJ-5A/B).

6.3. Potentiometric Surface and Groundwater Flow Direction

Using groundwater elevations measured in the Brucejack Project area, BGC prepared interpreted equipotential contour maps for both summer (Drawing 10) and winter (Drawing 11) baseline conditions. The summer contour map was created using groundwater elevations measured in August 2012. Because winter groundwater elevations observed in 2012-2013 were impacted by dewatering activity at the site, a combination of groundwater elevations from 2011, 2012, and 2013 were used to create the interpreted winter groundwater elevation contour map. Data were selected based on the absence of a dewatering or drilling signal, from the months of March and April when the water table reached its lowest elevation in each well.

BGC also prepared two interpreted hydrogeologic cross sections for the project area showing summer groundwater elevations and hydraulic conductivity data in relation to Pretium's geologic block model. Cross section alignments are shown on Drawing 06 and the cross sections are included as Drawings 12 and 13 in this report.

Groundwater flow in the LSA generally occurs downward and northward from the Valley of Kings Zone under topographically driven gradients towards Brucejack Creek and Brucejack Lake. A component of flow appears to be directed westwards towards the Sulphurets Glacier. Pronounced seasonal variation is observed in the potentiometric surface, with lower groundwater elevations occurring in winter months, though no prominent changes to overall flow direction are observed.

There are three deep VWPs (DH-BGC12-19, SU-88D, and SU-77) at which pressures corresponding to low groundwater elevations are consistently observed; these suggest structural controls (e.g., faults or other discontinuities) or a deeper component of flow directed westwards towards the Sulphurets Glacier. These low groundwater elevations, in particular the observation at SU-77, distort the flow field for both summer and winter baseline conditions, though it is unclear whether the low pressure observation at this location represents a deep water table or rather is indicative of a strong gradient driving downward flow.

6.4. Vertical Gradients and Recharge/Discharge Zones

Vertical hydraulic gradients were calculated using groundwater elevation data from nested groundwater monitoring wells where simultaneous measurements were available. For nested wells, a higher groundwater elevation in the shallow well vs. the deeper well indicates a hydraulic gradient driving downward flow, whereas a higher groundwater elevation in the deeper well indicates an upward flow direction. Vertical hydraulic gradients calculated from manual water level measurements in March, August, and September 2012, as well as January, April, July, and September 2013 are summarized in Table 7. Vertical gradients based on data logger records are plotted over time on Drawings 14 and 15 for each well nest with available data.

The interpretation of gradients is complicated by ongoing dewatering and drilling activity at the Brucejack site, as discussed in Section 6.2 (Groundwater Elevation). Vertical gradients between March and August 2012 are considered to be the most representative of baseline groundwater conditions because they are not affected by dewatering of underground workings at the site, which occurred from November 2011 to February 2012 and from August 2012 onwards. However, exploration drilling, in addition to geotechnical and hydrogeologic drilling all occurred between March and August 2012, potentially disturbing hydraulic gradients.

Nested monitoring wells completed at lower elevations (e.g., MW-BGC11-BJ-1A/B, MW-BGC11-BJ-3A/B, and MW-BGC11/12-BJ-4A/B) have small vertical gradients (0.00 – 0.05) associated with upward groundwater flow under baseline conditions. Nested wells in the VOK Zone (e.g., MW-BGC11-BJ-5A/B and MW-BGC12-BJ-12A/B) appear to be in a groundwater recharge zone with vertical gradients associated with downward flow. Monitoring wells MW-BGC12-BJ-8A/B and MW-BGC12-BJ-10A/B had slight gradients driving upward groundwater flow in August 2012, and MW-BGC11/12-BJ-6A/B appear to have consistent, small gradients driving downward flow.

The timeseries plots of vertical hydraulic gradients (Drawings 14 and 15) show clear dewatering impacts within the LSA. For example, wells MW-BGC11-BJ-1A and -1B respond immediately to dewatering. During the first dewatering period at the site (Nov 2011 – Feb 2012), an abrupt reversal of hydraulic gradient was observed, causing the flow direction to quickly shift from upward to downward. During the second, and ongoing dewatering period, the hydraulic gradient associated with downward groundwater flow has become more pronounced as dewatering progresses.

Nearby well pairs MW-BGC11-BJ-3A/B and MW-BGC12-BJ-8A/B also appear to respond to dewatering, though to a lesser degree. Well pairs MW-BGC11-BJ-5A/B and MW-BGC12-BJ-11A/B, located in the VOK, do not show an immediate response to dewatering, though develop strong (>0.8) hydraulic gradients driving downward groundwater flow in the months following the August 2012 start of dewatering. This may be related to the VOK drift advanced for the bulk sample. Wells located farther from the adit and new VOK development (e.g., MW-BGC11-BJ-4A & MW-BGC12-BJ-4B, MW-BGC11-BJ-6A & MW-BGC12-BJ-6B) do not appear to be impacted by dewatering, and generally present small hydraulic gradients.

6.5. Springs and Seeps

Springs and seeps represent natural groundwater discharge, and can be used as an indicator of in-situ geochemistry. They are often found in topographic lows or where permeable rock units overlie rocks of much lower permeability (Figure 6-2). Seeps and springs can also occur where faults or fracture zones daylight in low permeability rock, where groundwater movement is principally through these fractures (Fetter, 2001).

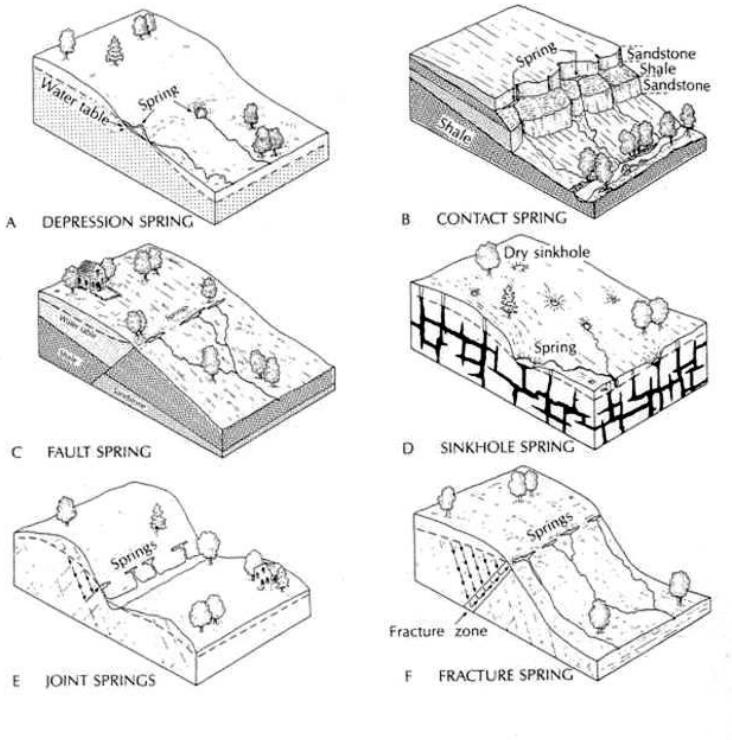

Figure 6-2. Types of springs - from Fetter, 2001.

To date, no seeps or springs have been observed above the ground surface at the Brucejack Project site. Seeps have been observed in the underground and these chemistries were used to estimate scaling factors for the derivation of underground water quality source terms. More details can be found in Lorax (2014).

7.0 GROUNDWATER QUALITY RESULTS

As noted previously, groundwater monitoring and sampling have been carried out at the Brucejack site since October 2011 on a quarterly basis, with the objective of determining baseline groundwater quality prior to mine development. All wells were sampled during these events, with the exception of those that were inaccessible due to depth of snow or potentially hazardous conditions.

On-site drilling operations, during these sampling periods, have the potential to impact water quality sampling. Therefore, the groundwater quality dataset is curated to remove those samples that are identified as 'influenced by drilling operations' and no longer represent baseline conditions. A discussion of the conditions to identify these samples is also included in the succeeding sections.

Groundwater samples were analyzed for physical parameters, major cations and anions, nutrients, cyanides, organic carbon, dissolved metals and total metals (Table 8). The analytical chemistry results for groundwater samples collected during each sampling event are summarized in Appendix E. All samples are compared to the regulatory framework outlined in the AIR and the EIS, as described in Section 7.1 below.

A geochemical assessment of the groundwater at Brucejack is detailed herein by way of review of major water quality indicators to improve the conceptual understanding of the LSA hydrogeology.

7.1. Regulatory Framework

In compliance with the EIS and AIR, the groundwater data collected as part of the baseline assessment is compared with British Columbia Ministry of the Environment (BC MOE) and Canadian Council of Ministers of the Environment (CCME) guidelines. Specifically, as outlined in Section 8.3.1 of the AIR, groundwater data are compared to:

- British Columbia Water Quality Guidelines for Protection of Freshwater Aquatic Life (BC MOE AW) and Drinking Water (BC MOE DW) (BC MOE 2010)
- Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME FW) (CCME 2012b).

Within the Environmental Management Act (BC MOE, 2011), the water quality guidelines provide numerical concentrations for the evaluation of groundwater quality. The groundwater standards are divided into different categories based on specified uses, such as aquatic life (AW), irrigation, livestock watering or drinking water (DW). The BC MOE AW and DW guidelines specify concentrations for total concentrations of heavy metals, metalloids, and inorganic ions as well as dissolved concentrations for aluminum and iron. Additionally, the guidelines are divided into 30 day average concentrations and maximum one-time concentration. For the purpose of this assessment, all results have been initially compared to the 30 day average concentrations and,in scenarios of 30-day threshold exceedance, the concentrations are subsequently compared to the maximum one-time concentration.

The Canadian Water Quality Guidelines set by the CCME for the protection of freshwater aquatic life (FW) include numerical concentrations to support and maintain the freshwater aquatic environment (CCME, 2012b). The CCME FW guideline values apply to the total element or substance in an unfiltered sample. Within the guidelines, there are thresholds for short-term and long-term concentrations. Results in this assessment are compared with the long-term concentration thresholds.

The full suite of guidelines used in this assessment is shown in Table 9, with additional detail on the calculation of CCME ammonia concentration guidelines provided in Table 10.

As indicated in Table 9, some BC MOE standards and CCME guidelines for metals and metalloids are dependent on hardness, temperature, and/or pH. The hardness-dependent standards and guidelines were calculated using the laboratory reported hardness (as $CaCO_3$) for each sample analyzed. The pH- and temperature-dependent standards and guidelines were compared to the range of pH and temperature measurements recorded in the field during sample collection. Where field pH measurements were not recorded, the analytical results were compared to laboratory reported pH.

Elevated concentrations above the BC MOE or CCME guidelines do not imply that the groundwater at the site is contaminated; rather they suggest that background concentrations of these parameters are higher than typically found in groundwater at other natural sites in Canada due to local mineralization. It should be noted that some areas of the site exist in a disturbed condition due to historical and current exploration activities, however, except where noted, observed concentrations are considered to be reflective of the natural site conditions.

7.2. Quality Assurance and Quality Control

7.2.1. General QA/QC procedures

To provide sampling data that are meaningful and reproducible, a Quality Assurance/Quality Control (QA/QC) program is incorporated into each sampling event. This program includes careful labeling of samples, identification of boreholes, and collection of trip blanks, field blanks and blind field duplicates.

QA/QC in the field is achieved by careful data collection and double-checking of names and labels. Prior to work, the identification of the monitoring well is confirmed on a map, by locating the relative position of other monitoring wells and by cross-checking the label on the well riser.The labels on the sample bottles are clearly filled out, while at the sample location and confirmed during sample collection. Proper preservation is added (where applicable) and samples are kept in coolers (with ice packs) to minimize changes to a sample's physic-chemical characteristics by warmer temperatures or exposure to sunlight.

Following collection, samples are promptly shipped to ALS Environmental Laboratories (ALS) along with chain of custody (COC) documentation. Upon receipt at ALS, the temperature of the samples is measured and recorded on the COC form. The COC form is part of the QA/QC

process as it links the samples at the time of shipment receipt to the source and records the movement of samples during handling, transportation and analysis.

Field Blanks and Trip Blanks

Field blanks consist of de-ionized water and are submitted in the same laboratory in the same sample bottles/jars as used for other samples. Field blanks provide information on contaminants encountered during the sampling procedure, other samples in the cooler at transport and during lab analysis. Field blanks were prepared during or immediately after sample collection. One field blank was submitted per sampling event.

Trip or travel blanks are prepared by the laboratory and consist of jars filled with de-ionized water. They are shipped along with the empty sample bottles to the field and are returned to the laboratory unopened. The purpose of the trip blank is to determine if sample bottle preparation, delivery, handling or storage have an impact on the integrity of the samples.

Duplicate Samples

Duplicate samples are collected at the same location and time as its replicate sample, using the same procedure. Duplicate samples are submitted as 'blind' samples and provide a QA/QC check on laboratory analytical methods and reproducibility. In theory, the duplicate sample should be similar to within 20% relative percent difference (RPD) of the original sample if at least one of the values is greater than 5 times the detection limit (BC Ministry of Water, Land and Air Protection, 2003). The groundwater baseline program designated one duplicate sample to be submitted during each sampling campaign.

7.2.2. Review of QA/QC Results

Results from the QA/QC monitoring program are provided in Appendix E along with full groundwater quality results, and are summarized below:

Field Blanks and Trip Blanks

Concentrations in the 8 field blanks were generally below the detection limit for all parameters. A single field blank (March 2012) exceeded the detection limits for total suspended solids (TSS), total kjeldahl nitrogen (TKN) and total nitrogen. The field blanks from September 2012 contained measureable total lithium, but were slightly above (i.e., 1.3 times) the detection limit value (i.e., 0.00005 mg/L).

Five trip blanks were analyzed as part of the Brucejack groundwater baseline. All trip blanks were below the detection limits except for a single sample (September 2012) with detectable total lithium at 1.2 times the detection limit.

Duplicate Samples

Charge balances were calculated for all duplicate samples using PHREEQC (v.3.0.6; Parkhurst and Appelo, 2013), considering dissolved concentrations select species and parameters (i.e., Ca, Mg, K, Na, SO_4, Cl, F, alkalinity, and pH) and ranged between -4.07% to

1.28%. Charge balances within ± 5% error suggest analytical results account for the major species in a sample's chemistry.

The majority of duplicate samples (i.e., 5 of 7) showed median RPD values less than 7%, for those concentrations with values greater than 5 times the minimum detection limit. The two duplicates with median RPD values greater than 20% were sampled September 2012 and April 7th from MW-BGC12-BJ-4B and MW-BGC11-BJ-2A (respectively). The latter sample showed significantly higher RPDs from total metals, relative to dissolved metals, whereas the former sample showed high RPDs for the majority of parameters analyzed. Specifically, TSS values differ by 6 times and 2 times between the replicate samples from these locations and is suggestive of particulate contamination during sampling.

General parameters and anions (i.e., pH, conductivity, TSS, TDS, turbidty, alkalinity, F, and sulphate) showed mean RPDs less than 20% for all duplicate samples tested. Nutrient concentrations (i.e., TKN, Total N, Total P) were less robust and had mean RPDs greater than 30%. Total metal concentrations were more susceptible to larger RPDs, relative to dissolved metals, which suggests particulate concentrations may govern these RPD exceedances. This observation is supported by the high median TSS (i.e., > 100 mg/L) concentrations from 10 (of 14 sampled) groundwater locations.

7.3. Laboratory Results

Groundwater quality results for all samples collected in groundwater monitoring wells on the Brucejack Project Site are presented in Appendix E, along with timeseries plots for selected parameters. The results are compared to the BC MOE AW and DW guidelines as well as CCME FW regulatory guidelines (Table 9). As described in Section 7.1, the results are compared with BC MOE 30 day average concentrations where these guidelines are available and the long-term maximum concentrations outlined in CCME. Where concentrations exceed these guidelines, the result is indicated by one of bolding, italics or underline dependent on the specific guideline exceeded.

The following sub-sections discuss the curation of the groundwater quality sample dataset, and groundwater chemistry results by geological model unit.

7.3.1. Dataset Curation

A total of 70 unique samples were taken from Brucejack monitoring wells between 2011 and 2013. Each well-specific dataset was curated to remove samples with a high likelihood of contamination from proximal drilling activities, surface water interaction, grout contamination, etc.. Specifically, these quality control measures include a temporal comparision between sampling and on-site actitivities (e.g., drilling and dewatering) and statistical analyses to identify outlier values.

Following this review, it was determined that 18 samples should be removed from the 70-sample dataset, from the following wells:

- MW-BGC11-BJ-03A (n = 1)
- MW-BGC11-BJ-03B (n = 1)
- MW-BGC11-BJ-04A (n = 1)
- MW-BGC12-BJ-04B (n = 4)
- MW-BGC11-BJ-05A (n = 2)
- MW-BGC11-BJ-05B (total concentrations only)
- MW-BGC11-BJ-06A (n = 2)
- MW-BGC12-BJ-06B (n = 3)
- MW-BGC12-BJ-08B (n = 3)
- MW-BGC12-BJ-12A (n = 1)

The reasoning and motivation for removing the above listed samples is discussed in the following sections.

7.3.1.1. MW-BGC11-BJ-3A/B

Two samples, collected from monitoring wells -03A (Sept. 25th, 2013) and -03B (Sept. 4th, 2012), were removed from the dataset due to high likelihood of contamination. Specifically, the chemistry of these samples was observed to be statistically uncharacteristic of their groundwater datasets and several parameters were identified as 'outlier' concentrations. Seventeen parameters from the MW-03A sample presented concentrations that were higher than the reasonable range displayed by this dataset (i.e., TSS; Total N; Total P; Total Al, Sb, As, Cd, Co, Cu, Fe, Pb, Mg, K, Ag, Tl, Zn; Dissolved Sb). A similar scenario was observed for the sample from MW-03B, as 19 parameters were higher than a reasonable range (i.e., TSS; Total Al, Cd, Cr, Co, Cu, Fe,Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Tl, and Zn; Dissolved Tl). The proximity of this nested monitoring well to the underground adit makes it susceptible to underground, as well as surface, drilling/exploration activities.

7.3.1.2. MW-BGC11/12-BJ-4A/B

The first sample from both the shallow (-04A; Oct. 10, 2011) and deep (-04B; Sept 3, 2012) monitoring well was removed from their respective datasets. In both scenarios, groundwater chemistries presented concentrations that were outside of a reasonable dataset range (i.e., TSS; turbidity; Total Sb, Cr, Cu, Ni ± As, Hg, K, Mo, and Zn; Dissolved Sb, K ± As, Co, Mo, Ni, Zn). Three additional samples were removed from the 4B dataset (i.e., April 8, 2013; July 11, 2013; Sept 25, 2013), due to significant increases to measured pHs by 2.0 – 2.5 pH units (i.e., pH 7.8 to pH 9.8 – 10.4) suggestive of grout contamination. As well, these three samples presented significant shifts to major cations concentrations, whereby Na values increased by one order of magnitude or greater and Ca, Mg and K concentrations decreased to extremely low, dilute values (i.e., Ca < 10 mg/L and Mg < 1 mg/L).

7.3.1.3. MW-BGC11-BJ-5A/B

These nested monitoring wells were installed in October 2011 and sampling was discontinued in the following summer (July, 2012) due to the well nest location in an area of significant drilling activity and potential for temporary contamination by drilling fluids. Total suspended solid (TSS) concentrations in these wells show extremely high TSS and turbidity values (4000 NTU). The first deep well (-05A) sample did not show evidence of contamination and will be used in the baseline review, whereas the subsequent two samples (March 28, 2012 and June 26, 2012; -05B) were removed. In regards to the shallow well (-05B), the presence of extremely high TSS values (i.e., > 3800 mg/L) from all three samples collected suggests total elemental concentrations should not be used in baseline water quality analyses. However, dissolved concentrations are comparable to those from 5A and are considered applicable to the baseline water quality discussion.

7.3.1.4. MW-BGC11/12-BJ-6A/B

Groundwater wells 6A and 6B are located on the north side of Brucejack Lake near its outflow to Brucejack Creek. The shallow well (-06A) was installed in October 2011, whereas the deeper well (-06B) was installed the following summer (June 2012). The installation of the deep well resulted in grout contamination of the fractured bedrock surrounding the well screen. As well, grout likely migrated towards the shallow (-06A) well and is assumed to be the source of significant increases to measured pH values (by 1 – 2 pH units). Therefore, two samples (June 26, 2012 and Sept 3, 2012) are removed from the -06A dataset and samples from -06B are not included in baseline groundwater quality analyses.

7.3.1.5. MW-BGC12-BJ-8B

Groundwater well -08B was installed on June 18, 2012, and samples taken 10 days later (June 28, 2012) and on September 5th 2012 show chemistries with significantly higher solute concentrations than the averaged dataset. Coupled with these high concentrations are significantly high TSS and turbidity values that suggest surrounding groundwater may have been temporarily contaminated with drilling waters/mud or require a longer period to be developed or flushed (i.e., TSS = 5340 and 984 mg/L; Turbidity = 6000 and 969 mg/L).

The third sample point from Well -08B (April 8, 2013) was removed due to its significantly high dissolved Al values, in lieu of basic pH (i.e., pH 8.23). These dissolved Al concentrations are not considered real and are likely attributed to possible colloidal material and/or insufficient filtration. In general, Al concentrations are controlled by secondary mineral precipitates (e.g., $Al(OH)_3(am)$ or Gibbsite) at pH values greater than 4.0 and very low to negligible Al concentrations (i.e., parts per billion range) are typical of waters with pH values > 5.5.

7.3.1.6. MW-BGC12-BJ-12A

Samples taken on Sept 5th, 2012 from Well -12A (i.e., less than 1 month following its installation) were removed from the -12A dataset. Specifically, September 2012 water

chemistry shows high TSS and turbidity (842 mg/L and 272 mg/L), which is unlike the other 2 samples taken. It should be noted that -12A waters are significantly higher than Well -08A, -08B or tributary waters with respect to several metals.

The above samples are included in Appendix E, but have not been included in the remainder of the assessment. Laboratory reports are compiled in Appendix F, and all groundwater samples were analyzed for the parameter set listed in Table 8.

7.3.2. Groundwater Quality by Geological Model Unit

In this section, monitoring wells are grouped based on geological model units, namely Office P1, P2, Volcanic Sedimentary Facies (VSF) and Bridge P1 (Section 3.4.5). The monitoring wells are grouped in this manner to assist with the identification of trends or characteristic groundwater chemistries specific to one or more geological model units.

7.3.2.1. Office P1

Two sets of nested monitoring wells have well screens seated in Office P1 material; MW-BGC11-BJ-1A/B and MW-BGC12-BJ-8A/B. Both monitoring wells are located in the same area to the southwest of the exploration camp. The former is approximately 50 m to the east side of the Brucejack Fault, whereas the latter is approximately 50 m west of the same fault. This dataset consists of eleven samples, with the majority (i.e., n = 9) collected from -08A (n = 6) and -08B (n = 3). Only one sample was taken from MW-BGC11-BJ-01A and -01B, immediately following installation, due to suspected movement of the well screen and/or well stick-up during the winter period (e.g., frost heave).

The aqueous chemistry from this location is relatively consistent. Specifically, general parameters show pH values between pH 8.0 and pH 8.3 and modest TSS and turbidity concentrations (i.e., < 200 mg/L and < 100 NTU). In regards to anions and nutrients; total alkalinity values are typically 75 ± 10 mg/L, with below detection to low nutrients (e.g., ammonia, nitrate, nitrite and orthophosphate), and fluoride concentrations that are below CCME guidelines. Sulphate values do not show seasonal variation and are approximately 30 – 36 mg/L. Median values of each well are plotted on a Piper diagram (red symbols; Figure 7-1) and results generally suggest groundwater is reasonably similar between the four locations. The one exception is the single sample from MW-BGC-11-BJ-01B, which has 4 to 10 times greater Na concentration than the other samples in this dataset. All other concentrations from -01B are within the range demonstrated by this compiled dataset. Therefore, this sample may represent a groundwater end member of the possible chemistries from Office P1.

Table 11 presents the statistical parameters from each nested well and those values for the ‘Office P1’ dataset. The compiled Office P1 dataset shows median values exceed CCME and/or BC MOE aquatic life (30-day average) guidelines for total concentrations of Al, As, Cu, Cr and Fe. A few samples show CCME or BC MOE AW exceedances of total Cd (MW-08A), Pb (MW-01A), Hg (MW-08B) and Zn (MW-01A and -08A). Measured total Ag concentrations exceeds BC MOE 30-day average and maximum one-time values in most groundwater wells.

Although Office P1 compiled (median) total Ag values do not exceed these guidelines, the frequency of this observation suggests Ag enrichment is likely characteristic of this material-specific ground. Therefore, groundwater sampled from Office P1 fractured bedrock contains enrichments of total Al, Ag, As, Cr, Cu, and Fe concentration, relative to guideline values.

7.3.2.2. P2

A total of 21 samples were taken from three monitoring wells situated in P2 material (MW-BGC11-BJ-02A: n = 8; MW-BGC11-BJ-03A: n = 7; MW-BGC11-BJ-03B: n = 6). As noted in Section 7.3.1, one sample from the MW-BGC11-BJ-03B dataset was identified as 'likely contaminated' and removed from the baseline dataset. In general, groundwater samples taken from these wells show moderately alkaline pH values (i.e., pH 8.0) with little variation (i.e., ± 0.2 pH units). These waters are typically more turbid than groundwater wells from the Office P1 unit, with ranges between 1.97 to 777 NTU. Alkalinities and sulphate concentrations are also similar between these locations with average values between 75 – 95 mg $CaCO_3$/L and 48 – 101 mg/L (respectively). Piper plots of the dominant cation and anion constituents plot within the same region of the trilinear diagram (Figure 7-1). These results suggest waters from fractured P2 bedrock are comparable and spatially consistent.

Several parameter concentrations show values that are consistently higher than CCME and/or BC MOE aquatic life guidelines. Specificially, total Al, Ag, As, Cr, Cu, Fe, and Zn generally exceed CCME guidelines for most samples, whereas total Ag, Cu, and Zn also exceed BC MOE AW 30-day average values. Total Zn values from MW-03A also exceeds its BC MOE one-time maximum guideline for the majority of samples taken from this location. Fluoride and total Cd, Pb, Se and dissolved Al concentrations exceed CCME and/or BC MOE AW guidelines on a sporadic to frequent basis. Total Hg concentrations from MW-BGC11-BJ-02A and -03A samples show common exceedances to CCME, and were not identified in shallow well (MW-BGC11-BJ-03B) and suggest some spatial variability within the aquifer.

It should be noted that the nested wells MW-BGC11-BJ-03A/B are located close to the underground adit and, following dewatering and active exploration in 2012 through to 2013, several spikes are observed in the samples collected from this location. Given the shorter duration of this dataset, and the potential for influence by nearby exploration activities, these wells were not included in the evaluation for temporal trends.

Bulk groundwater chemistries from P2 material (Table 12) indicate baseline conditions present higher elemental concentrations of F and total Al, Ag, As, Cu, Cr, Fe, Hg, and Zn relative to CCME and/or BC MOE aquatic life guidelines. Note that F and total Hg were included in this dataset given frequency of exceedances in select wells, which may point towards some spatial variability in this material type.

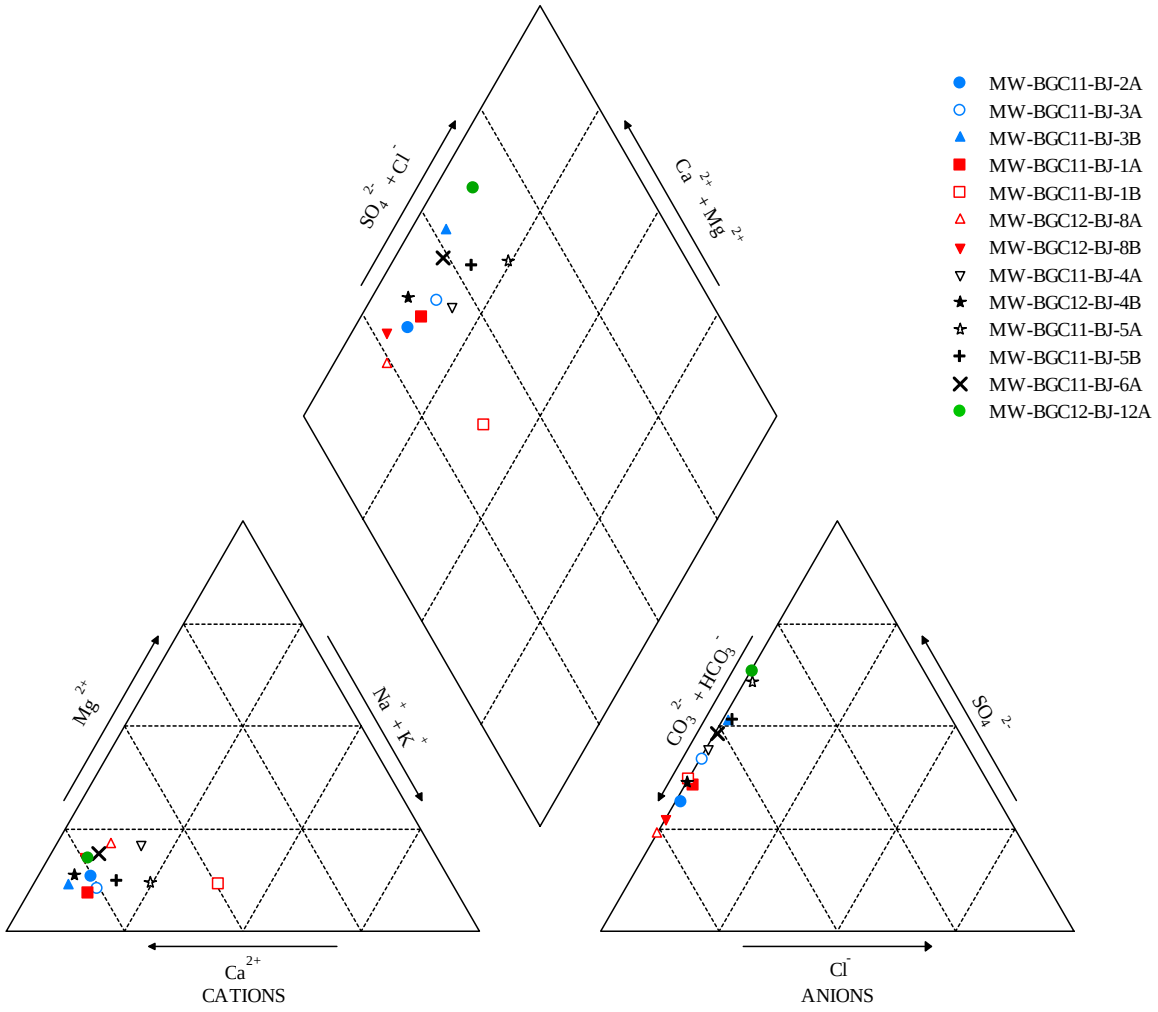

Figure 7-1. Piper diagram showing median groundwater concentrations measured from Brucejack monitoring wells.

7.3.2.3. Volcanic Sedimentary Facies (VSF)

Three nested monitoring well sets are installed in VSF material (i.e., MW-BGC11/12-BJ-04A/B, MW-BGC11-BJ-05A/B, and MW-BGC11/12-BJ-06A/B) for a total of 18 samples. Groundwater chemistries measured from VSF material typically show moderately alkaline pHs (i.e., pH ~ 8.0) and modest sulphate ranges (i.e., 69 – 140 mg/L) relative to those values observed from Office P1 and P2. Alkalinities from the VSF grouped dataset range between 40 – 126 mg $CaCO_3$/L.

The major anion and cation constituents of VSF groundwater chemistries are shown on the Piper diagram in Figure 7-1, relative to those chemistries from Office P1 and P2. These plots show anion concentrations (i.e., sulphate and alkalinity) exhibit the main differences between material-specific chemistries. Specifically, samples from fractured VSF material present higher median sulphate values and lower alkalinities, relative to Office P1 and P2, whereas most samples have similar alkali concentrations (i.e., Ca, Mg, Na, and K).

Compiled results for all monitoring wells in VSF material are shown in Table 13. Floride exceeds CCME guidelines (0.12 mg/L) in all samples with the exception of those from MW-BGC11-04A (Table 13). Dissolved Al shows some values greater than BC MOE aquatic life in a single monitoring well (i.e., MW -06A), and in most cases exceeds the one-time maximum value (i.e,. 0.2 mg/L).

Total Al and Fe concentrations surpass CCME values of 5 – 100 µg/L and 0.3 mg/L (respectively) in all collected samples. Total Cr and As concentrations from most samples exceed CCME and both, CCME and BC MOE aquatic life guideline values.

Measured total Ag, Cd, Co and Cu concentrations surpass CCME or BC MOE aquatic life values in select monitoring wells (i.e., -05A and -06A). Additionally, concentrations of total Pb, Hg, Se, Tl and Zn are highlighted as parameters of concern in MW-BGC11-BJ-06A only. In particular, total Pb values exceed CCME, BCMOE aquatic life 30-day average and one-time maximum, and BC MOE DW values.

A compilation of these results indicates bulk groundwaters from VSF material likely present enriched values of F and total Al, Ag, As, Cd, Co, Cr, Cu, Fe, Pb, and Zn. It should be mentioned, that although median Ag, Cd, Co, Cu and Pb concentrations for VSF groundwater (Table 13) are not above guidelines, they are included in the above list as these metals surpass guidelines values by 10 – 100 times and/or may show spatially signficant enrichments in this material type.

7.3.2.4. Bridge P1

One monitoring well (MW-BGC12-BJ-12A) was situated in Bridge P1 material. Two samples from this well are used in the baseline analysis and, due to the limited sample suite, these results should be considered preliminary. In general, these waters are characterized as very hard (> 181 mg/L), moderately alkaline (pH 7.8) with high sulphate (177 mg/L) concentrations

and moderate alkalinity (104 mg $CaCO_3$/L). Although samples from this location are limited, the average Bridge P1 values are likely identified as distinct from other units when plotted on trilinear diagrams (Figure 7-1). Similar to other observations, the anion constituents from this monitoring well differentiate these waters from those of Office P1, P2 and VSF units.

Concentrations are shown in Table 14 and, in regards to metal exceedances, F, total Al, Ag, Cd, Cr, Cu, Fe, Pb, and Zn concentrations are observed to surpass higher values from BC MOE aquatic life and/or CCME guidelines. Average total As values (0.14 mg/L) also exceed BC MOE drinking water standards by greater than 4 times (i.e., 0.03 mg/L). These 10 parameters (i.e., F and total Al, Ag, As, Cd, Cr, Cu, Fe, Pb and Zn) appear to be naturally elevated in baseline waters.

7.4. Groundwater Quality Summary

The average temperature of most samples was approximately 2^{o}C and minimal seasonal variation was observed. Chloride and nutrient concentrations (i.e., ammonia, nitrate and nitrite) from all samples are observed to be below the lowest guideline value and therefore will not be discussed in this report. The groundwater quality timeseries plots (Appendix E) do not show any evident seasonal or temporal trends. Note that monitoring wells MW-BGC11-BJ-03A/B were not included in this discussion, as observed variations may be equally attributed to their proximity to the underground adit. Specifically, dewatering of the underground may have influenced measured chemistries and underground exploration activities were concentrated in 2013 summer months.

The dominant cation constituents of groundwaters sampled at Brucejack are observed to be comparable, but do resemble a continuum in regards to anion concentrations. Specifically, Office P1 likely represents one end-member with low sulphate and high alkalinity and Bridge P1 resembles the higher end-member with high sulphate and low alkalinity. In addition to major cation/anions, this review of the groundwater quality specific to four geological model units (i.e., Office P1, P2, VSF and Bridge P1) revealed several parameters consistently present high concentrations in all materials tested (Table 15).

Specifically, six metals are shown to be enriched in all groundwaters sampled over the three-year Brucejack sampling campaign (i.e., Al, Ag, As, Cr, Cu, and Fe). Office P1 presents the least amount of exceedances and, coupled with its low sulphate and high alkalinity (Figure 7-1), is likely representative of the least amount of metal enrichment for the Brucejack area. In addition to the six enriched metals listed above, groundwater sampled from VSF-specific monitoring wells is representative of groundwater with the highest amount of metal exceedances (i.e., F, total Cd, Co, Pb, and Zn). Although the dataset from Bridge P1 is limited, groundwater chemistries from this material also present several additional metal exceedances (i.e., F, total Cd, Pb and Zn). These observations, coupled with the lowest alkalinities and highest sulphate values observed from Bridge P1 groundwater samples, suggests this material may be reflective of the groundwater with the highest likelihood for metal enrichment.

8.0 CONCLUDING SUMMARY

The baseline hydrogeologic conditions at the Brucejack Project site are summarized in this report, which includes a detailed description of the site, groundwater resources, methods of hydrogeologic assessment, and physical and geochemical hydrogeologic results. Data in support of the hydrogeologic baseline assessment were obtained through site investigations between 2010 and 2013 that involved:

1. the installation of geotechnical borehole instrumentation and groundwater monitoring wells;
2. hydraulic response testing (packer tests, rising and falling head tests);
3. continuous monitoring of groundwater elevation; and,
4. routine groundwater sampling.

The LSA, located within the Brucejack Creek catchment area, is partially glaciated and is snow-covered from approximately October to June. Snowmelt, which generally occurs in May-June leads to recharge and the rapid recovery of groundwater levels, which decrease slowly over the course of the winter at the site. The LSA is sparsely vegetated, and ET is not considered to have a significant impact on the hydrogeologic system.

Within the fractured bedrock at the site, a general trend of decreasing hydraulic conductivity with depth is observed, although hydraulic conductivity is observed to vary by two to three orders of magnitude at any given depth. The geometric means of hydraulic conductivity estimates from slug tests and packer tests are 8.3×10^{-7} m/s and 1.5×10^{-7} m/s, respectively. Overburden permeability data are not available in the immediate vicinity of the Brucejack Project, though overburden cover is sparse and discontinuous, and not considered to be significant from a hydrogeologic perspective at the site.

In general, groundwater elevations are observed to mimic topography (i.e., higher groundwater elevations in instrumentation completed at higher elevations and vice versa), and show greater seasonal variation at higher elevations. It follows that, in general, groundwater flow at the site follows topography, with groundwater recharge occurring at higher elevations and groundwater discharge occuring in the vicinity of Brucejack Creek and Brucejack Lake. A component of groundwater flow also occurs westwards, towards the Brucejack Fault and Sulphurets Glacier.

Adit dewatering, which occurred from November 2011 to February 2012 and August 2012 onwards, created a very pronounced decrease in groundwater elevation in nearby wells. Dewatering activities impact hydraulic gradients, leading to increasingly strong gradients driving groundwater flow downward in areas affected by dewatering.

For the purposes of this baseline hydrogeologic assessment, concentrations of physical parameters, total metals, and dissolved metals are compared with BC MOE (aquatic life and drinking water) and CCME freshwater guidelines. Seventy unique samples were collected from 14 monitoring wells and, following curation of the dataset to exclude likely contaminated samples, a total of 52 samples were used in the baseline review. In general, the pH of the groundwater is moderately alkaline (~ pH 8) and groundwater temperatures are approximately

2°C, with minimal seasonal variation. All samples from the curated dataset showed chloride and nutrient concentrations (i.e., ammonia, nitrate and nitrite) to be below the lowest guideline values.

Monitoring wells were grouped based on the geological model unit surrounding the well screens. Specifically, groundwater samples pertain to four material types; Office P1, P2, VSF and Bridge P1. An analysis of bulk chemistries from each material revealed several metals presented common exceedances to guideline values. Specifically, six metals are shown to be enriched in all groundwaters sampled over the three-year Brucejack sampling campaign (i.e., Al, Ag, As, Cr, Cu, and Fe). Office P1 presents the least amount of exceedances, whereas groundwater sampled from VSF-specific monitoring wells is representative of the highest amount of metal exceedances (i.e., F, total Cd, Co, Pb, and Zn). Although the dataset from Bridge P1 is limited, groundwater chemistries from this material do present several metal exceedances (i.e., F, total Cd, Pb and Zn).

Piper diagrams show all groundwaters present similar major cation concentrations, however anion constituents appear to show material-specific trends. Office P1 is representative of one end member, with low sulphate and high alkalinity, and Bridge P1 is highlighted as the opposite end-member. These results, coupled with the previous discussion of metal exceedances, imply Bridge P1 and Office P1 likely represent baseline groundwater high and low end-members (respectively) present at the Project site.

9.0 CLOSURE

We trust the above satisfies your requirements at this time. Should you have any questions or comments, please do not hesitate to contact us.

Yours sincerely,

BGC ENGINEERING INC.
per:

ISSUED AS DIGITAL DOCUMENT. SIGNED HARDCOPY ON FILE WITH BGC ENGINEERING INC.

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TABLES

Table 1. Mean Monthly Precipitation Data and BJL-H1 Observed Streamflow and Runoff

Month	Brucejack Lake (1,360 masl)[1]	Climate BC Model (1,400 masl)[2]	Unuk River Eskay Creek (887 masl)[3]	Bob Quinn AGS (610 masl)[4]	Average Runoff[5]	Average Flow[6]
	(mm)	(mm)	(mm)	(mm)	(mm)	(m^3/s)
January	137	239	249	60	18	0.078
February	99	165	214	41	14	0.066
March	114	113	181	27	19	0.084
April	106	100	97	25	32	0.143
May	90	80	88	29	299	1.308
June	84	105	67	34	378	1.707
July	88	121	83	57	346	1.512
August	128	160	139	51	245	1.069
September	367	242	207	86	194	0.874
October	180	377	247	102	114	0.500
November	124	235	215	62	54	0.245
December	72	228	247	69	33	0.146
Total	**1,589**	**2,165**	**2,034**	**643**	**1,746**	**7.732**
Monthly Average	**132**	**180**	**170**	**54**	**146**	**0.644**

Notes:
1. Data collected from the Brucejack meteorological station from 2010 to 2012 (Rescan, 2013a)
2. Climate normals (1981 to 2009) generated from the Climate BC climate model for latitude (56°28'20"), longitude (130°11'31"W), elevation (1,400 masl) (Wang, 2012)
3. Environment Canada Unuk River Eskay Creek climate station (1989 to 2010)
4. Environment Canada Bob Quinn AGS climate station (1977 to 1994)
5. Average runoff and flow are based on streamflow data from the Brucejack Lake hydrometric station (BJL-H1) for the years 2007-2012, reported in (Rescan, 2013d)
6. Streamflows are typically estimated for winter months due to ice and snow conditions hindering access to the site, methods of estimation are provided in ERM Rescan (2014)

Table 2. Summary of Groundwater Monitoring Wells and Water Levels

Well ID	Installation Date	Easting (m)	Northing (m)	Top of PVC Elevation (m asl)	Surveyed Standpipe Stickup Height (m)	Ground Surface Elevation (m asl)	Measured Standpipe Stickup Height (m)	Manual Water Level Readings				Screen		Sand Pack		PVC Casing Diameter (m)	Drilled Diameter (m)	Screened Geologic Unit	Comments
								Date	Time	Water Level (m btoc)	Water Level (m asl)	From (m bgs)	To (m bgs)	From (m bgs)	To (m bgs)				
MW-BGC11-BJ-1A	2-Oct-11	426280.6	6258840.0	1386.286	0.57	1385.716	0.57	10-Oct-11	9:10	21.598	1364.688	78.6	84.8	77.1	85.3	0.05	0.10	PHP	
							0.57	23-Mar-12	12:00	35.230	1351.056								
							0.57	14-Aug-12	13:30	25.890	1360.396								
							0.57	7-Sep-12	17:30	27.545	1358.741								
							0.57	9-Jul-13	14:55	56.341	1329.945								
							0.57	21-Sep-13	11:20	57.933	1328.353								
MW-BGC11-BJ-1B	2-Oct-11	426280.0	6258841.0	1386.393	0.67	1385.723	0.67	10-Oct-11	9:40	24.605	1361.788	35.3	38.4	31.3	38.7	0.05	0.10	PHP	
							0.67	23-Mar-12	12:00	35.300	1351.093								
								14-Aug-12	13:30	-									unable to locate due to snowpack
							0.67	7-Sep-12	17:35	23.286	1363.107								
							0.67	9-Jul-13	15:05	24.972	1361.421								
							0.67	21-Sep-13	11:10	23.345	1363.048								
MW-BGC11-BJ-2A	3-Oct-11	426885.3	6258811.7	1423.420	0.25	1423.170	0.25	9-Oct-11	9:58	51.052	1372.368	70.7	76.8	64.9	80.3	0.05	0.10	PHPP	
							0.25	19-Jan-12	12:00	58.150	1365.270								no stickup due to snowpack, use previous stickup to correct WL
							0.25	23-Mar-12	unk	58.350	1365.070								
							0.25	30-Mar-12	11:30	58.310	1365.110								
							0.25	25-Jun-12	14:10	50.290	1373.130								
							0.25	1-Jul-12	9:55	51.270	1372.150								
							0.25	3-Jul-12	10:55	51.420	1372.000								
							0.25	14-Aug-12	14:05	52.800	1370.620								
							0.25	25-Aug-12	16:35	54.150	1369.270								
							0.25	27-Aug-12	17:15	54.304	1369.116								
							0.25	1-Sep-12	15:45	53.695	1369.725								
							0.25	4-Sep-12	17:00	53.470	1369.950								
							0.25	3-Apr-13	15:50	59.578	1363.842								
							0.25	9-Jul-13	11:30	54.091	1369.329								
							0.25	21-Sep-13	9:35	53.271	1370.149								
MW-BGC11-BJ-3A	3-Oct-11	426615.4	6258843.9	1368.433	0.81	1367.627	0.2	8-Oct-11	10:51	flowing	>1367.7	83.0	88.3	79.3	88.4	0.05	0.10	PP	removed stickup extension - su approx 20 cm
							0.2	23-Jan-12	12:00	9.670	1358.157								removed stickup extension - su approx 20 cm
							2.0	23-Mar-12	unk	2.010	1367.617								
							2.0	28-Mar-12	unk	1.740	1367.887								

Table 2. cont'd Summary of Groundwater Monitoring Wells and Water Levels

Well ID	Installation Date	Easting (m)	Northing (m)	Top of PVC Elevation (m asl)	Surveyed Standpipe Stickup Height (m)	Ground Surface Elevation (m asl)	Measured Standpipe Stickup Height (m)	Manual Water Level Readings				Screen		Sand Pack		PVC Casing Diameter (m)	Drilled Diameter (m)	Screened Geologic Unit	Comments
								Date	Time	Water Level (m btoc)	Water Level (m asl)	From (m bgs)	To (m bgs)	From (m bgs)	To (m bgs)				
MW-BGC11-BJ-3A	3-Oct-11	426615.4	6258843.9	1368.433	0.81	1367.627	2.0	24-Jun-12	9:35	1.230	1368.397	83.0	88.3	79.3	88.4	0.05	0.10	PP	WL measured with stickup extension, removed for sampling
							2.0	3-Jul-12	9:35	0.833	1368.794								artesian pressure contained by stickup
							2.06	14-Aug-12	14:30	5.560	1364.127								
							2.11	28-Aug-12	14:50	2.097	1367.640								
							2.11	4-Sep-12	9:30	5.030	1364.707								
							2.11	3-Apr-13	14:15	19.040	1350.697								
							0.806	10-Jul-13	15:00	10.846	1357.587								New stickup, recorded water level adjusted to fit hydrograph
							0.806	21-Sep-13	9:10	4.845	1363.588								
MW-BGC11-BJ-3B	4-Oct-11	426615.1	6258844.2	1369.762	2.23	1367.532	0.2	8-Oct-11	10:51	flowing	>1367.8	5.8	8.8	4.5	9.1	0.05	0.10	PP	
							0.2	23-Jan-12	12:00	8.400	1359.332								removed stickup extension - su approx 20 cm
							0.2	23-Mar-12	unk	2.140	1365.592								
							0.2	28-Mar-12	11:00	1.450	1366.282								
							0.2	24-Jun-12	10:00	flowing	>1367.8								
							0.2	3-Jul-12	9:35	flowing	>1367.8								overflowing artesian - influenced by nearby drilling
							2.13	14-Aug-12	14:30	1.130	1368.532								
							2.13	28-Aug-12	16:15	2.182	1367.480								
							2.23	4-Sep-12	9:35	1.535	1368.227								
							2.23	3-Apr-13	14:20	10.290	1359.472								bailed until empty and failed to recover after 4 days.
							2.23	10-Jul-13	15:05	2.275	1367.487								
							2.23	21-Sep-13	9:15	10.646	1359.116								
MW-BGC11-BJ-4A	4-Oct-11	427030.7	6258749.8	1390.857	0.40	1390.457	0.49	8-Oct-11	11:20	27.870	1362.987	21.3	30.5	18.0	31.0	0.05	0.10	FV	
							0.49	18-Jan-12	14:00	13.720	1377.137								no stickup due to snowpack
							0.49	23-Mar-12	unk	14.620	1376.237								
							0.49	26-Jun-12	14:50	11.030	1379.827								
							0.49	30-Jun-12	11:10	12.000	1378.857								
							0.49	3-Jul-12	10:00	12.060	1378.797								
							0.40	14-Aug-12	14:20	13.010	1377.847								
							0.40	27-Aug-12	16:50	13.190	1377.667								
							0.40	29-Aug-12	11:30	15.850	1375.007								
							0.40	30-Aug-12	8:55	14.055	1376.802								
							0.40	31-Aug-12	9:00	14.729	1376.128								

Table 2. cont'd Summary of Groundwater Monitoring Wells and Water Levels

Well ID	Installation Date	Easting (m)	Northing (m)	Top of PVC Elevation (m asl)	Surveyed Standpipe Stickup Height (m)	Ground Surface Elevation (m asl)	Measured Standpipe Stickup Height (m)	Manual Water Level Readings				Screen		Sand Pack		PVC Casing Diameter (m)	Drilled Diameter (m)	Screened Geologic Unit	Comments
								Date	Time	Water Level (m btoc)	Water Level (m asl)	From (m bgs)	To (m bgs)	From (m bgs)	To (m bgs)				
MW-BGC11-BJ-4A	4-Oct-11	427030.7	6258749.8	1390.857	0.40	1390.457	0.40	31-Aug-12	16:15	14.145	1376.712	21.3	30.5	18.0	31.0	0.05	0.10	FV	
							0.40	1-Sep-12	8:00	13.561	1377.296								
							0.40	2-Sep-12	8:15	15.558	1375.299								
							0.40	3-Sep-12	14:30	14.058	1376.799								
							0.40	3-Apr-13	15:15	17.032	1373.825								
							0.40	9-Jul-13	11:00	13.042	1377.815								
							0.40	21-Sep-13	8:20	14.055	1376.802								
MW-BGC12-BJ-4B	20-Jun-12	427030.7	6258752.5	1391.100	0.67	1390.430	0.67	26-Jun-12	14:40	11.430	1379.670	94.9	97.9	91.6	98.1	0.05	0.12		slow response following development
							0.67	3-Jul-12	10:00	12.245	1378.855								
							0.67	11-Aug-12	14:00	12.840	1378.260								
							0.67	14-Aug-12	14:15	13.230	1377.870								
							0.67	27-Aug-12	16:55	13.312	1377.788								
							0.67	29-Aug-12	11:30	13.680	1377.420								
							0.67	30-Aug-12	8:50	14.105	1376.995								
							0.67	31-Aug-12	8:55	14.228	1376.872								
							0.67	1-Sep-12	7:55	14.252	1376.848								
							0.67	3-Sep-12	14:35	13.598	1377.502								
							0.67	7-Sep-12	9:35	13.350	1377.750								
							0.67	8-Sep-12	8:20	13.335	1377.765								recovered back to static post-development and testing
							0.67	3-Apr-13	15:20	17.921	1373.179								
							0.67	9-Jul-13	11:05	15.069	1376.031								
							0.67	21-Sep-13	8:30	15.304	1375.796								
MW-BGC11-BJ-5A	29-Sep-11	426346.6	6258040.4	1526.694	0.55	1526.144	0.6	10-Oct-11	13:18	17.662	1509.032	68.6	77.7	65.7	78.0	0.05	0.10	FV	
							0.6	23-Mar-12	12:00	42.130	1484.564								
							0.6	28-Mar-12	9:30	41.950	1484.744								
							0.6	24-Jun-12	9:45	4.300	1522.394								influenced by nearby drilling
							0.6	1-Jul-12	11:00	6.230	1520.464								
							0.6	3-Jul-12	11:40	2.675	1524.019								influenced by nearby drilling
							0.55	14-Aug-12	17:30	14.010	1512.684								possible mistake?
							0.55	25-Aug-12	14:22	10.690	1516.004								
							0.55	27-Aug-12	12:10	10.717	1515.977								
							0.55	10-Jul-13	9:25	15.045	1511.649								
							0.55	21-Sep-13	13:25	45.041	1481.653								

Table 2. cont'd Summary of Groundwater Monitoring Wells and Water Levels

Well ID	Installation Date	Easting (m)	Northing (m)	Top of PVC Elevation (m asl)	Surveyed Standpipe Stickup Height (m)	Ground Surface Elevation (m asl)	Measured Standpipe Stickup Height (m)	Manual Water Level Readings				Screen		Sand Pack		PVC Casing Diameter (m)	Drilled Diameter (m)	Screened Geologic Unit	Comments
								Date	Time	Water Level (m btoc)	Water Level (m asl)	From (m bgs)	To (m bgs)	From (m bgs)	To (m bgs)				
MW-BGC11-BJ-5B	30-Sep-11	426346.0	6258041.5	1526.595	0.44	1526.155	0.4	10-Oct-11	13:18	18.325	1508.270	41.0	50.2	39.6	50.9	0.05	0.10	FV	
							0.4	23-Mar-12	15:00	40.090	1486.505								
							0.4	28-Mar-12	10:10	40.110	1486.485								
							0.4	26-Jun-12	10:20	6.240	1520.355								influenced by nearby drilling
							0.4	1-Jul-12	14:00	7.620	1518.975								
							0.4	3-Jul-12	11:40	0.835	1525.760								influenced by nearby drilling
							0.44	14-Aug-12	17:30	11.030	1515.565								
							0.44	25-Aug-12	14:20	14.095	1512.500								
							0.44	27-Aug-12	12:00	14.109	1512.486								
							0.44	10-Jul-13	9:35	17.415	1509.180								
							0.44	21-Sep-13	13:30	40.832	1485.763								
MW-BGC11-BJ-6A	4-Oct-11	427094.8	6258983.4	1380.810	1.00	1379.810	*0.1*	8-Oct-11	14:49	8.235	1371.675	21.2	30.3	20.7	31.8	0.05	0.10	FV	
							0.1	23-Mar-12	15:00	13.700	1366.210								
							0.1	30-Mar-12	12:30	13.710	1366.200								
							0.1	26-Jun-12	11:45	7.350	1372.560								possible grout migration into well
							0.1	30-Jun-12	9:15	7.210	1372.700								
							0.1	3-Jul-12	8:50	8.140	1371.770								
							1.0	14-Aug-12	8:30	9.270	1371.540								
							1.0	31-Aug-12	10:55	10.468	1370.342								
							1.0	3-Sep-12	11:30	10.358	1370.452								
							1.0	5-Apr-13	8:45	15.976	1364.834								Stick up detached, must repair in summer
							1.0	9-Jul-13	10:30	10.890	1369.920								Stick up repaired
							1.0	21-Sep-13	15:15	11.693	1369.117								
MW-BGC12-BJ-6B	16-Jun-12	427097.3	6258982.5	1380.234	0.67	1379.564	0.77	23-Jun-12	10:50	11.330	1368.904	100.3	103.3	98.2	103.8	0.05	0.12	IV	prior to development
							0.77	3-Jul-12	8:55	11.730	1368.504								prior to development
							0.77	14-Aug-12	8:30	12.400	1367.834								
							0.67	28-Aug-12	12:10	12.995	1367.239								
							0.67	31-Aug-12	10:45	13.083	1367.151								
							0.67	1-Sep-12	10:00	13.086	1367.148								
							0.67	2-Sep-12	10:20	13.092	1367.142								
							0.67	3-Sep-12	11:35	13.063	1367.171								
							0.67	6-Sep-12	10:20	12.872	1367.362								
							0.67	5-Apr-13	8:30	16.274	1363.960								
							0.67	9-Jul-13	10:20	13.202	1367.032								

Table 2. cont'd Summary of Groundwater Monitoring Wells and Water Levels

Well ID	Installation Date	Easting (m)	Northing (m)	Top of PVC Elevation (m asl)	Surveyed Standpipe Stickup Height (m)	Ground Surface Elevation (m asl)	Measured Standpipe Stickup Height (m)	Manual Water Level Readings				Screen		Sand Pack		PVC Casing Diameter (m)	Drilled Diameter (m)	Screened Geologic Unit	Comments
								Date	Time	Water Level (m btoc)	Water Level (m asl)	From (m bgs)	To (m bgs)	From (m bgs)	To (m bgs)				
MW-BGC12-BJ-6B	16-Jun-12	427097.3	6258982.5	1380.234	0.67	1379.564	0.67	21-Sep-13	15:20	14.123	1366.111	100.3	103.3	98.2	103.8	0.05	0.12	IV	
MW-BGC12-BJ-8A	18-Jun-12	426105.9	6258818.5	1403.734	0.35	1403.384	0.38	22-Jun-12	9:10	12.570	1391.164	86.2	92.3	86.0	95.1	0.05	0.12	PHP	prior to development
							0.38	28-Jun-12	10:30	13.620	1390.114								
							0.38	1-Jul-12	15:00	13.430	1390.304								
							0.38	3-Jul-12	12:05	13.675	1390.059								
							0.35	12-Aug-12	16:00	14.390	1389.344								
							0.35	14-Aug-12	13:15	14.680	1389.054								
							0.35	29-Aug-12	14:50	15.338	1388.396								
							0.35	30-Aug-12	10:45	15.416	1388.318								
							0.35	4-Sep-12	14:20	15.277	1388.457								
							0.35	6-Apr-13	8:25	36.525	1367.209								
							0.35	9-Jul-13	14:10	15.119	1388.615								
							0.35	26-Sep-13	9:05	13.409	1390.325								
MW-BGC12-BJ-8B	19-Jun-12	426106.1	6258819.1	1403.630	0.33	1403.300	0.35	22-Jun-12	10:20	15.970	1387.660	44.8	50.9	44.3	51.0	0.05	0.12	PHP	prior to development
							0.35	27-Jun-12	15:20	18.630	1385.000								
							0.35	1-Jul-12	16:30	17.100	1386.530								
							0.35	3-Jul-12	12:05	17.416	1386.214								
							0.35	12-Aug-12	16:00	17.910	1385.720								
							0.35	14-Aug-12	13:15	18.040	1385.590								
							0.33	29-Aug-12	15:00	18.726	1384.904								
							0.33	30-Aug-12	11:20	18.812	1384.818								
							0.33	4-Sep-12	16:25	18.338	1385.292								
							0.33	6-Apr-13	8:15	37.228	1366.402								
							0.33	9-Jul-13	14:15	18.054	1385.576								
							0.33	21-Sep-13	9:00	17.104	1386.526								
MW-BGC12-BJ-9A	4-Aug-12	426464.5	6258360.6	1515.130	0.73	1514.400	0.77	14-Aug-12	18:00	58.960	1456.170	72.9	79.0	70.8	80.0	0.05	0.12		
							0.73	25-Aug-12	14:10	63.380	1451.750								
							0.73	6-Sep-12	14:20	62.920	1452.210								
							0.73	3-Apr-13	16:20	79.794	1435.336								
							0.73	10-Jul-13	10:00	79.811	1435.319								
							0.73	21-Sep-13	14:25	79.906	1435.224								
MW-BGC12-BJ-9B	1-Aug-12	426460.6	6258361.8	1515.228	0.67	1514.558	0.67	14-Aug-12	16:05	17.100	1498.128	40.6	46.7	38.4	47.4	0.05	0.12		difficult to locate water surface
							0.67	25-Aug-12	14:00	31.485	1483.743								
							0.67	6-Sep-12	14:50	30.008	1485.220								
							0.67	7-Sep-12	11:10	29.784	1485.444								

Table 2. cont'd Summary of Groundwater Monitoring Wells and Water Levels

Well ID	Installation Date	Easting (m)	Northing (m)	Top of PVC Elevation (m asl)	Surveyed Standpipe Stickup Height (m)	Ground Surface Elevation (m asl)	Measured Standpipe Stickup Height (m)	Manual Water Level Readings				Screen		Sand Pack		PVC Casing Diameter (m)	Drilled Diameter (m)	Screened Geologic Unit	Comments
								Date	Time	Water Level (m btoc)	Water Level (m asl)	From (m bgs)	To (m bgs)	From (m bgs)	To (m bgs)				
MW-BGC12-BJ-9B	1-Aug-12	426460.6	6258361.8	1515.228	0.67	1514.558	0.67	9-Sep-12	13:55	29.793	1485.435	40.6	46.7	38.4	47.4	0.05	0.12		
							0.67	3-Apr-13	16:15	46.232	1468.996								
							0.67	10-Jul-13	10:20	39.547	1475.681								
							0.67	21-Sep-13	3:36	43.402	1471.826								
MW-BGC12-BJ-10A	22-Jun-12	426989.1	6258340.8	1445.966	0.38	1445.586	0.44	3-Jul-12	11:21	6.664	1439.362	53.2	59.3	51.6	60.1	0.05	0.12	IV	prior to development
							0.38	11-Aug-12	8:30	7.840	1438.126								
							0.38	12-Aug-12	7:30	50.720	1395.246								still recovering from development
							0.38	14-Aug-12	8:30	10.840	1435.126								slow response following development, expect WL still recovering
							0.38	25-Aug-12	15:45	47.381	1398.585								
							0.38	8-Sep-12	10:50	45.480	1400.486								still recovering from well development
							0.38	21-Sep-13	10:40	32.122	1413.844								
MW-BGC12-BJ-10B	22-Jun-12	426989.1	6258341.2	1446.359	0.72	1445.639	0.72	3-Jul-12	11:24	13.089	1433.270	38.1	41.1	35.6	41.4	0.05	0.12	IV	
							0.72	11-Aug-12	8:15	13.255	1433.104								
							0.76	14-Aug-12	13:55	13.210	1433.149								
							0.76	9-Jul-13	11:55	13.572	1432.787								
							0.76	9-Jul-13	11:55	13.572	1432.787								
							0.76	21-Sep-13	10:51	14.996	1431.363								
MW-BGC12-BJ-11A	26-Jun-12	426300.3	6258594.9	1434.181	0.61	1433.571	0.61	3-Jul-12	12:15	5.975	1428.206	26.5	29.5	25.8	29.5	0.05	0.12	PHP	
							0.61	12-Aug-12	11:30	6.500	1427.681								prior to development
							0.61	14-Aug-12	13:00	6.920	1427.261								
							0.63	25-Aug-12	15:15	6.794	1427.387								
							0.61	27-Aug-12	14:15	6.820	1427.361								
							0.61	7-Sep-12	14:00	6.822	1427.359								
							0.61	9-Jul-13	13:45	14.362	1419.819								
							0.61	21-Sep-13	11:52	18.037	1416.144								
MW-BGC12-BJ-11B	28-Jun-12	426299.3	6258594.6	1433.589	0.63	1432.959	0.63	3-Jul-12	12:15	6.574	1427.015	50.7	53.8	48.2	53.8	0.05	0.10	PHP	
							0.63	12-Aug-12	11:30	7.500	1426.089								prior to development
							0.63	14-Aug-12	13:00	7.150	1426.439								
							0.63	25-Aug-12	15:10	7.506	1426.083								
							0.63	27-Aug-12	13:20	7.498	1426.091								
							0.63	9-Jul-13	13:50	21.936	1411.653								
							0.63	21-Sep-13	11:45	37.097	1396.492								
MW-BGC12-BJ-12A	8-Aug-12	426508.7	6257806.6	1579.965	0.78	1579.185	0.78	14-Aug-12	17:30	51.680	1528.285	87.8	93.9	84.3	97.0	0.05	0.12		difficult to locate water surface
							0.78	15-Aug-12	11:25	51.560	1528.405								

Table 2. cont'd Summary of Groundwater Monitoring Wells and Water Levels

Well ID	Installation Date	Easting (m)	Northing (m)	Top of PVC Elevation (m asl)	Surveyed Standpipe Stickup Height (m)	Ground Surface Elevation (m asl)	Measured Standpipe Stickup Height (m)	Manual Water Level Readings				Screen		Sand Pack		PVC Casing Diameter (m)	Drilled Diameter (m)	Screened Geologic Unit	Comments
								Date	Time	Water Level (m btoc)	Water Level (m asl)	From (m bgs)	To (m bgs)	From (m bgs)	To (m bgs)				
MW-BGC12-BJ-12A	8-Aug-12	426508.7	6257806.6	1579.965	0.78	1579.185	0.78	25-Aug-12	14:45	50.325	1529.640	87.8	93.9	84.3	97.0	0.05	0.12		
							0.78	2-Sep-12	16:00	52.202	1527.763								
							0.78	5-Sep-12	10:15	51.781	1528.184								
							0.78	9-Apr-13	9:30	74.435	1505.530								water too far from surface for compressor. Used bailers on wireline.
							0.78	10-Jul-13	8:40	68.010	1511.955								
							0.78	26-Sep-13	11:50	82.190	1497.775								
MW-BGC12-BJ-12B	10-Aug-12	426504.8	6257807.0	1579.938	0.78	1579.158	0.78	14-Aug-12	17:30	37.600	1542.338	46.7	52.8	45.2	53.1	0.05	0.12		difficult to locate water surface
							0.78	15-Aug-12	13:30	37.730	1542.208								
							0.78	25-Aug-12	14:40	42.442	1537.496								
							0.78	2-Sep-12	16:00	52.202	1527.736								
							0.78	4-Sep-12	10:20	46.786	1533.152								
							0.78	6-Sep-12	12:00	50.026	1529.912								still recovering from development
							0.78	7-Sep-12	12:00	51.785	1528.153								still recovering from development
							0.78	9-Sep-12	13:30	51.550	1528.388								still recovering from slug test
							0.78	9-Apr-13	9:35	52.486	1527.452								
							0.78	10-Jul-13	8:55	52.592	1527.346								
							0.78	26-Sep-13	11:40	52.529	1527.409								

Table 3. Summary of Geotechnical Drill Holes

BGC Hole ID	Pretium Hole ID	Drilling Contractor[1]	Investigation Objective[2]	Completion Date	Easting[3] (m)	Northing[3] (m)	Elevation[3] (m)	Total Hole Length (m)	Hole Plunge / Trend (°)	Depth to Rock (m)	Instrumentation Installed in Borehole[4]
-	SU-77	Radius	2010 Site Investigation	1-Aug-10	426,721	6,258,133	1507.2	550	66 / 180	0.0	VWP @ 268.2 m
-	SU-82	Radius	2010 Site Investigation	15-Aug-10	426,632	6,257,847	1541.6	518	59 / 247	0.0	2 VWP's @ 76.2 & 393.2 m
-	SU-88	Radius	2010 Site Investigation	21-Aug-10	426,694	6,258,727	1389.8	300	75 / 360	0.0	2 VWP's @ 75.0 & 215 m
DH-BGC12-19	SU-290	Radius	West Zone (UG Design)	17-Mar-12	426,563	6,258,822	1,375.0	425.3	75 / 131	15.1	VWP @ 214.3 m
DH-BGC12-20	SU-295	Radius	West Zone (UG Design)	26-Mar-12	426,552	6,258,607	1,419.0	420.3	76 / 222	0.0	none
DH-BGC12-21	SU-304	Radius	Valley of Kings (UG Design)	9-Apr-12	426,406	6,258,223	1,499.0	544.4	75 / 145	0.0	2 VWP's @ 251.8 & 513.9 m
DH-BGC12-22	SU-316	Radius	Valley of Kings (UG Design)	25-Apr-12	426,473	6,257,930	1,544.0	585.8	75 / 036	0.0	2 VWP's @ 95.7 & 447.9 m
DH-BGC12-23	SU-318	Radius	Valley of Kings (UG Design)	3-May-12	426,502	6,257,853	1,582.0	566.0	70 / 271	0.0	2 VWP's @ 501.1 & 564.6 m
DH-BGC12-24	SU-329	Radius	Valley of Kings (UG Design)	4-May-12	426,644	6,257,880	1,548.0	501.4	68 / 002	0.0	2 VWP's @ 98.5 & 499.9 m
DH-BGC12-25	SU-337	Radius	Valley of Kings (UG Design)	13-May-12	426,350	6,258,086	1,524.0	371.3	45 / 176	0.0	2 VWP's @ 30.6 & 369.8 m
DH-BGC12-26	SU-381	Radius	Mine Site (Foundations)	8-Jun-12	426,753	6,258,745	1,406.0	30.5	75 / 180	0.3	VWP @ 29.0 m
DH-BGC12-27	SU-383	Radius	Mine Site (Foundations)	8-Jun-12	426,843	6,258,669	1,409.0	30.2	75 / 315	0.0	VWP @ 29.3 m
DH-BGC12-28	SU-385	Radius	Mine Site (Foundations)	9-Jun-12	426,907	6,258,772	1,417.0	30.5	80 / 360	0.5	STP @ 26.2 to 30.5 m
DH-BGC12-29	SU-389	Radius	Mine Site (Foundations)	11-Jun-12	426,899	6,258,739	1,417.0	30.5	80 / 270	0.0	STP @ 28.1 to 30.5 m
DH-BGC12-30	SU-391	Radius	Mine Site (Foundations)	11-Jun-12	426,976	6,258,751	1,393.0	32.3	80 / 225	2.4	STP @ 27.4 to 30.5 m
DH-BGC12-31	SU-583	Radius	North Portal	29-Sep-12	426,960	6,258,615	1,410.3	50.0	75 / 256	4.3	2 VWP's @ 22.56 & 43.90 m
DH-BGC12-32	SU-586	Radius	South Portal	30-Sep-12	426,981	6,258,578	1,410.8	50.0	75 / 240	2.1	VWP @ 43.90 m
DH-BGC12-33	SU-587	Radius	Mine Site (Foundations)	1-Oct-12	427,073	6,258,623	1,392.7	29.3	75 / 095	7.2	VWP @ 23.18 m
DH-BGC12-34	SU-588	Radius	Mine Site (Foundations)	1-Oct-12	427,046	6,258,650	1,396.0	31.4	75 / 244	5.8	Thermistor
DH-BGC12-35	SU-589	Radius	Mine Site (Foundations)	2-Oct-12	427,021	6,258,692	1,389.4	32.9	75 / 154	1.7	VWP @ 23.77 m
						Total Meterage (17 holes)		3,762.0			

Notes:
1. Radius - Radius Drilling Corp., Prince George, BC; exploration drilling company.
2. UG Design objective refers to Underground Design.
3. Borehole coordinates and elevations from handheld GPS in NAD83 UTM Zone 9.
4. VWP = vibrating wire piezometer grouted in hole; depth corresponds to location of probe. SP = standpipe piezometer; 50.88 mm PVC or 2"" diameter PVC; depth range corresponds to measuring interval/sand pack. No instrumentation installed in hole DH-BGC12-20."

Table 4. Summary of Vibrating Wire Piezometer Completion Details

BGC Hole ID	Pretium Hole ID	Installation Date	Trend (°)	Plunge (°)	VWP Tip Easting [1] (m)	VWP Tip Northing [1] (m)	VWP Tip Elevation (m asl)	VWP Tip Depth (mah)
-	SU-77	1-Aug-10	66	180	426,596	6,258,207	1,267	268.2
-	SU-82	15-Aug-10	59	247	426,475	6,258,025	1,475	76.2
					426,328	6,257,961	1,202	393.2
-	SU-88	21-Aug-10	75	360	426,572	6,258,939	1,317	75.0
					426,574	6,258,971	1,181	215.0
DH-BGC12-19	SU-290	17-Mar-12	75	131	426,611	6,258,787	1,159	214.3
DH-BGC12-21	SU-304	9-Apr-12	75	145	426,440	6,258,176	1,293	251.8
					426,489	6,258,100	1,007	513.9
DH-BGC12-22	SU-316	25-Apr-12	75	036	426,492	6,257,958	1,447	95.7
					426,548	6,258,039	1,109	447.9
DH-BGC12-23	SU-318	3-May-12	70	271	426,330	6,257,863	1,114	501.1
					426,308	6,257,866	1,054	564.6
DH-BGC12-24	SU-329	4-May-12	68	002	426,644	6,257,913	1,456	98.5
					426,656	6,258,066	1,086	499.9
DH-BGC12-25	SU-337	13-May-12	45	176	426,352	6,258,065	1,506	30.6
					426,360	6,257,795	1,302	369.8
DH-BGC12-26	SU-381	8-Jun-12	75	180	426,757	6,258,741	1,378	29.0

Table 4. cont'd Summary of Vibrating Wire Piezometer Completion Details

BGC Hole ID	Pretium Hole ID	Installation Date	Trend (°)	Plunge (°)	VWP Tip Easting 1 (m)	VWP Tip Northing 1 (m)	VWP Tip Elevation (m asl)	VWP Tip Depth (mah)
DH-BGC12-27	SU-383	8-Jun-12	75	315	426,841	6,258,676	1,386	29.3
DH-BGC12-31	SU-583	29-Sep-12	75	256	426,954	6,258,613	1,388	22.6
					426,949	6,258,612	1,368	43.9
DH-BGC12-32	SU-586	30-Sep-12	75	240	426,971	6,258,572	1,368	43.9
DH-BGC12-33	SU-587	1-Oct-12	75	095	427,079	6,258,622	1,370	23.2
DH-BGC12-35	SU-589	2-Oct-12	75	154	427,024	6,258,686	1,366	23.8

Notes:
1. VWP tip coordinates calculated based on surface coordinates provided by Pretium from professional surveys in UTM NAD 83 Zone 9N.
2. "m asl" refers to metres above sea level; "mah" refers to metres along hole.

Table 5. Summary of Packer Test Results

Monitoring Well / Borehole ID	Easting[1] (m)	Northing (m)	Elevation (m asl)	Plunge / Trend (°)	Test No.	Test Interval					Depth to Midpt (m bgs)	Discons/ Faults[2]	Simplified Geology[3]	K Estimate (m/s)
						From (mah)	To (mah)	From (m bgs)	To (m bgs)	Interval (m)				
Constant Head Packer Tests														
SU-77	426,599	6,258,328	1,507.16	64	1	67.5	96.6	60.8	87.0	26.2	73.9	DIS 1	SEDIMENTARY	1.2E-07
				63	2	174.2	203.3	155.7	181.7	26.0	168.7	FAULT	SEDIMENTARY	4.7E-07
				63	3	308.3	337.4	274.1	300.0	25.9	287.1	STK	METAMORPHIC	1.5E-08
SU-82	426,510	6,258,042	1,541.57	59	1	97.2	127.1	83.7	109.4	25.7	96.6	FAULT	METAMORPHIC	7.8E-08
SU-88	426,572	6,258,921	1,389.77	76	1	55.3	84.4	53.8	82.0	28.3	67.9	STK	VOLCANIC	7.9E-08
DH-BGC12-19	426,567	6,258,826	1,365.04	-75 / 131	3	313.0	317.6	302.3	306.8	4.4	304.6	STK	IGNEOUS/INTRUSIVE	3.3E-07
					4	401.4	425.8	387.7	411.3	23.6	399.5	STK	SEDIMENTARY	3.9E-08
DH-BGC12-20	426,552	6,258,607	1,419.00	-76 / 222	1	33.2	50.0	32.2	48.5	16.3	40.4	FAULT	SEDIMENTARY/HYDROTHERMAL	3.9E-07
					3	240.5	264.9	233.4	257.0	23.7	245.2	STK	SEDIMENTARY	1.7E-07
DH-BGC12-21	426,406	6,258,223	1,499.00	-75 / 145	1	36.6	50.6	35.4	48.9	13.5	42.1	STK	IGNEOUS/INTRUSIVE	1.6E-07
					2	131.4	148.1	126.9	143.1	16.1	135.0	DIS 1	IGNEOUS/INTRUSIVE	3.5E-08
					3	228.9	248.6	221.1	240.1	19.0	230.6	STK	IGNEOUS/INTRUSIVE	(4)
					4	331.0	349.3	319.7	337.4	17.7	328.6	FAULT	SEDIMENTARY	3.8E-08
					5[5]	417.9	437.7	403.7	422.8	19.1	413.2	DIS 2	SEDIMENTARY	1.7E-06
DH-BGC12-22	426,481	6,257,936	1,539.76	-75 / 036	1	50.9	61.6	49.2	59.5	10.3	54.3	FAULT	SEDIMENTARY	1.9E-08
					2	258.2	271.9	249.4	262.6	13.2	256.0	STK	VOLCANIC	1.2E-07
					3	361.8	381.6	349.5	368.6	19.1	359.0	STK	SEDIMENTARY/HYDROTHERMAL	4.3E-08
DH-BGC12-23	426,503	6,257,856	1,583.69	-70 / 271	1	189.6	210.0	178.2	197.4	19.2	187.8	STK	SEDIMENTARY	3.8E-07
					2	308.5	331.3	289.9	311.3	21.5	300.6	STK	IGNEOUS/INTRUSIVE	8.6E-09
					4	531.0	550.3	498.9	517.2	18.2	508.0	FAULT	IGNEOUS/INTRUSIVE	2.0E-08
DH-BGC12-24	426,646	6,257,878	1,547.61	-68 / 002	1	292.6	306.3	271.3	284.0	12.7	277.7	STK	SEDIMENTARY	3.1E-08
					2	384.1	406.9	356.1	377.3	21.2	366.7	STK	SEDIMENTARY	2.7E-08
					3	432.8	458.7	401.3	425.3	24.0	413.3	STK	SEDIMENTARY	1.9E-08
					4	460.3	470.9	426.7	436.6	9.9	431.7	FAULT	SEDIMENTARY	6.7E-08

Table 5. cont'd Summary of Packer Test Results

Monitoring Well / Borehole ID	Easting[1)] (m)	Northing (m)	Elevation (m asl)	Plunge / Trend (°)	Test No.	Test Interval					Depth to Midpt (m bgs)	Discons/ Faults[2]	Simplified Geology[3]	K Estimate (m/s)
						From (mah)	To (mah)	From (m bgs)	To (m bgs)	Interval (m)				
Constant Head Packer Tests cont'd														
DH-BGC12-25	426,350	6,258,086	1,527.77	-45 / 176	1	198.7	212.5	140.5	150.2	9.7	145.4	DIS 2	SEDIMENTARY	3.3E-08
					2	238.7	255.4	168.8	180.6	11.9	174.7	DIS 2	SEDIMENTARY	3.9E-07
DH-BGC12-32	426,981	6,258,578	1,410.76	-75 / 240	1	30.2	50.0	29.2	48.3	19.1	38.7	STK	SEDIMENTARY	1.8E-07
DH-BGC12-33	427,073	6,258,623	1,392.65	-75 / 095	1	14.0	30.8	13.5	29.7	16.2	21.6	FAULT	VOLCANIC	1.4E-06
DH-BGC12-34	427,046	6,258,650	1,395.96	-75 / 244	1	14.6	31.4	14.1	30.3	16.2	22.2	STK	VOLCANIC	4.6E-07
DH-BGC12-35	427,021	6,258,692	1,389.40	-75 / 154	1	16.2	32.9	15.6	31.8	16.2	23.7	FAULT	SEDIMENTARY	1.5E-07
MW-BGC12-BJ-4B	427,031	6,258,752	1,390.43	-	1	93.6	98.1	93.2	97.8	4.6	95.5	FAULT	SEDIMENTARY	2.0E-07
					2	78.7	81.7	78.4	81.4	3.0	79.9	FAULT	SEDIMENTARY	(4)
MW-BGC12-BJ-6B	427,097	6,258,982	1,379.56	-	1	66.8	78.3	66.8	78.3	11.5	72.6	STK	VOLCANIC	2.6E-08
					2	48.7	51.8	48.7	51.8	3.1	50.2	STK	VOLCANIC	1.5E-07
MW-BGC12-BJ-8A	426,106	6,258,818	1,403.38	-	1	18.6	23.1	18.6	23.1	4.6	20.8	FAULT	IGNEOUS/INTRUSIVE	4.4E-06
					2	48.7	53.1	48.7	53.1	4.5	50.9	DIS 2	IGNEOUS/INTRUSIVE	8.1E-08
					3	63.7	68.1	63.7	68.1	4.5	65.9	FAULT	IGNEOUS/INTRUSIVE	2.6E-07
					4	87.6	92.1	87.6	92.1	4.6	89.8	FAULT	IGNEOUS/INTRUSIVE	4.6E-06
MW-BGC12-BJ-9A	426,465	6,258,361	1,514.40	-	1a[(7)]	25.1	29.7	25.1	29.7	4.6	27.4	STK	IGNEOUS/INTRUSIVE	3.7E-08
					1	36.5	41.0	36.5	41.0	4.5	38.8	STK	IGNEOUS/INTRUSIVE	9.8E-08
					2	75.5	80.0	75.5	80.0	4.5	77.8	STK	IGNEOUS/INTRUSIVE	2.8E-07
MW-BGC12-BJ-10A	426,989	6,258,341	1,445.59	-	1	15.7	20.3	15.7	20.3	4.6	18.0	STK	VOLCANIC	7.1E-08
					2	42.7	50.3	42.7	50.3	7.6	46.5	STK	VOLCANIC	1.4E-08
MW-BGC12-BJ-11B	426,299	6,258,595	1,432.96	-	1	12.7	17.4	12.7	17.4	4.7	15.0	STK	IGNEOUS/INTRUSIVE	(4)
					2	34.0	38.6	34.0	38.6	4.6	36.3	FAULT	IGNEOUS/INTRUSIVE	4.0E-07
					3	46.2	53.8	46.2	53.8	7.7	50.0	FAULT	IGNEOUS/INTRUSIVE	6.5E-07
MW-BGC12-BJ-12A	426,509	6,257,807	1,579.19	-	1	48.0	50.0	48.0	50.0	2.0	49.0	STK	IGNEOUS/INTRUSIVE	1.8E-06
					2	66.0	70.5	66.0	70.5	4.5	68.3	FAULT	IGNEOUS/INTRUSIVE	1.8E-06

Table 5. cont'd Summary of Packer Test Results

Monitoring Well / Borehole ID	Easting[1] (m)	Northing (m)	Elevation (m asl)	Plunge / Trend (°)	Test No.	Test Interval					Depth to Midpt (m bgs)	Discons/ Faults[2]	Simplified Geology[3]	K Estimate (m/s)
						From (mah)	To (mah)	From (m bgs)	To (m bgs)	Interval (m)				
Falling Head Packer Tests														
SU-82	426,510	6,258,042	1,541.57	59	2	219.9	249.0	189.4	214.5	25.1	202.0	STK	VOLCANIC	4.3E-06
DH-BGC12-19	426,567	6,258,826	1,365.04	-75 / 131	1	50.9	55.5	49.2	53.6	4.4	51.4	FAULT	SEDIMENTARY	1.6E-07
					2	215.5	220.1	208.2	212.6	4.4	210.4	FAULT	SEDIMENTARY	2.6E-07
DH-BGC12-20	426,552	6,258,607	1,419.00	-76 / 222	2	127.7	149.0	123.9	144.6	20.7	134.2	DIS 1	SEDIMENTARY	1.7E-08
					4	380.7	403.6	369.4	391.6	22.2	380.5	STK	SEDIMENTARY	6.4E-08
DH-BGC12-23	426,503	6,257,856	1,583.69	-70 / 271	3	491.3	513.0	461.7	482.0	20.3	471.9	FAULT	IGNEOUS/INTRUSIVE	9.4E-07
MW-BGC12-BJ-6B	427,097	6,258,982	1,379.56	-	3	12.7	15.8	12.7	15.8	3.1	14.2	STK	VOLCANIC	(4)
MW-BGC12-BJ-10A	426,989	6,258,341	1,445.59	-	3	54.7	62.3	54.7	62.3	7.6	58.5	FAULT	VOLCANIC	6.2E-07

Notes:
1. Drill hole coordinates and elevations for the DH and MW-series holes provided by Pretium from professional surveys in NAD83 UTM Zone 9N, with the exception of DH-BGC12-20 and -21 which are from a handheld GPS and are limited to the accuracy of that tool.
2. "Discons" refers to discontinuities observed during core logging; "STK" indicates stick rock, "DIS1" indicates observation of 1 discontinuity, "DIS2" indicates observation of 2 or more discontinuities, "FAULT" indicates observation of a fault zone.
3. Simplified geology represents the most prevalent geologic material encountered over the packer interval within a borehole, based on core logging completed by BGC and Pretium staff.
4. Incomplete packer test due to failure of packer to seat properly (MW-BGC12-BJ-4B, MW-BGC12-BJ-11B), or insufficient flow (DH-BGC12-21, MW-BGC12-BJ-6B).
5. Unable to achieve pressure required for a constant head test or falling head test. Estimated K represents minimum possible hydraulic conductivity for the interval, derived from estimates of flow at 0 psi.
6. First attempt at MW-BGC12-BJ-9A was drilled using an HQ3 drill head, and was abandoned prior to completion of the hole. Packer test 1a was completed prior to abandonment.

Table 6. Summary of Slug Test Data and Hydraulic Conductivity (K) Estimates

Monitoring Well / Borehole ID	Easting[1] (m)	Northing (m)	Elevation (m asl)	Sand Pack Interval			Depth to Midpt (m bgs)	Well Screen Interval			Discons/ Faults[2]	Simplified Geology[3]	K Estimate (m/s)
				From (m bgs)	To (m bgs)	Interval Length (m)		From (m bgs)	To (m bgs)	Interval Length (m)			
Rising and Falling Head Slug Tests													
MW-BGC11-BJ-2A	426,885	6,258,812	1,423.17	64.9	80.3	15.4	72.6	70.7	76.8	6.1	DIS 1	IGNEOUS/INTRUSIVE	1.1E-06
MW-BGC11-BJ-3A	426,615	6,258,844	1,367.63	79.3	88.4	9.1	83.9	83.0	88.3	5.3	STK	IGNEOUS/INTRUSIVE	2.4E-06
MW-BGC11-BJ-3B	426,615	6,258,844	1,367.53	4.5	9.1	4.6	6.8	5.8	8.8	3.0	FAULT	IGNEOUS/INTRUSIVE	6.2E-06
MW-BGC11-BJ-4A	427,031	6,258,750	1,390.46	18.0	31.0	13.0	24.5	21.3	30.5	9.2	FAULT	VOLCANIC	3.0E-09
MW-BGC12-BJ-4B	427,031	6,258,752	1,390.43	91.6	98.1	6.5	94.9	94.9	97.9	3.1	FAULT	SEDIMENTARY	1.2E-07
MW-BGC11-BJ-5A	426,347	6,258,040	1,526.14	65.7	78.0	12.3	71.9	68.6	77.7	9.1	STK	VOLCANIC	6.3E-07
MW-BGC11-BJ-5B	426,346	6,258,042	1,526.16	39.6	50.9	11.3	45.3	41.0	50.2	9.2	STK	VOLCANIC	1.3E-06
MW-BGC11-BJ-6A	427,095	6,258,983	1,379.81	20.7	31.8	11.1	26.3	21.2	30.3	9.1	STK	VOLCANIC	1.8E-07
MW-BGC12-BJ-6B	427,097	6,258,982	1,379.56	98.2	103.8	5.6	101.0	100.3	103.3	3.1	FAULT	VOLCANIC	2.4E-07
MW-BGC12-BJ-8A	426,106	6,258,818	1,403.38	86.0	95.1	9.1	90.6	86.2	92.3	6.1	FAULT	IGNEOUS/INTRUSIVE	3.0E-05
MW-BGC12-BJ-8B	426,106	6,258,819	1,403.30	44.3	51.0	6.7	47.6	44.8	50.9	6.1	FAULT	IGNEOUS/INTRUSIVE	2.8E-07
MW-BGC12-BJ-9A	426,465	6,258,361	1,514.40	70.8	80.0	9.2	75.4	72.9	79.0	6.1	STK	IGNEOUS/INTRUSIVE	(4)
MW-BGC12-BJ-9B	426,461	6,258,362	1,514.56	38.4	47.4	9.0	42.9	40.6	46.7	6.1	STK	IGNEOUS/INTRUSIVE	8.3E-07
MW-BGC12-BJ-10A	426,989	6,258,341	1,445.59	51.6	60.1	8.5	55.9	53.2	59.3	6.1	FAULT	VOLCANIC	(4)
MW-BGC12-BJ-10B	426,989	6,258,341	1,445.64	35.6	41.4	5.8	38.5	38.1	41.1	3.1	FAULT	VOLCANIC	7.9E-07
MW-BGC12-BJ-11A	426,300	6,258,595	1,433.57	25.8	29.5	3.7	27.7	26.5	29.5	3.1	FAULT	IGNEOUS/INTRUSIVE	(4)
MW-BGC12-BJ-11B	426,299	6,258,595	1,432.96	48.2	53.8	5.6	51.0	50.7	53.8	3.1	FAULT	IGNEOUS/INTRUSIVE	4.0E-06
MW-BGC12-BJ-12A	426,509	6,257,807	1,579.19	84.3	97.0	12.7	90.7	87.8	93.9	6.1	FAULT	IGNEOUS/INTRUSIVE	1.5E-05
MW-BGC12-BJ-12B	426,505	6,257,807	1,579.16	45.2	53.1	7.9	49.2	46.7	52.8	6.1	STK	IGNEOUS/INTRUSIVE	(4)

Notes:
1. Monitoring well coordinates provided by Pretium from professional surveys in UTM NAD 83 Zone 9N.
2. "Discons" refers to discontinuities observed during core logging; "STK" indicates stick rock, "DIS1" indicates observation of 1 discontinuity, "DIS2" indicates observation of 2 or more discontinuities, "FAULT" indicates observation of a fault zone.
3. Simplified geology represents the most prevalent geologic material encountered over the well completion interval, based on core logging completed by BGC and Pretium staff.
4. Wells not tested due to slow well response.

Table 7. Vertical Hydraulic Gradients in Monitoring Wells

Well ID	Midpoint of Screened Interval		Vertical Distance (m)	March 2012		August 2012		September 2012		January 2013		April 2013		July 2013		September 2013	
	From (m bgs)	To (m bgs)		Water Level (m asl)	Vertical Gradient [1]	Water Level (m asl)	Vertical Gradient	Water Level (m asl)	Vertical Gradient	Water Level (m asl)	Vertical Gradient	Water Level (m asl)	Vertical Gradient	Water Level (m asl)	Vertical Gradient	Water Level (m asl)	Vertical Gradient
MW-BGC11-BJ-1A	77.1	85.3	46.2	1351.1	0.00	1360.4	-0.11	1358.7	-0.09	-	-	-	-	1329.9	-0.68	1328.4	-0.75
MW-BGC11-BJ-1B	31.3	38.7		1351.1		1365.7		1363.1		-		-		1361.4		1363.0	
MW-BGC11-BJ-3A	79.3	88.4	77.1	1368.0	0.02	1364.2	-0.06	1364.7	-0.05	-	-	1350.7	-0.11	1357.6	-0.13	1363.6	-0.07
MW-BGC11-BJ-3B	4.5	9.1		1366.3		1368.6		1368.2		-		1359.5		1367.5		1368.6	
MW-BGC11-BJ-4A	18.0	31.0	70.4	1376.2	-	1377.8	0.00	1376.8	0.01	1375.5	0.00	1373.8	-0.01	1377.8	-0.03	1376.8	-0.01
MW-BGC12-BJ-4B	91.6	98.1		(3)		1377.9		1377.5		1375.3		1373.2		1376.0		1375.8	
MW-BGC11-BJ-5A	65.7	78.0	26.6	1484.7	-0.07	1512.7	-0.11	-	-	1502.7	0.07	-	-	1511.6	0.09	1481.7	-0.15
MW-BGC11-BJ-5B	39.6	50.9		1486.5		1515.6		-		1500.8		-		1509.2		1485.8	
MW-BGC11-BJ-6A	20.7	31.8	74.7	1366.2	-	1371.5	-0.05	1370.5	-0.04	1365.8	-0.01	1364.8	-0.01	1369.9	-0.04	1369.1	-0.04
MW-BGC12-BJ-6B	98.2	103.8		(3)		1367.8		1367.2		1364.7		1364.0		1367.0		1366.1	
MW-BGC12-BJ-8A	86.0	95.1	42.9	(3)	-	1389.1	0.08	1388.5	0.07	1372.4	0.04	1367.2	0.02	1388.6	0.07	1390.3	0.09
MW-BGC12-BJ-8B	44.3	51.0		(3)		1385.6		1385.3		1370.9		1366.4		1385.6		1386.5	
MW-BGC12-BJ-9A	70.8	80.0	32.5	(3)	-	1456.2	-1.29	1452.2	-1.02	-	-	(4)	-	(4)	-	(4)	-
MW-BGC12-BJ-9B	38.4	47.4		(3)		1498.1		1485.4		-		1469.0		1475.7		1471.8	
MW-BGC12-BJ-10A	51.6	60.1	17.4	(3)	-	1435.1	0.11	(5)	-	-	-	-	-	(5)	-	(5)	-
MW-BGC12-BJ-10B	35.6	41.4		(3)		1433.1		-		-		-		1432.8		1431.4	
MW-BGC12-BJ-11A	25.8	29.5	23.4	(3)	-	1427.3	-0.04	1427.4	-	-	-	-	-	1419.8	-0.35	1416.1	-0.84
MW-BGC12-BJ-11B	48.2	53.8		(3)		1426.4		-		-		-		1411.7		1396.5	
MW-BGC12-BJ-12A	84.3	97.0	41.5	(3)	-	1528.3	-0.34	1528.2	-	1513.7	-	1505.5	-	1512.0	-	1497.8	-
MW-BGC12-BJ-12B	45.2	53.1		(3)		1542.3		(4)		(4)		(4)		(4)		(4)	

Notes:
1. Vertical hydraulic gradients are calculated based on manual water level measurements taken during groundwater sampling events. A positive vertical gradient indicates upward flow, whereas a negative vertical gradient indicates downward flow.
2. Values in grey are considered uncertain; the ground surface was reconfigured at wells 3A/B between April to July 2013, and needs to be re-surveyed before groundwater level data can be accurately corrected to elevation.
3. Groundwater monitoring well not yet installed; no vertical hydraulic gradient calculated.
4. Water level below well screen; no vertical hydraulic gradient calculated.
5. Well slow to respond to development; groundwater elevation data not considered representative of in-situ conditions.

Table 8. Groundwater Quality Parameter Monitoring Set

Parameter Set	Comment
Field parameters	Temperature, pH, Electrical Conductivity (EC)
Laboratory physical parameters	Temperature, Conductivity, Turbidity, TDS, Total Suspended Solids (TSS), pH, Hardness, Colour
Cyanide	Total Cyanide and Weak Acid Dissociable (WAD) Cyanide
Anions	Cl, SO_4, NO_3, NO, Total Alkalinity
Nutrients	Total Kjeldahl Nitrogen (TKN), NH_3, Total Nitrogen, Ortho-PO_4,
Carbon	Total Organic Carbon (TOC), Dissolved Organic Carbon (DOC)
Total Metals	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mn, Hg, Mo, Ni, P, K, Se, Si, Ag, Na, Sr, Tl, Sn, Ti, V, U, Zn
Dissolved Metals	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mn, Hg, Mo, Ni, P, K, Se, Si, Ag, Na, Sr, Tl, Sn, Ti, V, U, Zn

Table 9. Groundwater Quality Guidelines as Specified in the Brucejack Project AIR

Parameter	Unit	BC MOE[1]				CCME[2]
		Drinking Water		Aquatic Life		
		30 d Ave.	Max.	30 d Ave.	Max.	Long Term Max
Physical Tests						
Colour, True	CU	-	-	-	-	BD[3]
Conductivity	uS/cm	-	-	-	-	-
Hardness (as CaCO3)	mg/L	-	-	-	-	-
pH	pH	6.5 - 8.5		6.5 - 9.0		6.5 - 9.0
Total Suspended Solids	mg/L	-	-	BD		BD
Total Dissolved Solids	mg/L	-	-	-	-	-
Turbidity	NTU	BD		BD		BD
Anions and Nutrients						
Acidity (as CaCO3)	mg/L	-	-	-	-	-
Alkalinity, Bicarbonate (as CaCO3)	mg/L	-	-	-	-	-
Alkalinity, Carbonate (as CaCO3)	mg/L	-	-	-	-	-
Alkalinity, Hydroxide (as CaCO3)	mg/L	-	-	-	-	-
Alkalinity, Total (as CaCO3)	mg/L	-	-	-	-	-
Ammonia (as N)	mg/L	-	-	0.38 – 2.08[4]	1.99-23.2[4]	0.502 – 23.1[5]
Bromide (Br)	mg/L	-	-	-	-	-
Chloride (Cl)	mg/L	250		150	600	120
Fluoride (F)	mg/L	1	1.5	0.4[6]		0.12
Nitrate (as N)	mg/L	-	10	40	200	13
Nitrite (as N)	mg/L	-	1.0	0.02-0.20[7]	0.06	0.06
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-
Total Nitrogen	mg/L	-	-	-	-	-
Orthophosphate - Dissolved (as P)	mg/L	-	-	-	-	-
Phosphorus (P)-Total	mg/L	-	-	-	-	-
Sulfate (SO4)	mg/L	500	500	128-429[8]	-	-
Cyanides						
Cyanide, Weak Acid Diss	mg/L	-	-	<0.005	0.01	0.005 as free

[1] British Columbia Water Quality Guidelines for Protection of Freshwater Aquatic Life and Drinking Water (BC MOE), Accessed May, 2014

[2] Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Aquatic Life, Accessed May 2014

[3] Background dependent

[4] Ammonia concentration is pH and temperature dependent based on tabulations shown in BC MOE aquatic life guidelines. Assumes average temperature range of 0°C – 5°C and pH range of 7.0 – 8.5

[5] Ammonia concentration is pH and temperature dependent (see Table 10) based on average temperature range of 0°C – 5°C and pH range of 7.0 – 8.5

[6] Fluoride concentration - 0.4 as a maximum where the water hardness is 10 mg/L CaCO3 otherwise use the equation: *LC50 fluoride = -51.73 + 92.57 log10 (Hardness)* and multiply by 0.01

[7] Nitrite concentration – dependent on chloride concentration (0.06 mg/L as a maximum, 0.2 mg/L as a 30 d ave.)

[8] Sulfate concentration – dependent on water hardness: very soft (0-30 mg/L) – 128 mg/L SO4; soft to moderately soft (31-75 mg/L) – 218 mg/L SO4; moderately soft/hard to hard (76-180 mg/L) – 309 mg/L SO4; very hard (181-250 mg/L) – 419 mg/L SO4.

Parameter	Unit	BC MOE[1]				CCME[2]
		Drinking Water		Aquatic Life		
		30 d Ave.	Max.	30 d Ave.	Max.	Long Term Max
Cyanide, Total	mg/L	0.2	0.20	-	-	-
Organic/ Inorganic Carbon						
Dissolved Organic Carbon	mg/L	-	-	BD	BD	-
Total Organic Carbon	mg/L	4	4	BD	BD	-
Total Metals						
Aluminum (Al)	mg/L	-	-	-	-	0.005 - 0.1[9]
Antimony (Sb)	mg/L	-	-	-	-	-
Arsenic (As)	mg/L	0.025[10]		0.005		0.005
Barium (Ba)	mg/L	-	-	-	-	-
Beryllium (Be)	mg/L	-	-	-	-	-
Bismuth(Bi)	mg/L	-	-	-	-	-
Boron (B)	mg/L	5	5	1.2	1.2	1.5
Cadmium (Cd)	mg/L	-	-	-	-	0.00009[11]
Calcium (Ca)	mg/L	-	-	-	-	-
Chromium (Cr)	mg/L	-	-	-	-	0.001[12]
Cobalt (Co)	mg/L	-	-	0.004	0.110	-
Copper (Cu)	mg/L	-	0.5	0.00004-0.002[13]	0.002-0.026[13]	0.002-0.004[14]
Iron (Fe)	mg/L	-	-	1.0	1.0	0.3
Lead (Pb)	mg/L	None proposed	0.05	0.004-0.016[15]	0.003-0.33[15]	0.001-0.007[16]
Lithium (Li)	mg/L	-	-	-	-	-
Magnesium (Mg)	mg/L	-	-	-	-	-
Manganese (Mn)	mg/L	-	-	0.605-1.9[17]	0.54-3.8[17]	-
Mercury (Hg)	mg/L	-	0.001	0.00000125-0.0002	-	0.000026

[9] Aluminum concentration - 5 µg/L if pH < 6.5; 100 µg/L if pH ≥ 6.5

[10] Arsenic interim guideline

[11] Cadmium concentration - When the water hardness is > 0 to < 17 mg/L: 0.04 µg/L; At hardness ≥ 17 to ≤ 280 mg/L, calculated using this equation cadmium *(µg/L) = 10{0.83(log[hardness]) – 2.46 };* At hardness > 280 mg/L: 0.37 µg/L

[12] Chromium concentration is for Chromium hexavalent CrVI

[13] Copper concentration (BC MOE)– 30 d average: at hardness ≤ 50 mg/L then less than or equal to 2 µg/L, at hardness > 50 mg/L then less than or equal to *0.04 (mean hardness)* in µg/L; maximum concentration: concentration is *(0.094(hardness)+2)* in µg/L

[14] Copper concentration (CCME) -When the water hardness is 0 to < 82 mg/L, 2 µg/L; At hardness ≥82 to ≤180 mg/L, calculated using this equation: copper *(µg/L) = 0.2 * e{0.8545[ln(hardness)]-1.465};* At hardness >180 mg/L, 4 µg/L. If the hardness is unknown, 2 µg/L.

[15] Lead concentration (BC MOE) – 30 d average: at hardness greater than 8 mg/L, calculated using the equation *3.31 + e(1.273 ln (mean hardness) - 4.704)* in µg/L; maximum concentration: at hardness ≤ 8 mg/L then 3 µg/L total lead, at hardness > 8 mg/L calculated using *e(1.273 ln (hardness) -1.460)* in µg/L.

[16] Lead concentration (CCME) - When the hardness is 0 to ≤ 60 mg/L, maximum is 1 µg/L; at hardness >60 to ≤ 180 mg/L maximum is calculated using this equation concentration (µg/L) = *e{1.273[ln(hardness)]-4.705}*; at hardness >180 mg/L, the CWQG is 7 µg/L. If the hardness is unknown, the CWQG is 1 µg/L.

[17] Manganese concentration – 30 d average: calculated from *0.0044 hardness + 0.605;* maximum concentration: calculated from *0.01102 hardness + 0.54*

Parameter	Unit	BC MOE[1]				CCME[2]
		Drinking Water		Aquatic Life		
		30 d Ave.	Max.	30 d Ave.	Max.	Long Term Max
Molybdenum (Mo)	mg/L	-	0.25	1	2	0.073
Nickel (Ni)	mg/L	-	-	-	-	0.025-0.150[18]
Phosphorus (P)	mg/L	-	-	-	-	-
Potassium (K)	mg/L	-	-	-	-	-
Selenium (Se)	mg/L	-	0.010	0.002	-	0.001
Silicon (Si)	mg/L	-	-	-	-	-
Silver (Ag)	mg/L	-	-	0.00005-0.0015[19]	0.0001-0.003[19]	0.0001
Sodium (Na)	mg/L	-	-	-	-	-
Strontium (Sr)	mg/L	-	-	-	-	-
Thallium (Tl)	mg/L	-	-	0.0003[20]		0.0008
Tin (Sn)	mg/L	-	-	-	-	-
Titanium (Ti)	mg/L	-	-	-	-	-
Uranium (U)	mg/L	-	-	0.3[20]		0.015
Vanadium (V)	mg/L	-	-	-	-	-
Zinc (Zn)	mg/L	5	5	0.0075-0.240[21]	0.033-2.65[21]	0.03
Dissolved Metals						
Aluminum (Al)	mg/L	-	0.2	0.005-0.05[22]	0.02-0.1	-
Iron (Fe)	mg/L	-	-	-	0.35	-

[18] Nickel concentration - When the water hardness is 0 to ≤ 60 mg/L, 25 µg/L; at hardness > 60 to ≤ 180 mg/L, calculated using this equation CWQG *(µg/L) = e{0.76[ln(hardness)]+1.06}; a*t hardness >180 mg/L, the CWQG is 150 µg/L. If the hardness is unknown, the CWQG is 25 µg/L.

[19] Silver concentration – 30 d average: at hardness ≤ 100 mg/L concentration is 0.05 µg/L, at hardness > 100 mg/L concentration is 1.5 µg/L; maximum concentration: at hardness ≤ 100 mg/L concentration is 0.1 µg/L, at hardness > 100 mg/L concentration is 3.0 µg/L.

[20] Working guideline based on the water quality guidelines for Ontario.

[21] Zinc concentration – 30 d average: use the equation *7.5 + 0.75 x (hardness -90)*; maximum concentration: use the equation *33 + 0.75 x (hardness -90)*

[22] Aluminum (dissolved) concentration – 30 d average: at pH ≥ 6.5, 0.05 mg/L, at pH <6.5, calculated using *e(1.6 - 3.327 (median pH) + 0.402 K)* where K = *(median pH)*^{2}; maximum concentration: : at pH ≥ 6.5, 0.1 mg/L , at pH <6.5, calculated using *e(1.209 - 2.426 (pH) + 0.286 K*) where *K = (pH)*^{2}.

Table 10. Tabulation of CCME Maximum Long-Term Ammonia Concentration Guidelines

		pH							
		6.0	6.5	7.0	7.5	8.0	8.5	9.0	10.0
Temp (°C)	0	231	73.0	23.1	7.32	2.33	0.749	0.25	0.042
	5	153	48.3	15.3	4.84	1.54	0.502	0.172	0.034
	10	102	32.4	10.3	3.26	1.04	0.343	0.121	0.029
	15	69.7	22.0	6.98	2.22	0.715	0.239	0.089	0.026
	20	48.0	15.2	4.82	1.54	0.499	0.171	0.067	0.024
	25	33.5	10.6	3.37	1.08	0.354	0.125	0.053	0.022
	30	23.7	7.50	2.39	0.767	0.256	0.094	0.043	0.021

Notes:
1. CCME long-term maximum guideline for ammonia concentration is pH and temperature dependent (see Table 9), and is calculated based on the matrix above.

Table 11. Statistical Summary of Water Quality Results from Monitoring Wells Completed in Office P1 Material.

		MW-BGC11-BJ-1A (n=1)	MW-BGC11-BJ-1B (n=1)	MW-BGC11-BJ-8A (n=6)				MW-BGC11-BJ-8B (n=3)			Office P1 All (n=11)			
		-	-	Min	Max	Med.	Ave.	Min	Max	Med.	Min	Max	Med.	Ave.
Field Parameters	**Unit**													
Temperature	°C	-	-	1.90	4.92	2.88	3.05	1.00	2.60	1.90	1.00	4.92	2.60	2.64
Physical Tests	**Unit**													
pH	pH	7.96	7.99	7.02	8.30	8.20	7.68	8.02	8.21	8.12	7.02	8.30	8.14	7.81
Total Suspended Solids	mg/L	31.6	86.2	7.10	212	18.7	63.1	17.2	193	182	7.10	212	31.6	80.8
Turbidity	NTU	34.1	99.7	3.29	118	9.51	31.4	53.1	266	174	3.29	266	43.6	74.1
Anions and Nutrients	**Unit**													
Alkalinity, Total (as CaCO3)	mg/L	29.2	86.1	72.5	76.0	74.2	74.5	68.2	73.2	69.9	29.2	86.1	73.9	70.3
Ammonia (as N)	mg/L	0.028	0.023	<0.0050	<0.0050	-	-	<0.0050	<0.0050	-	<0.0050	0.028	0.0025	0.0067
Chloride (Cl)	mg/L	0.66	<0.50	<0.50	<0.50	-	-	<0.50	<0.50	-	<0.50	0.66	0.25	0.29
Fluoride (F)	mg/L	0.039	*0.25*	0.027	0.031	0.030	0.029	0.021	0.023	0.023	0.021	*0.25*	0.029	0.048
Nitrate (as N)	mg/L	0.014	0.026	0.0065	0.027	0.014	0.015	0.015	0.022	0.020	0.0065	0.027	0.018	0.017
Nitrite (as N)	mg/L	*<0.0010*	0.0036	*<0.0010*	<0.0010	-	-	<0.0010	<0.0010	-	<0.0010	0.0036	-	-
Orthophosphate - Dissolved (as P)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	-	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	-
Phosphorus (P)-Total	mg/L	0.032	0.072	0.0021	0.10	0.0058	0.024	0.0096	0.093	0.091	0.0021	0.10	0.022	0.040
Sulfate (SO4)	mg/L	19.1	60.0	30.1	36.6	33.0	33.3	32.0	35.7	35.1	19.1	60.0	33.9	34.7
Total Metals	**Unit**													
Aluminum (Al)-Total	mg/L	*0.80*	*2.43*	*0.30*	*5.14*	*0.89*	*1.99*	*2.83*	*12.2*	*7.02*	*0.30*	*12.2*	*2.43*	*3.38*
Antimony (Sb)-Total	mg/L	0.00086	0.0014	0.00074	0.0016	0.00085	0.00097	0.00097	0.0018	0.0018	0.00074	0.0018	0.00097	0.0011
Arsenic (As)-Total	mg/L	*0.0056*	*0.029*	*0.0074*	*0.032*	*0.0086*	*0.012*	*0.030*	*0.082*	*0.069*	*0.0056*	*0.082*	*0.0089*	*0.026*
Barium (Ba)-Total	mg/L	0.061	0.11	0.021	0.10	0.026	0.040	0.079	0.28	0.16	0.021	0.28	0.061	0.085
Beryllium (Be)-Total	mg/L	<0.0010	<0.0010	<0.00010	0.00073	0.000050	0.00023	<0.00010	0.00031	0.00017	<0.00010	0.00073	0.00017	0.00026
Bismuth(Bi)- Total	mg/L	<0.20	<0.20	<0.00050	<0.00050	-	-	<0.00050	<0.00050	-	<0.00050	<0.20	-	-
Boron (B)-Total	mg/L	<0.10	<0.10	0.011	0.014	0.012	0.012	<0.010	0.012	0.0050	<0.010	0.014	0.012	0.018
Cadmium (Cd)-Total	mg/L	0.000061	0.000032	0.000012	*0.00024*	0.000017	5.5E-05	<0.000010	0.000040	0.000033	<0.000010	*0.00024*	0.000032	4.6E-05
Calcium (Ca)-Total	mg/L	16.8	29.5	26.3	41.4	30.5	31.6	30.3	39.0	32.3	16.8	41.4	30.3	30.7
Chromium (Cr)-Total	mg/L	*0.0013*	*0.0012*	0.00019	*0.0067*	0.00090	*0.0023*	0.00080	*0.016*	*0.0023*	0.00019	*0.016*	*0.0012*	*0.0032*
Cobalt (Co)-Total	mg/L	0.00049	0.0010	<0.00010	0.0016	0.00016	0.00042	0.00056	0.0033	0.0030	<0.00010	0.0033	0.00056	0.00099
Copper (Cu)-Total	mg/L	*0.012*	*0.0047*	<0.00050	*0.018*	0.0015	*0.0049*	0.0018	*0.0098*	*0.0077*	<0.00050	*0.018*	*0.0047*	*0.0059*
Iron (Fe)-Total	mg/L	*1.02*	*1.89*	0.092	*4.97*	*0.33*	*1.20*	*1.41*	*6.82*	*5.06*	0.092	*6.82*	*1.30*	*2.13*
Lead (Pb)-Total	mg/L	*0.0017*	0.0019	0.00013	0.0075	0.00055	0.0020	0.0010	0.0057	0.0042	0.00013	0.0075	0.0017	0.0024
Lithium (Li)-Total	mg/L	0.0073	0.082	0.0082	0.011	0.0097	0.0099	0.0066	0.0096	0.0096	0.0066	0.082	0.0096	0.016
Magnesium (Mg)-Total	mg/L	1.19	4.19	5.03	6.89	5.75	5.89	4.08	5.28	4.81	1.19	6.89	5.28	4.99
Manganese (Mn)-Total	mg/L	0.080	0.13	0.0049	0.28	0.021	0.063	0.061	0.33	0.29	0.0049	0.33	0.061	0.12
Mercury (Hg)-Total	mg/L	0.000011	<0.000010	<0.000010	<0.000010	-	-	<0.000010	*0.000056*	*0.000040*	<0.000010	*0.000056*	0.0000050	1.3E-05
Molybdenum (Mo)-Total	mg/L	<0.0010	0.0024	0.0013	0.0026	0.0016	0.0018	0.0016	0.0031	0.0019	0.0013	0.0031	0.0017	0.0018
Nickel (Ni)-Total	mg/L	0.0012	0.0010	<0.00050	0.0042	0.00051	0.0012	0.00051	0.0087	0.0025	<0.00050	0.0087	0.0010	0.0019
Phosphorus (P) - Total	mg/L	<0.30	<0.30	<0.30	<0.30	-	-	<0.30	<0.30	-	<0.30	<0.30	-	-
Potassium (K)-Total	mg/L	<2.0	3.2	0.49	1.88	0.60	0.85	1.28	3.07	2.09	0.49	3.20	1.00	1.43
Selenium (Se)-Total	mg/L	<0.0010	<0.0010	0.00016	0.00023	0.00018	0.00018	0.00022	0.00028	0.00028	0.00016	<0.0010	0.00022	0.00026
Silicon (Si)- Total	mg/L	2.06	5.77	3.24	13.6	5.05	7.18	6.86	23.4	15.6	2.06	23.4	5.77	8.79
Silver (Ag)-Total	mg/L	*0.00011*	0.000073	<0.000010	*0.00022*	0.000049	0.000093	0.000036	*0.00077*	*0.00023*	<0.000010	*0.00077*	0.000075	*0.00016*
Sodium (Na)-Total	mg/L	2.6	25.3	4.2	7	5.6	5.6	2.5	2.8	2.6	2.5	25.3	4.2	6.29
Strontium (Sr)-Total	mg/L	0.21	0.90	0.63	0.76	0.73	0.71	0.43	0.49	0.46	0.21	0.90	0.63	0.61
Thallium (Tl)-Total	mg/L	<0.00020	<0.00020	<0.000010	0.00013	0.000014	3.8E-05	0.000045	0.00017	0.00012	<0.000010	0.00017	0.000059	6.9E-05
Tin (Sn)-Total	mg/L	0.0040	0.0017	<0.00010	0.00047	0.00021	0.00023	<0.00010	0.00065	0.00034	<0.00010	0.0040	0.00034	0.00074
Titanium (Ti)-Total	mg/L	<0.010	0.030	<0.010	0.051	0.021	0.026	0.047	0.19	0.12	<0.010	0.19	0.030	0.050
Uranium (U)-Total	mg/L	<0.00020	<0.00020	0.00020	0.0012	0.00036	0.00059	0.00018	0.00052	0.00023	<0.00020	0.0012	0.00032	0.00043
Vanadium (V)-Total	mg/L	0.0011	0.0020	<0.0010	0.0048	0.00050	0.0015	0.0033	0.011	0.0081	<0.0010	0.011	0.0020	0.0032
Zinc (Zn)-Total	mg/L	*0.039*	0.018	<0.0030	*0.034*	0.0041	0.0098	0.0082	*0.034*	*0.031*	<0.0030	*0.039*	0.014	0.017

Table 11 continued

		MW-BGC11-BJ-1A (n=1)	MW-BGC11-BJ-1B (n=1)	MW-BGC11-BJ-8A (n=6)				MW-BGC11-BJ-8B (n=3)			Office P1 All (n=11)			
		-	-	Min	Max	Med.	Ave.	Min	Max	Med.	Min	Max	Med.	Ave.
Dissolved Metals	**Unit**													
Aluminum (Al)-Dissolved	mg/L	0.034	0.015	0.012	0.020	0.014	0.015	0.017	0.035	0.031	0.012	0.035	0.016	0.020
Antimony (Sb)-Dissolved	mg/L	0.00080	0.00093	0.00081	0.0014	0.00086	0.00094	0.00067	0.00072	0.00067	0.00067	0.0014	0.00085	0.00086
Arsenic (As)-Dissolved	mg/L	0.0011	0.0080	0.0069	0.0083	0.0070	0.0073	0.016	0.017	0.017	0.0011	0.017	0.0078	0.0093
Barium (Ba)-Dissolved	mg/L	0.028	0.022	0.019	0.022	0.021	0.021	0.015	0.0171	0.016	0.015	0.028	0.020	0.020
Beryllium (Be)-Dissolved	mg/L	<0.0010	<0.0010	<0.00010	<0.00010	-	-	<0.00010	<0.00010	-	<0.00010	<0.0010	-	-
Bismuth(Bi)- Dissolved	mg/L	<0.20	<0.20	<0.00050	<0.00050	-	-	<0.00050	<0.00050	-	<0.00050	<0.20	-	-
Boron (B)-Dissolved	mg/L	<0.10	<0.10	<0.010	0.013	0.012	0.011	<0.010	<0.010	-	<0.010	0.013	0.011	0.016
Cadmium (Cd)-Dissolved	mg/L	0.000027	<0.000017	<0.000010	0.000012	0.0000050	7.2E-06	<0.000010	<0.000010	-	<0.000010	0.000027	0.0000050	0.0000085
Calcium (Ca)-Dissolved	mg/L	16.4	29.7	26.3	31.1	27.8	28.5	30.4	33.2	32.2	16.4	33.2	29.7	28.4
Chromium (Cr)-Dissolved	mg/L	<0.0010	<0.0010	<0.00010	0.00019	0.000050	0.000095	<0.00010	0.00013	0.000050	<0.00010	0.00019	0.000050	0.00016
Cobalt (Co)-Dissolved	mg/L	<0.00030	<0.00030	<0.00010	<0.00010	-	-	<0.00010	<0.00010	-	<0.00010	<0.00030	-	-
Copper (Cu)-Dissolved	mg/L	0.0090	<0.0010	<0.00050	<0.00050	-	-	<0.00050	<0.00050	-	<0.00050	0.0090	0.00025	0.0011
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030	0.045	0.015	0.020	<0.030	<0.030	-	<0.030	0.045	0.015	0.018
Lead (Pb)-Dissolved	mg/L	<0.00050	<0.00050	<0.000050	<0.000050	-	-	<0.000050	<0.000050	-	<0.000050	<0.00050	-	-
Lithium (Li)-Dissolved	mg/L	0.0073	0.078	0.0083	0.011	0.0091	0.0092	0.0050	0.0055	0.0053	0.0050	0.078	0.0089	0.014
Magnesium (Mg)-Dissolved	mg/L	1.01	3.80	4.88	5.53	5.30	5.25	3.39	3.75	3.53	1.01	5.53	4.88	4.27
Manganese (Mn)-Dissolved	mg/L	0.033	0.031	0.0025	0.012	0.0042	0.0051	0.00051	0.0082	0.00066	0.00051	0.033	0.0043	0.0095
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	-	-	<0.000010	<0.000010	-	<0.000010	<0.000010	-	-
Molybdenum (Mo)-Dissolved	mg/L	<0.0010	0.0023	0.0014	0.0025	0.0016	0.0017	0.0016	0.0022	0.0017	0.0014	0.0025	0.0016	0.0017
Nickel (Ni)-Dissolved	mg/L	<0.0010	<0.0010	<0.00050	0.00084	0.00025	0.00040	<0.00050	0.0013	0.00025	<0.00050	0.0013	0.00025	0.00047
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	<0.30	<0.30	-	-	<0.30	<0.30	-	<0.30	<0.30	-	-
Potassium (K)-Dissolved	mg/L	<2.0	2.50	0.44	0.86	0.50	0.55	0.54	0.63	0.60	0.44	2.50	0.542	0.76
Selenium (Se)-Dissolved	mg/L	<0.0010	<0.0010	0.00017	0.00019	0.00018	0.00018	0.00021	0.00024	0.00023	0.00017	0.00024	0.00019	0.00019
Silicon (Si)-Dissolved	mg/L	0.98	2.77	1.90	2.06	2.01	2.00	1.92	2.04	1.97	0.98	2.77	1.99	1.97
Silver (Ag)-Dissolved	mg/L	<0.000020	<0.000020	<0.000010	<0.000010	-	-	<0.000010	<0.000010	-	<0.000010	<0.000020	-	-
Sodium (Na)-Dissolved	mg/L	2.9	25.8	3.9	6.9	5.6	5.4	2.3	2.4	2.3	2.3	25.8	4.0	6.19
Strontium (Sr)-Dissolved	mg/L	0.21	0.90	0.61	0.74	0.69	0.68	0.44	0.45	0.45	0.21	0.90	0.66	0.59
Thallium (Tl)-Dissolved	mg/L	<0.00020	<0.00020	<0.000010	0.000011	0.0000050	0.0000060	<0.000010	<0.000010	-	<0.000010	0.000011	0.0000050	5.7E-06
Tin (Sn)-Dissolved	mg/L	0.0016	0.0012	<0.00010	<0.00010	-	-	<0.00010	<0.00010	-	<0.00010	0.0016	0.000050	0.00029
Titanium (Ti)-Dissolved	mg/L	<0.010	<0.010	<0.010	<0.010	-	-	<0.010	<0.010	-	<0.010	<0.010	-	-
Uranium (U)-Dissolved	mg/L	<0.00020	<0.00020	0.00018	0.00030	0.00024	0.00024	0.00016	0.00016	0.00016	0.00016	0.00030	0.00019	0.00021
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	-	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	-
Zinc (Zn)-Dissolved	mg/L	0.017	<0.0050	<0.0030	0.0063	0.0015	0.0023	<0.0030	<0.0030	-	<0.0030	0.017	0.0015	0.0035

Table 12. Statistical Summary of Water Quality Results from Monitoring Wells Completed in P2 Material.

		MW-BGC11-BJ-2A (n=8)				MW-BGC11-BJ-3A (n=7)				MW-BGC11-BJ-3B (n=6)				P2 All (n=21)			
		Min	Max	Med.	Ave.	Min	Max	Med.	Ave.	Min	Max	Med.	Ave.	Min	Max	Med.	Ave.
Field Parameters	**Unit**																
Temperature	°C	0.81	4.50	2.35	2.22	1.80	3.50	2.70	2.68	0.60	3.30	1.90	1.90	0.60	4.50	2.35	2.30
Physical Tests	**Unit**																
pH	pH	7.13	8.14	8.04	7.73	7.97	8.22	8.12	8.11	7.86	8.22	8.07	8.02	7.13	8.22	8.07	7.91
Total Suspended Solids	mg/L	9.60	655	319	368	<3.0	520	54.9	160	1.50	675	301	327	<3.0	675	293	287
Turbidity	NTU	19.1	581	244	295	2.94	270	40.2	103	1.97	777	246	295	1.97	777	199	231
Anions and Nutrients	**Unit**																
Alkalinity, Total (as CaCO3)	mg/L	63.3	81.5	78.9	74.8	89.4	102	93.8	94.8	42.9	94.6	86.0	79.8	42.9	102	85.6	82.9
Ammonia (as N)	mg/L	<0.0050	0.041	0.0046	0.013	0.028	0.070	0.031	0.036	0.015	0.032	0.028	0.026	<0.0050	0.070	0.028	0.024
Chloride (Cl)	mg/L	0.67	3.73	1.22	1.71	<0.50	0.6	0.25	0.30	<0.50	2.36	0.25	0.76	<0.50	3.73	0.60	0.97
Fluoride (F)	mg/L	0.030	0.10	0.040	0.050	*0.18*	*0.22*	*0.19*	*0.19*	0.091	*0.16*	0.11	0.12	0.030	*0.22*	0.11	0.12
Nitrate (as N)	mg/L	<0.0050	0.093	0.018	0.029	<0.0050	0.0059	0.0025	0.0030	<0.0050	0.21	0.0039	0.040	<0.0050	0.21	0.0025	0.024
Nitrite (as N)	mg/L	*<0.0010*	<0.0010	-	-	<0.0010	0.0024	0.00050	0.0013	*<0.0010*	0.044	0.0015	0.0083	*<0.0010*	0.044	0.00050	0.0030
Orthophosphate - Dissolved (as P)	mg/L	<0.0010	<0.0010	-	-	<0.0010	0.0030	0.00050	0.00094	<0.0010	0.0021	0.00085	0.0010	<0.0010	0.0030	0.00050	0.00080
Phosphorus (P)-Total	mg/L	0.010	0.54	0.29	0.29	<0.0020	0.29	0.059	0.091	<0.0020	0.51	0.20	0.21	<0.0020	0.54	0.23	0.20
Sulfate (SO4)	mg/L	34.7	63.3	47.8	48.2	80.9	89.8	89.1	87.4	82.5	125	98.8	101	34.7	125	84.0	76.3
Total Metals	**Unit**																
Aluminum (Al)-Total	mg/L	*0.41*	*14.2*	*9.44*	*8.88*	*0.52*	*11.2*	*1.64*	*3.78*	0.017	*10.0*	*7.60*	*6.22*	0.017	*14.2*	*7.15*	*6.42*
Antimony (Sb)-Total	mg/L	0.00099	0.0022	0.0013	0.0014	0.0020	0.021	0.0050	0.0084	0.0011	0.019	0.0054	0.0076	0.00099	0.021	0.0027	0.0055
Arsenic (As)-Total	mg/L	0.0016	*0.047*	*0.015*	*0.020*	*0.013*	*0.087*	*0.024*	*0.035*	*0.016*	*0.11*	*0.047*	*0.054*	0.0016	*0.11*	*0.024*	*0.035*
Barium (Ba)-Total	mg/L	0.065	0.42	0.25	0.26	0.040	0.44	0.064	0.14	0.044	0.41	0.27	0.26	0.040	0.44	0.20	0.22
Beryllium (Be)-Total	mg/L	0.00011	0.00095	0.0005	0.00051	<0.00010	0.00069	0.00014	0.00028	0.00023	0.00088	0.00050	0.00050	<0.00010	0.00095	0.00050	0.00043
Bismuth(Bi)- Total	mg/L	<0.00050	<0.20	-	-	<0.00050	<0.20	-	-	<0.00050	<0.2	-	-	<0.00050	<0.20	-	-
Boron (B)-Total	mg/L	0.013	<0.10	0.018	0.025	0.039	0.054	0.048	0.047	0.029	<0.10	0.040	0.040	0.013	0.054	0.040	0.036
Cadmium (Cd)-Total	mg/L	0.000021	*0.0042*	0.00014	*0.00066*	<0.000017	*0.00055*	0.000097	0.00016	<0.000017	*0.00059*	*0.00031*	*0.00031*	<0.000017	*0.0042*	0.00014	*0.00039*
Calcium (Ca)-Total	mg/L	31.1	60.2	40.3	43.9	31.8	65.4	53.1	52.3	58.4	75.9	68.9	67.87	31.1	75.9	55.9	53.6
Chromium (Cr)-Total	mg/L	*0.0018*	*0.11*	*0.026*	*0.040*	0.00046	*0.019*	*0.0016*	*0.0049*	<0.0010	*0.0045*	*0.0025*	*0.0025*	0.00046	*0.11*	*0.0035*	*0.018*
Cobalt (Co)-Total	mg/L	<0.00030	0.0076	0.0040	0.0039	<0.00030	0.0060	0.00071	0.0015	<0.00030	0.0052	0.0019	0.0022	<0.00030	0.0076	0.0021	0.0026
Copper (Cu)-Total	mg/L	*0.0033*	*0.030*	*0.019*	*0.018*	<0.0010	*0.035*	0.0029	*0.0080*	<0.0010	*0.024*	*0.0099*	*0.012*	<0.0010	*0.035*	*0.012*	*0.013*
Iron (Fe)-Total	mg/L	*0.83*	*21.5*	*13.1*	*12.6*	0.067	*16.4*	*1.88*	*4.41*	0.055	*15.7*	*6.87*	*6.87*	0.055	*21.5*	*7.75*	*8.24*
Lead (Pb)-Total	mg/L	0.00053	0.014	0.0071	0.0073	<0.00050	0.027	0.0052	0.0083	<0.00050	*0.020*	0.0061	0.0083	<0.00050	*0.027*	0.0061	0.0079
Lithium (Li)-Total	mg/L	0.0088	0.036	0.018	0.020	0.016	0.075	0.031	0.036	0.010	0.028	0.017	0.018	0.0088	0.075	0.021	0.025
Magnesium (Mg)-Total	mg/L	1.89	5.91	4.3	4.15	2.64	6.80	4.51	4.66	3.87	7.43	5.80	5.78	1.89	7.43	4.53	4.78
Manganese (Mn)-Total	mg/L	0.046	0.83	0.46	0.44	0.22	1.60	0.25	0.50	0.39	1.14	0.53	0.62	0.046	1.60	0.42	0.52
Mercury (Hg)-Total	mg/L	<0.000010	*0.00017*	*0.000041*	*0.000058*	<0.000010	*0.000053*	0.0000050	1.5E-05	<0.000010	*0.000072*	0.000026	*0.000031*	<0.000010	*0.00017*	0.000022	*3.6E-05*
Molybdenum (Mo)-Total	mg/L	0.0024	0.013	0.0037	0.0048	0.0013	0.0040	0.0024	0.0025	<0.0010	0.0022	0.00086	0.0011	<0.0010	0.013	0.0024	0.0030
Nickel (Ni)-Total	mg/L	<0.0010	0.049	0.013	0.016	<0.00050	0.011	0.0011	0.0026	<0.0010	0.0033	0.0019	0.0019	<0.00050	0.049	0.0020	0.0074
Phosphorus (P) - Total	mg/L	<0.30	0.49	0.23	0.26	<0.30	0.45	0.15	0.19	<0.30	0.54	0.15	0.24	<0.30	0.54	0.15	0.23
Potassium (K)-Total	mg/L	<2.0	4.15	2.27	2.32	1.78	5.96	2.10	2.79	<2.0	5.26	2.47	2.77	1.78	5.96	2.26	2.60
Selenium (Se)-Total	mg/L	0.00017	<0.0010	0.00028	0.00031	<0.00010	*0.0014*	0.00032	0.00041	0.00046	*0.0021*	0.00085	*0.0011*	<0.00010	*0.0021*	0.00046	0.00057
Silicon (Si)- Total	mg/L	2.77	33.1	19.8	19.8	4.27	25.9	7.36	9.63	3.57	30.3	19.0	17.64	2.77	33.1	13.8	15.79
Silver (Ag)-Total	mg/L	0.000064	*0.0019*	*0.00097*	*0.0010*	<0.000020	*0.0052*	*0.00052*	*0.0012*	<0.000020	*0.0043*	*0.0013*	*0.0017*	<0.000020	*0.0052*	*0.00090*	*0.0013*
Sodium (Na)-Total	mg/L	3.9	20.9	5.55	8.06	8.20	36.5	10.0	15.8	3.20	6.60	5.65	5.30	3.20	36.5	5.90	9.84
Strontium (Sr)-Total	mg/L	0.87	2.18	1.44	1.49	1.01	1.48	1.20	1.21	1.04	3.03	1.68	1.81	0.87	3.03	1.41	1.49
Thallium (Tl)-Total	mg/L	0.000042	0.00020	0.00010	0.00012	0.000025	0.00067	0.00017	0.00022	<0.00020	0.00042	0.00024	0.00025	0.000025	0.00067	0.00014	0.00019
Tin (Sn)-Total	mg/L	0.00018	0.0030	0.00070	0.00093	<0.00010	0.00031	0.00012	0.00015	0.00016	0.00032	0.00025	0.00025	<0.00010	0.0030	0.00025	0.00048
Titanium (Ti)-Total	mg/L	0.013	0.47	0.25	0.22	<0.010	0.26	0.052	0.074	<0.010	0.28	0.12	0.14	<0.010	0.47	0.10	0.15
Uranium (U)-Total	mg/L	0.00033	0.0018	0.00066	0.00089	<0.00020	0.00053	0.00023	0.00026	0.00025	0.00098	0.00079	0.00070	<0.00020	0.0018	0.00057	0.00063
Vanadium (V)-Total	mg/L	<0.0010	0.021	0.012	0.012	<0.0010	0.017	0.0033	0.0059	<0.0010	0.016	0.011	0.0095	<0.0010	0.021	0.011	0.0092
Zinc (Zn)-Total	mg/L	0.0070	*0.17*	*0.057*	*0.069*	<0.0050	*0.068*	0.013	0.025	<0.0050	*0.055*	*0.031*	0.030	<0.0050	*0.17*	*0.035*	*0.043*

Table 12. Continued

		MW-BGC11-BJ-2A (n=8)				MW-BGC11-BJ-3A (n=7)				MW-BGC11-BJ-3B (n=6)				P2 All (n=21)			
		Min	Max	Med.	Ave.	Min	Max	Med.	Ave.	Min	Max	Med.	Ave.	Min	Max	Med.	Ave.
Dissolved Metals	**Unit**																
Aluminum (Al)-Dissolved	mg/L	0.012	0.20	0.018	0.045	0.0065	0.024	0.016	0.016	0.0075	0.047	0.015	0.021	0.0065	0.20	0.016	0.028
Antimony (Sb)-Dissolved	mg/L	0.00020	0.0018	0.00042	0.00058	0.0013	0.012	0.0033	0.0048	0.0011	0.019	0.0026	0.0051	0.00020	0.019	0.0018	0.0033
Arsenic (As)-Dissolved	mg/L	0.00050	0.0022	0.00098	0.0011	0.0055	0.028	0.0076	0.012	0.0077	0.028	0.015	0.016	0.00050	0.028	0.0069	0.0090
Barium (Ba)-Dissolved	mg/L	0.027	0.069	0.040	0.041	0.022	0.031	0.029	0.027	0.034	0.053	0.043	0.044	0.022	0.069	0.037	0.037
Beryllium (Be)-Dissolved	mg/L	<0.00010	<0.0010	-	-	<0.00010	<0.0010	-	-	<0.00010	<0.0010	-	-	<0.00010	<0.0010	-	-
Bismuth(Bi)- Dissolved	mg/L	<0.00050	<0.20	-	-	<0.00050	<0.20	-	-	<0.00050	<0.20	-	-	<0.00050	<0.20	-	-
Boron (B)-Dissolved	mg/L	<0.010	<0.10	0.014	0.021	0.037	<0.10	0.047	0.045	0.025	<0.10	0.034	0.037	<0.010	<0.10	0.037	0.034
Cadmium (Cd)-Dissolved	mg/L	<0.000010	0.0010	0.0000085	0.00013	0.0000050	0.000038	0.0000050	1.5E-05	<0.000017	0.000081	0.000052	4.7E-05	<0.000010	0.0010	0.000014	7.0E-05
Calcium (Ca)-Dissolved	mg/L	29.5	49.6	36.9	40.0	31.5	60.0	53.4	50.8	57.2	66.6	60.0	61.3	29.5	66.6	49.6	49.7
Chromium (Cr)-Dissolved	mg/L	<0.00010	0.0069	0.00031	0.0011	<0.00010	<0.0010	-	-	<0.00010	<0.0010	0.000075	0.00021	<0.00010	0.0069	0.00010	0.00054
Cobalt (Co)-Dissolved	mg/L	<0.00010	0.00041	0.00015	0.00019	<0.00010	0.00038	0.00015	0.00015	<0.00010	0.00050	0.00015	0.00018	<0.00010	0.00050	0.00015	0.00017
Copper (Cu)-Dissolved	mg/L	<0.00050	0.0020	0.00025	0.00053	<0.00050	<0.0010	0.00025	0.00032	<0.00050	0.00089	0.00038	0.00044	<0.00050	0.0020	0.00025	0.00044
Iron (Fe)-Dissolved	mg/L	<0.030	0.11	0.015	0.030	0.015	0.015	-	-	<0.030	0.076	0.015	0.029	<0.030	0.11	0.015	0.024
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.00050	0.000048	0.000094	<0.000050	<0.00050	0.000065	0.00011	<0.000050	<0.00050	-	-	<0.000050	<0.00050	0.000025	1.0E-04
Lithium (Li)-Dissolved	mg/L	0.0047	0.032	0.0073	0.011	0.016	0.074	0.022	0.033	<0.0050	0.015	0.010	0.0099	0.0047	0.074	0.012	0.018
Magnesium (Mg)-Dissolved	mg/L	1.50	2.38	1.8	1.92	2.45	4.34	3.93	3.85	2.78	5.32	3.80	3.86	1.50	5.32	3.46	3.12
Manganese (Mn)-Dissolved	mg/L	0.000431	0.13	0.051	0.053	0.13	0.22	0.19	0.18	0.041	0.40	0.19	0.20	0.00043	0.40	0.13	0.14
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.000010	-	-	<0.000010	<0.000010	-	-	<0.000010	<0.000010	-	-	<0.000010	<0.000010	-	-
Molybdenum (Mo)-Dissolved	mg/L	0.00086	0.0044	0.0017	0.0022	0.0011	0.0026	0.0015	0.0017	<0.0010	0.0012	0.00060	0.00071	0.00086	0.0044	0.0013	0.0016
Nickel (Ni)-Dissolved	mg/L	<0.00050	0.0063	0.00063	0.0018	<0.00050	0.0018	0.00050	0.00061	<0.00050	0.00083	0.00038	0.00043	<0.00050	0.0063	0.00050	0.0010
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	-	-	<0.30	<0.30	-	-	<0.30	<0.30	-	-	<0.30	<0.30	-	-
Potassium (K)-Dissolved	mg/L	0.24	<2.0	0.54	0.60	<2.0	1.55	1.47	1.34	0.98	1.76	1.04	1.16	0.24	1.76	1.00	1.01
Selenium (Se)-Dissolved	mg/L	<0.00010	<0.0010	0.00012	0.00019	<0.00010	<0.0010	0.000050	0.00020	0.00017	0.0012	0.00050	0.00054	<0.00010	0.0012	0.00017	0.00029
Silicon (Si)-Dissolved	mg/L	1.63	2.32	1.92	1.92	2.91	3.51	3.31	3.32	1.91	3.49	2.98	2.90	1.63	3.51	2.91	2.67
Silver (Ag)-Dissolved	mg/L	<0.000010	0.000011	0.0000050	0.0000070	<0.000010	<0.000020	-	-	<0.000010	<0.000020	-	-	<0.000010	0.000011	0.0000050	6.7E-06
Sodium (Na)-Dissolved	mg/L	2.50	20.0	4.60	6.94	7.90	36.7	9.90	15.5	3.10	6.40	5.10	4.98	2.50	36.7	5.60	9.23
Strontium (Sr)-Dissolved	mg/L	0.85	1.97	1.40	1.39	0.99	1.34	1.18	1.18	1.03	2.90	1.61	1.75	0.85	2.90	1.36	1.42
Thallium (Tl)-Dissolved	mg/L	<0.000010	<0.00020	0.0000080	0.000031	<0.000010	0.00015	0.000076	7.3E-05	0.000032	<0.00020	0.000050	6.2E-05	<0.000010	0.00015	0.000044	5.4E-05
Tin (Sn)-Dissolved	mg/L	<0.00010	<0.00050	0.000050	0.00012	<0.00010	<0.00050	-	-	<0.00010	<0.00050	-	-	<0.00010	<0.00050	0.000050	0.00011
Titanium (Ti)-Dissolved	mg/L	<0.010	<0.010	-	-	<0.010	<0.010	-	-	<0.010	<0.010	-	-	<0.010	<0.010	-	-
Uranium (U)-Dissolved	mg/L	0.00015	0.00043	0.00032	0.00029	<0.00020	0.00018	0.00014	0.00014	0.00024	0.00066	0.00053	0.00049	0.00015	0.00066	0.00029	0.00030
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010	-	-	<0.0010	<0.0010	-	-	<0.0010	<0.0010	-	-	<0.0010	<0.0010	-	-
Zinc (Zn)-Dissolved	mg/L	<0.0030	0.019	0.0020	0.0058	<0.0030	0.031	0.0015	0.0059	<0.0030	0.0074	0.0015	0.0027	<0.0030	0.031	0.0015	0.0049

Table 13. Statistical Summary of Water Quality Results from Monitoring Wells Completed in Volcanic Sedimentary Facies (VSF) Material.

		MW-BGC11-BJ-4A (n=7)				MW-BGC12-BJ-4B (n=1)	MW-BGC11-BJ-5A (n=1)	MW-BGC11-BJ-5B (n=3)			MW-BGC11-BJ-6A (n=6)				VSF All (n=18)			
		Min	Max	Med.	Ave.	-	-	Min	Max	Med.	Min	Max	Med.	Ave.	Min	Max	Med.	Ave.
Field Parameters	**Unit**																	
Temperature	°C	1.6	4.3	2.3	2.4	1.4	0	-	-	-	2.0	4.1	2.3	2.8	1.4	4.3	2.3	2.5
Physical Tests	**Unit**																	
pH	pH	7.26	8.16	8.12	7.86	8.19	7.96	8.05	8.13	8.12	7.99	8.22	8.16	8.12	7.26	8.22	8.13	7.98
Total Suspended Solids	mg/L	14.2	51.7	19.5	25.5	<3.0	62.2	3830	34400	6220	717	3460	2055	2120	14.2	34400	389	3190
Turbidity	NTU	9.19	20.7	11.5	12.9	1.99	66.6	>4000	>4000	-	836	>4000	1755	2130	1.99	>4000	16.3	669
Anions and Nutrients	**Unit**																	
Alkalinity, Total (as CaCO3)	mg/L	106	126	115	114	121	39.5	70.8	89.3	75.6	58.7	97.9	68.5	76.2	39.5	126	97.0	91.8
Ammonia (as N)	mg/L	0.11	0.24	0.16	0.17	0.056	0.10	0.12	0.39	0.23	0.021	0.090	0.080	0.070	0.021	0.39	0.12	0.14
Chloride (Cl)	mg/L	<0.50	1.89	0.74	0.82	<0.50	1.47	0.76	4.31	2.97	<0.50	0.67	0.38	0.41	<0.50	4.31	0.61	1.00
Fluoride (F)	mg/L	0.075	0.086	0.078	0.079	0.11	*0.15*	*0.18*	*0.26*	*0.24*	*0.15*	*0.18*	*0.17*	*0.17*	0.075	*0.26*	*0.15*	*0.14*
Nitrate (as N)	mg/L	0.0072	0.19	0.12	0.12	<0.0050	0.0057	<0.0050	<0.0050	-	<0.0050	0.0074	0.0025	0.0033	<0.0050	0.19	0.0041	0.048
Nitrite (as N)	mg/L	0.0035	0.038	0.0058	0.012	0.0011	0.0011	<0.0010	0.0011	0.0005	<0.0010	0.0011	0.00050	0.00068	<0.0010	0.038	0.0011	0.0050
Orthophosphate - Dissolved (as P)	mg/L	<0.0010	0.0032	0.0013	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	-	<0.0010	0.0043	0.0027	0.0024	<0.0010	0.0043	0.00075	0.0014
Phosphorus (P)-Total	mg/L	0.013	0.049	0.021	0.025	<0.0020	0.042	1.11	15.7	2.97	0.16	3.55	0.95	1.45	0.013	15.7	0.10	1.59
Sulfate (SO4)	mg/L	109	140	122	123	98.2	73.6	89.2	121	96.3	69.2	96.1	83.4	82.1	69.2	140	97.3	102
Total Metals	**Unit**																	
Aluminum (Al)-Total	mg/L	*0.24*	*0.79*	*0.42*	*0.47*	0.056	*1.04*	-	-	-	*4.90*	*44.8*	*26.3*	*26.4*	0.056	*44.8*	*0.792*	*10.8*
Antimony (Sb)-Total	mg/L	0.0017	0.0085	0.0035	0.0042	0.00061	0.0032	-	-	-	0.0075	0.021	0.012	0.013	0.00061	0.021	0.00474	0.0074
Arsenic (As)-Total	mg/L	*0.016*	*0.031*	*0.021*	*0.021*	0.0037	*0.013*	-	-	-	*0.047*	*0.64*	*0.19*	*0.27*	0.0037	*0.64*	*0.0225*	*0.12*
Barium (Ba)-Total	mg/L	0.047	0.098	0.055	0.060	0.022	0.072	-	-	-	0.33	33.1	13.6	14.9	0.022	33.1	0.072	6.00
Beryllium (Be)-Total	mg/L	<0.00010	<0.0010	-	-	<0.00010	<0.0010	-	-	-	<0.0010	<0.010	0.0025	0.0027	<0.00010	<0.0010	-	-
Bismuth(Bi)- Total	mg/L	<0.00050	<0.20	-	-	<0.00050	<0.20	-	-	-	<0.00050	<0.20	-	-	<0.00050	<0.20	-	-
Boron (B)-Total	mg/L	0.064	0.070	0.069	0.065	0.021	<0.10	-	-	-	<0.050	<0.10	0.035	0.037	0.021	0.070	0.05	0.050
Cadmium (Cd)-Total	mg/L	0.000015	0.000054	0.000026	3.2E-05	<0.000010	*0.00023*	-	-	-	*0.00055*	*0.0023*	*0.0012*	*0.0013*	<0.000010	*0.0023*	0.000054	*0.00057*
Calcium (Ca)-Total	mg/L	50.3	62.4	56.5	55.9	74.2	32.4	-	-	-	60.0	114	71.4	76.2	32.4	114	60.3	63.7
Chromium (Cr)-Total	mg/L	0.00070	*0.0032*	*0.0011*	*0.0013*	0.00073	*0.0020*	-	-	-	*0.0024*	*0.024*	*0.013*	*0.013*	*0.00070*	*0.024*	*0.002*	*0.0060*
Cobalt (Co)-Total	mg/L	0.00064	0.0012	0.00078	0.00083	0.00013	0.0044	-	-	-	0.0042	0.027	0.010	0.013	0.00013	0.027	0.00123	0.0059
Copper (Cu)-Total	mg/L	0.0010	0.0018	0.0015	0.0014	0.00075	*0.0091*	-	-	-	*0.052*	*0.17*	*0.074*	*0.099*	0.00075	*0.17*	0.00179	*0.041*
Iron (Fe)-Total	mg/L	*0.36*	*0.82*	*0.41*	*0.50*	<0.030	*1.50*	-	-	-	*6.90*	*95.3*	*35.1*	*44.3*	<0.030	*95.3*	*0.821*	*18.1*
Lead (Pb)-Total	mg/L	0.00051	0.0012	0.00072	0.00078	0.000085	0.0025	-	-	-	**0.067**	*0.28*	**0.13**	**0.15**	0.000085	*0.28*	0.00118	**0.062**
Lithium (Li)-Total	mg/L	0.028	0.034	0.030	0.030	0.020	0.023	-	-	-	0.0058	0.054	0.029	0.031	0.0058	0.054	0.0292	0.029
Magnesium (Mg)-Total	mg/L	11.4	14.1	11.8	12.21	7.77	3.60	-	-	-	4.90	22.0	11.5	12.3	3.60	22.0	11.6	11.4
Manganese (Mn)-Total	mg/L	0.099	0.17	0.11	0.13	0.060	0.65	-	-	-	0.73	3.49	1.12	1.72	0.060	3.49	0.171	0.79
Mercury (Hg)-Total	mg/L	<0.000010	0.000023	0.000005	9.7E-06	<0.000010	<0.000010	-	-	-	*0.00013*	*0.0011*	*0.00048*	*0.00055*	<0.000010	*0.0011*	0.000014	*0.00023*
Molybdenum (Mo)-Total	mg/L	0.00098	0.0021	0.0013	0.0014	0.00049	0.0063	-	-	-	<0.0010	0.0074	0.0039	0.0040	0.00049	0.0074	0.00206	0.0027
Nickel (Ni)-Total	mg/L	0.00057	0.0011	0.00074	0.00077	0.00080	0.0038	-	-	-	0.0048	0.027	0.012	0.014	0.00057	0.027	0.0011	0.0063
Phosphorus (P) - Total	mg/L	<0.30	<0.30	-	-	<0.30	<0.30	-	-	-	0.64	2.72	1.01	1.42	<0.30	2.72	0.15	0.66
Potassium (K)-Total	mg/L	1.62	2.20	1.70	1.80	0.97	3.3	-	-	-	4.8	11.9	9.36	8.80	0.97	11.9	2.2	4.64
Selenium (Se)-Total	mg/L	<0.00010	<0.0010	-	-	<0.00010	<0.0010	-	-	-	<0.0010	<0.010	*0.0014*	*0.0020*	<0.00010	<0.0010	-	-
Silicon (Si)- Total	mg/L	3.33	4.97	4.02	4.06	2.48	4.92	-	-	-	11.1	86.6	60.5	58.2	2.48	86.6	4.92	25.7
Silver (Ag)-Total	mg/L	<0.000020	0.000074	0.000019	2.9E-05	0.000074	*0.00052*	-	-	-	*0.0024*	*0.026*	*0.011*	*0.012*	0.000074	*0.026*	0.000074	*0.0050*
Sodium (Na)-Total	mg/L	17.9	27.6	18.4	20.4	7.9	12.4	-	-	-	2.3	6.9	6.2	5.32	2.30	27.6	12.4	13.0
Strontium (Sr)-Total	mg/L	2.58	3.05	2.84	2.80	1.05	0.84	-	-	-	1.01	3.34	2.59	2.47	0.84	3.34	2.65	2.42
Thallium (Tl)-Total	mg/L	0.000021	<0.00020	0.000027	3.6E-05	0.000013	<0.00020	-	-	-	<0.00020	<0.0020	0.00063	0.00061	0.000013	<0.0020	0.00010	0.00027
Tin (Sn)-Total	mg/L	0.00018	<0.00050	0.00025	0.00027	0.00020	0.0019	-	-	-	0.00056	<0.0050	0.00074	0.0011	0.00018	<0.0050	0.00036	0.00071
Titanium (Ti)-Total	mg/L	0.011	0.025	0.017	0.018	<0.010	0.020	-	-	-	0.12	0.87	0.60	0.59	<0.010	0.87	0.025	0.25
Uranium (U)-Total	mg/L	0.0021	0.0050	0.0028	0.0032	0.00080	0.00028	-	-	-	0.00055	0.0018	0.0011	0.0011	0.00028	0.0050	0.0018	0.0020
Vanadium (V)-Total	mg/L	<0.0010	0.0011	0.00050	0.00059	<0.0010	0.0015	-	-	-	0.0074	0.078	0.043	0.043	<0.0010	0.078	0.0011	0.018
Zinc (Zn)-Total	mg/L	0.0037	0.0084	0.0070	0.0066	0.026	*0.032*	-	-	-	*0.30*	*1.19*	*0.53*	*0.63*	0.0037	*1.19*	0.026	*0.26*

Table 13 Continued.

		MW-BGC11-BJ-4A (n=7)				MW-BGC12-BJ-4B (n=1)	MW-BGC11-BJ-5A (n=1)	MW-BGC11-BJ-5B (n=3)			MW-BGC11-BJ-6A (n=6)				VSF All (n=18)		
		Min	Max	Med.	Ave.	-	-	Min	Max	Med.	Min	Max	Med.	Ave.	Min	Max	Med.
Dissolved Metals	**Unit**																
Aluminum (Al)-Dissolved	mg/L	0.0036	0.019	0.0080	0.0093	0.0074	0.057	0.030	0.087	0.075	0.010	0.83	0.040	0.17	0.0036	0.83	0.020
Antimony (Sb)-Dissolved	mg/L	0.0016	0.0087	0.0035	0.0039	0.00052	0.0028	0.0046	0.011	0.0072	0.0018	0.0068	0.0035	0.0039	0.00052	0.011	0.0035
Arsenic (As)-Dissolved	mg/L	0.013	0.030	0.016	0.018	0.0030	0.0064	0.0053	0.012	0.010	0.0017	0.029	0.024	0.019	0.0017	0.030	0.015
Barium (Ba)-Dissolved	mg/L	0.033	0.044	0.034	0.037	0.020	0.027	0.024	0.049	0.042	0.035	0.14	0.049	0.059	0.020	0.14	0.037
Beryllium (Be)-Dissolved	mg/L	<0.00010	<0.0010	-	-	<0.00010	<0.0010	<0.00020	<0.0010	-	<0.00010	<0.0010	-	-	<0.00010	<0.0010	-
Bismuth(Bi)- Dissolved	mg/L	<0.00050	<0.20	-	-	<0.00050	<0.20	<0.0010	<0.20	-	<0.00050	<0.20	-	-	<0.00050	<0.20	-
Boron (B)-Dissolved	mg/L	0.063	0.072	0.066	0.065	0.018	<0.10	0.039	<0.10	0.050	<0.020	<0.10	0.030	0.032	<0.020	0.072	0.050
Cadmium (Cd)-Dissolved	mg/L	<0.000017	0.000034	0.000012	1.9E-05	<0.000010	0.00011	<0.000017	0.00033	0.0000085	<0.000010	0.00036	0.000013	0.000072	<0.000010	0.00036	0.000012
Calcium (Ca)-Dissolved	mg/L	49.5	61.5	57.1	56.1	69.8	31.3	48.6	58.5	56.9	42.3	68.7	48.5	52.7	31.3	68.7	55.6
Chromium (Cr)-Dissolved	mg/L	<0.00010	<0.0010	0.00014	0.00015	<0.00010	<0.0010	<0.00020	<0.0010	-	<0.00010	<0.0010	-	-	<0.00010	<0.0010	0.00012
Cobalt (Co)-Dissolved	mg/L	0.00011	0.00065	0.00026	0.00029	<0.00010	0.0033	<0.00030	0.00037	0.00015	<0.00010	<0.00030	-	-	<0.00010	0.00065	0.00015
Copper (Cu)-Dissolved	mg/L	<0.00050	<0.0010	-	-	<0.00050	0.0024	<0.0010	<0.0010	-	<0.00050	0.0024	0.00038	0.00076	<0.00050	0.0024	0.00025
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	-	-	<0.030	0.072	<0.030	<0.030	-	<0.030	0.32	0.015	0.066	<0.030	0.32	0.015
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.00050	-	-	<0.000050	<0.00050	<0.00010	<0.00050	-	<0.00010	0.0010	0.00024	0.00032	<0.000050	0.0010	0.000096
Lithium (Li)-Dissolved	mg/L	0.027	0.035	0.031	0.030	0.016	0.021	0.0094	0.023	0.015	<0.0050	0.0066	0.0061	0.0051	<0.0050	0.035	0.019
Magnesium (Mg)-Dissolved	mg/L	11.3	14.1	12.0	12.2	7.33	3.22	5.74	6.38	5.91	3.45	4.45	3.77	3.89	3.22	14.1	6.15
Manganese (Mn)-Dissolved	mg/L	0.052	0.14	0.071	0.086	0.057	0.57	0.13	0.55	0.26	0.036	0.062	0.044	0.046	0.036	0.55	0.066
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.000010	-	-	<0.000010	<0.000010	<0.000010	<0.00010	-	<0.000010	<0.000010	-	-	<0.000010	<0.00010	-
Molybdenum (Mo)-Dissolved	mg/L	0.00089	0.0020	0.0012	0.0013	0.00044	0.0058	0.0055	0.016	0.0075	<0.0010	0.0035	0.0023	0.0019	0.00044	0.016	0.0019
Nickel (Ni)-Dissolved	mg/L	<0.00050	0.00064	0.00052	0.00047	0.00061	0.0026	<0.0010	0.0017	0.00050	<0.00050	0.0031	0.00050	0.00085	<0.00050	0.0031	0.00050
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	-	-	<0.30	<0.30	<0.30	<0.30	-	<0.30	<0.30	-	-	<0.30	<0.30	-
Potassium (K)-Dissolved	mg/L	1.59	1.62	1.61	1.52	0.92	2.50	3.70	7.4	5.53	2.20	2.67	2.51	2.51	0.92	7.40	2.34
Selenium (Se)-Dissolved	mg/L	<0.00010	<0.0010	-	-	<0.00010	<0.0010	<0.00020	<0.0010	-	0.00023	0.00064	0.00041	0.00041	<0.00010	0.00064	0.00027
Silicon (Si)-Dissolved	mg/L	2.90	3.23	3.00	3.03	2.27	1.94	2.57	3.78	2.80	2.26	5.49	3.66	3.63	1.94	5.49	3.00
Silver (Ag)-Dissolved	mg/L	<0.000010	<0.000020	-	-	<0.000010	<0.000020	<0.000020	<0.000020	-	<0.000020	0.000048	0.000012	0.000019	<0.000010	0.000048	0.000010
Sodium (Na)-Dissolved	mg/L	17.3	27.7	17.9	20.3	6.60	12.3	9.80	14.5	12.7	2.50	5.10	4.05	3.9	2.50	27.7	12.5
Strontium (Sr)-Dissolved	mg/L	2.56	3.04	2.81	2.80	0.98	0.81	0.75	1.66	1.55	0.89	2.22	2.00	1.88	0.75	3.04	2.09
Thallium (Tl)-Dissolved	mg/L	0.000017	<0.00020	0.000018	3.0E-05	<0.000010	<0.00020	<0.00020	0.00013	0.00010	0.000053	<0.00020	0.000077	7.8E-05	<0.000010	0.00013	0.000064
Tin (Sn)-Dissolved	mg/L	<0.00010	<0.00050	-	-	<0.00010	0.00091	<0.00020	0.0012	0.00025	<0.00010	0.00052	0.00010	0.00018	<0.00010	0.0012	0.000075
Titanium (Ti)-Dissolved	mg/L	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	0.023	0.0050	0.0080	<0.010	0.023	0.0050
Uranium (U)-Dissolved	mg/L	0.0020	0.0049	0.0027	0.0031	0.00073	0.00022	0.00082	0.0015	0.0011	<0.00020	0.00069	0.00046	0.00044	<0.00020	0.0049	0.00095
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010	-	-	<0.0010	<0.0010	<0.0010	<0.0020	-	<0.0010	<0.0020	-	-	<0.0010	<0.0020	-
Zinc (Zn)-Dissolved	mg/L	<0.0030	0.0037	0.0031	0.0027	0.017	0.010	<0.0050	<0.0060	-	<0.0030	0.055	0.0020	0.011	<0.0030	0.055	0.0028

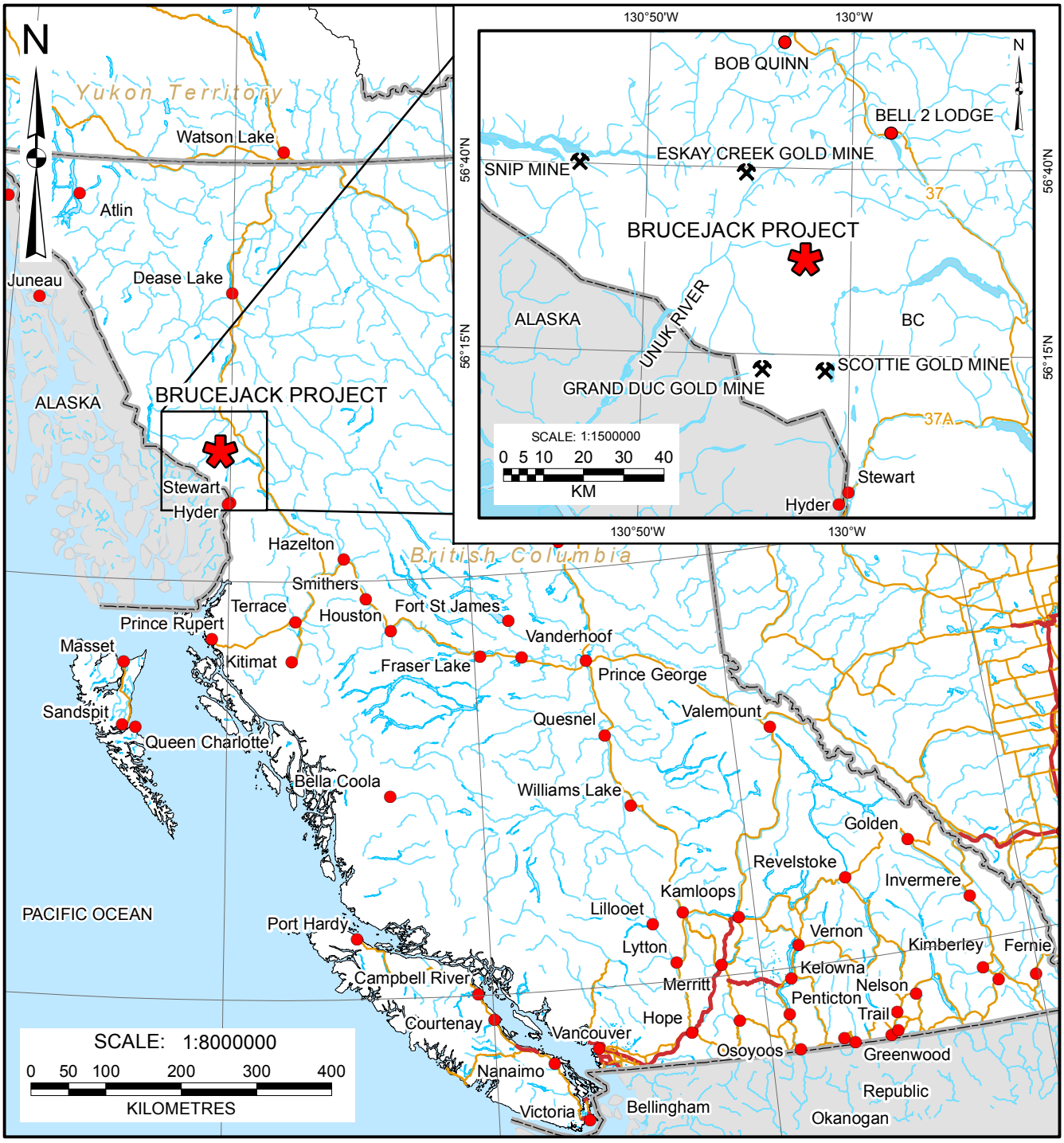
Table 14. Statistical Summary of Water Quality Results from Monitoring Wells Completed Bridge P1 Material.

		MW-BGC12-BJ-12A (n=2)	
		Min	**Max**
Field Parameters	**Unit**		
Temperature	°C	1.3	2.5
Physical Tests	**Unit**		
pH	pH	7.69	8.06
Total Suspended Solids	mg/L	183	488
Turbidity	NTU	2.40	164
Anions and Nutrients	**Unit**		
Alkalinity, Total (as CaCO3)	mg/L	98.8	109
Ammonia (as N)	mg/L	0.15	0.17
Chloride (Cl)	mg/L	0.71	1.05
Fluoride (F)	mg/L	*0.15*	*0.16*
Nitrate (as N)	mg/L	<0.0050	0.0088
Nitrite (as N)	mg/L	<0.0010	-
Orthophosphate - Dissolved (as P)	mg/L	<0.0010	-
Phosphorus (P)-Total	mg/L	0.21	0.27
Sulfate (SO4)	mg/L	159	195
Total Metals	**Unit**		
Aluminum (Al)-Total	mg/L	*1.48*	*4.39*
Antimony (Sb)-Total	mg/L	0.0032	0.0050
Arsenic (As)-Total	mg/L	*0.083*	*0.19*
Barium (Ba)-Total	mg/L	0.23	0.30
Beryllium (Be)-Total	mg/L	<0.00010	0.0005
Bismuth(Bi)- Total	mg/L	<0.00050	-
Boron (B)-Total	mg/L	0.021	0.026
Cadmium (Cd)-Total	mg/L	0.00029	*0.00052*
Calcium (Ca)-Total	mg/L	74.5	95.3
Chromium (Cr)-Total	mg/L	*0.029*	*0.16*
Cobalt (Co)-Total	mg/L	0.0022	0.00255
Copper (Cu)-Total	mg/L	*0.014*	*0.016*
Iron (Fe)-Total	mg/L	*5.36*	*8.02*
Lead (Pb)-Total	mg/L	*0.021*	*0.047*
Lithium (Li)-Total	mg/L	0.011	0.016
Magnesium (Mg)-Total	mg/L	10.5	14
Manganese (Mn)-Total	mg/L	0.37	0.43
Mercury (Hg)-Total	mg/L	<0.000010	0.000012
Molybdenum (Mo)-Total	mg/L	0.0028	0.00524
Nickel (Ni)-Total	mg/L	0.013	0.059
Phosphorus (P) - Total	mg/L	<0.30	-
Potassium (K)-Total	mg/L	5.28	5.33
Selenium (Se)-Total	mg/L	0.00031	0.00070
Silicon (Si)- Total	mg/L	6.08	13.8
Silver (Ag)-Total	mg/L	*0.00087*	*0.0017*
Sodium (Na)-Total	mg/L	6.4	9.2
Strontium (Sr)-Total	mg/L	1.41	1.87
Thallium (Tl)-Total	mg/L	0.00015	0.00024
Tin (Sn)-Total	mg/L	0.0014	0.0028
Titanium (Ti)-Total	mg/L	0.041	0.054
Uranium (U)-Total	mg/L	0.00055	0.0016
Vanadium (V)-Total	mg/L	0.0024	0.0029
Zinc (Zn)-Total	mg/L	*0.047*	*0.061*
Dissolved Metals	**Unit**		
Aluminum (Al)-Dissolved	mg/L	0.0050	0.012
Antimony (Sb)-Dissolved	mg/L	0.00055	0.0013
Arsenic (As)-Dissolved	mg/L	0.0043	0.025
Barium (Ba)-Dissolved	mg/L	0.040	0.071
Beryllium (Be)-Dissolved	mg/L	<0.00010	-
Bismuth(Bi)- Dissolved	mg/L	<0.00050	-
Boron (B)-Dissolved	mg/L	0.02	0.022
Cadmium (Cd)-Dissolved	mg/L	<0.000010	0.000039
Calcium (Ca)-Dissolved	mg/L	73.1	85.4
Chromium (Cr)-Dissolved	mg/L	0.00012	0.0019
Cobalt (Co)-Dissolved	mg/L	0.00033	0.00072
Copper (Cu)-Dissolved	mg/L	<0.00050	-
Iron (Fe)-Dissolved	mg/L	<0.030	-
Lead (Pb)-Dissolved	mg/L	<0.000050	-
Lithium (Li)-Dissolved	mg/L	0.010	0.013
Magnesium (Mg)-Dissolved	mg/L	10.1	13
Manganese (Mn)-Dissolved	mg/L	0.31	0.34
Mercury (Hg)-Dissolved	mg/L	<0.000010	-
Molybdenum (Mo)-Dissolved	mg/L	0.0021	0.0030
Nickel (Ni)-Dissolved	mg/L	0.0021	0.0072
Phosphorus (P)-Dissolved	mg/L	<0.30	-
Potassium (K)-Dissolved	mg/L	4.47	4.53
Selenium (Se)-Dissolved	mg/L	<0.00010	0.00010
Silicon (Si)-Dissolved	mg/L	3.63	3.69
Silver (Ag)-Dissolved	mg/L	<0.000010	-
Sodium (Na)-Dissolved	mg/L	6.20	9.20
Strontium (Sr)-Dissolved	mg/L	1.37	1.78
Thallium (Tl)-Dissolved	mg/L	0.000018	0.000024
Tin (Sn)-Dissolved	mg/L	<0.00010	0.00018
Titanium (Ti)-Dissolved	mg/L	<0.010	0.010
Uranium (U)-Dissolved	mg/L	0.00026	0.00036
Vanadium (V)-Dissolved	mg/L	<0.0010	-
Zinc (Zn)-Dissolved	mg/L	0.0030	0.0057

Table 15. Metal Exceedances Common to Material-Specific Baseline Groundwater Chemistries

Parameter	Office P1	P2	VSF	Bridge P1
Total Al	X	X	X	X
Total Ag	X	X	X	X
Total As	X	X	X	X
Total Cr	X	X	X	X
Total Cu	X	X	X	X
Total Fe	X	X	X	X
Total Cd			X	X
Total Co			X	
Total Hg		X		
Total Pb			X	X
Total Zn		X	X	X
F		X	X	X

DRAWINGS



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SCALE:	AS SHOWN	DESIGNED:	CJB
DATE:	JUN 2014	CHECKED:	DP
DRAWN:	MIB, SMR	APPROVED:	DP

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT
HYDROGEOLOGY BASELINE REPORT

TITLE: PROJECT LOCATION

PROJECT No.:	DWG No.:	REV.:
1008010	01	

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DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT - HYDROGEOLOGY BASELINE REPORT" DATED JUNE 2014

426000 427000 428000

6259000

6258000

N

BRUCEJACK CREEK

SHORE ZONE

BRUCEJACK LAKE
APPROX. LAKE SURFACE
EL. 1364.5 masl

EXPLOSIVES STORAGE

DETONATOR STORAGE

BRUCE FAULT

MILL BUILDING INCLUDING ADMIN, WAREHOUSE, MINE DRY AND WATER TREATMENT

FUEL STORAGE

HELIPAD

TAILINGS DISPOSAL PIPE

LAYDOWN AREA

EXISTING PORTAL APPROXIMATE LOCATION

SITE DRAINAGE COLLECTION POND

MINE PORTAL

ACCESS ROAD

TRUCK SHOP

WEST ZONE

BRUCEJACK FAULT

GARBAGE AND INCINERATOR AREA

PRE-PRODUCTION ORE STORAGE

EXISTING CAMP

WASTE ROCK TRANSFER STORAGE

SUBSTATION AND GENERATORS

HIGH VOLTAGE TRANSMISSION LINE

ALTERNATE ACCESS ROAD

VALLEY OF KINGS ZONE

GENERAL TREND OF REGIONAL LINEAMENTS

BRUCEJACK FAULT

GRACE SHEAR ZONE

UPPER TREATY GLACIER

TREATY CREEK

NOTES:
1. SURVEYS OF THE HISTORIC UNDERGROUND WORKINGS WERE PROVIDED BY PRETIUM RESOURCES INC. ON MARCH 23, 2012.
2. CONTOURS RECEIVED FROM AEROGEOMETRICS, FEBRUARY 2011.
3. PROPOSED UNDERGROUND WORKINGS PROVIDED BY AMC ON MARCH 18, 2012.
4. GENERAL ARRANGEMENT OF THE SITE RECEIVED FROM TETRA TECH ON DECEMBER 12, 2013 (DRAWING 100000-10-005 REV.C).
5. REGIONAL LINEAMENTS ARE INTERPRETED FROM A STRUCTURAL GEOLOGY REVIEW BY EARTH RESOURCE SURVEYS INC. FOR AN ADJACENT PROPERTY.
6. BATHYMETRY OF BRUCEJACK LAKE RECEIVED FROM RESCAN, NOVEMBER 2013.

SCALE 1:7500

100 50 0 100 200 300

METRES

LEGEND

- SURVEYED UNDERGROUND WORKINGS
- PROPOSED UNDERGROUND WORKINGS
- FAULT
- STREAM
- BATHYMETRIC CONTOURS

5 m CONTOUR INTERVAL
NAD 1983 UTM Zone 9N

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REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE:	1:7500
DATE:	JUN 2014
DRAWN:	LL, MIB
DESIGNED:	DP
CHECKED:	CAM
APPROVED:	TC

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.

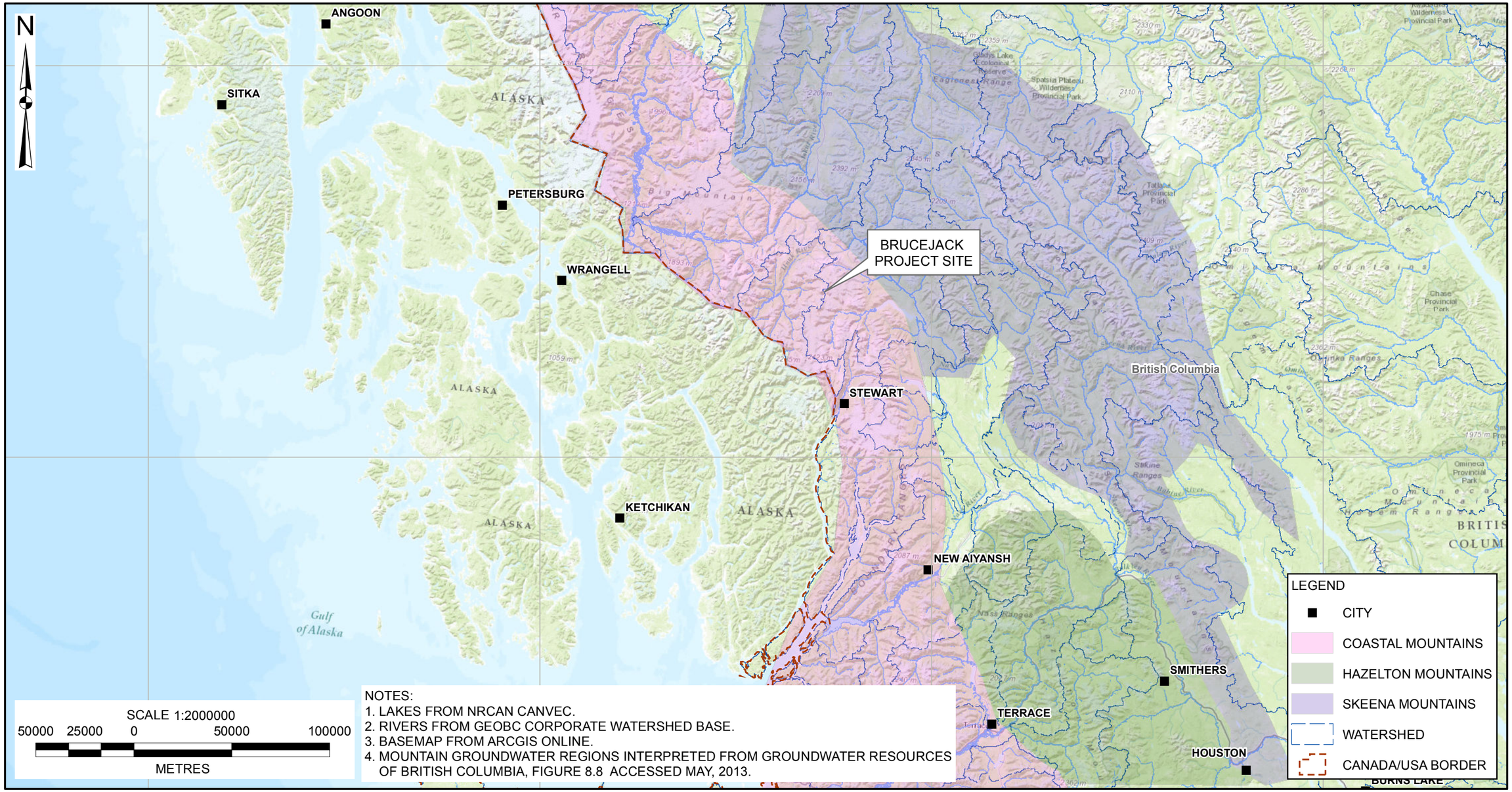
PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: SITE PLAN
BRUCEJACK PROJECT

PROJECT No.:	DWG No.:	REV.:
1008010	02	

X:\Projects\1008010\Workspace\201324_REPORT_BRUCEJACKPROJECT_ENVIRONMENTALASSESSMENT_HYDROGEOLOGY_BASELINE_REPORT\02_Site_Plan_Brucejack_Project.mxd

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT - HYDROGEOLOGY BASELINE REPORT" DATED JUNE 2014.



NOTES:
1. LAKES FROM NRCAN CANVEC.
2. RIVERS FROM GEOBC CORPORATE WATERSHED BASE.
3. BASEMAP FROM ARCGIS ONLINE.
4. MOUNTAIN GROUNDWATER REGIONS INTERPRETED FROM GROUNDWATER RESOURCES OF BRITISH COLUMBIA, FIGURE 8.8 ACCESSED MAY, 2013.

BC MOE ALBERS NAD83

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC, AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT. AUTHORIZATION FOR ANY USE AND/OR PUBLICATION OF THIS REPORT OR ANY DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS, THROUGH ANY FORM OF PRINT OR ELECTRONIC MEDIA, INCLUDING WITHOUT LIMITATION, POSTING OR REPRODUCTION OF SAME ON ANY WEBSITE, IS RESERVED PENDING BGC'S WRITTEN APPROVAL. IF THIS REPORT IS ISSUED IN AN ELECTRONIC FORMAT, AN ORIGINAL PAPER COPY IS ON FILE AT BGC ENGINEERING INC. AND THAT COPY IS THE PRIMARY REFERENCE WITH PRECEDENCE OVER ANY ELECTRONIC COPY OF THE DOCUMENT, OR ANY EXTRACTS FROM OUR DOCUMENTS PUBLISHED BY OTHERS.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE: 1:2000000
DATE: JUN 2014
DRAWN: SMR, GLT-C
DESIGNED: RET
CHECKED: DP
APPROVED: TC

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: COASTAL MOUNTAINS SUB-REGION

PROJECT No.:	DWG No.:	REV.:
1008010	03	

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT -HYDROGEOLOGY BASELINE REPORT" DATED JUNE 2014

X:\Projects\1008010\Workspace\20132_REPORT_BRUCEJACKPROJECT_ENVIRONMENTALASSESSMENT_HYDROGEOLOGY_BASELINE_REPORT\03_Brucejack_Regional_Study_Area.mxd

425000 430000 435000

6260000

N

BRUCEJACK CREEK

BJL-H1 MONITORING STATION 11.7 km²

BRUCEJACK LAKE 10.1 km²

EAST LAKE 5.4 km²

PROJECT SITE & LOCAL STUDY AREA

KNIPPLE GLACIER

SCALE 1:40000

1000 500 0 1000 2000

METRES

LEGEND

- MONITORING STATION
- PROPOSED ACCESS ROAD
- WATERSHED AREAS
- STREAM
- LAKE

NAD 1983 UTM Zone 9N

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REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE:	1:40000
DATE:	JUN 2014
DRAWN:	RC, DM
DESIGNED:	ES
CHECKED:	DP
APPROVED:	TC

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: WATERSHED BOUNDARIES AND LOCAL STUDY AREA

PROJECT No.:	DWG No.:	REV.:
1008010	04	

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT - HYDROGEOLOGY BASELINE REPORT" DATED JUNE 2014

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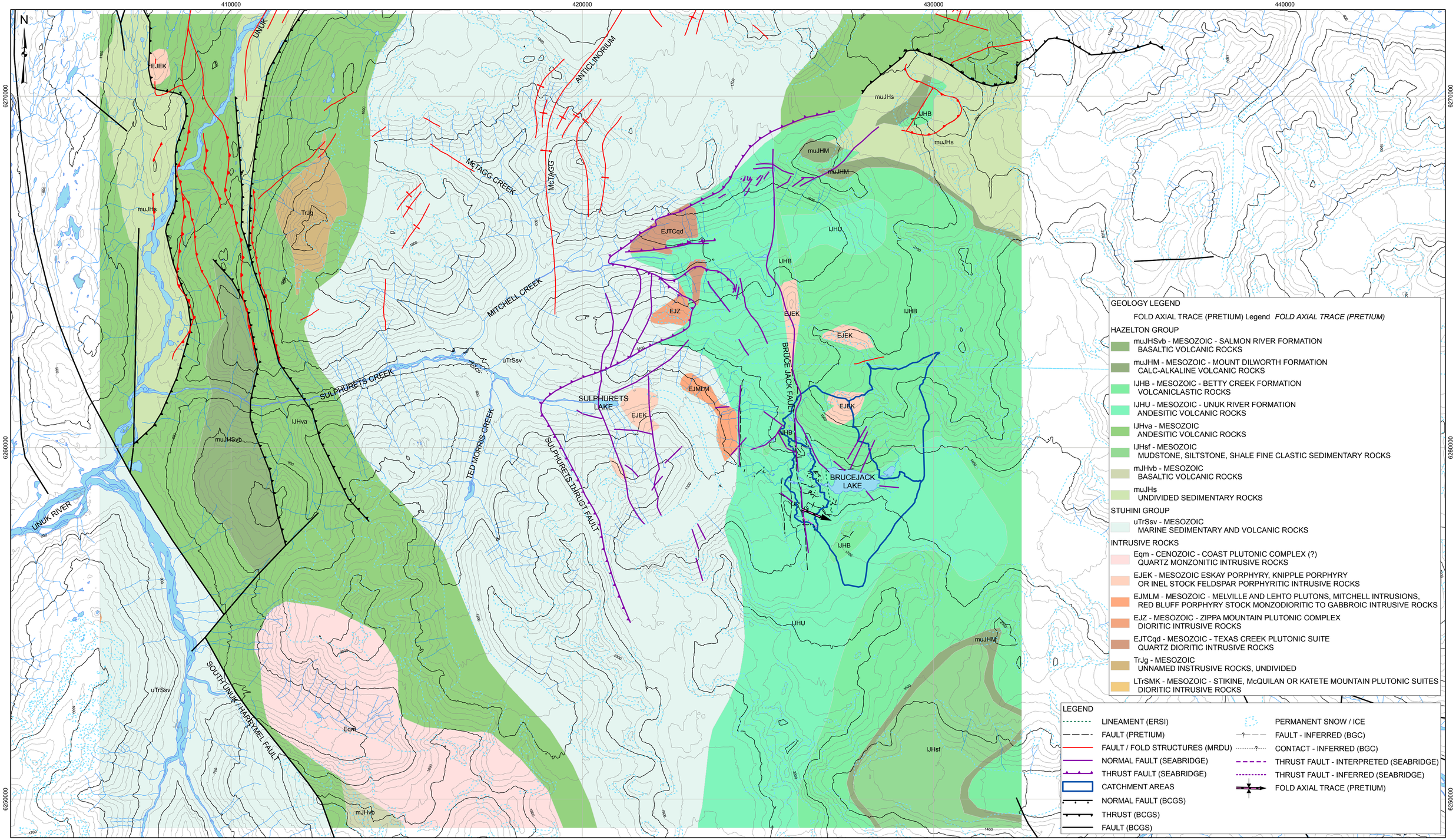

GEOLOGY LEGEND

FOLD AXIAL TRACE (PRETIUM) Legend *FOLD AXIAL TRACE (PRETIUM)*

HAZELTON GROUP

- muJHSvb - MESOZOIC - SALMON RIVER FORMATION BASALTIC VOLCANIC ROCKS
- muJHM - MESOZOIC - MOUNT DILWORTH FORMATION CALC-ALKALINE VOLCANIC ROCKS
- IJHB - MESOZOIC - BETTY CREEK FORMATION VOLCANICLASTIC ROCKS
- IJHU - MESOZOIC - UNUK RIVER FORMATION ANDESITIC VOLCANIC ROCKS
- IJHva - MESOZOIC ANDESITIC VOLCANIC ROCKS
- IJHsf - MESOZOIC MUDSTONE, SILTSTONE, SHALE FINE CLASTIC SEDIMENTARY ROCKS
- mJHvb - MESOZOIC BASALTIC VOLCANIC ROCKS
- muJHs UNDIVIDED SEDIMENTARY ROCKS

STUHINI GROUP

- uTrSsv - MESOZOIC MARINE SEDIMENTARY AND VOLCANIC ROCKS

INTRUSIVE ROCKS

- Eqm - CENOZOIC - COAST PLUTONIC COMPLEX (?) QUARTZ MONZONITIC INTRUSIVE ROCKS
- EJEK - MESOZOIC ESKAY PORPHYRY, KNIPPLE PORPHYRY OR INEL STOCK FELDSPAR PORPHYRITIC INTRUSIVE ROCKS
- EJMLM - MESOZOIC - MELVILLE AND LEHTO PLUTONS, MITCHELL INTRUSIONS, RED BLUFF PORPHYRY STOCK MONZODIORITIC TO GABBROIC INTRUSIVE ROCKS
- EJZ - MESOZOIC - ZIPPA MOUNTAIN PLUTONIC COMPLEX DIORITIC INTRUSIVE ROCKS
- EJTCqd - MESOZOIC - TEXAS CREEK PLUTONIC SUITE QUARTZ DIORITIC INTRUSIVE ROCKS
- TrJg - MESOZOIC UNNAMED INSTRUSIVE ROCKS, UNDIVIDED
- LTrSMK - MESOZOIC - STIKINE, McQUILAN OR KATETE MOUNTAIN PLUTONIC SUITES DIORITIC INTRUSIVE ROCKS

LEGEND

- LINEAMENT (ERSI)
- FAULT (PRETIUM)
- FAULT / FOLD STRUCTURES (MRDU)
- NORMAL FAULT (SEABRIDGE)
- THRUST FAULT (SEABRIDGE)
- CATCHMENT AREAS
- NORMAL FAULT (BCGS)
- THRUST (BCGS)
- FAULT (BCGS)
- PERMANENT SNOW / ICE
- FAULT - INFERRED (BGC)
- CONTACT - INFERRED (BGC)
- THRUST FAULT - INTERPRETED (SEABRIDGE)
- THRUST FAULT - INFERRED (SEABRIDGE)
- FOLD AXIAL TRACE (PRETIUM)

SCALE 1:50,000

2 1 0 2 4 6

KILOMETRES

NOTES:
1. GEOLOGICAL BOUNDARIES ACQUIRED FROM BRITISH COLUMBIA GEOLOGICAL SURVEY GEOFILE GF2005-9.
2. TOPOGRAPHIC INFORMATION OUTSIDE LIDAR BOUNDARIES BASED ON GEOBASE DATA, NATURAL RESOURCES CANADA.

100 m CONTOUR INTERVAL (GEOBASE 2013)
NAD 1983 UTM Zone 9N

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REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE:	1:50,000
DATE:	JUN 2014
DRAWN:	MIB, ST
DESIGNED:	RT, DK
CHECKED:	DP
APPROVED:	TC

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: BRUCEJACK PROJECT REGIONAL GEOLOGY

PROJECT No.:	DWG No.:	REV.:
1008010	05	

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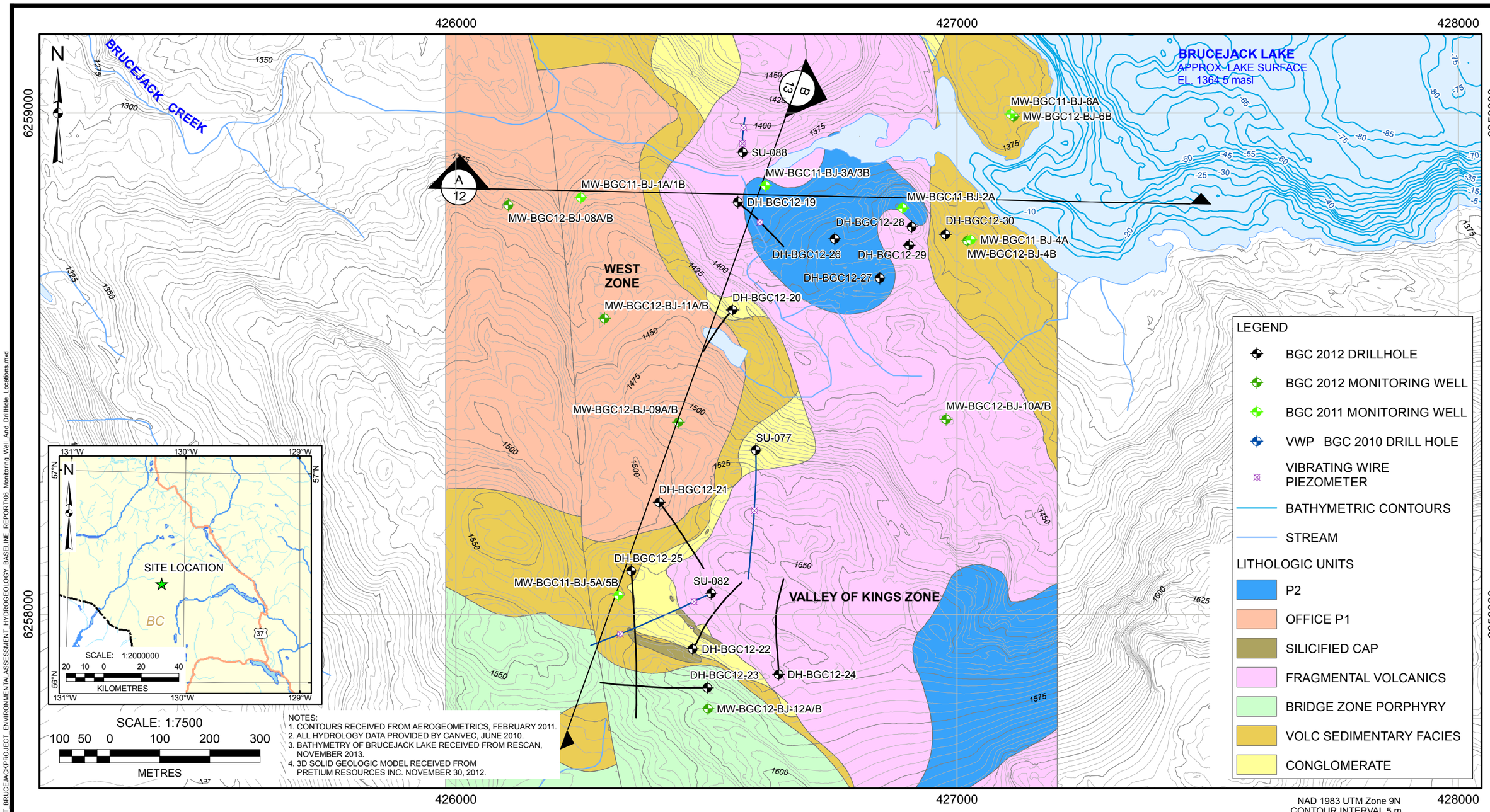
DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT - HYDROGEOLOGY BASELINE REPORT" DATED JUNE 2014



NOTES:
1. CONTOURS RECEIVED FROM AEROGEOMETRICS, FEBRUARY 2011.
2. ALL HYDROLOGY DATA PROVIDED BY CANVEC, JUNE 2010.
3. BATHYMETRY OF BRUCEJACK LAKE RECEIVED FROM RESCAN, NOVEMBER 2013.
4. 3D SOLID GEOLOGIC MODEL RECEIVED FROM PRETIUM RESOURCES INC. NOVEMBER 30, 2012.

NAD 1983 UTM Zone 9N
CONTOUR INTERVAL 5 m

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SCALE:	1:7,500
DATE:	JUN 2014
DRAWN:	JCS, ST
DESIGNED:	RET
CHECKED:	DP
APPROVED:	TC

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.

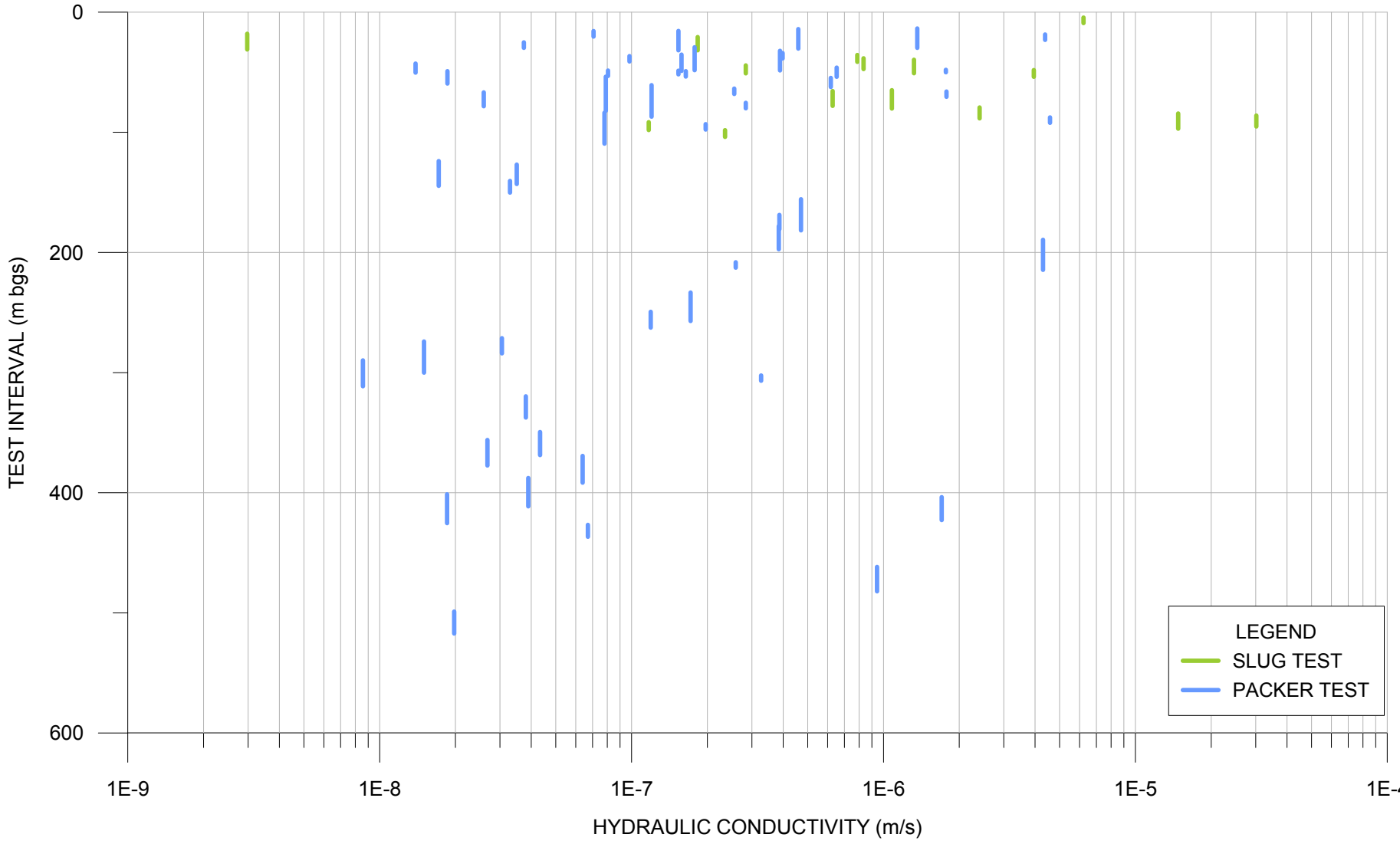
PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MONITORING WELL AND DRILLHOLE LOCATIONS

PROJECT No.:	DWG No.:	REV.:
1008010	06	

X:\Projects\1008\010\Workspace\20132#_REPORT_BRUCEJACKPROJECT_ENVIRONMENTALASSESSMENT_HYDROGEOLOGY_BASELINE_REPORT\06_Monitoring_Well_And_Drillhole_Locations.mxd

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT – HYDROGEOLOGY BASELINE REPORT" DATED JUNE 2014



SCALE:	N/A	DESIGNED:	DP
DATE:	JUN 2014	CHECKED:	CM
DRAWN:	DP	APPROVED:	TC

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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.

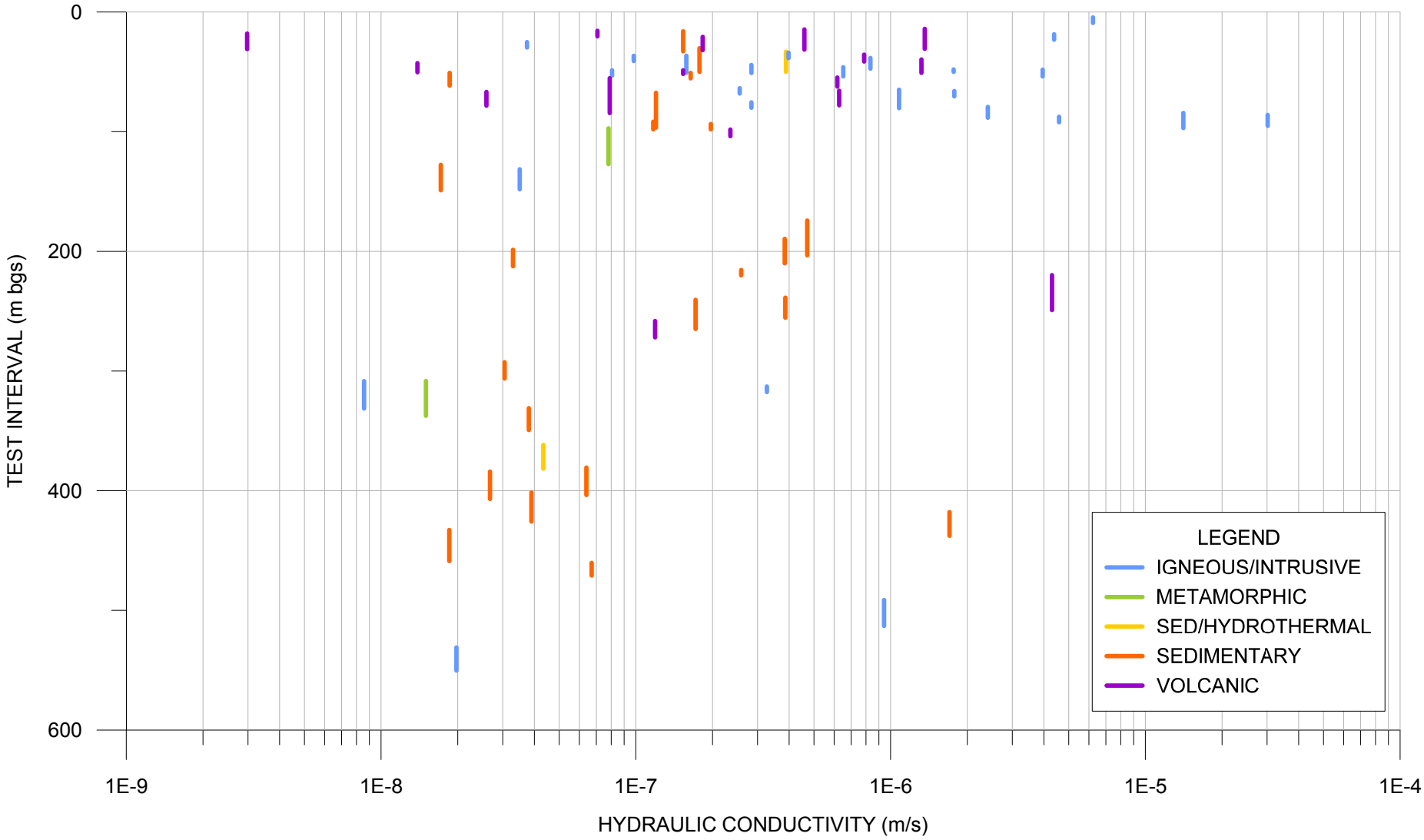
PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT
HYDROGEOLOGY BASELINE REPORT

TITLE: HYDRAULIC CONDUCTIVITY VS. DEPTH BY TEST TYPE

PROJECT No.	FIG No.	REV.
1008-010	07	1

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT - HYDROGEOLOGY BASELINE REPORT DATED JUN 2014

N:/Projects/1008 Pretium/010 EA 2013/002 Hydrogeology/09 Reporting/ 02 EA Modeling Report/02 Drawings



SCALE:	N/A	DESIGNED:	DP
DATE:	JUN 2014	CHECKED:	CM
DRAWN:	DP	APPROVED:	TC

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

PROJECT:
BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT
HYDROGEOLOGY BASELINE REPORT

TITLE:
HYDRAULIC CONDUCTIVITY VS. DEPTH
BY LITHOLOGY

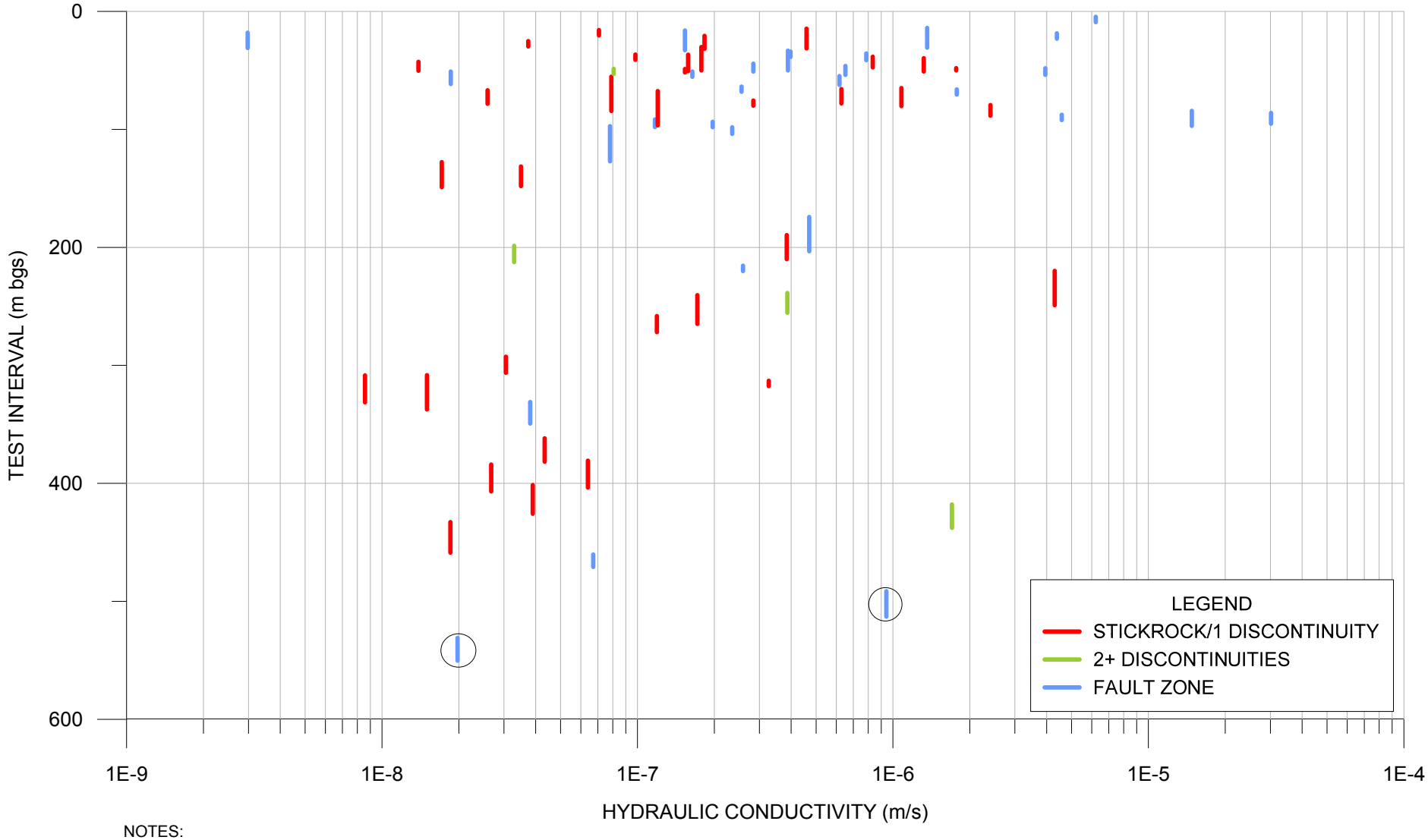
CLIENT:
PRETIUM RESOURCES INC.

PROJECT No.	FIG No.	REV.
1008-010	08	1

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

N:/Projects/1008 Pretium/010 EA 2013/002 Hydrogeology/09 Reporting/ 02 EA Modeling Report/02 Drawings

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT - HYDROGEOLOGY BASELINE REPORT" DATED JUN 2014



NOTES:
1) Circled results (2) are packer tests completed in the Brucejack Fault.

SCALE: N/A	DESIGNED: DP	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY	PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT
DATE: JUN 2014	CHECKED: CM		TITLE: HYDRAULIC CONDUCTIVITY VS. DEPTH BY DISCONTINUITY CLASS
DRAWN: DP	APPROVED: TC		

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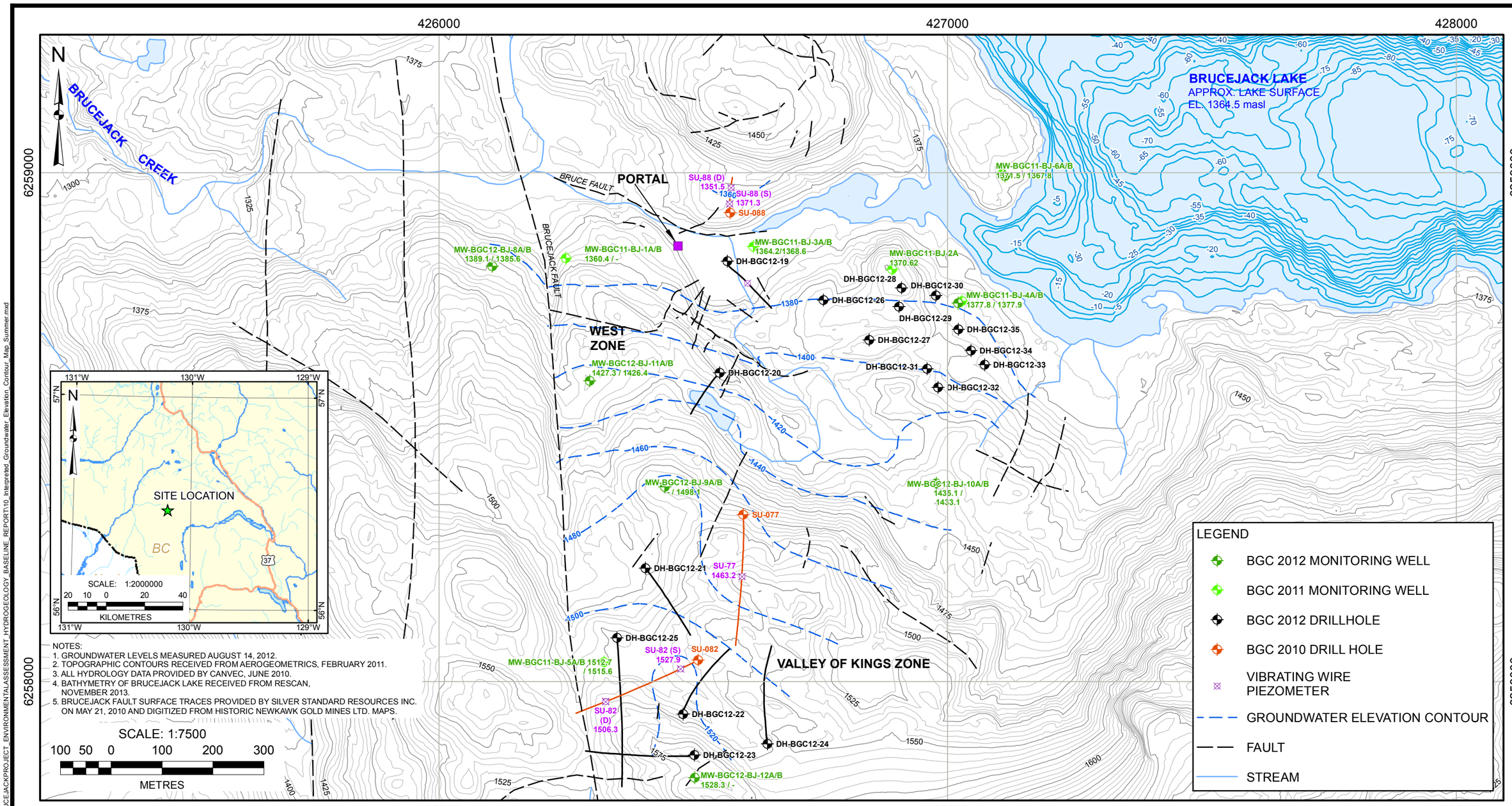
CLIENT: PRETIUM RESOURCES INC.

PROJECT No.	FIG No.	REV.
1008-010	09	1

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT - HYDROGEOLOGY BASELINE REPORT" DATED JUN 2014

N:/Projects/1008 Pretium/010 EA 2013/002 Hydrogeology/09 Reporting/ 02 EA Modeling Report/02 Drawings



NOTES:
1. GROUNDWATER LEVELS MEASURED AUGUST 14, 2012.
2. TOPOGRAPHIC CONTOURS RECEIVED FROM AEROGEOMETRICS, FEBRUARY 2011.
3. ALL HYDROLOGY DATA PROVIDED BY CANVEC, JUNE 2010.
4. BATHYMETRY OF BRUCEJACK LAKE RECEIVED FROM RESCAN, NOVEMBER 2013.
5. BRUCEJACK FAULT SURFACE TRACES PROVIDED BY SILVER STANDARD RESOURCES INC. ON MAY 21, 2010 AND DIGITIZED FROM HISTORIC NEWKAWK GOLD MINES LTD. MAPS.

CONTOUR INTERVAL 5 m
NAD 1983 UTM Zone 9N

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC, AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT. AUTHORIZATION FOR ANY USE AND/OR PUBLICATION OF THIS REPORT OR ANY DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS, THROUGH ANY FORM OF PRINT OR ELECTRONIC MEDIA, INCLUDING WITHOUT LIMITATION, POSTING OR REPRODUCTION OF SAME ON ANY WEBSITE, IS RESERVED PENDING BGC'S WRITTEN APPROVAL. IF THIS REPORT IS ISSUED IN AN ELECTRONIC FORMAT, AN ORIGINAL PAPER COPY IS ON FILE AT BGC ENGINEERING INC. AND THAT COPY IS THE PRIMARY REFERENCE WITH PRECEDENCE OVER ANY ELECTRONIC COPY OF THE DOCUMENT, OR ANY EXTRACTS FROM OUR DOCUMENTS PUBLISHED BY OTHERS.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE:	1:7500
DATE:	JUN 2014
DRAWN:	JCS, ST
DESIGNED:	DP
CHECKED:	CAM
APPROVED:	TC

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.

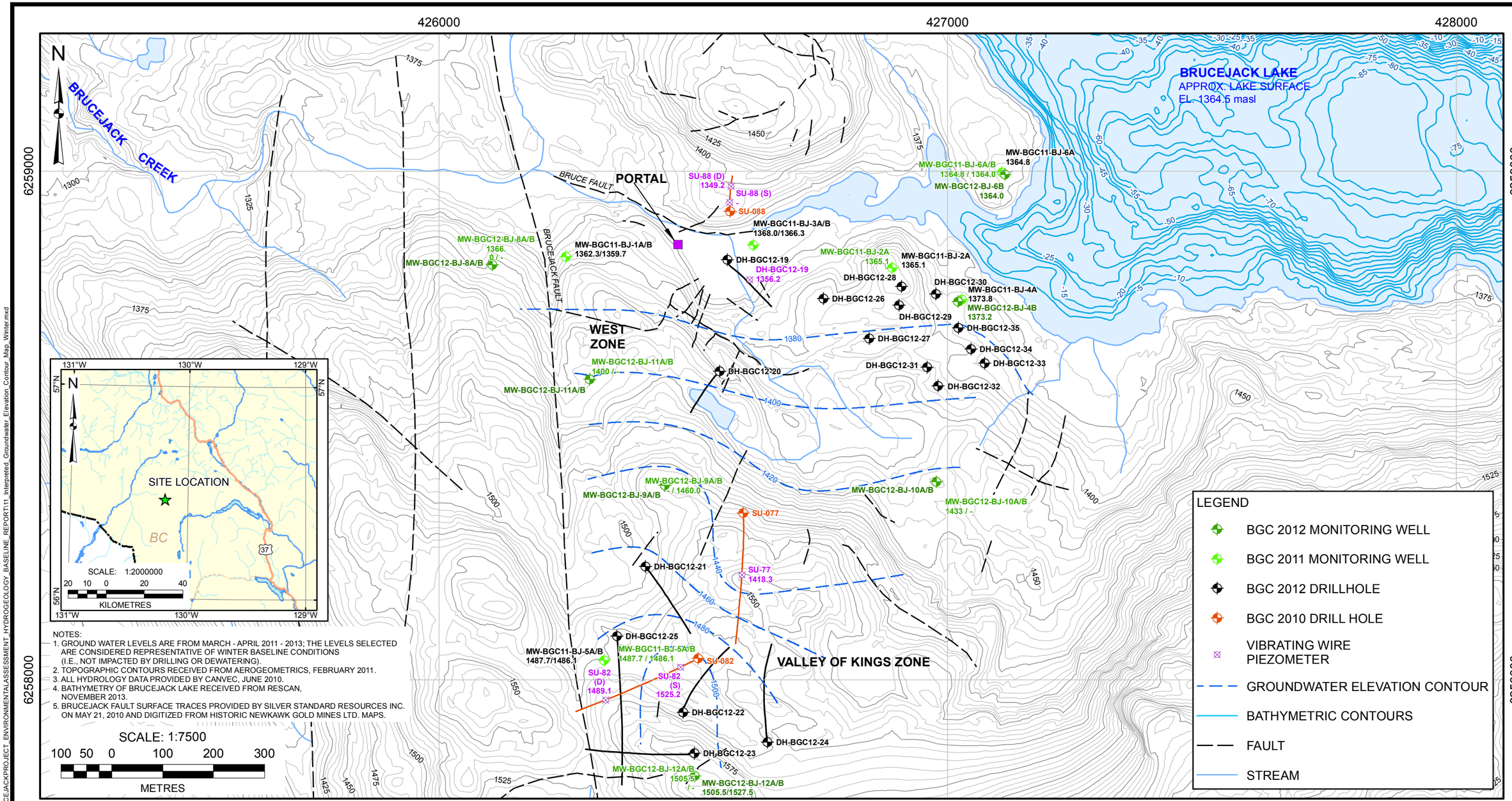
PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: INTERPRETED GROUNDWATER ELEVATION CONTOUR MAP SUMMER

PROJECT No.:	DWG No.:	REV.:
1008010	10	

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT - HYDROGEOLOGY BASELINE REPORT" DATED JUNE 2014

X:\Projects\1008\01\Workspace\201324_REPORT_BRUCEJACK\PROJECT_ENVIRONMENTALASSESSMENT-HYDROGEOLOGY_BASELINE_REPORT\10_Interpreted_Groundwater_Elevation_Contour_Map_Summer.mxd



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REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE: 1:7500
DATE: JUN 2014
DRAWN: MIB, ST
DESIGNED: DP
CHECKED: CAM
APPROVED: TC

PROFESSIONAL SEAL:

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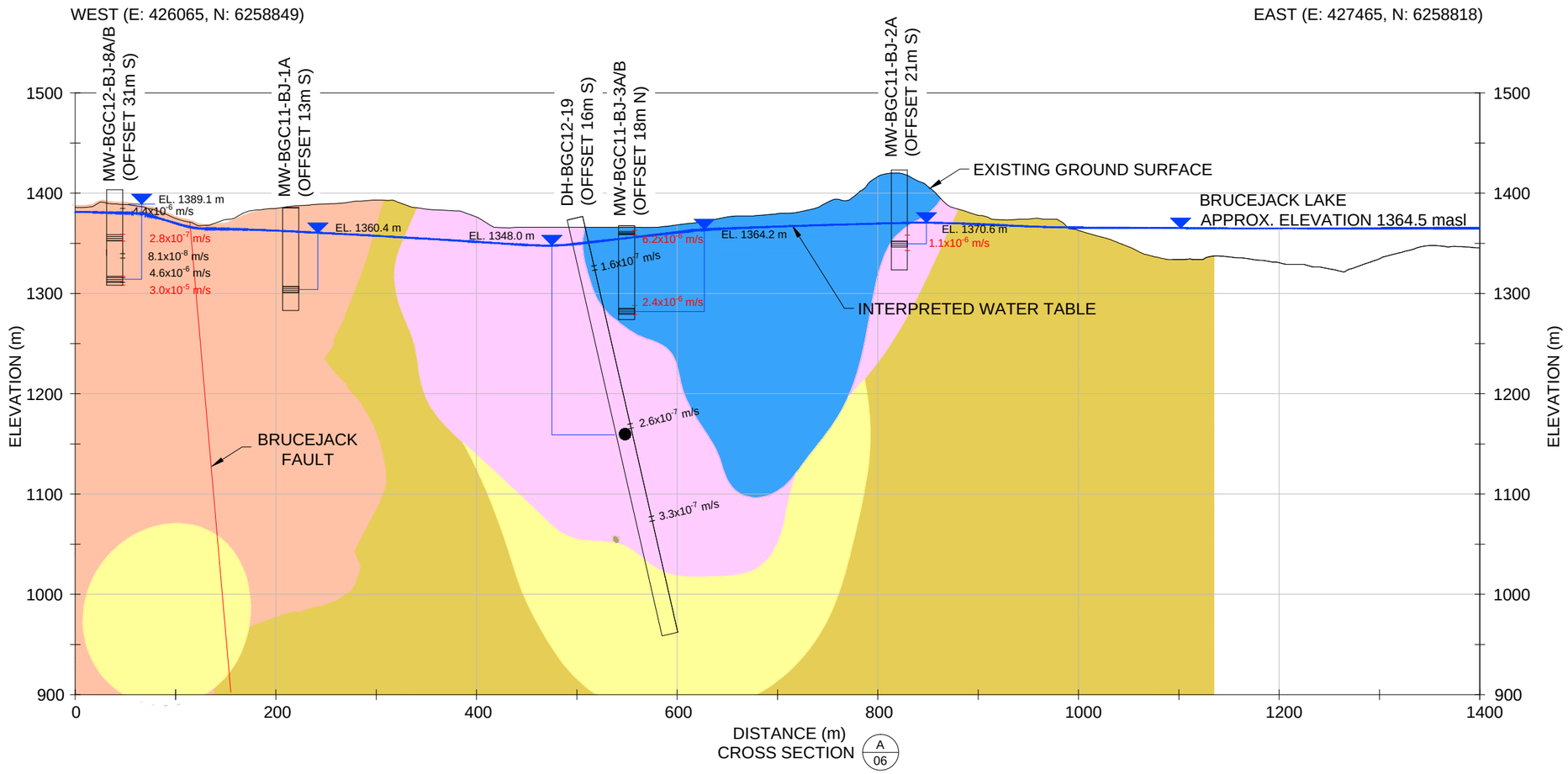
CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: INTERPRETED GROUNDWATER ELEVATION CONTOUR MAP WINTER

PROJECT No.:	DWG No.:	REV.:
1008010	11	

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT - HYDROGEOLOGY BASELINE REPORT" DATED JUNE 2014



SCALE 1:5000

100 0 100 200 300

METRES

NOTES:

1. WATER LEVELS MEASURED ON AUGUST 14, 2012.
2. DATA SETS RECEIVED FROM PRETIUM RESOURCES INC.: 3D SOLID GEOLOGIC MODEL NOVEMBER 30, 2012, UNDERGROUND DESIGN JULY 08, 2013, BULK SAMPLE AS BUILT - AUGUST 06 2013.
3. BASE TOPOGRAPHIC DATA BASED ON EAGLE MAPPING LIDAR PROVIDED BY PRETIUM RESOURCES INC, DATED OCTOBER 18, 2012.

LEGEND

- GROUNDWATER ELEVATION
- VIBRATING WIRE PIEZOMETER
- ± 4.6x10-6 m/s PACKER TEST
- ± 1.1x10-6 m/s SLUG TEST
- FAULT
- WELL SCREEN

LITHOLOGY

- P2
- OFFICE P1
- SILICIFIED CAP
- FRAGMENTAL
- VSF
- CONGLOMERATE

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REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE: 1:5000
DATE: JUN 2014
DRAWN: SKS
DESIGNED: DP
CHECKED: CAM
APPROVED: TC

PROFESSIONAL SEAL:

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: HYDROGEOLOGICAL CROSS-SECTION A

PROJECT No.:	DWG No:	REV.:
1008010	12	

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT - HYDROGEOLOGY BASELINE REPORT" DATED JUNE 2014

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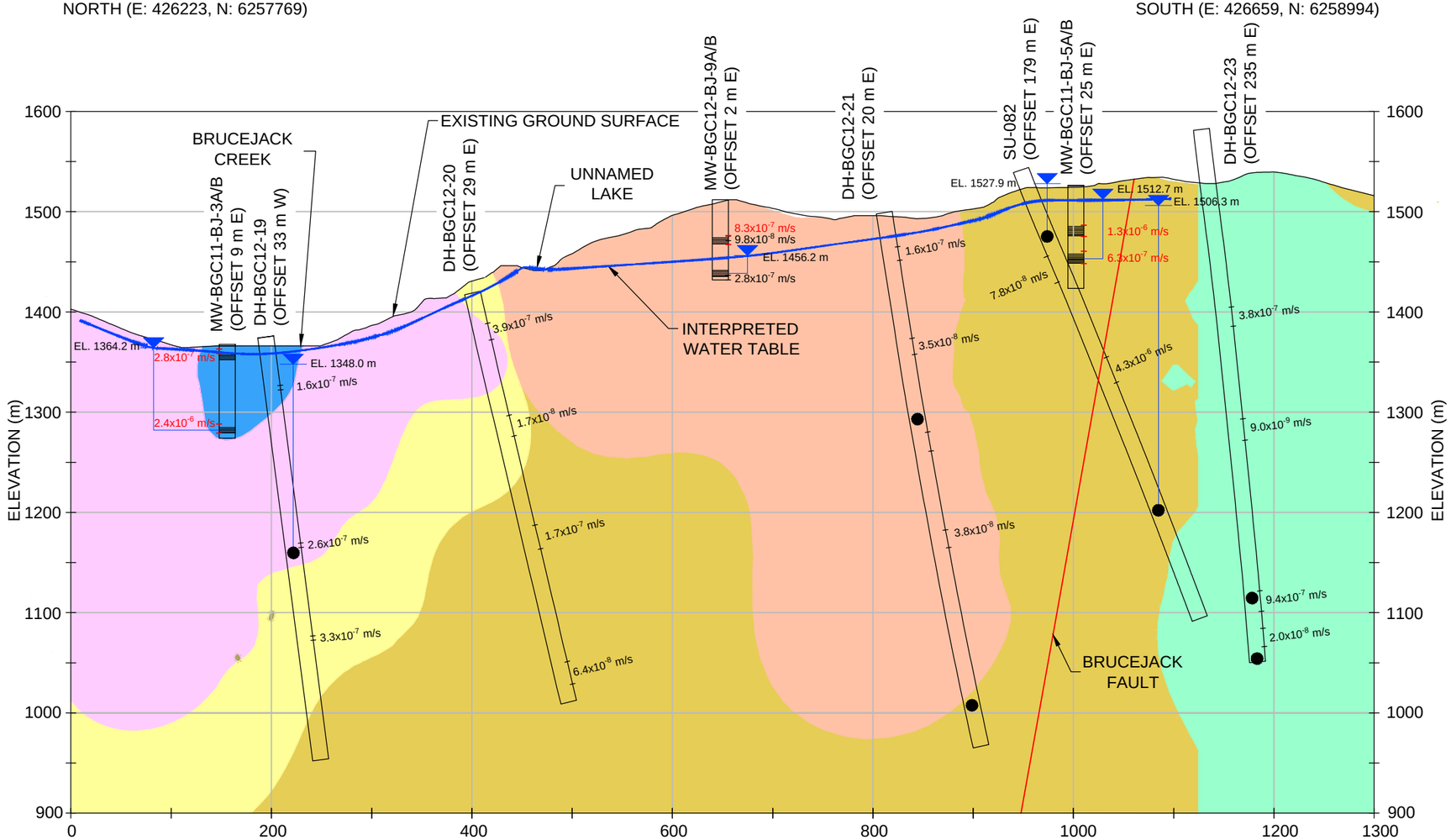
NORTH (E: 426223, N: 6257769)

SOUTH (E: 426659, N: 6258994)



CROSS SECTION B 06

SCALE 1:5000

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METRES

NOTES:

1. WATER LEVELS MEASURED ON AUGUST 14, 2012.
2. DATA SETS RECEIVED FROM PRETIUM RESOURCES INC.: 3D SOLID GEOLOGIC MODEL NOVEMBER 30, 2012, UNDERGROUND DESIGN JULY 08, 2013, BULK SAMPLE AS BUILT - AUGUST 06 2013.
3. BASE TOPOGRAPHIC DATA BASED ON EAGLE MAPPING LIDAR PROVIDED BY PRETIUM RESOURCES INC, DATED OCTOBER 18, 2012.

LEGEND

- GROUNDWATER ELEVATION
- VIBRATING WIRE PIEZOMETER
- 4.6x10-6 m/s PACKER TEST
- 1.1x10-6 m/s SLUG TEST
- FAULT
- WELL SCREEN

LITHOLOGY

- P2
- OFFICE P1
- SILICIFIED CAP
- FRAGMENTAL
- BRIDGE ZONE PORPHYRY
- VSF
- CONGLOMERATE

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REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE: 1:5000
DATE: JUN 2014
DRAWN: SKS
DESIGNED: DP
CHECKED: CAM
APPROVED: TC

PROFESSIONAL SEAL:

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CLIENT: PRETIUM RESOURCES INC.

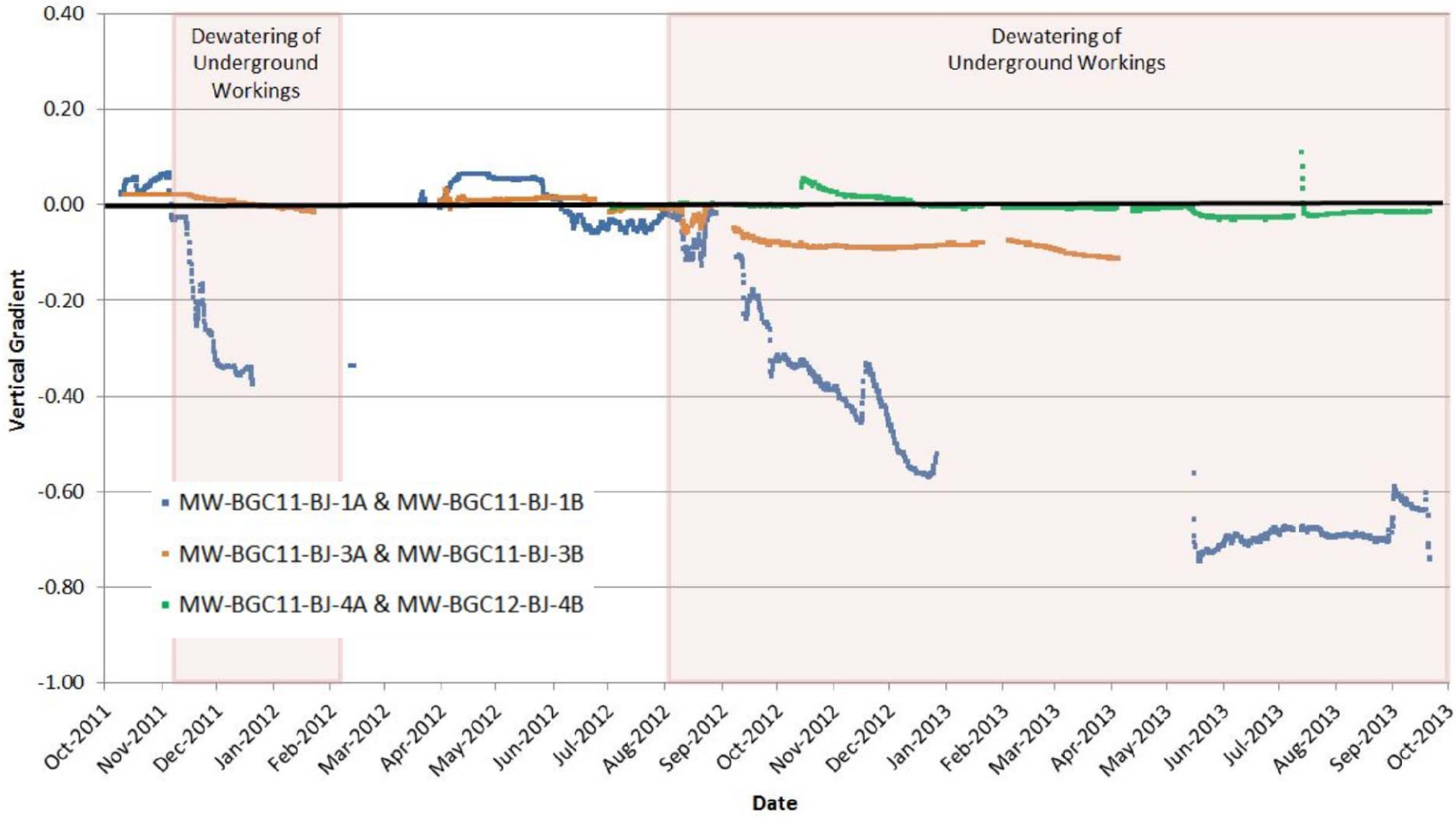
PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: HYDROGEOLOGICAL CROSS-SECTION B

PROJECT No.:	DWG No:	REV.:
1008010	13	

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT - HYDROGEOLOGY BASELINE REPORT" DATED JUNE 2014

X:\Projects\1008\010\Workspace\201324_REPORT_BRUCEJACKPROJECT_ENVIRONMENTALASSESSMENT_HYDROGEOLOGY_BASELINE_REPORT\13_HYDROGEOLOGICAL_CROSS-SECTION_B_WITH_LITHOLOGY.dwg Layout: Section B Plot Date: Jun 12 14 Time: 10:20 AM



Notes:

1) Positive values for vertical hydraulic gradient indicate upward groundwater flow, while negative values indicate downward groundwater flow.
2) Dewatering of underground workings impacting groundwater elevations and gradients at the site occured from Nov 2011 to Feb 2012, and from Aug 2012 onwards.

SCALE: N/A	DESIGNED: DP	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY	PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT
DATE: JUN 2014	CHECKED: TCC		TITLE: VERTICAL HYDRAULIC GRADIENTS - WELLS 1A/B, 3A/B, 4A/B
DRAWN: DP	APPROVED: TC		
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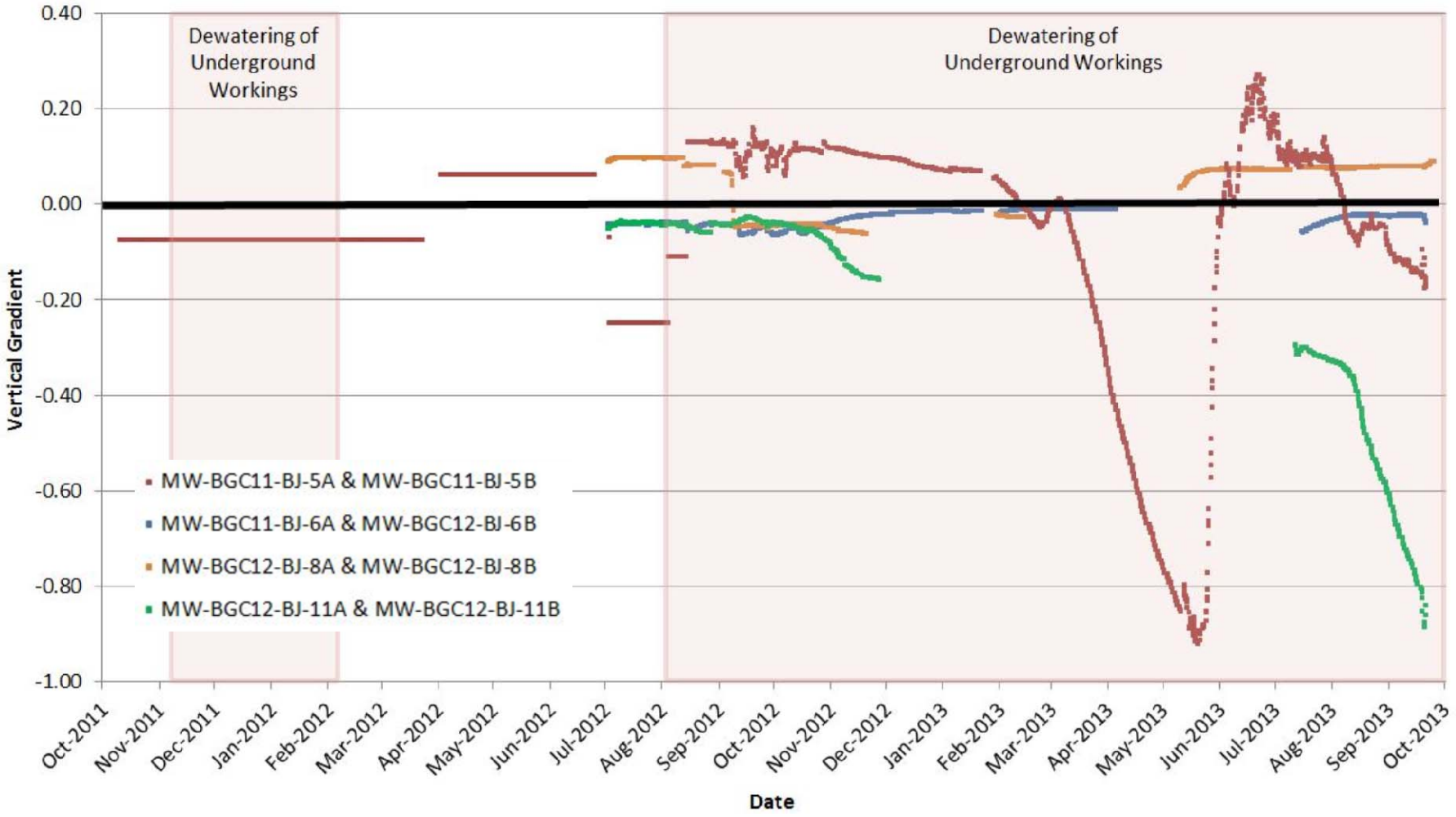
DWG. TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT - HYDROGEOLOGY BASELINE REPORT" DATED JUN 2014

N:/BGC/Projects/0011/080 Fedorova Project/Water Management/contact water dam/Seepage Estimate/Memo/Figure 2_Run 1_0 Output.srf



Notes:

1) Positive values for vertical hydraulic gradient indicate upward groundwater flow, while negative values indicate downward groundwater flow.
2) Dewatering of underground workings impacting groundwater elevations and gradients at the site occured from Nov 2011 to Feb 2012, and from Aug 2012 onwards.

SCALE: N/A	DESIGNED: DP	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY	PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT
DATE: JUN 2014	CHECKED: TCC		TITLE: VERTICAL HYDRAULIC GRADIENTS - WELLS 5A/B, 6A/B, 8A/B, 11A/B
DRAWN: DP	APPROVED: TC		
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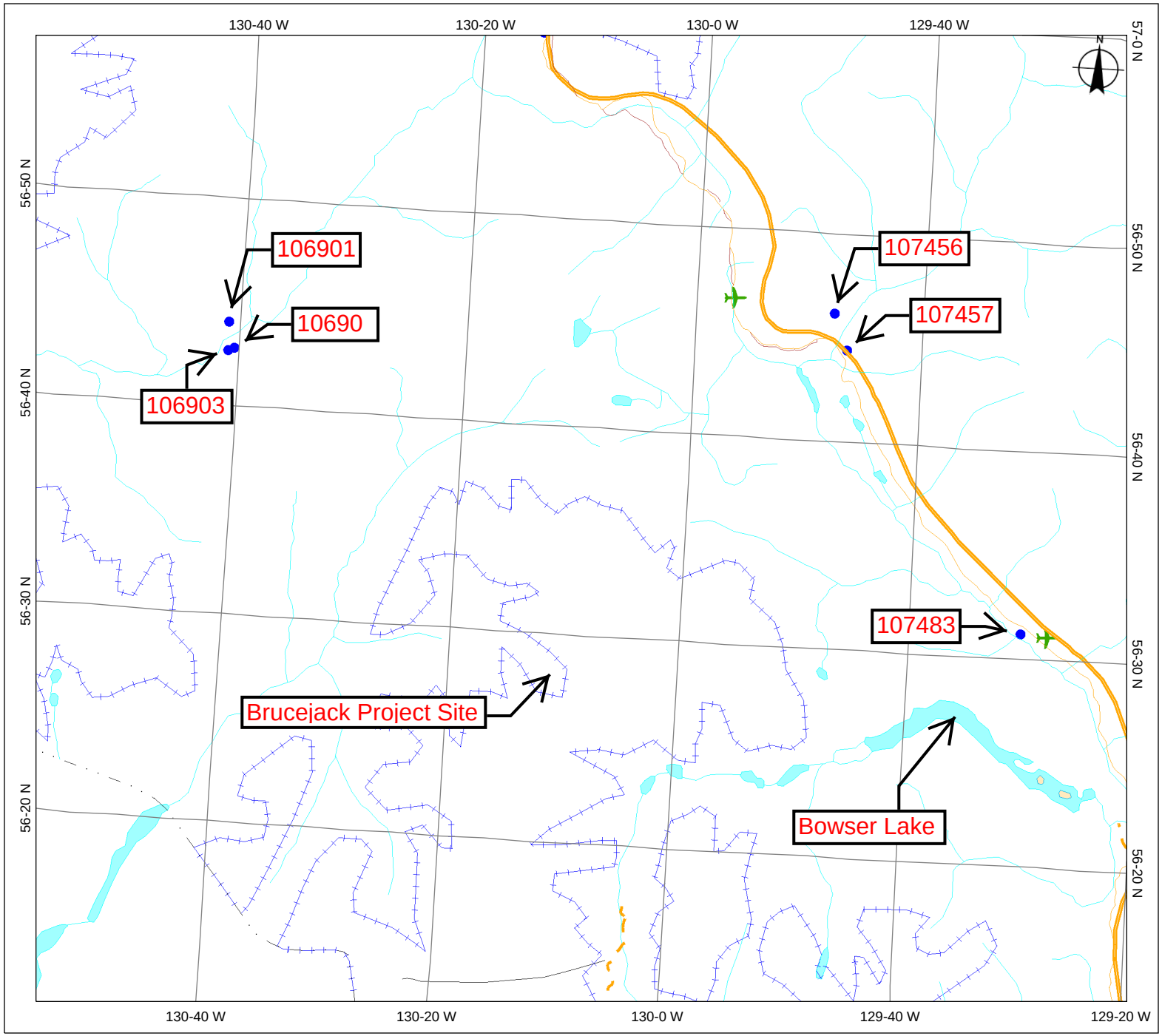
N:/BGC/Projects/0011/080 Fedorova Project/Water Management/contact water dam/Seepage Estimate/Memo/Figure 2_Run 1_0 Output.srf

DWG. TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT - HYDROGEOLOGY BASELINE REPORT" DATED JUN 2014

APPENDIX A
BC MOE DATABASE AQUIFER AND WELL SEARCH RESULTS



BRITISH COLUMBIA

BC Water Resources Atlas

Legend

Transportation - Roads, Railroads, etc. (1:250,000)

- Road - Paved lanes 2 or More Divided
- Ferry Route
- Aerial Cableway
- Road (Gravel Undivided) - 1 Lane
- Road (Gravel Undivided) - 3 Lanes
- Road (Paved Undivided) - Not Elevated - 1 Lane
- Road (Paved Undivided) - Not Elevated - 2 Lanes
- Road - Paved lanes 3 or More Undivided
- Road (Unimproved)
- Road - Loose access Dry Weather
- Road (Winter Road)
- Road - Paved lanes 2 Undivided
- Road - Paved lanes 2 Undivided U C
- Road - Paved Divided access Non Standard
- Track - Cart or Tractor
- Causeway (Railway)
- Cut (Roadway)
- Trail
- Tunnel
- Bridge
- Rail Line - Narrow Gauge - Single Track
- Rail Line (Multiple Track)
- Rail Line (Single Track)
- Rail Line - Abandoned Track
- Cable - Telephone
- Line (Transmission) - Electrical
- Line (Transmission) - Electrical - Primary

0 7 14 km.

Scale: 1:500,000

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Datum/Projection: NAD83, Albers Equal Area Conic

Key Map of British Columbia

BRITISH COLUMBIA

Report 1 - Detailed Well Record

Well Tag Number: 106900

Owner: ALTA GAS LTD

Address: FORREST KERR CAMP

Area: BOB QUINN LAKE

WELL LOCATION:
Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 27): Well:

Class of Well: Water supply
Subclass of Well: Non-domestic
Orientation of Well: Vertical
Status of Well: New
Well Use: Commercial and Industrial
Observation Well Number:
Observation Well Status:
Construction Method:
Diameter: inches
Casing drive shoe: Y
Well Depth: 475 feet
Elevation: feet (ASL)
Final Casing Stick Up: 24 inches
Well Cap Type: 6" WTC
Bedrock Depth: 145 feet
Lithology Info Flag: N
File Info Flag: N
Sieve Info Flag: N
Screen Info Flag: N

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 2011-12-01 00:00:00

Driller: Double D Drilling
Well Identification Plate Number: 33554
Plate Attached By: ROBERT STANVICK
Where Plate Attached: WELL HEAD

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 4 (Driller's Estimate) U.S. Gallons per Minute
Development Method: Air lifting
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 177.5 feet

WATER QUALITY:
Character:
Colour:
Odour: IRON
Well Disinfected: Y
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):

Water Utility:
Water Supply System Name:
Water Supply System Well Name:

SURFACE SEAL:
Flag: N
Material: Bentonite clay
Method: Poured
Depth (ft): 15 feet
Thickness (in): 2 inches
Liner from To: feet

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size

Casing from	to feet	Diameter	Material	Drive Shoe
0	360	6	Steel	Y

GENERAL REMARKS:
THIS WELL MAY BE PVC LINED FROM 340-475 FT. INSTALLED PVC LINER JAN 2012. 4 GPM AIRLIFT.

LITHOLOGY INFORMATION:
From 0 to 145 Ft. Medium VOLCANIC ROCK black
From 145 to 360 Ft. Soft POSSIBLE FRACTURES ENCOUNTERED: 145, 192, 207, 250, 330, 347 grey bedrock
From 360 to 475 Ft. MEDIUM SOFT GREY BLACK; OPEN HOLE 360-475'. POSSIBLE FRACTURE 423. vari-coloured bedrock
From 475 to 575 Ft. Soft grey bedrock

- Return to Main
- Return to Search Options
- Return to Search Criteria

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BRITISH COLUMBIA

Report 1 - Detailed Well Record

Well Tag Number: 106901

Owner: ALTA GAS

Address:

Area:

WELL LOCATION:
Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 27): Well:

Class of Well: Water supply
Subclass of Well: Non-domestic
Orientation of Well: Vertical
Status of Well: New
Well Use: Commercial and Industrial
Observation Well Number:
Observation Well Status:
Construction Method:
Diameter: inches
Casing drive shoe: Y
Well Depth: 175 feet
Elevation: feet (ASL)
Final Casing Stick Up: 18 inches
Well Cap Type: 6" WTC
Bedrock Depth: feet
Lithology Info Flag: N
File Info Flag: N
Sieve Info Flag: N
Screen Info Flag: N

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 2011-11-12 00:00:00

Driller: Double D Drilling
Well Identification Plate Number: 33552
Plate Attached By: ROBERT STANVICK
Where Plate Attached: WELL HEAD

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 30 (Driller's Estimate) U.S. Gallons per Minute
Development Method: Air lifting
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 130 feet

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: Y
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):

Water Utility:
Water Supply System Name:
Water Supply System Well Name:

SURFACE SEAL:
Flag: N
Material: Bentonite clay
Method: Poured
Depth (ft): 15 feet
Thickness (in): 2 inches
Liner from To: feet

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size
162	175		100

Casing from	to feet	Diameter	Material	Drive Shoe
0	162	6	Steel	Y

GENERAL REMARKS:
GROUND ELEVATION: 286 M. SURFACE SEAL: TYPE: 3/8 BENTONITE.

LITHOLOGY INFORMATION:

From	0	to	15	Ft.	Medium	WASTE ROCK & OR FILL brown
From	15	to	35	Ft.	Medium	BRKN ROCK, SAND, GRAVEL brown
From	35	to	48	Ft.	Medium	BRKN ROCK, SAND, GRAVEL brown
From	48	to	58	Ft.		LAVA, RELATIVE HARDNESS: N/H black
From	58	to	85	Ft.	Medium	BRKN LAVA W/VOIDS black
From	85	to	128	Ft.	Medium	LAVA black
From	128	to	135	Ft.	Medium	BRKN LAVA OR FRACTURED ROCK W/B@ 130' black
From	135	to	162	Ft.	Medium	LAVA black
From	162	to	171	Ft.	Medium	MAJOR FAULT BRKN ROCK 30 Gallons per Minute (U.S./Imperial) AIR LIFT black
From	171	to	175	Ft.	Medium	VOLCANIC ROCK black

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- Return to Search Options
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BRITISH COLUMBIA

Report 1 - Detailed Well Record

Well Tag Number: 106903

Owner: ALTA GAS

Address:

Area:

WELL LOCATION:
Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 27): Well:

Class of Well: Water supply
Subclass of Well: Non-domestic
Orientation of Well: Vertical
Status of Well: New
Well Use: Other
Observation Well Number:
Observation Well Status:
Construction Method:
Diameter: inches
Casing drive shoe: Y
Well Depth: 375 feet
Elevation: feet (ASL)
Final Casing Stick Up: 20 inches
Well Cap Type: 6" WTC
Bedrock Depth: feet
Lithology Info Flag: N
File Info Flag: N
Sieve Info Flag: N
Screen Info Flag: N

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 2011-11-15 00:00:00

Driller: Double D Drilling
Well Identification Plate Number: 33553
Plate Attached By: ROBERT STANVICK
Where Plate Attached: WELL HEAD

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 45 (Driller's Estimate) U.S. Gallons per Minute
Development Method: Air lifting
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 290 feet

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: Y
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):

Water Utility:
Water Supply System Name:
Water Supply System Well Name:

SURFACE SEAL:
Flag: N
Material: Bentonite clay
Method: Poured
Depth (ft): 15 feet
Thickness (in): 2 inches
Liner from To: feet

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size
362	375		100

Casing from	to feet	Diameter	Material	Drive Shoe
0	368	6	Steel	Y

GENERAL REMARKS:
SUB-CLASS OF WELL: POSS. DOMESTIC BACK UP. SURFACE SEAL: TYPE: 3/8 BENTONITE.

LITHOLOGY INFORMATION:

From	0	to	4 Ft.	Medium LAVA BRKN red
From	4	to	18 Ft.	Hard SOLID ROCK black
From	18	to	35 Ft.	Medium BRKN VOLCANIC black
From	35	to	255 Ft.	VOLCANIC ROCK, RELATIVE HARDNESS: M/H VARIOUS VOIDS OR NO RETURNS DUE TO FORMATION black
From	255	to	295 Ft.	Medium OXIDIZED VOLCANIC ROCK COLOUR: R/BLK vari-coloured
From	295	to	310 Ft.	Very hard VOLCANIC black
From	310	to	332 Ft.	Very hard VOLCANIC FRACTURE @ 324' black
From	332	to	348 Ft.	Very hard VOLCANIC ROCK W/BRN TILE black
From	348	to	355 Ft.	Medium FINE & MED SAND, ROCK & TRACE FINE GRAVEL COLOUR: MULTI vari-coloured
From	355	to	375 Ft.	Medium MIXED SAND & MIXED GRAVEL 45 Gallons per Minute (U.S./Imperial) grey

- Return to Main
- Return to Search Options
- Return to Search Criteria

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BRITISH COLUMBIA

Report 1 - Detailed Well Record

Well Tag Number: 107456

Owner: VALLARD CONSTRUCTION

Address: HIGHWAY 37

Area: BELL II

WELL LOCATION:
Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 27): Well:

Class of Well: Water supply
Subclass of Well: Non-domestic
Orientation of Well: Vertical
Status of Well: New
Well Use: Commercial and Industrial
Observation Well Number:
Observation Well Status:
Construction Method:
Diameter: inches
Casing drive shoe: Y
Well Depth: 225 feet
Elevation: 620 feet (ASL)
Final Casing Stick Up: 18 inches
Well Cap Type: 6" WTC
Bedrock Depth: feet
Lithology Info Flag:
File Info Flag:
Sieve Info Flag:
Screen Info Flag:

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 2012-08-13 00:00:00

Driller: Double D Drilling
Well Identification Plate Number: 33574
Plate Attached By: ROBERT STANVICK
Where Plate Attached: WELL HEAD

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 4 (Driller's Estimate) U.S. Gallons per Minute
Development Method: Air lifting
Pump Test Info Flag:
Artesian Flow:
Artesian Pressure (ft):
Static Level: 174 feet

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: Y
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):

Water Utility:
Water Supply System Name:
Water Supply System Well Name:

SURFACE SEAL:
Flag:
Material: Bentonite clay
Method:
Depth (ft): 15 feet
Thickness (in): 4 inches
Liner from To: feet

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size
221	225		10

Casing from	to feet	Diameter	Material	Drive Shoe
0	220	6	Steel	Y

GENERAL REMARKS:
CLIENT DID NOT SUPPLY LEGAL DESCRIPTIONS

LITHOLOGY INFORMATION:

From	0 to	15 Ft.	Medium	MED COARSE GRAVEL MIXED SANDS	brown
From	15 to	30 Ft.	Medium	STICKY SAND & GRAVEL TRACE OF TILL	grey
From	30 to	170 Ft.	Hard	grey till	
From	170 to	180 Ft.		FINE SAND & SILT MEDIUM HARD grey	
From	180 to	193 Ft.	Hard	grey till	
From	193 to	225 Ft.	Medium	FINE SAND TRACE SILT	black
From	225 to	235 Ft.	Medium	FINE SAND TRACE SILT	grey
From	235 to	251 Ft.	Medium	FINE SAND TRACE SILT	black
From	251 to	280 Ft.	Medium	CLAY SILT	grey
From	280 to	295 Ft.	Medium	FINE SAND TRACE OF SILT	grey

- Return to Main

- Return to Search Options
- Return to Search Criteria

Information Disclaimer
The Province disclaims all responsibility for the accuracy of information provided. Information provided should not be used as a basis for making financial or any other commitments.

BRITISH COLUMBIA

Report 1 - Detailed Well Record

Well Tag Number: 107457

Owner: VALLARD CONSTRUCTION

Address: HIGHWAY 37

Area: BELL II

WELL LOCATION:
Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 27): Well:

Class of Well: Water supply
Subclass of Well: Domestic
Orientation of Well: Vertical
Status of Well: New
Well Use: Commercial and Industrial
Observation Well Number:
Observation Well Status:
Construction Method:
Diameter: inches
Casing drive shoe: Y
Well Depth: 45 feet
Elevation: 597 feet (ASL)
Final Casing Stick Up: 18 inches
Well Cap Type: 6" WTC
Bedrock Depth: 107 feet
Lithology Info Flag: Y
File Info Flag: N
Sieve Info Flag: N
Screen Info Flag: Y

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 2012-08-11 00:00:00

Driller: Double D Drilling
Well Identification Plate Number: 33573
Plate Attached By: ROBERT STANVICK
Where Plate Attached: WELL HEAD

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 8 (Driller's Estimate) U.S. Gallons per Minute
Development Method: Pumping
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 22 feet

WATER QUALITY:
Character:
Colour:
Odour: SLIGHT IRON
Well Disinfected: Y
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):

Water Utility:
Water Supply System Name:
Water Supply System Well Name:

SURFACE SEAL:
Flag: Y
Material: Bentonite clay
Method: Poured
Depth (ft): 15 feet
Thickness (in): 4 inches
Liner from To: feet

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size
41	45		50

Casing from	to feet	Diameter	Material	Drive Shoe
0	42	6	Steel	Y

GENERAL REMARKS:
CLIENT DID NOT PROVIDE LEGAL DESCRIPTIONS

LITHOLOGY INFORMATION:

From	0	to	8	Ft.	Hard COARSE GRAVEL BOULDERS MIXED SAND TRACE TILL grey	
From	8	to	35	Ft.	Medium SOME COBBLES COARSE GRAVEL MIXED SANDS DAMP VERY STICKY; POSSIBLE WB @ 25' brown	
From	35	to	47	Ft.	Medium FINE-MED GRAVEL MIXED SAND 8 U.S. Gallons per Minute grey	
From	47	to	90	Ft.	Medium SILT CLAY grey	
From	90	to	107	Ft.	Hard grey till	
From	107	to	135	Ft.	Hard black bedrock	

- Return to Main
- Return to Search Options
- Return to Search Criteria

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BRITISH COLUMBIA

Report 1 - Detailed Well Record

Well Tag Number: 107483

Owner: PRETIUM EXPLORATION

Address: KM215 HIGHWAY 37

Area: WILDFIRE CAMP

WELL LOCATION:
Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 27): Well:

Class of Well: Water supply
Subclass of Well: Domestic
Orientation of Well: Vertical
Status of Well: New
Well Use: Private Domestic
Observation Well Number:
Observation Well Status:
Construction Method:
Diameter: 6 inches
Casing drive shoe: Y
Well Depth: 95 feet
Elevation: feet (ASL)
Final Casing Stick Up: 18 inches
Well Cap Type: 6" WTC
Bedrock Depth: feet
Lithology Info Flag: N
File Info Flag: N
Sieve Info Flag: N
Screen Info Flag: Y

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 2012-11-06 00:00:00

Driller: Double D Drilling
Well Identification Plate Number: 33581
Plate Attached By: ROBERT STANVICK
Where Plate Attached: WELL HEAD

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 50 (Driller's Estimate) U.S. Gallons per Minute
Development Method: Air lifting
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 63 feet

WATER QUALITY:
Character:
Colour: SLIGHT BR
Odour:
Well Disinfected: Y
EMS ID:
Water Chemistry Info Flag: Y
Field Chemistry Info Flag:
Site Info (SEAM):

Water Utility:
Water Supply System Name: WILDFIRE CAMP
Water Supply System Well Name: WILDFIRE CAMP

SURFACE SEAL:
Flag: Y
Material: Bentonite clay
Method: Poured
Depth (ft): 15 feet
Thickness (in): 4 inches
Liner from To: feet

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size
91	95		50

Casing from	to feet	Diameter	Material	Drive Shoe
0	90	6	Steel	Y

GENERAL REMARKS:
WELL WILL CLEAN UP WITH PUMPING. CLIENT DID NOT SUPPLY LEGAL DESCRIPTION.

LITHOLOGY INFORMATION:

From	0	to	8	Ft.	Hard	COARSE GRAVEL COBBLES COARSE SAND brown
From	8	to	33	Ft.	Hard	grey till
From	33	to	95	Ft.	Hard	COARSE GRAVEL COARSE SAND 50 GPM AIRLIFT; TEMP = 2.2C black

- Return to Main
- Return to Search Options
- Return to Search Criteria

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APPENDIX B
MONITORING WELL LOGS

Project: Brucejack
Project No.: 1008-004

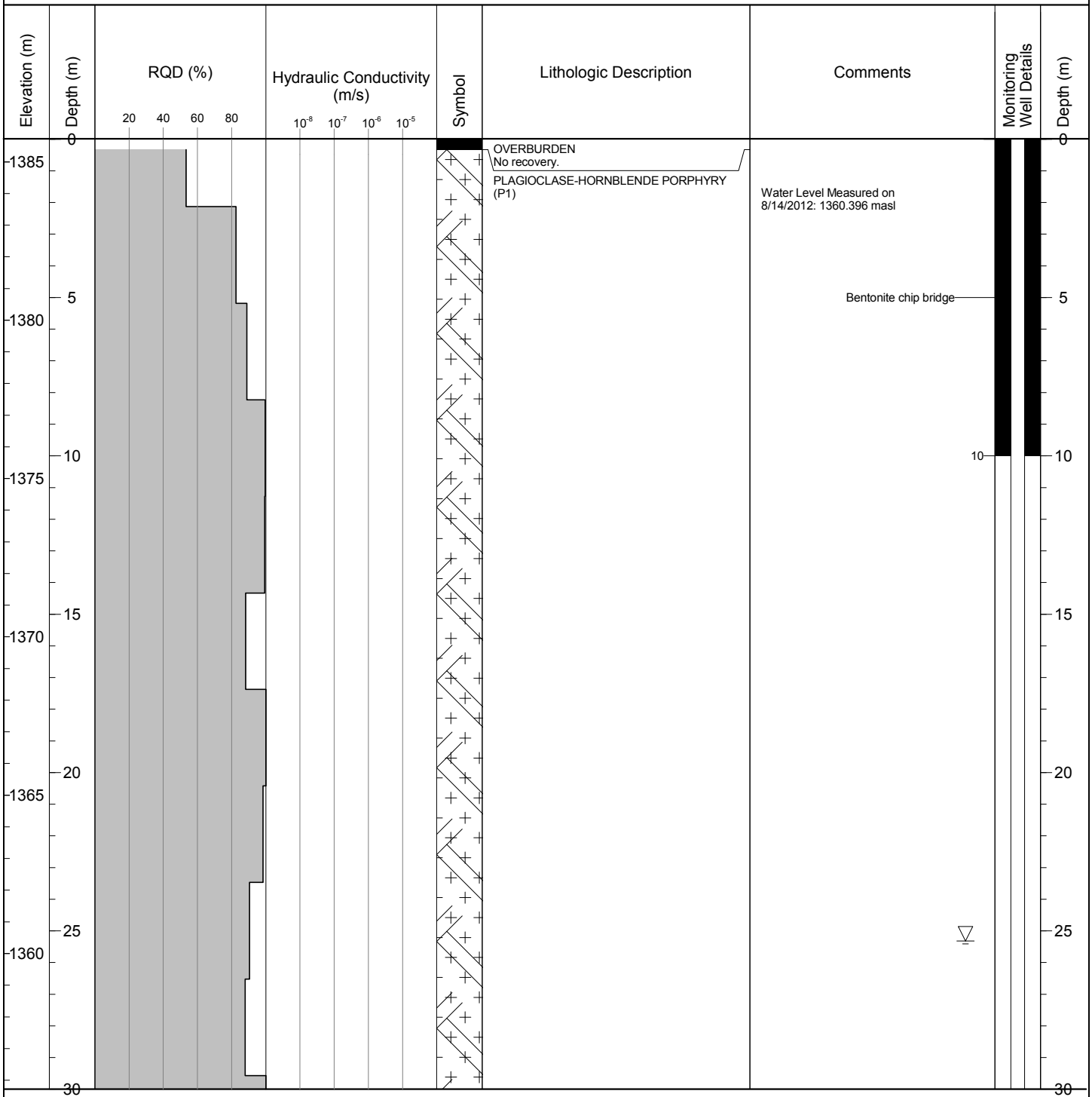
DRILL HOLE # MW-BGC11-BJ-1A

Location: West Zone

Co-ordinates (m): 426,280E - 6,258,840N
Ground Elevation (m): 1,385.72
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.57
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1386.3
Cased To (m): 3

Start date: 30 Sep 11
Finish Date: 02 Oct 11
Final Depth (m): 102.7
Depth To Top Of Rock (m): 0.3
Logged by: Pretium
Reviewed by: BGC



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

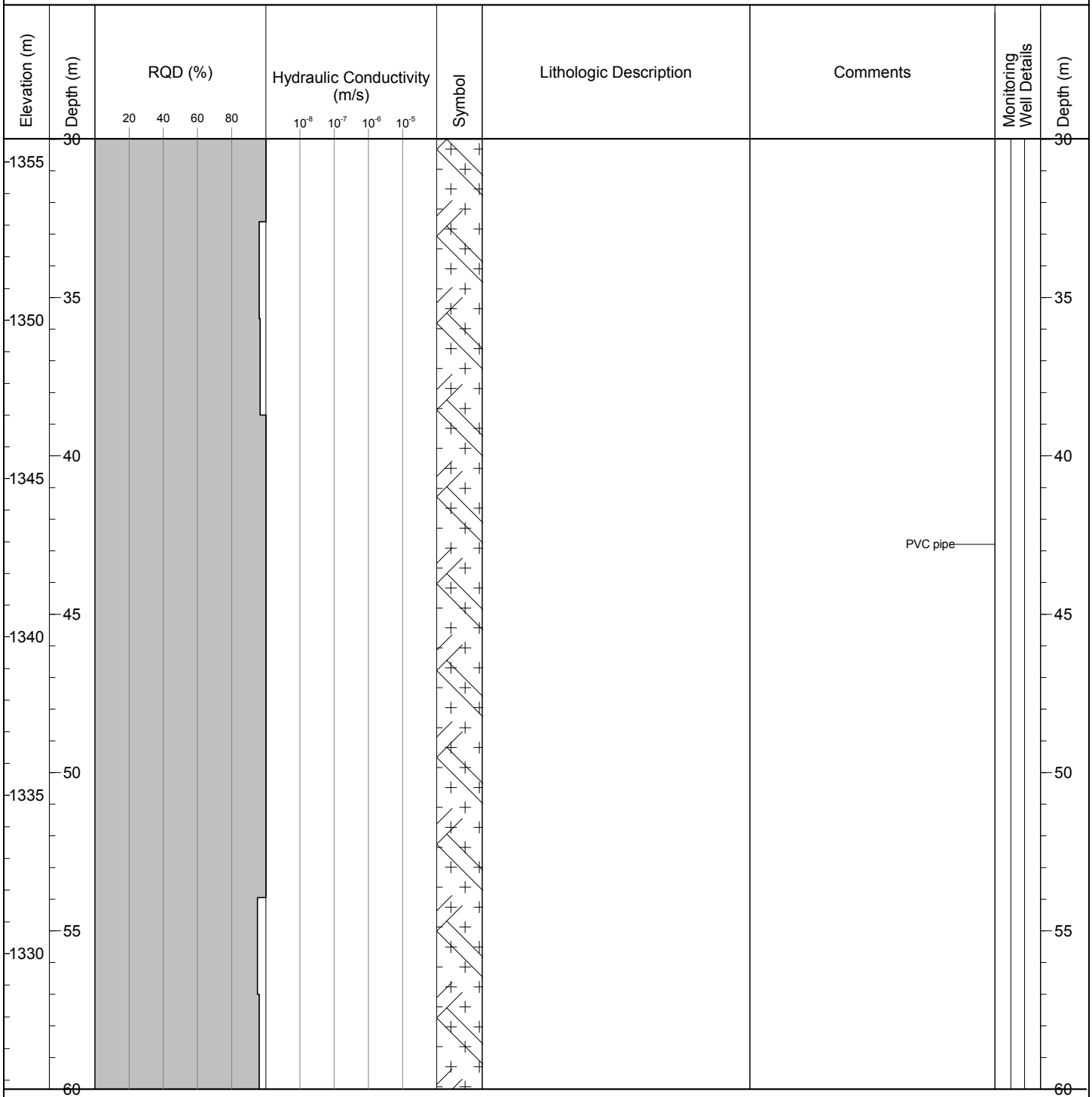
DRILL HOLE # MW-BGC11-BJ-1A

Location: West Zone

Co-ordinates (m): 426,280E - 6,258,840N
Ground Elevation (m): 1,385.72
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.57
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1386.3
Cased To (m): 3

Start date: 30 Sep 11
Finish Date: 02 Oct 11
Final Depth (m): 102.7
Depth To Top Of Rock (m): 0.3
Logged by: Pretium
Reviewed by: BGC



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

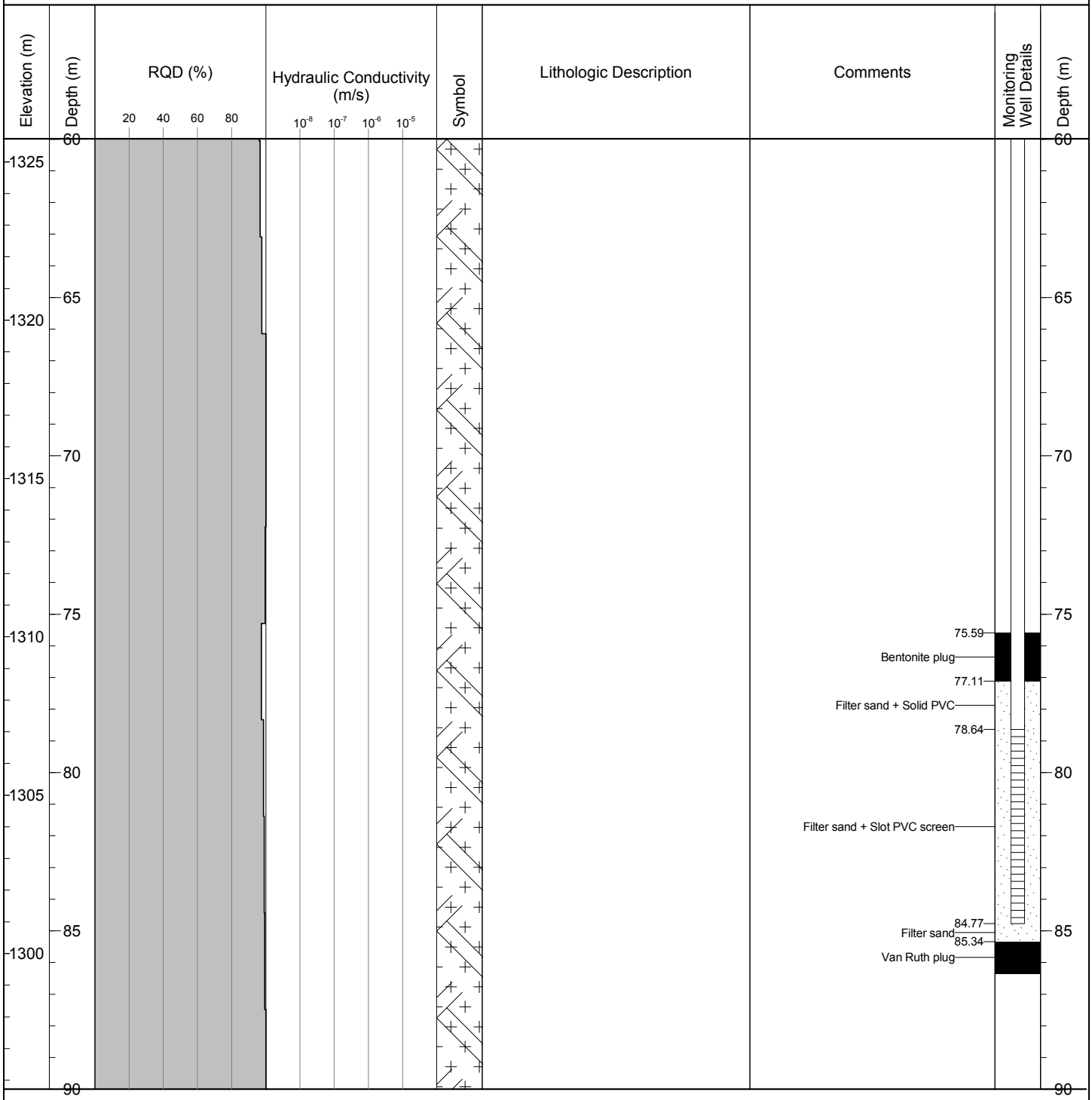
DRILL HOLE # MW-BGC11-BJ-1A

Location: West Zone

Co-ordinates (m): 426,280E - 6,258,840N
Ground Elevation (m): 1,385.72
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.57
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1386.3
Cased To (m): 3

Start date: 30 Sep 11
Finish Date: 02 Oct 11
Final Depth (m): 102.7
Depth To Top Of Rock (m): 0.3
Logged by: Pretium
Reviewed by: BGC



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

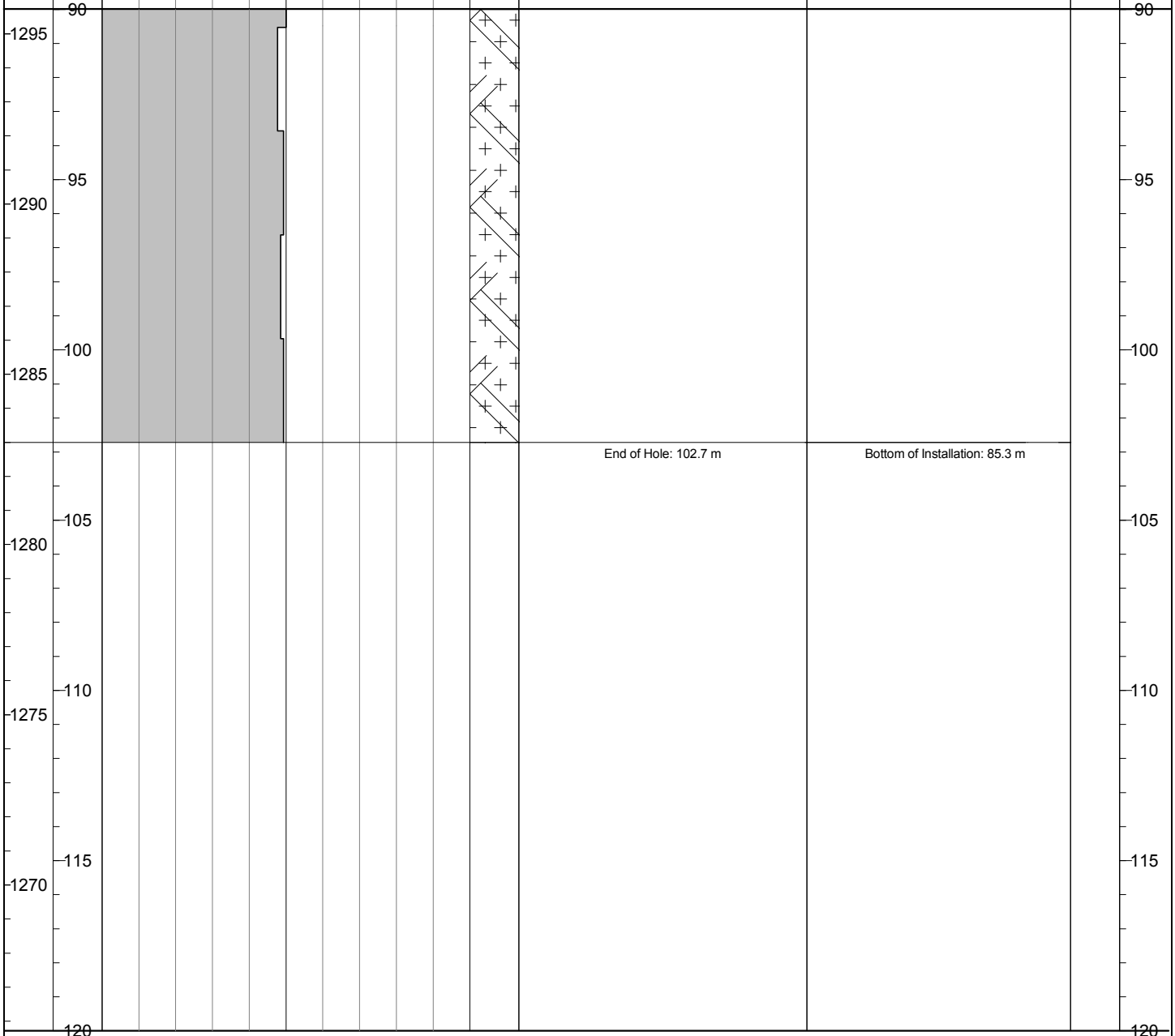
DRILL HOLE # MW-BGC11-BJ-1A

Location: West Zone

Co-ordinates (m): 426,280E - 6,258,840N
Ground Elevation (m): 1,385.72
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.57
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1386.3
Cased To (m): 3

Start date: 30 Sep 11
Finish Date: 02 Oct 11
Final Depth (m): 102.7
Depth To Top Of Rock (m): 0.3
Logged by: Pretium
Reviewed by: BGC



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

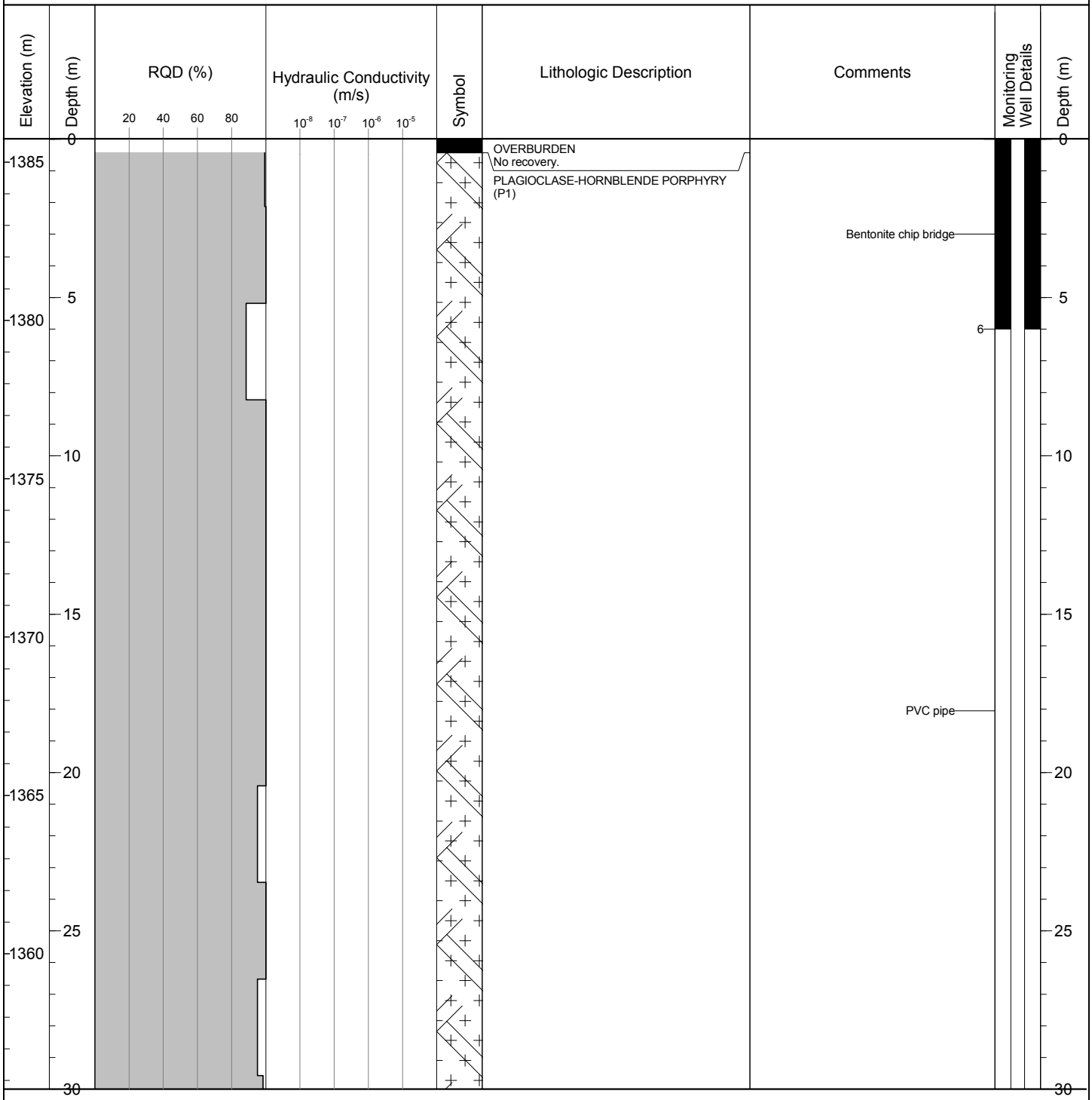
DRILL HOLE # MW-BGC11-BJ-1B

Location: West Zone

Co-ordinates (m): 426,280E - 6,258,841N
Ground Elevation (m): 1,385.72
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.67
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1386.4
Cased To (m): NO CASING INSTALLED

Start date: 02 Oct 11
Finish Date: 02 Oct 11
Final Depth (m): 38.7
Depth To Top Of Rock (m): 0.4
Logged by: Pretium
Reviewed by: BGC



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

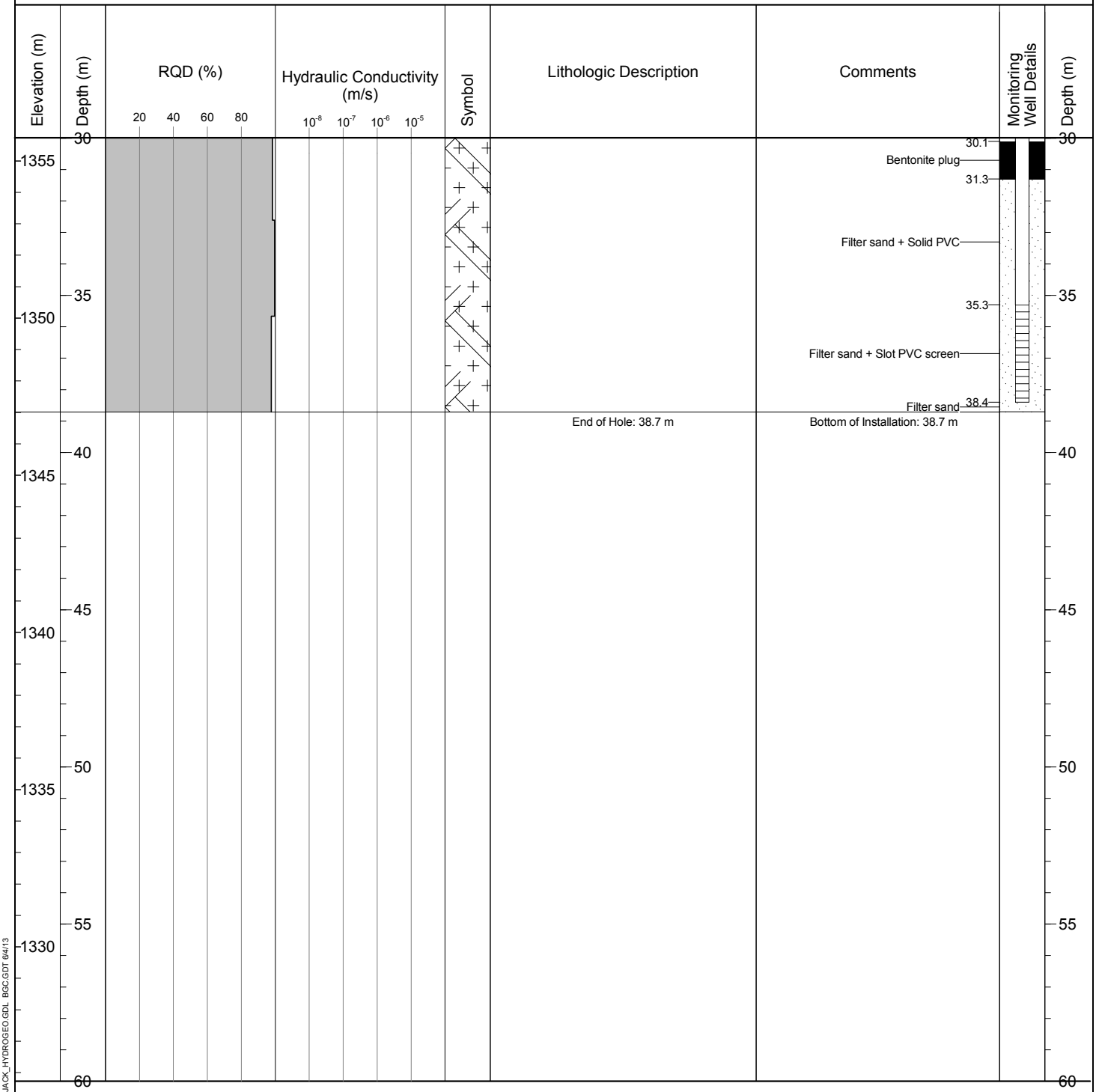
DRILL HOLE # MW-BGC11-BJ-1B

Location: West Zone

Co-ordinates (m): 426,280E - 6,258,841N
Ground Elevation (m): 1,385.72
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.67
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1386.4
Cased To (m): NO CASING INSTALLED

Start date: 02 Oct 11
Finish Date: 02 Oct 11
Final Depth (m): 38.7
Depth To Top Of Rock (m): 0.4
Logged by: Pretium
Reviewed by: BGC



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

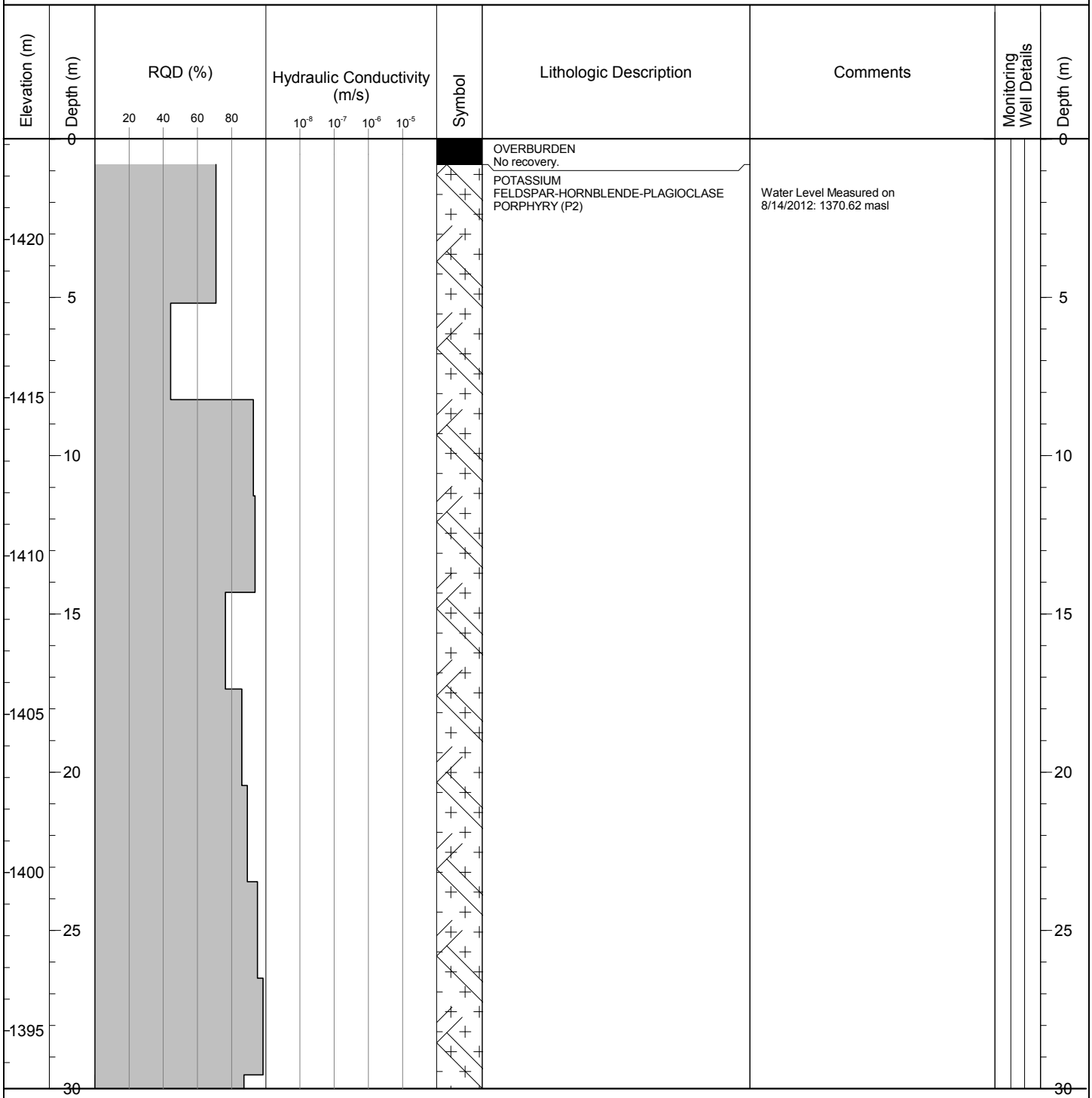
DRILL HOLE # MW-BGC11-BJ-2A

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,885E - 6,258,812N
Ground Elevation (m): 1,423.17
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.25
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1423.4
Cased To (m): 3

Start date: 01 Oct 11
Finish Date: 03 Oct 11
Final Depth (m): 99.7
Depth To Top Of Rock (m): 0.8
Logged by: Pretium
Reviewed by: BGC



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

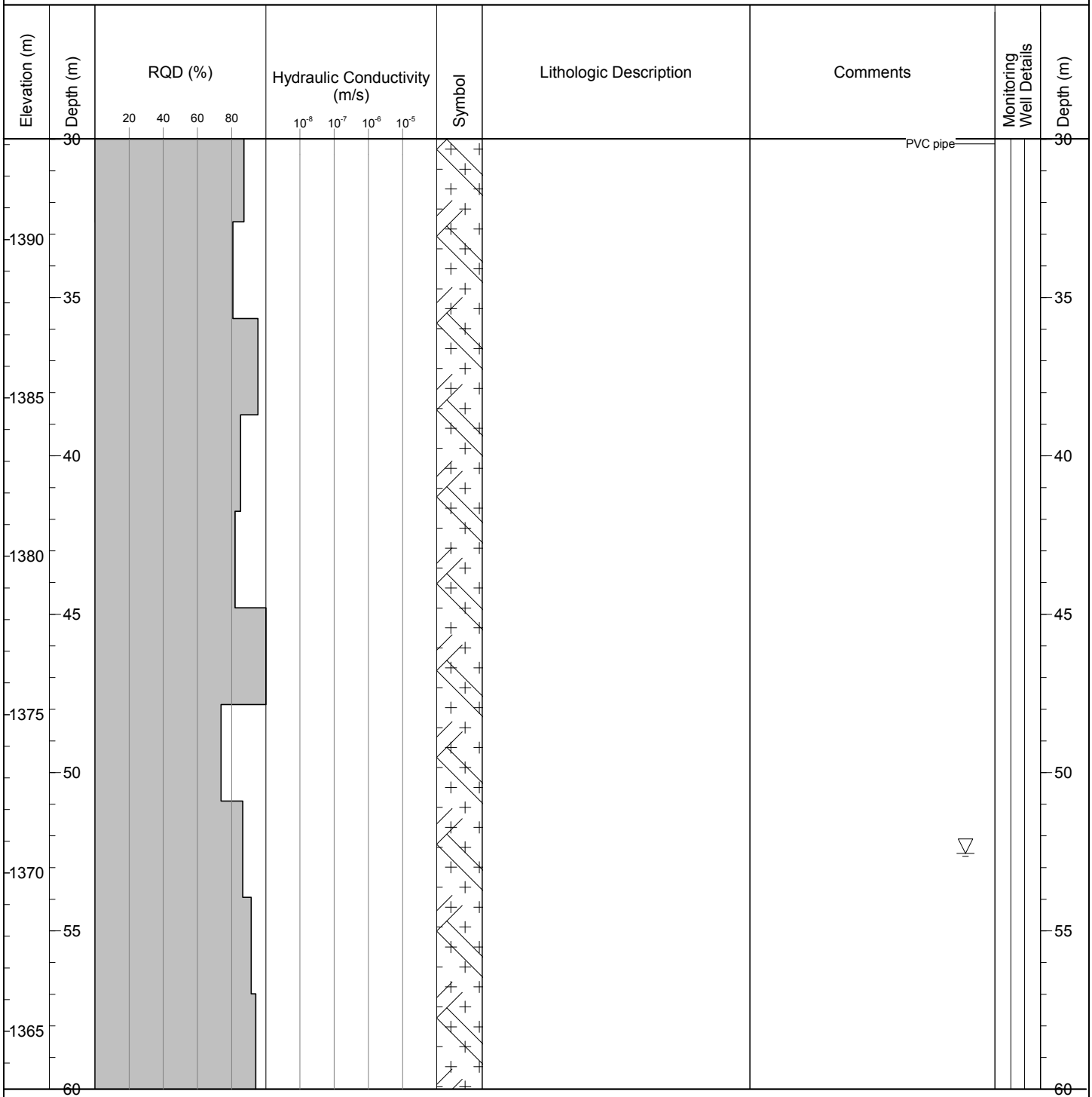
DRILL HOLE # MW-BGC11-BJ-2A

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,885E - 6,258,812N
Ground Elevation (m): 1,423.17
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.25
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1423.4
Cased To (m): 3

Start date: 01 Oct 11
Finish Date: 03 Oct 11
Final Depth (m): 99.7
Depth To Top Of Rock (m): 0.8
Logged by: Pretium
Reviewed by: BGC



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AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

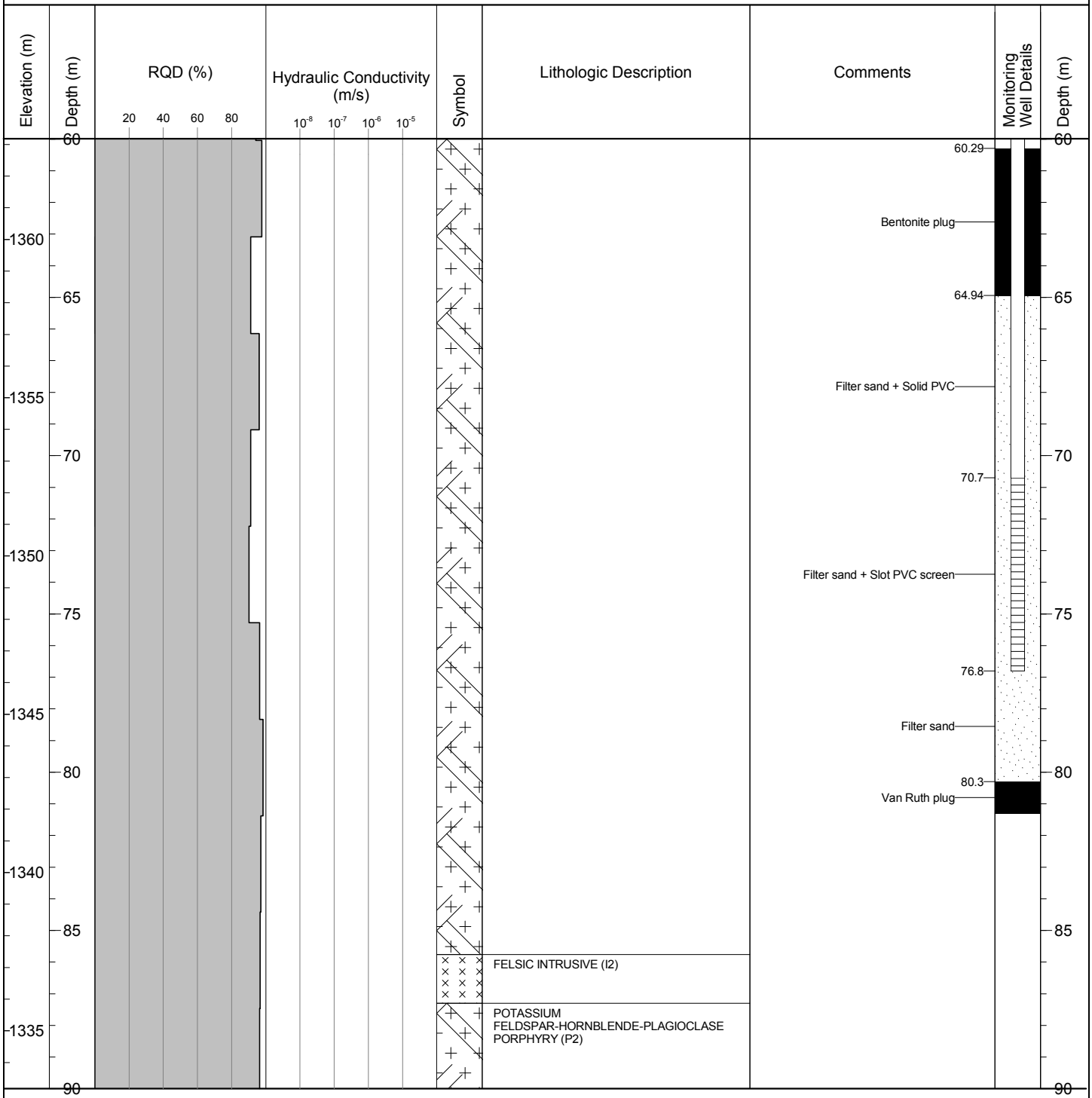
DRILL HOLE # MW-BGC11-BJ-2A

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,885E - 6,258,812N
Ground Elevation (m): 1,423.17
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.25
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1423.4
Cased To (m): 3

Start date: 01 Oct 11
Finish Date: 03 Oct 11
Final Depth (m): 99.7
Depth To Top Of Rock (m): 0.8
Logged by: Pretium
Reviewed by: BGC



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AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

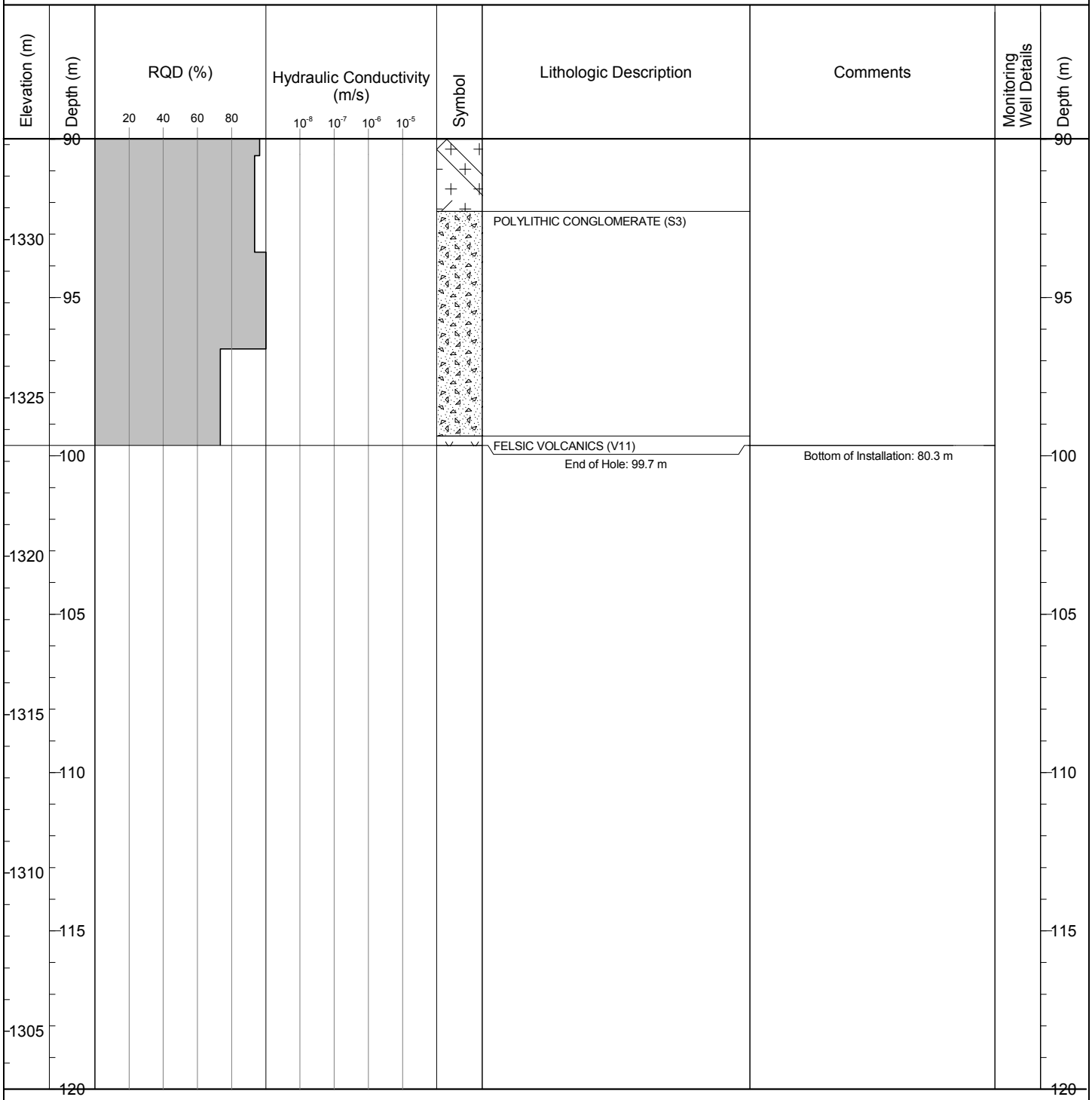
DRILL HOLE # MW-BGC11-BJ-2A

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,885E - 6,258,812N
Ground Elevation (m): 1,423.17
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.25
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1423.4
Cased To (m): 3

Start date: 01 Oct 11
Finish Date: 03 Oct 11
Final Depth (m): 99.7
Depth To Top Of Rock (m): 0.8
Logged by: Pretium
Reviewed by: BGC



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

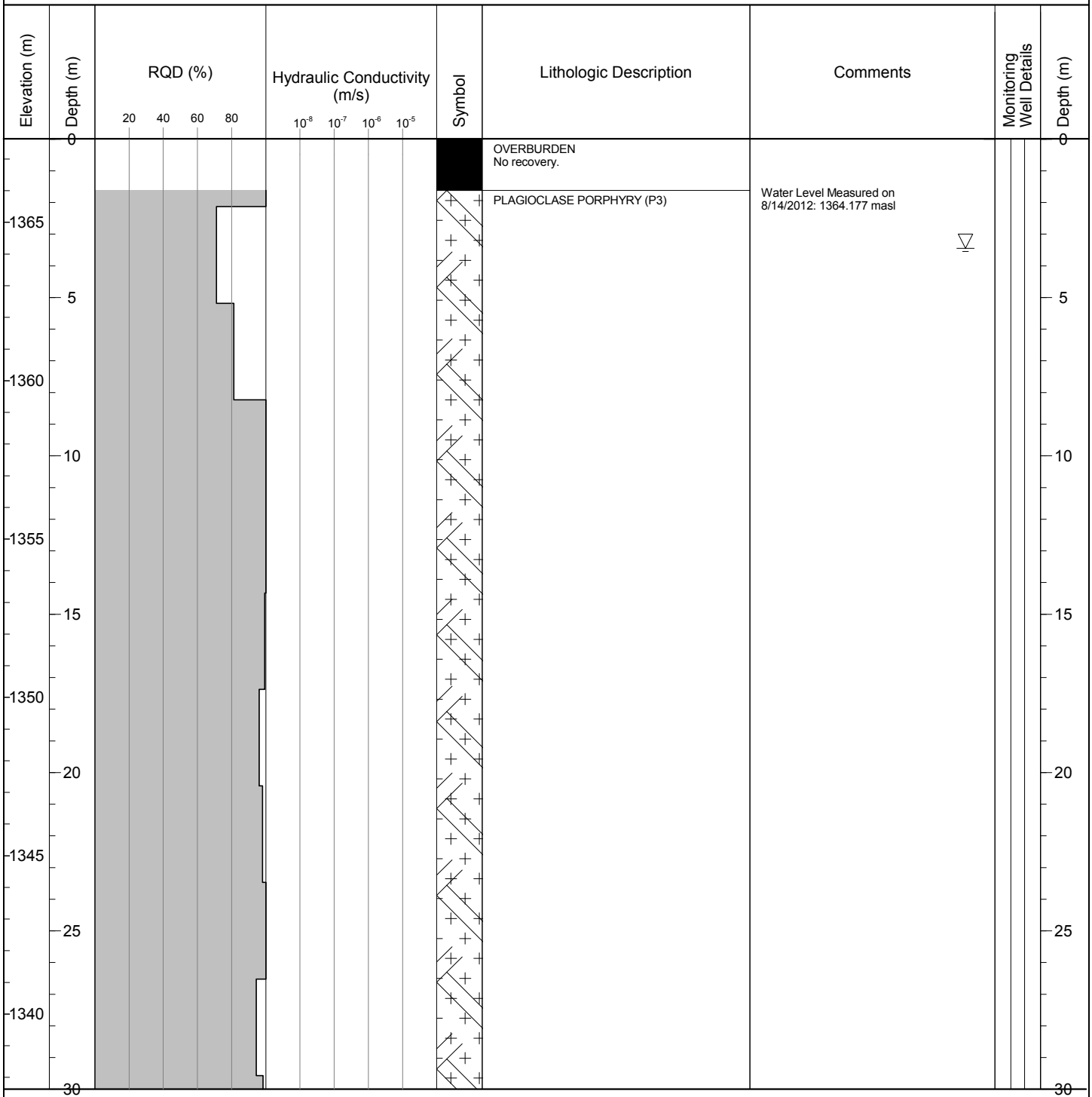
DRILL HOLE # MW-BGC11-BJ-3A

Location: West Zone

Co-ordinates (m): 426,615E - 6,258,844N
Ground Elevation (m): 1,367.63
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 2.11
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1369.7
Cased To (m): 3

Start date: 02 Oct 11
Finish Date: 03 Oct 11
Final Depth (m): 93.6
Depth To Top Of Rock (m): 1.6
Logged by: Pretium
Reviewed by: BGC



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

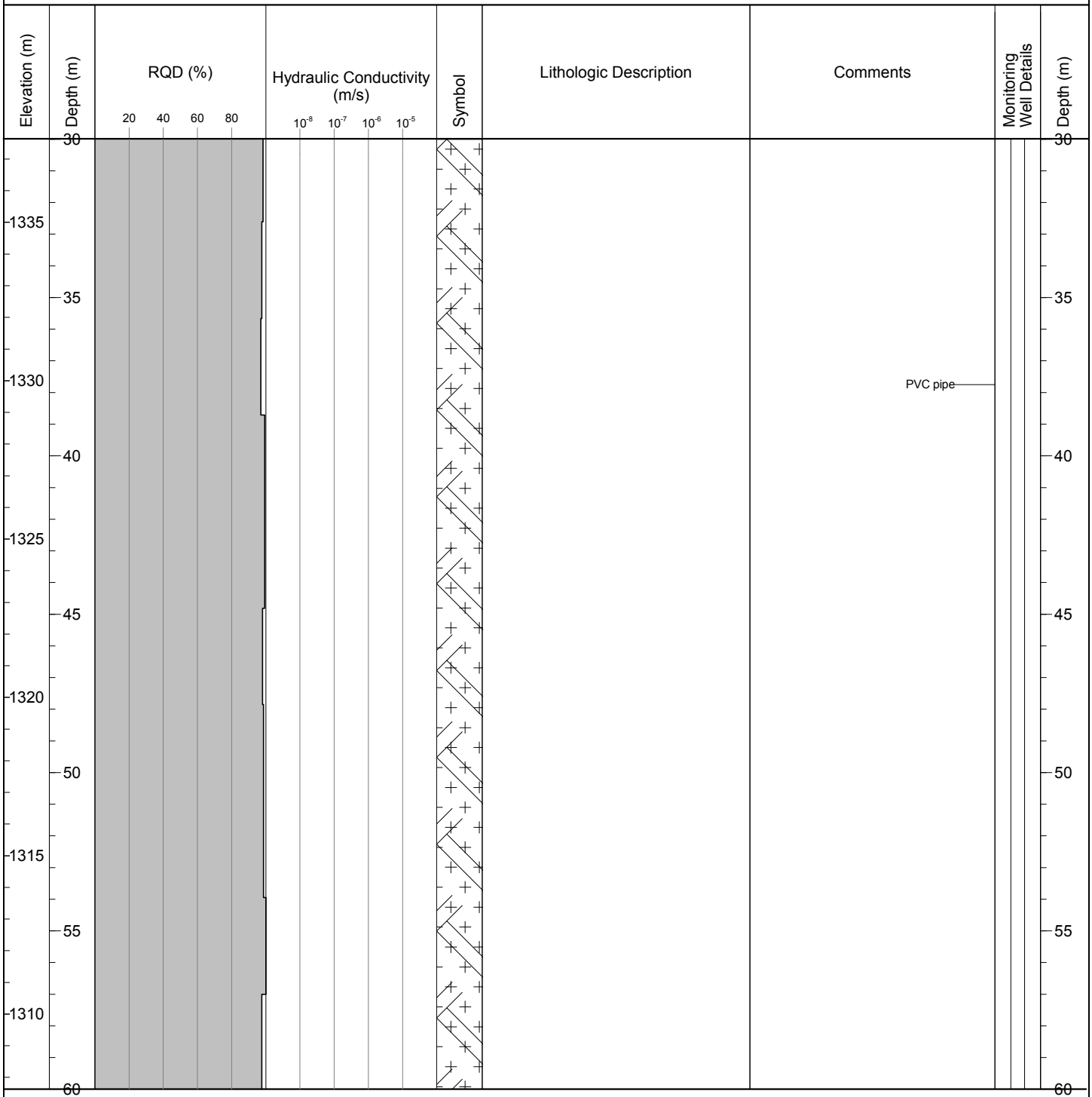
DRILL HOLE # MW-BGC11-BJ-3A

Location: West Zone

Co-ordinates (m): 426,615E - 6,258,844N
Ground Elevation (m): 1,367.63
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 2.11
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1369.7
Cased To (m): 3

Start date: 02 Oct 11
Finish Date: 03 Oct 11
Final Depth (m): 93.6
Depth To Top Of Rock (m): 1.6
Logged by: Pretium
Reviewed by: BGC



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

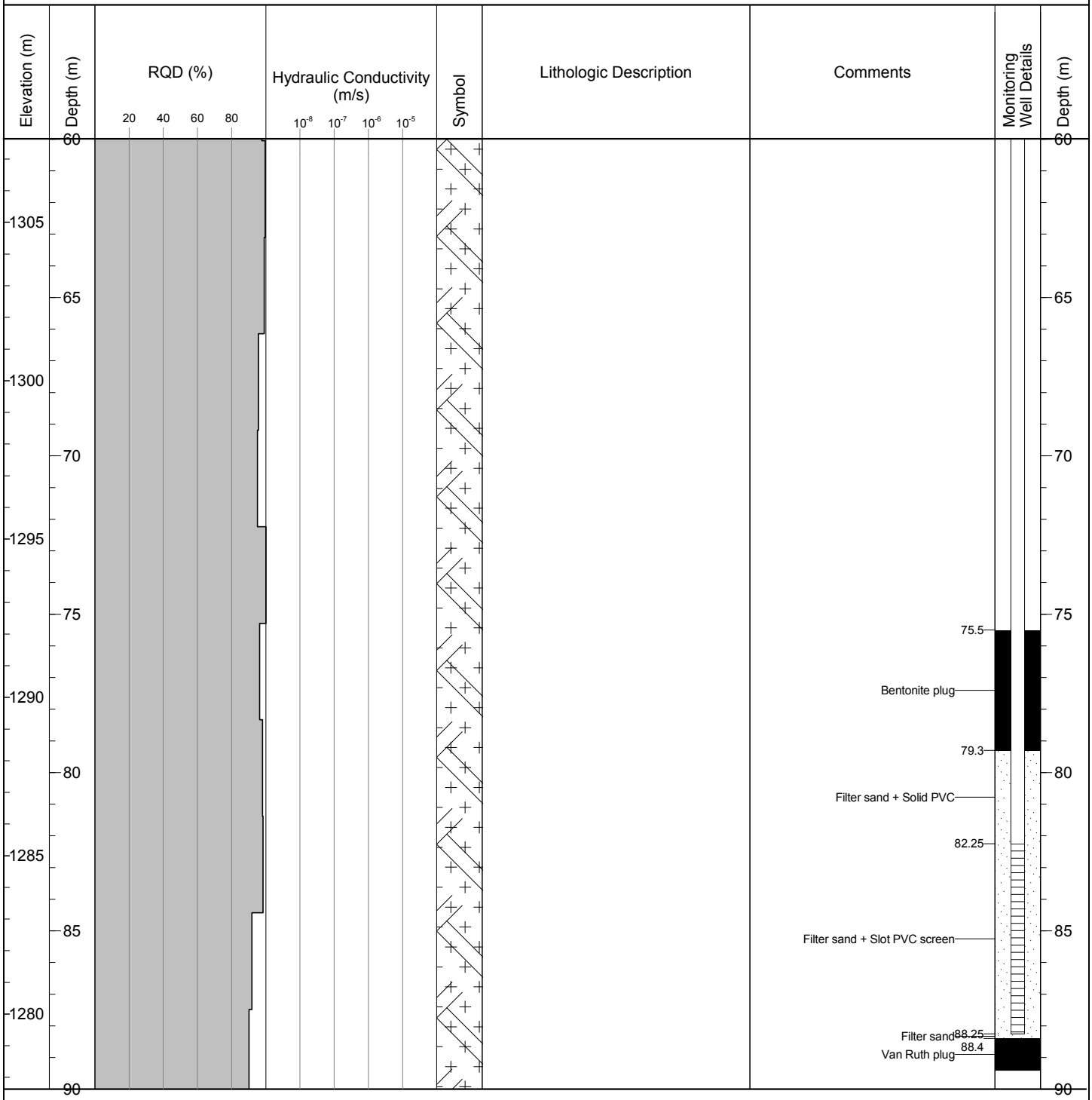
DRILL HOLE # MW-BGC11-BJ-3A

Location: West Zone

Co-ordinates (m): 426,615E - 6,258,844N
Ground Elevation (m): 1,367.63
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 2.11
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1369.7
Cased To (m): 3

Start date: 02 Oct 11
Finish Date: 03 Oct 11
Final Depth (m): 93.6
Depth To Top Of Rock (m): 1.6
Logged by: Pretium
Reviewed by: BGC



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

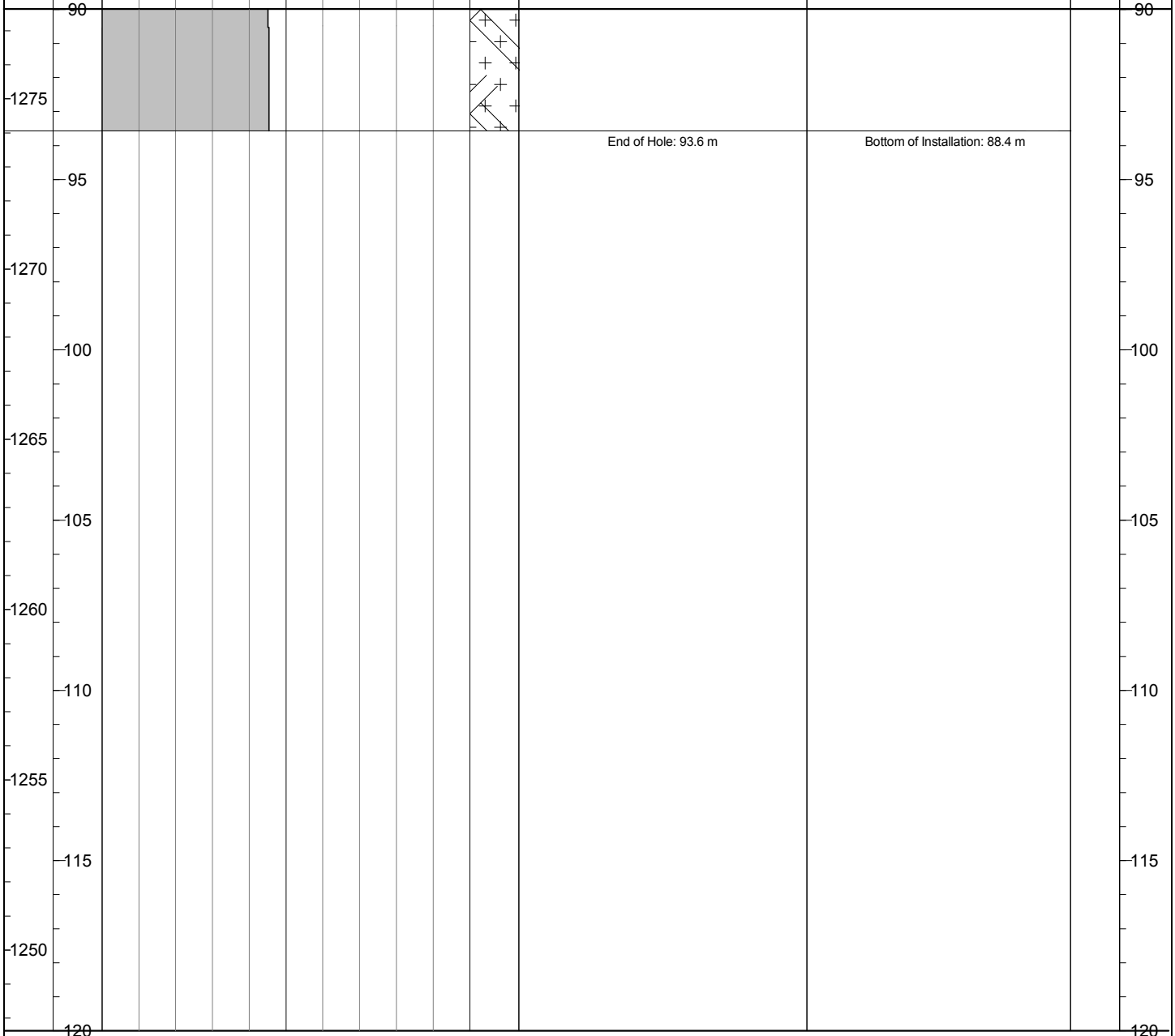
DRILL HOLE # MW-BGC11-BJ-3A

Location: West Zone

Co-ordinates (m): 426,615E - 6,258,844N
Ground Elevation (m): 1,367.63
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 2.11
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1369.7
Cased To (m): 3

Start date: 02 Oct 11
Finish Date: 03 Oct 11
Final Depth (m): 93.6
Depth To Top Of Rock (m): 1.6
Logged by: Pretium
Reviewed by: BGC



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

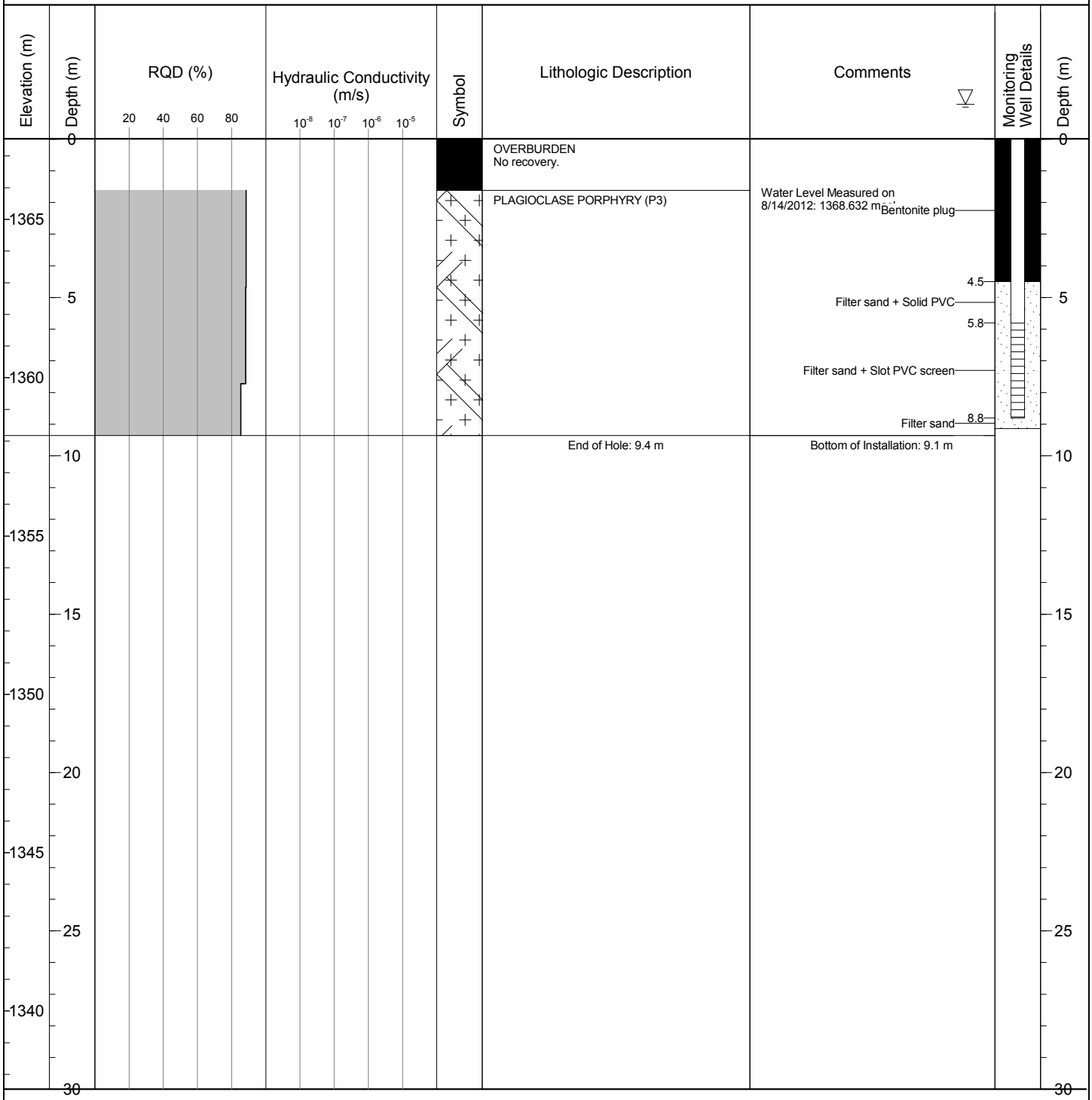
DRILL HOLE # MW-BGC11-BJ-3B

Location: West Zone

Co-ordinates (m): 426,615E - 6,258,844N
Ground Elevation (m): 1,367.53
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 2.23
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1369.8
Cased To (m): 3

Start date: 03 Oct 11
Finish Date: 04 Oct 11
Final Depth (m): 9.4
Depth To Top Of Rock (m): 1.6
Logged by: Pretium
Reviewed by: BGC



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

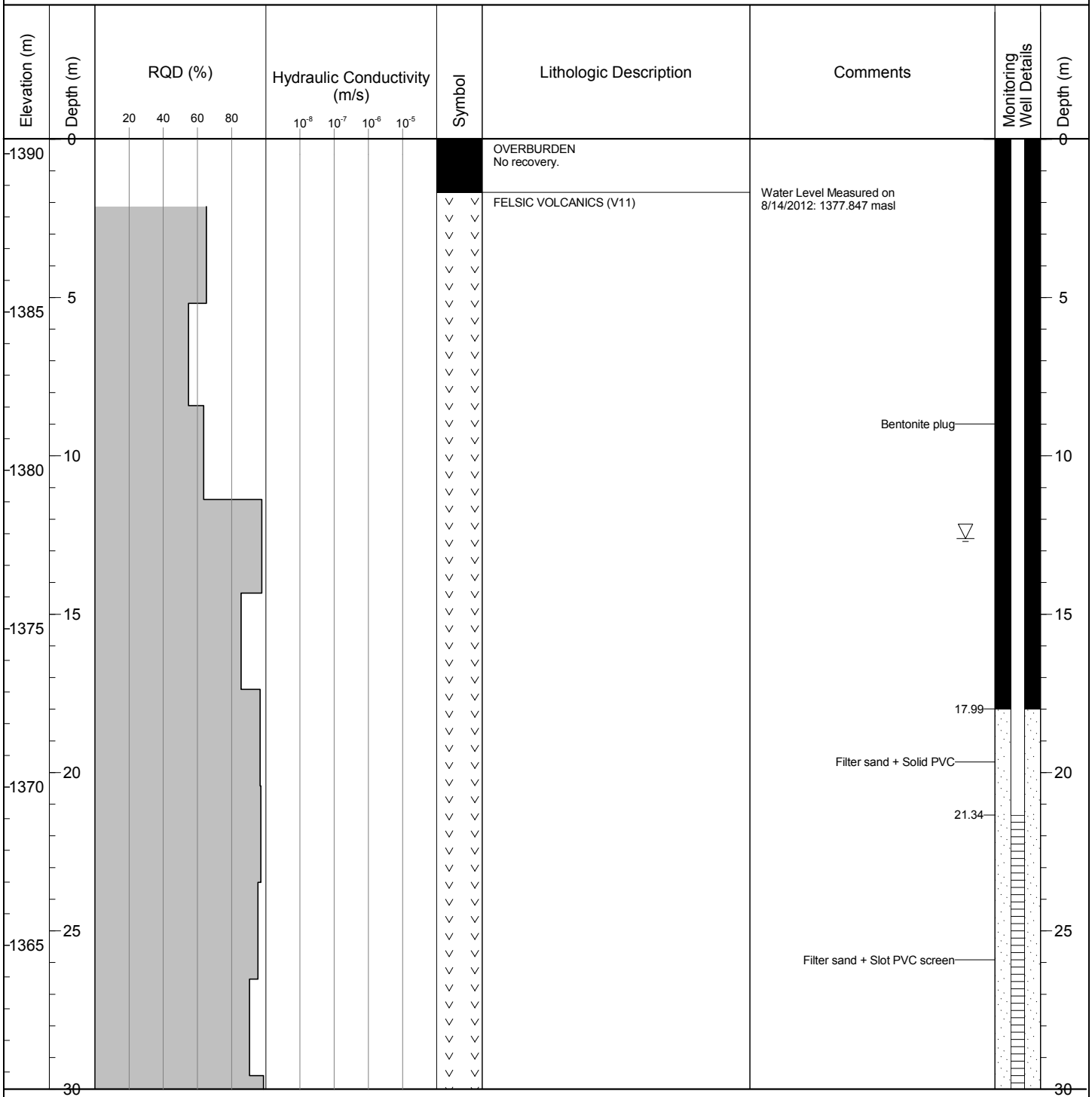
DRILL HOLE # MW-BGC11-BJ-4A

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,031E - 6,258,750N
Ground Elevation (m): 1,390.46
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.4
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1390.9
Cased To (m): 3

Start date: 04 Oct 11
Finish Date: 04 Oct 11
Final Depth (m): 32.6
Depth To Top Of Rock (m): 1.7
Logged by: Pretium
Reviewed by: BGC



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

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Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
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Cased To (m): 3

Start date: 04 Oct 11
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Final Depth (m): 32.6
Depth To Top Of Rock (m): 1.7
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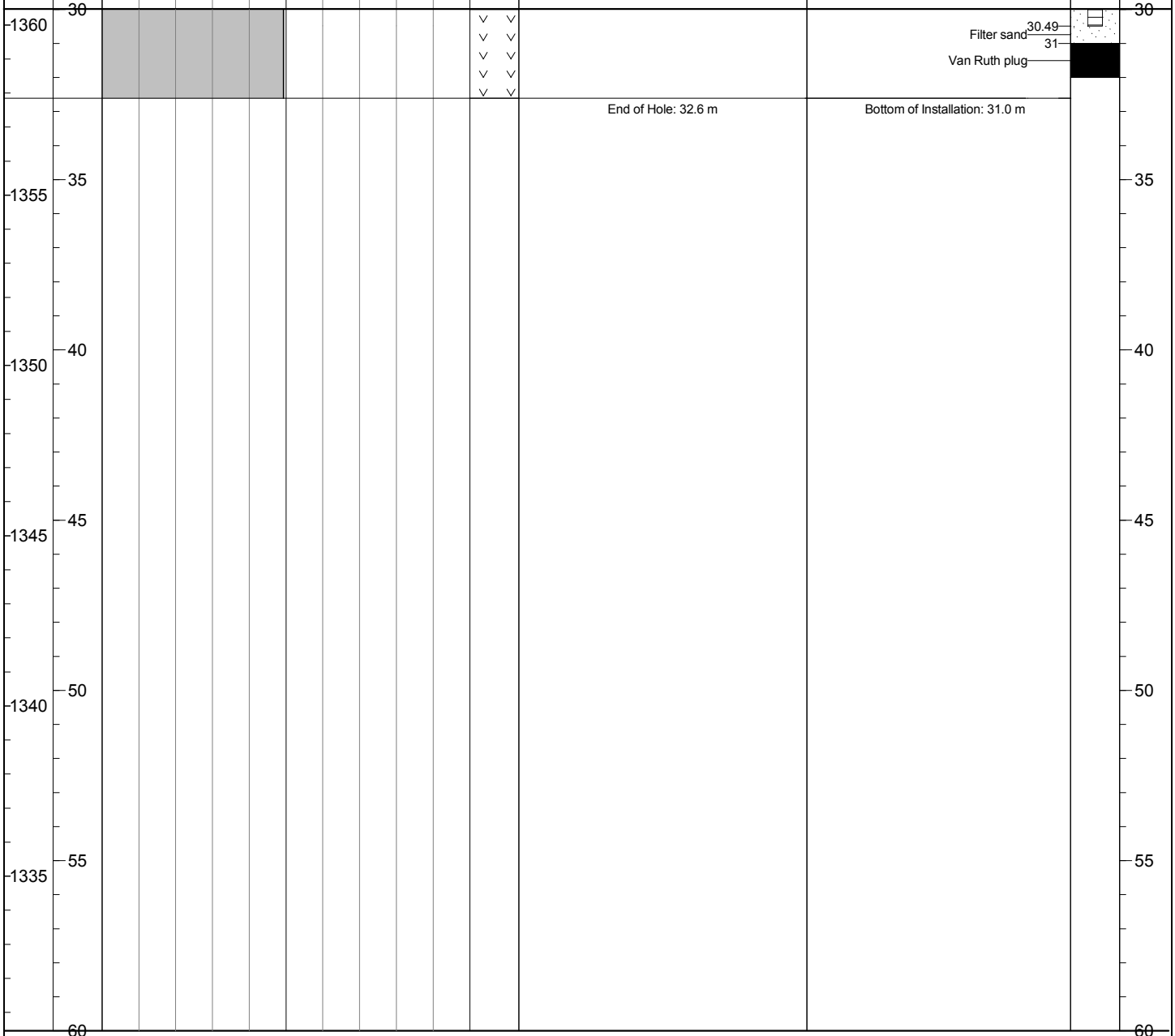

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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

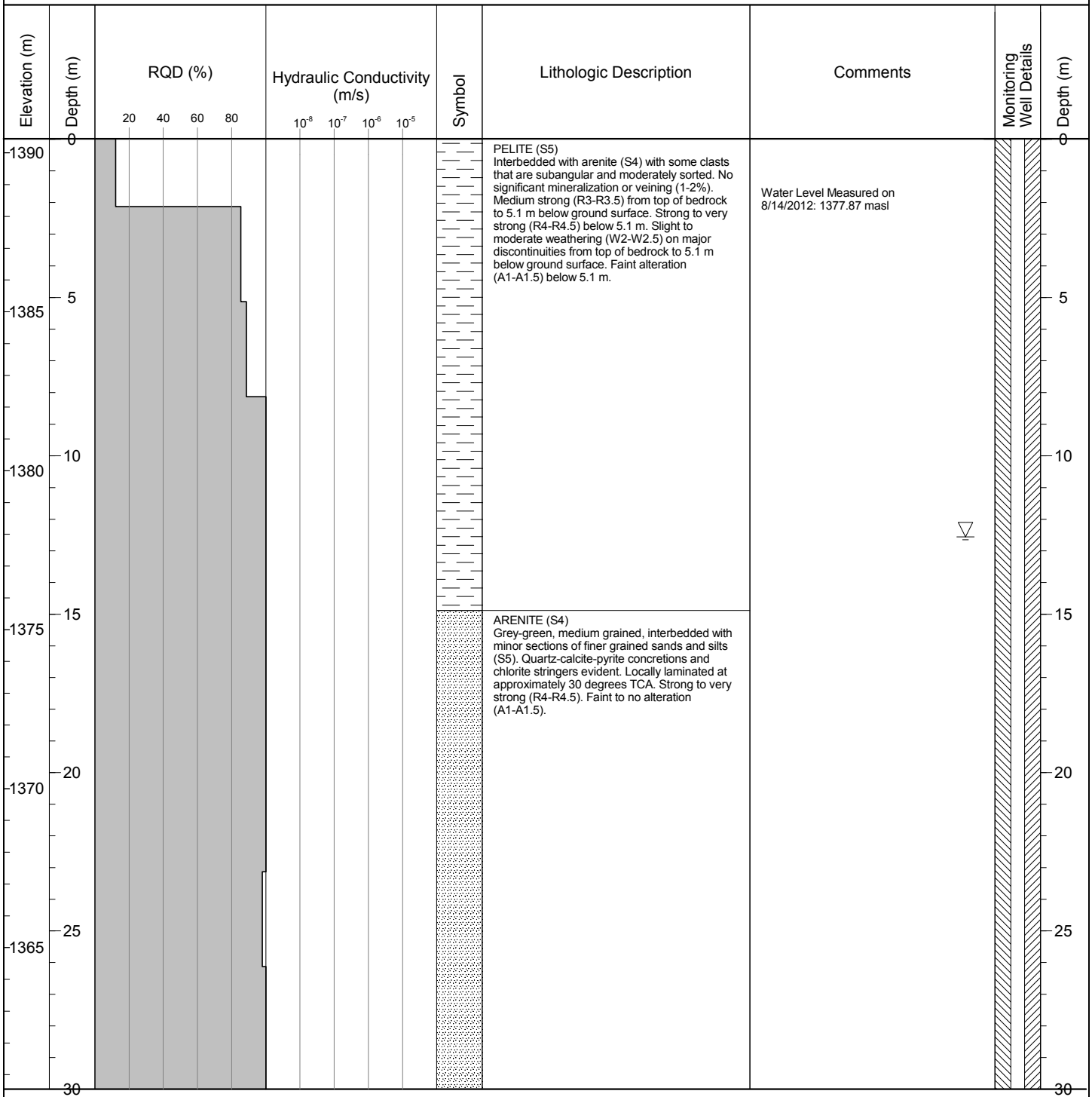
DRILL HOLE # MW-BGC12-BJ-4B

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,031E - 6,258,752N
Ground Elevation (m): 1,390.43
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.67
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1391.1
Cased To (m): 1.98

Start date: 19 Jun 12
Finish Date: 20 Jun 12
Final Depth (m): 98.1
Depth To Top Of Rock (m): 0.0
Logged by: LM/RH
Reviewed by: KSJ



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
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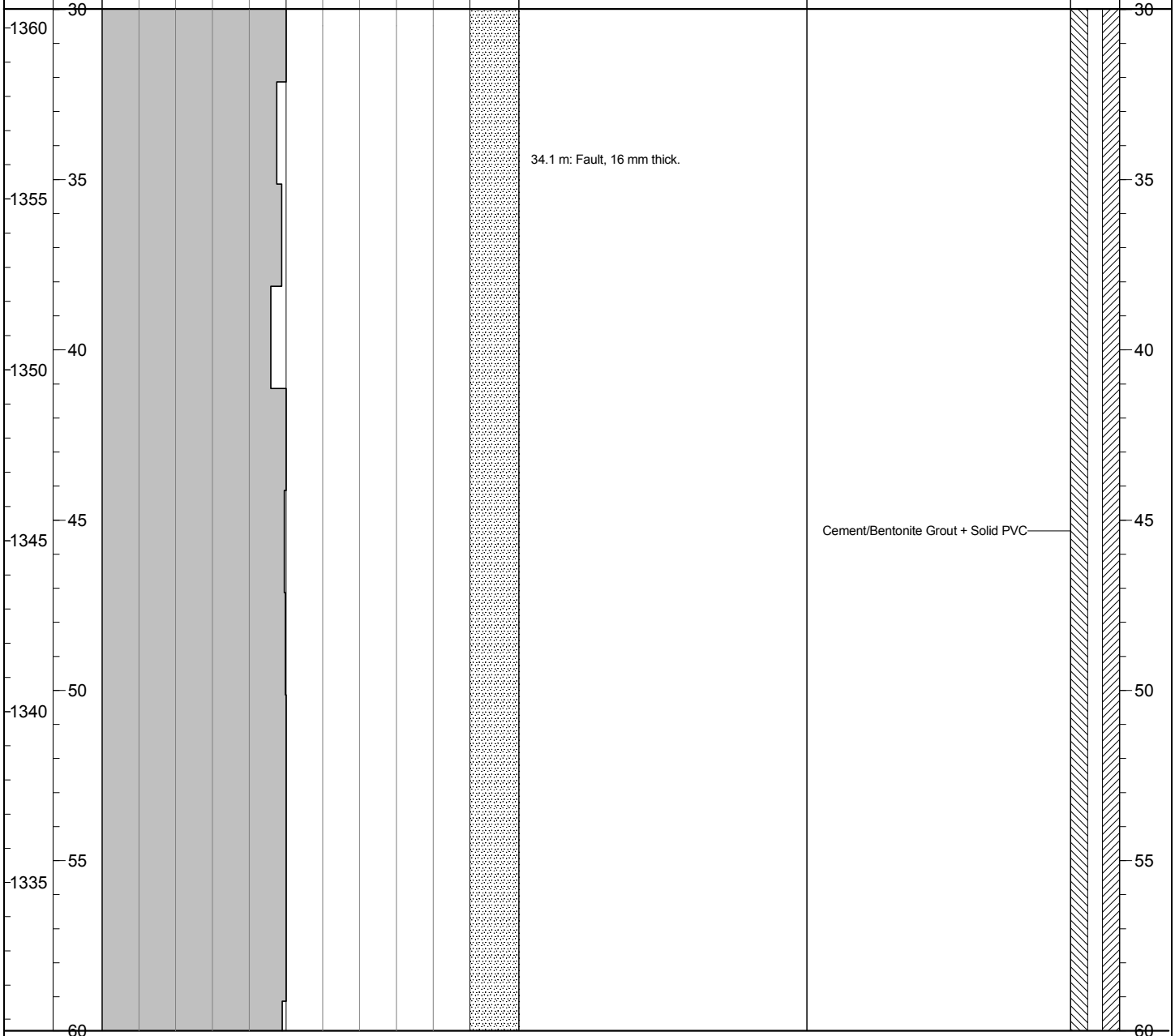

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CLIENT: Pretium Resources Inc.

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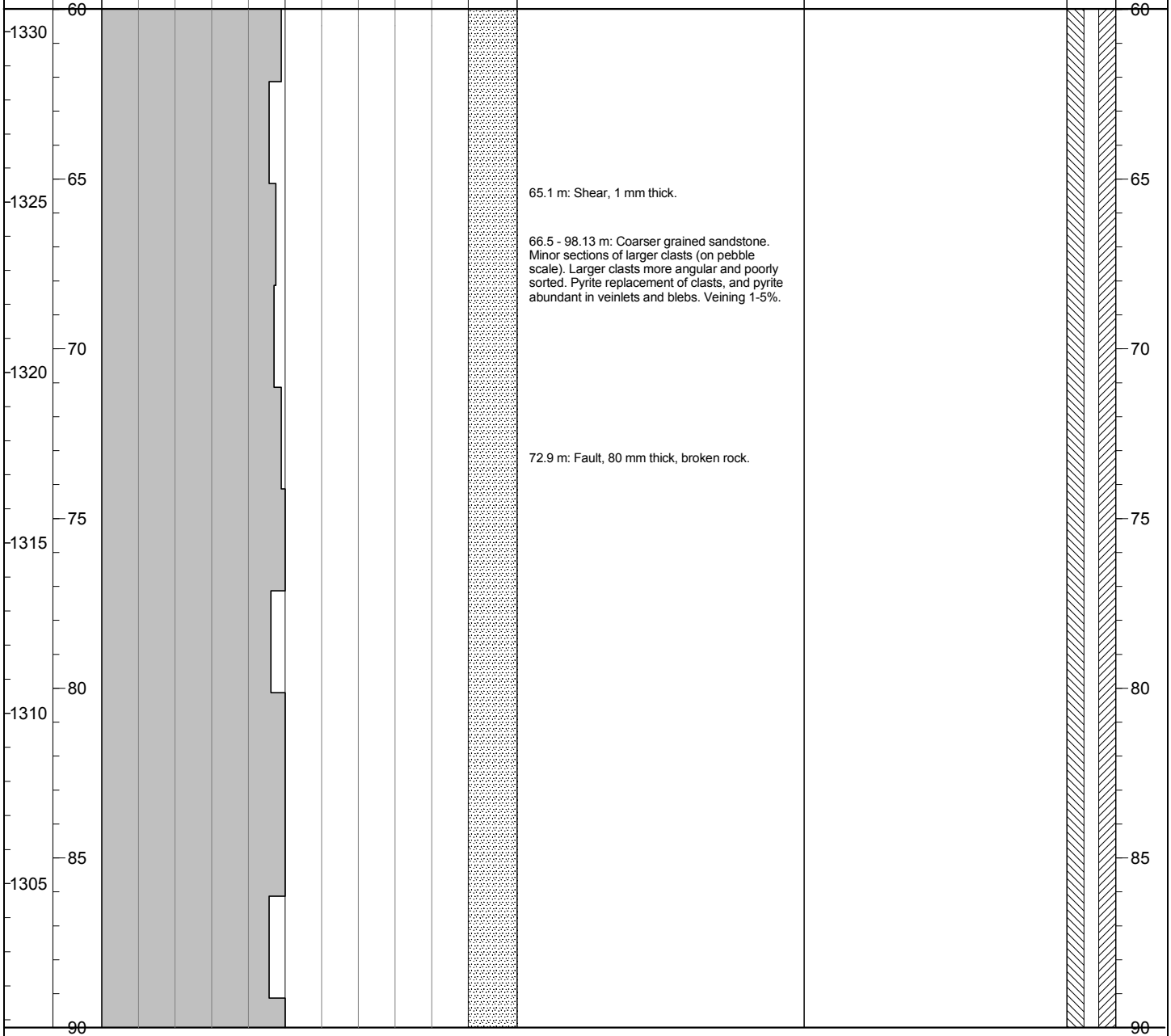

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CLIENT: Pretium Resources Inc.

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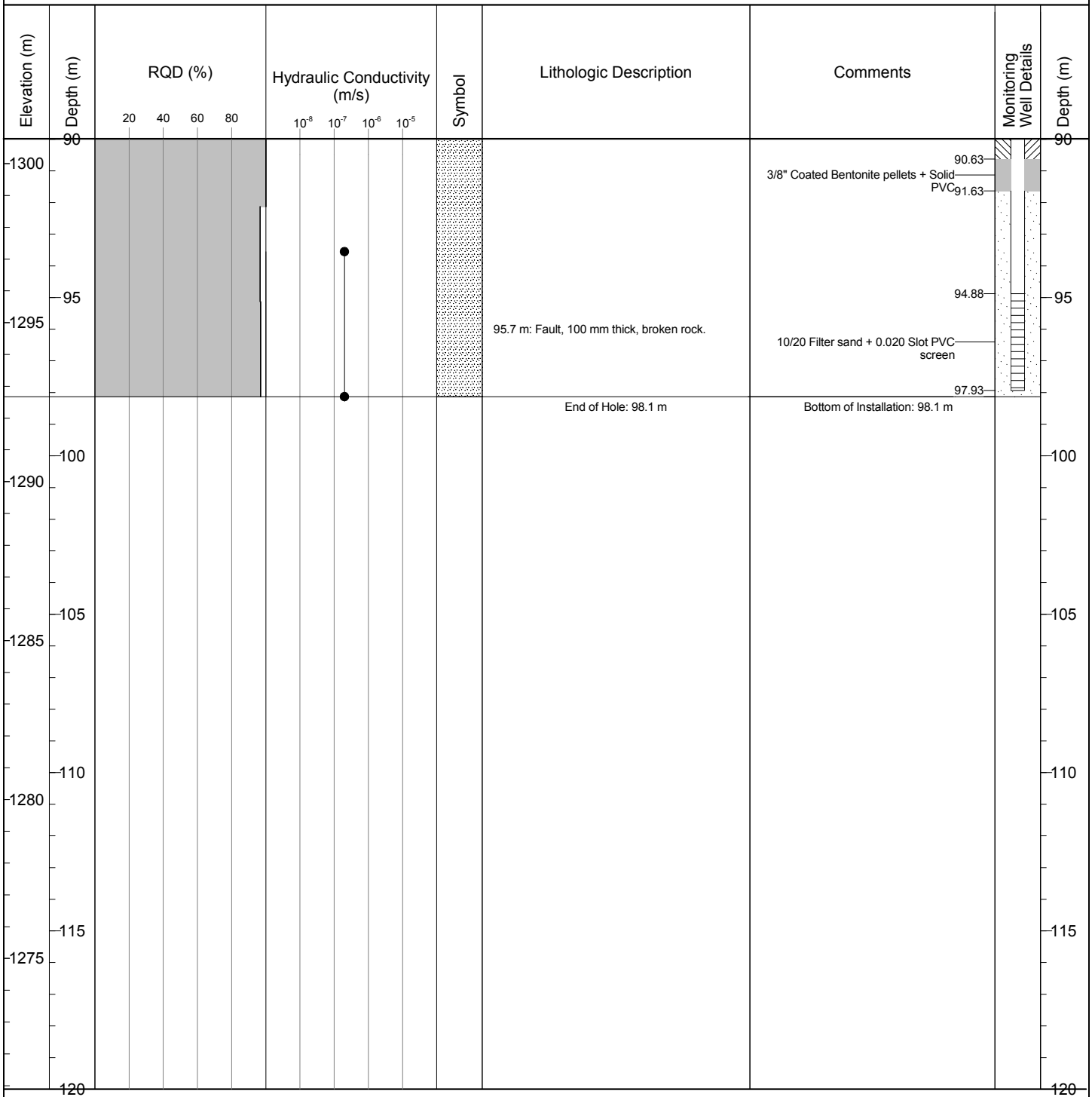

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AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

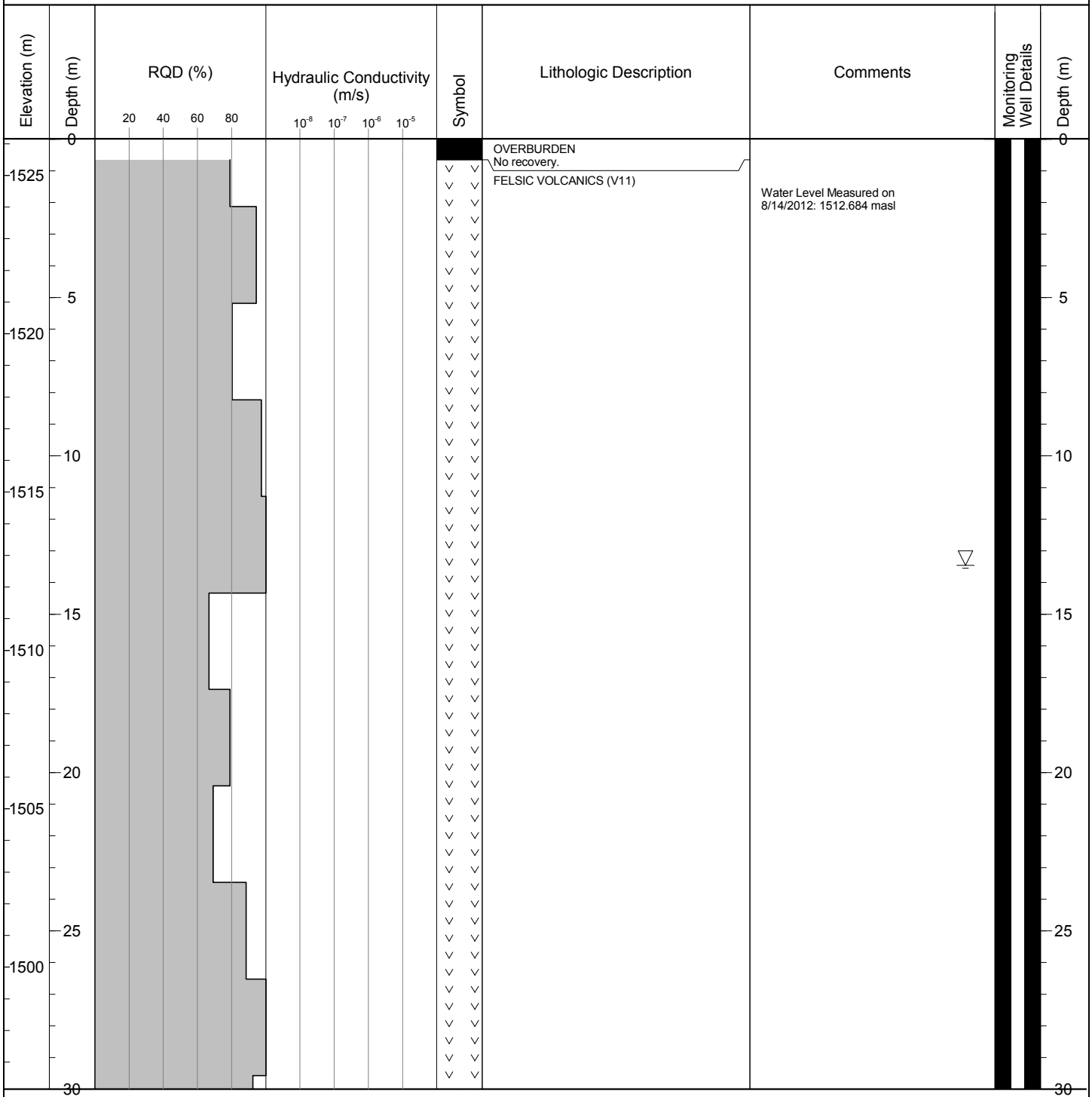
DRILL HOLE # MW-BGC11-BJ-5A

Location: Valley of Kings Zone

Co-ordinates (m): 426,347E - 6,258,040N
Ground Elevation (m): 1,526.14
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.55
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1526.7
Cased To (m): 3

Start date: 28 Sep 11
Finish Date: 29 Sep 11
Final Depth (m): 102.7
Depth To Top Of Rock (m): 0.7
Logged by: Pretium
Reviewed by: BGC



BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

Project: Brucejack
Project No.: 1008-004

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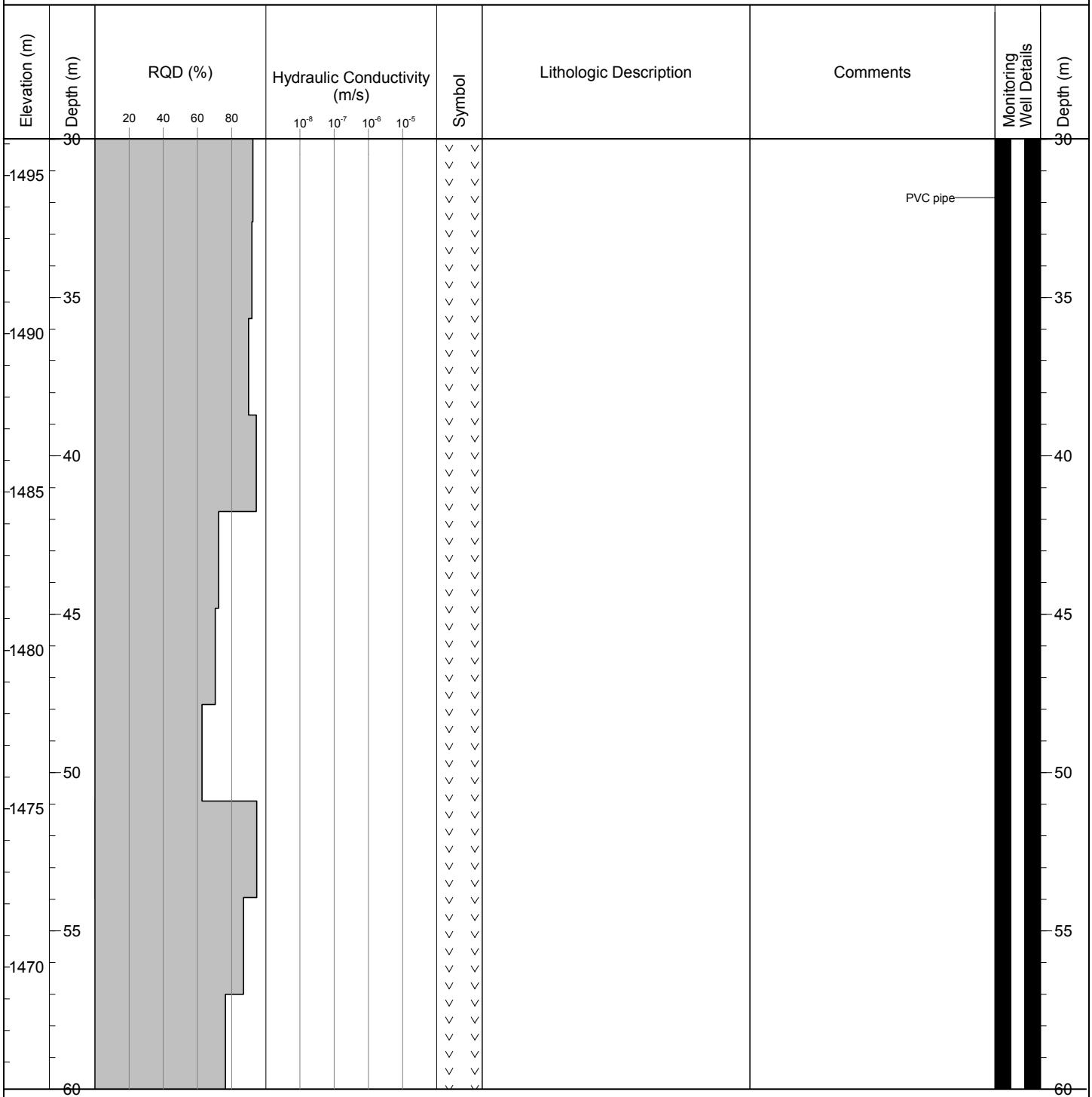

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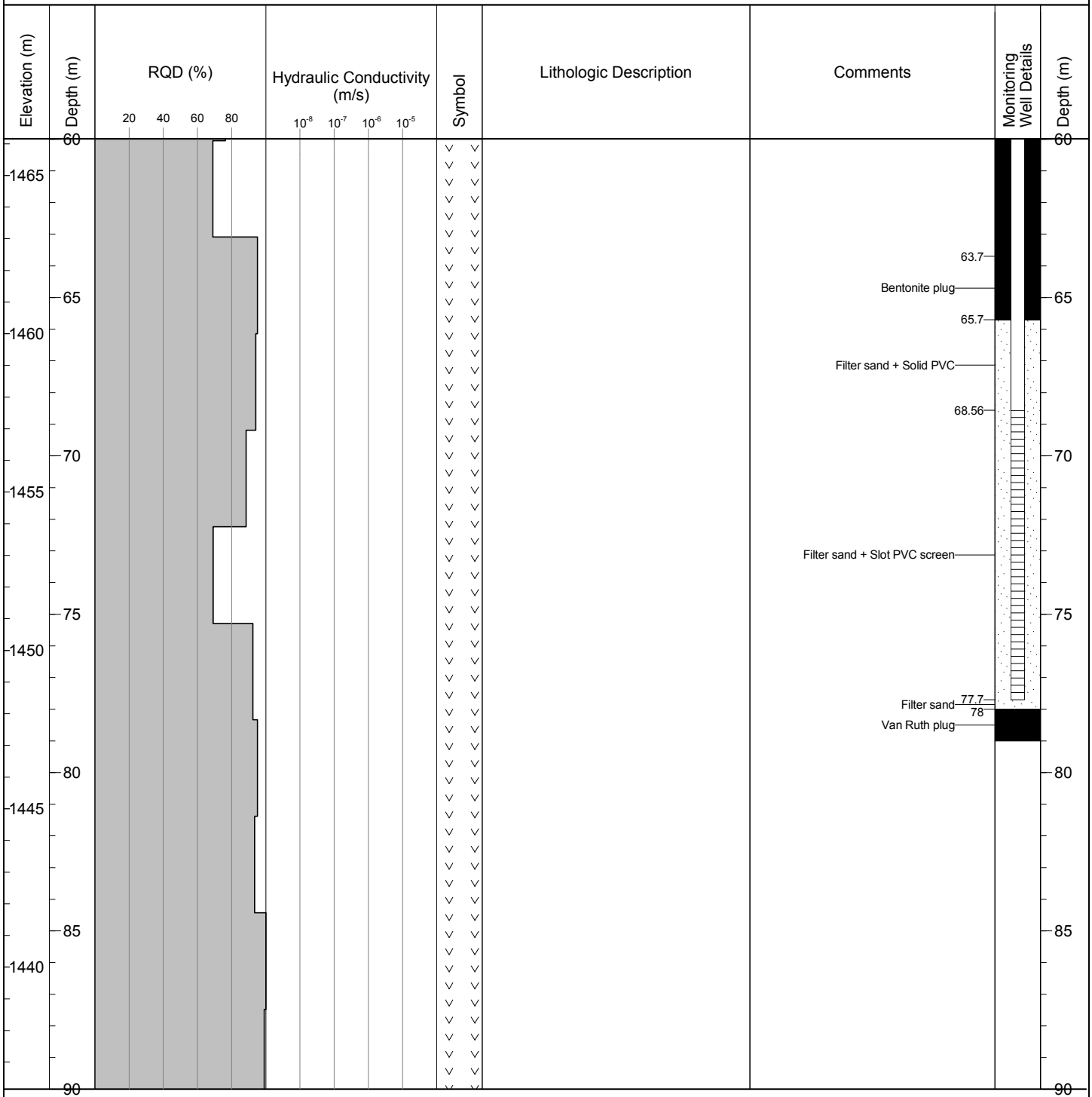

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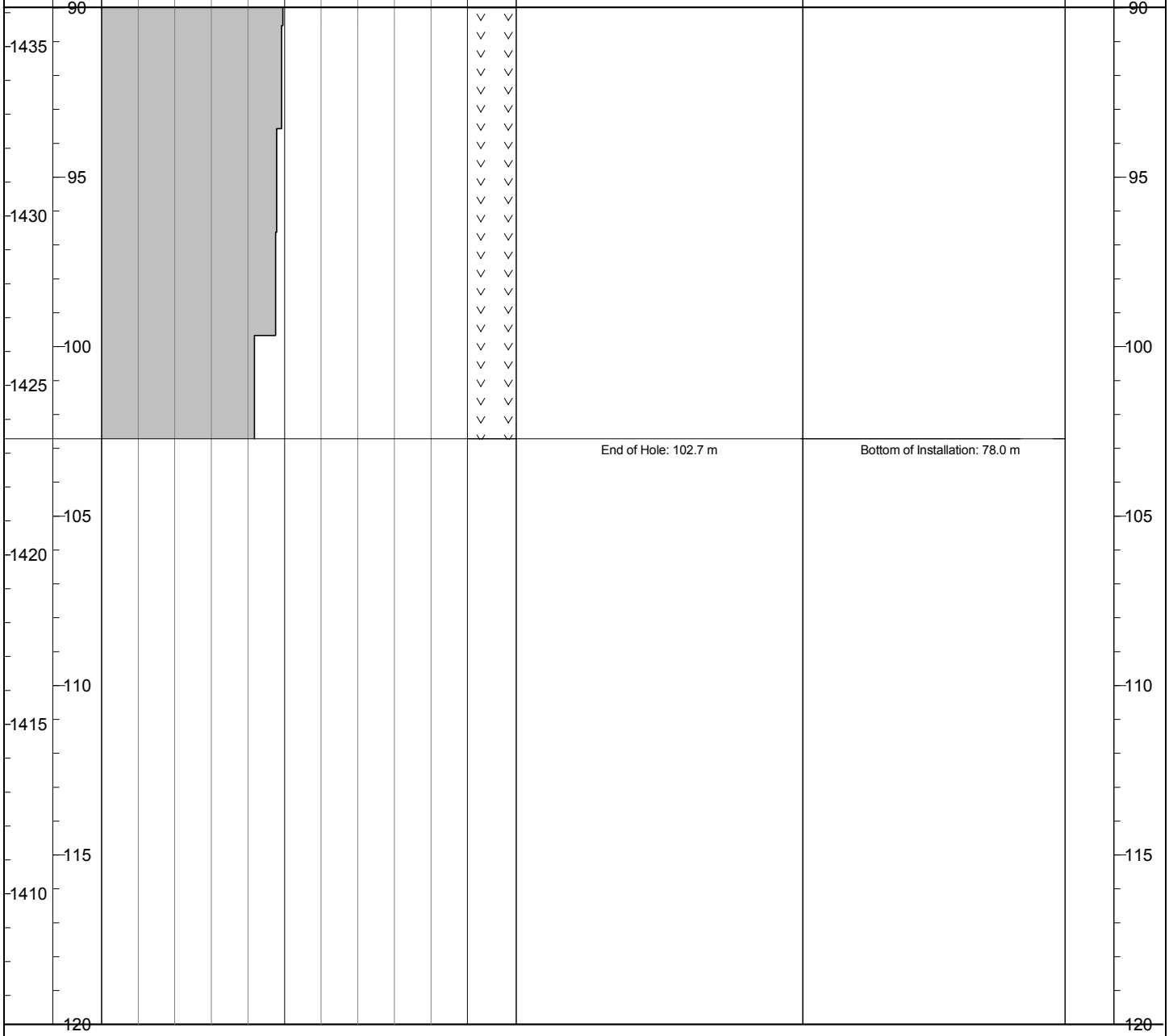


BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

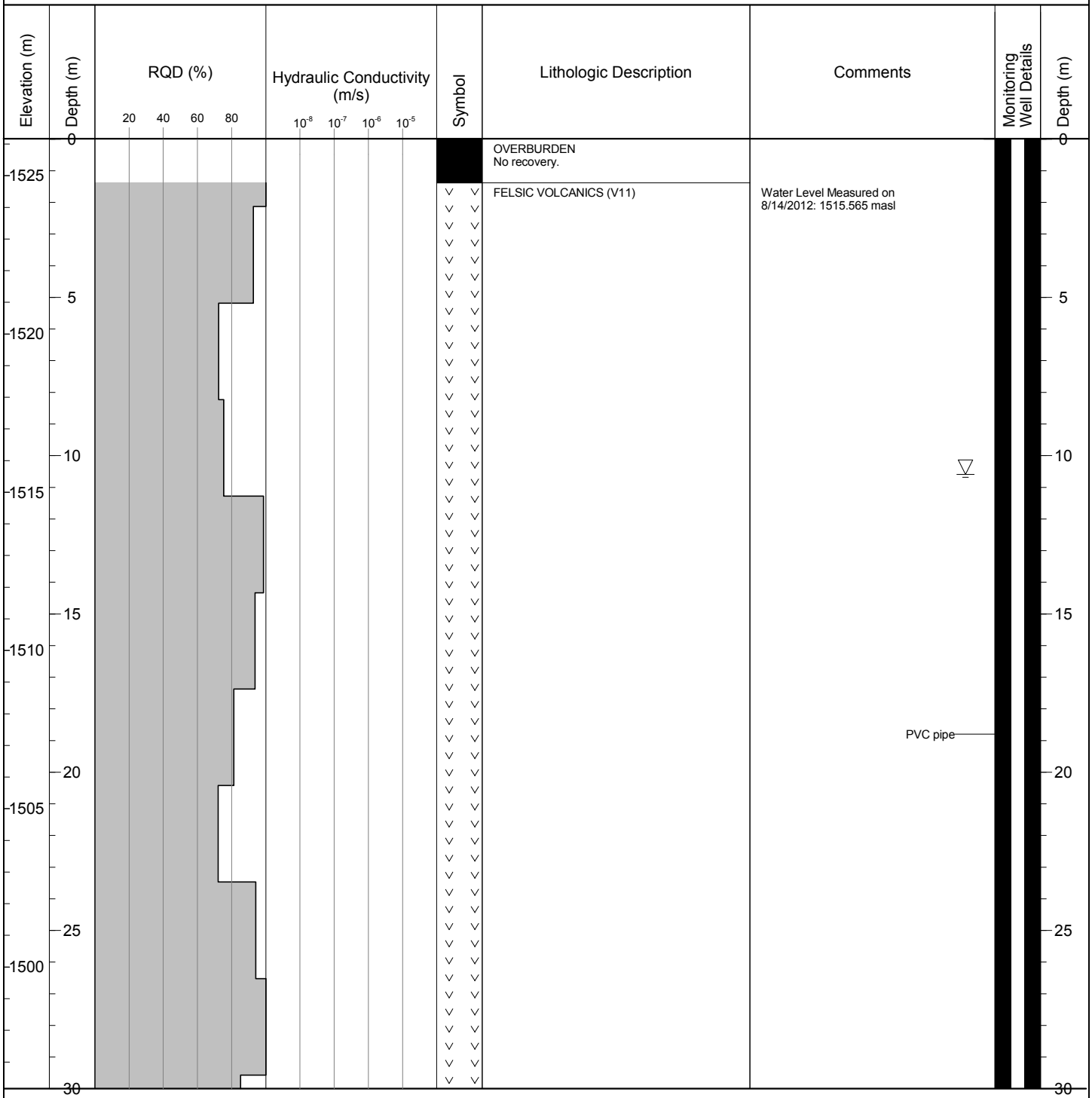
DRILL HOLE # MW-BGC11-BJ-5B

Location: Valley of Kings Zone

Co-ordinates (m): 426,346E - 6,258,042N
Ground Elevation (m): 1,526.16
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.44
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Matrix
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1526.6
Cased To (m): NO CASING INSTALLED

Start date: 29 Sep 11
Finish Date: 30 Sep 11
Final Depth (m): 50.9
Depth To Top Of Rock (m): 1.4
Logged by: Pretium
Reviewed by: BGC



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Project: Brucejack
Project No.: 1008-004

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Drill Designation: Heliportable
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Drill Method: Diamond
Core: HQ
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Depth To Top Of Rock (m): 1.4
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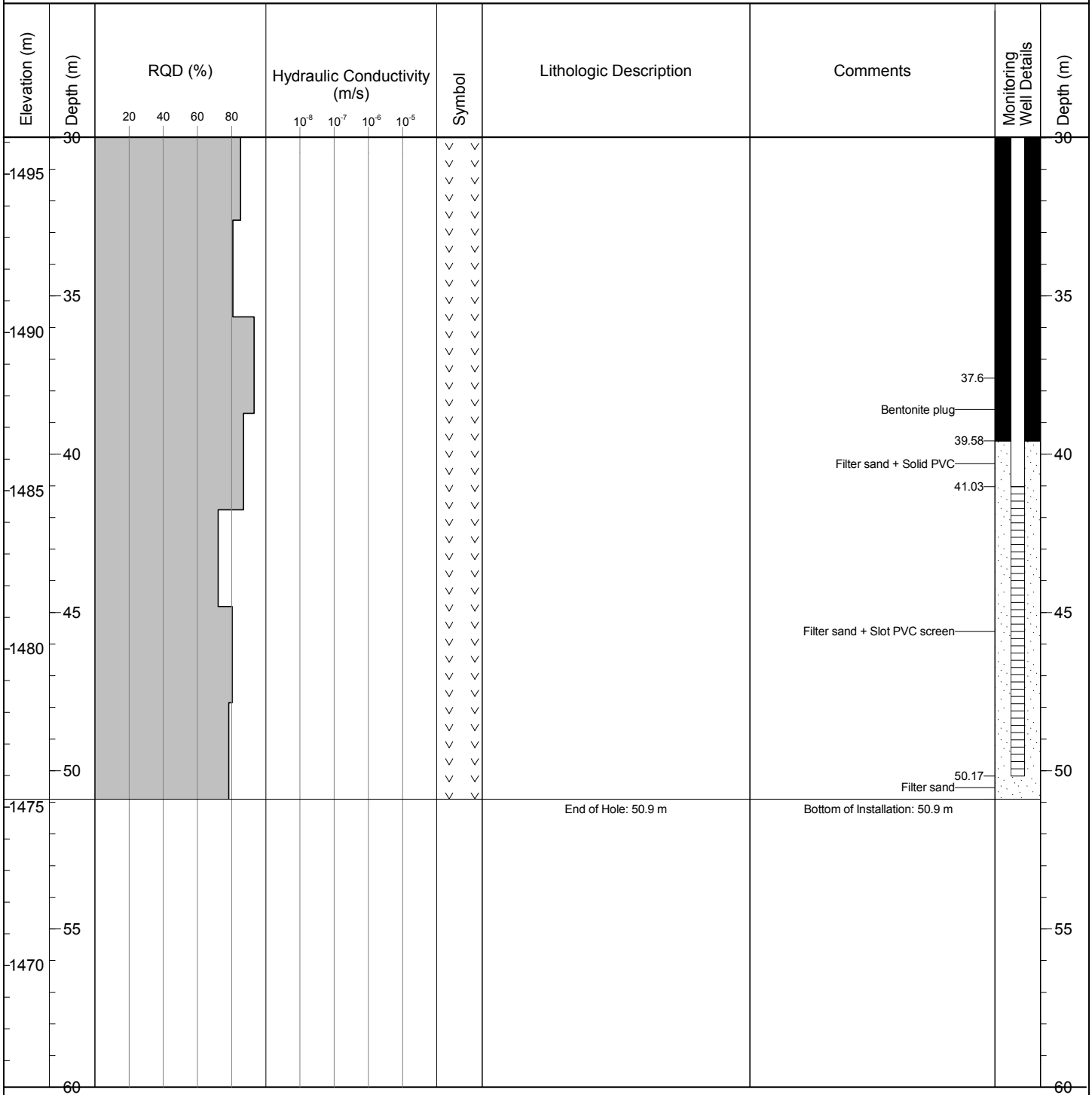

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AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-004

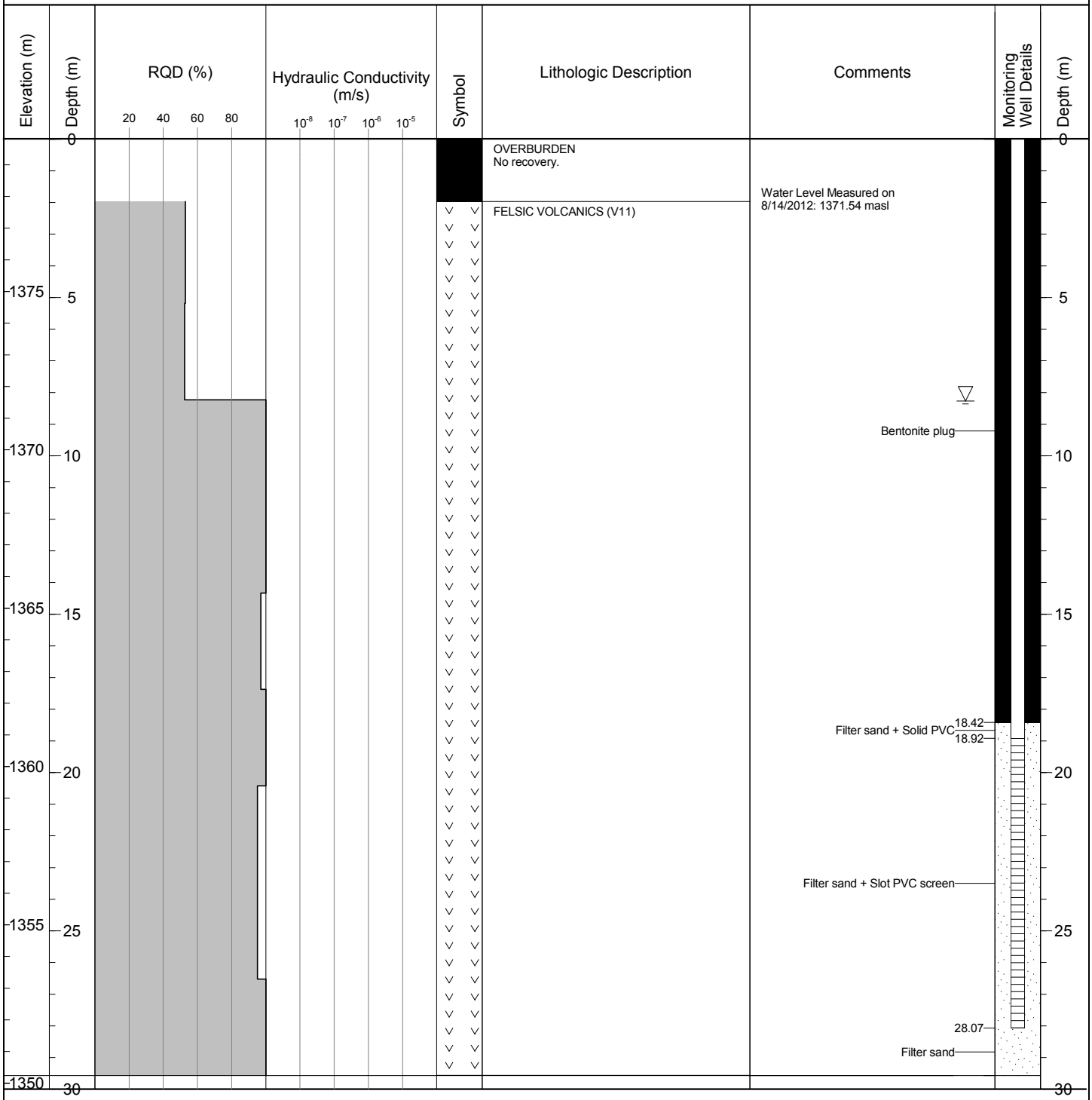
DRILL HOLE # MW-BGC11-BJ-6A

Location: Shore Zone

Co-ordinates (m): 427,095E - 6,258,983N
Ground Elevation (m): 1,379.81
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 1
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1380.8
Cased To (m): 3

Start date: 03 Oct 11
Finish Date: 04 Oct 11
Final Depth (m): 29.6
Depth To Top Of Rock (m): 2.0
Logged by: Pretium
Reviewed by: BGC



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Project No.: 1008-004

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Core: HQ
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Cased To (m): 3

Start date: 03 Oct 11
Finish Date: 04 Oct 11
Final Depth (m): 29.6
Depth To Top Of Rock (m): 2.0
Logged by: Pretium
Reviewed by: BGC

Elevation (m)	Depth (m)	RQD (%) (20, 40, 60, 80)	Hydraulic Conductivity (m/s) (10^{-8}, 10^{-7}, 10^{-6}, 10^{-5})	Symbol	Lithologic Description	Comments	Monitoring Well Details	Depth (m)
	30				End of Hole: 29.6 m	Bottom of Installation: 31.8 m		30
1345	35							35
1340	40							40
1335	45							45
1330	50							50
1325	55							55
1320	60							60

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BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # MW-BGC12-BJ-6B

Location: Shore Zone

Co-ordinates (m): 427,097E - 6,258,982N
Ground Elevation (m): 1,379.56
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.67
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1380.2
Cased To (m): 3.84

Start date: 13 Jun 12
Finish Date: 16 Jun 12
Final Depth (m): 103.8
Depth To Top Of Rock (m): 2.5
Logged by: LM/RH
Reviewed by: KSJ

Elevation (m)	Depth (m)	RQD (%) (20, 40, 60, 80)	Hydraulic Conductivity (m/s) (10^{-8}, 10^{-7}, 10^{-6}, 10^{-5})	Symbol	Lithologic Description	Comments	Monitoring Well Details	Depth (m)
1375	0				GRAVEL (GW) Coarse, sub-angular, green to brown, odourless, dry, weathered.	Water Level Measured on 8/14/2012: 1367.834 masl		0
	5				INTERMEDIATE VOLCANICS (V12) Tuff and crystal tuff with minor zones of brecciation. High degree of disseminated pyrite (up to ~15% in places). Increased base metal sulphides from 35.3 - 37.5 m. Sericite clast replacement with minor fuschite seen throughout unit. Medium strong (R3-R3.5) from top of bedrock to 11.3 m. Strong to very strong (R4-R4.5) below 11.3 m. Slight to moderate alteration (A2.5) on major discontinuities from top of bedrock to 8.3 m. Faint to no alteration (A1-A1.5) below 8.3 m. 3.0 m: Fault, 220 mm thick, weathered rock. 5.5 m: Fault, 130 mm thick. 6.5 m: Fault, 350 mm thick. 7.6 m: Fault, 250 mm thick. 8.1 m: Fault, 220 mm thick.			5
1370	10							10
1365	15							15
1360	20							20
1355	25							25
1350	30							30

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

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Project No.: 1008-007

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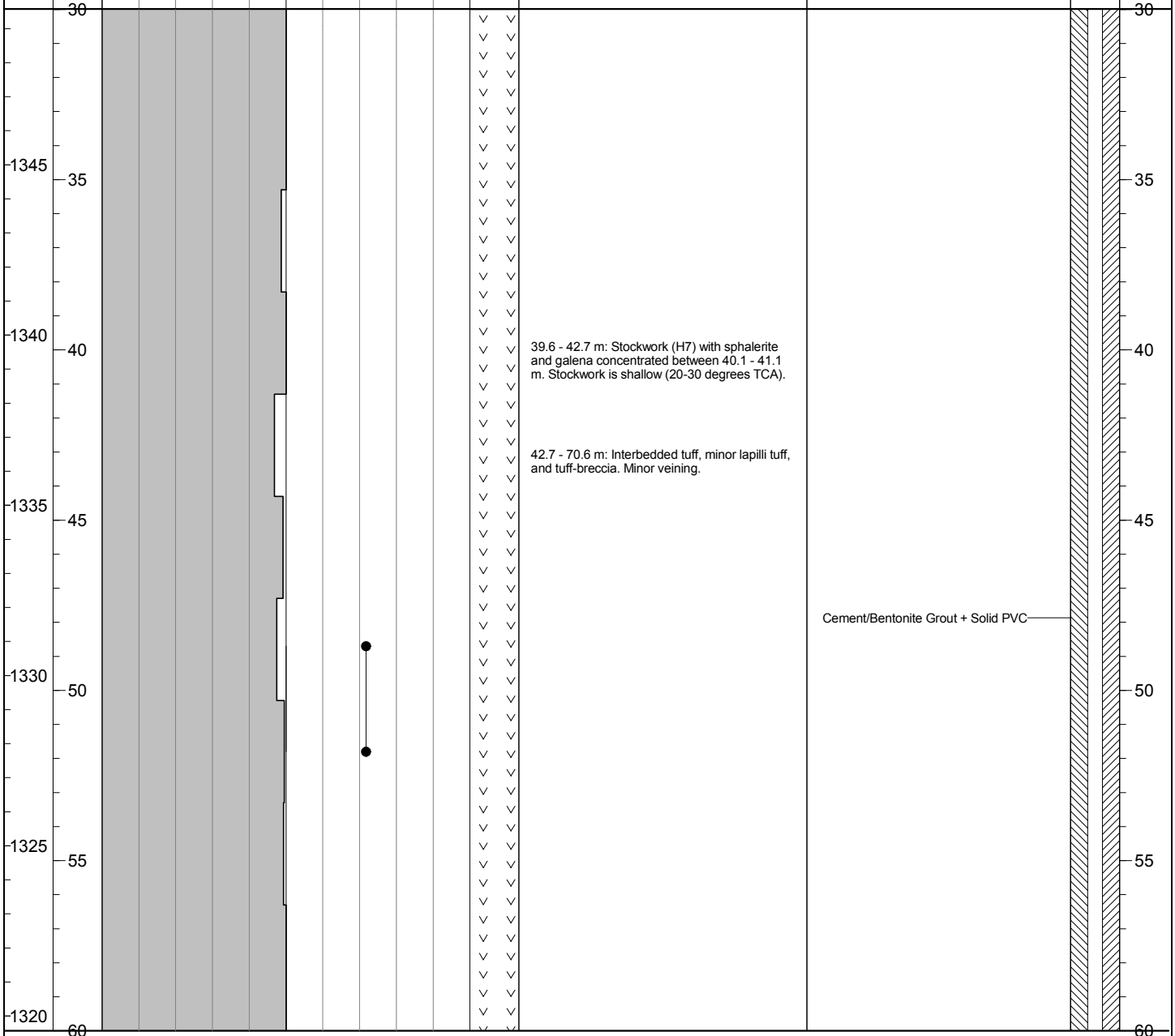
Reviewed by: KSJ



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

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Project No.: 1008-007

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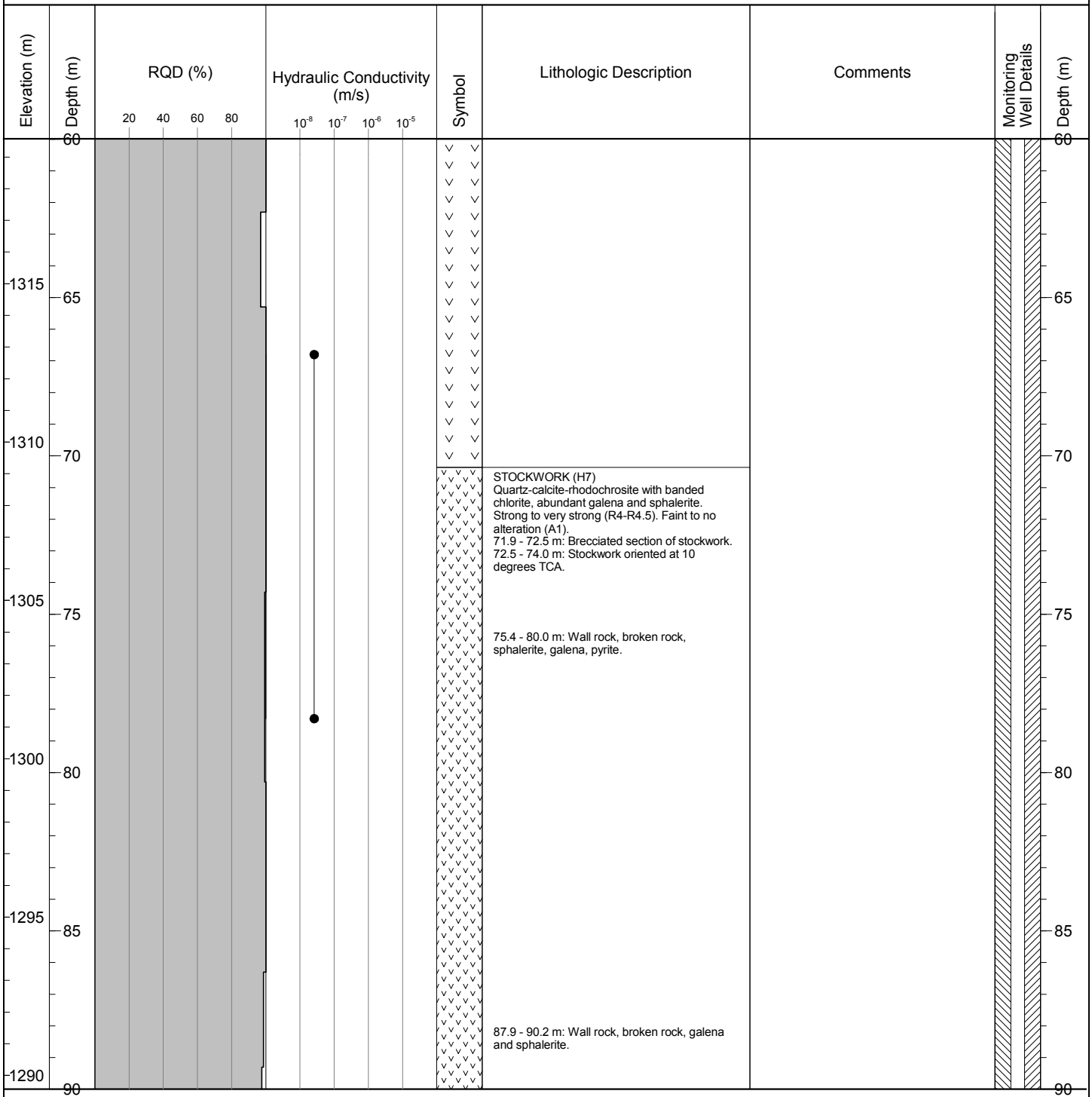

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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

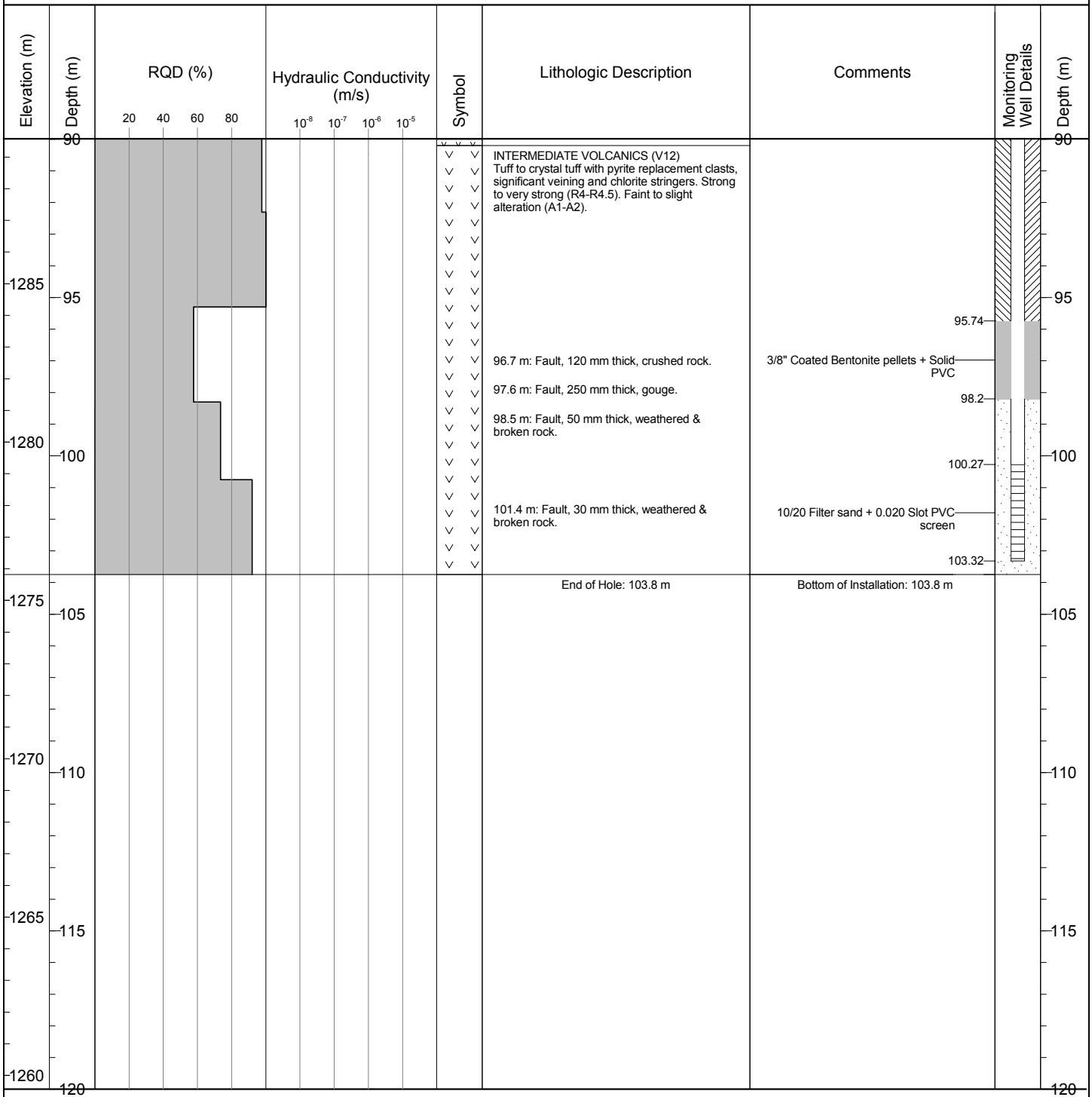
DRILL HOLE # MW-BGC12-BJ-6B

Location: Shore Zone

Co-ordinates (m): 427,097E - 6,258,982N
Ground Elevation (m): 1,379.56
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.67
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1380.2
Cased To (m): 3.84

Start date: 13 Jun 12
Finish Date: 16 Jun 12
Final Depth (m): 103.8
Depth To Top Of Rock (m): 2.5
Logged by: LM/RH
Reviewed by: KSJ



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

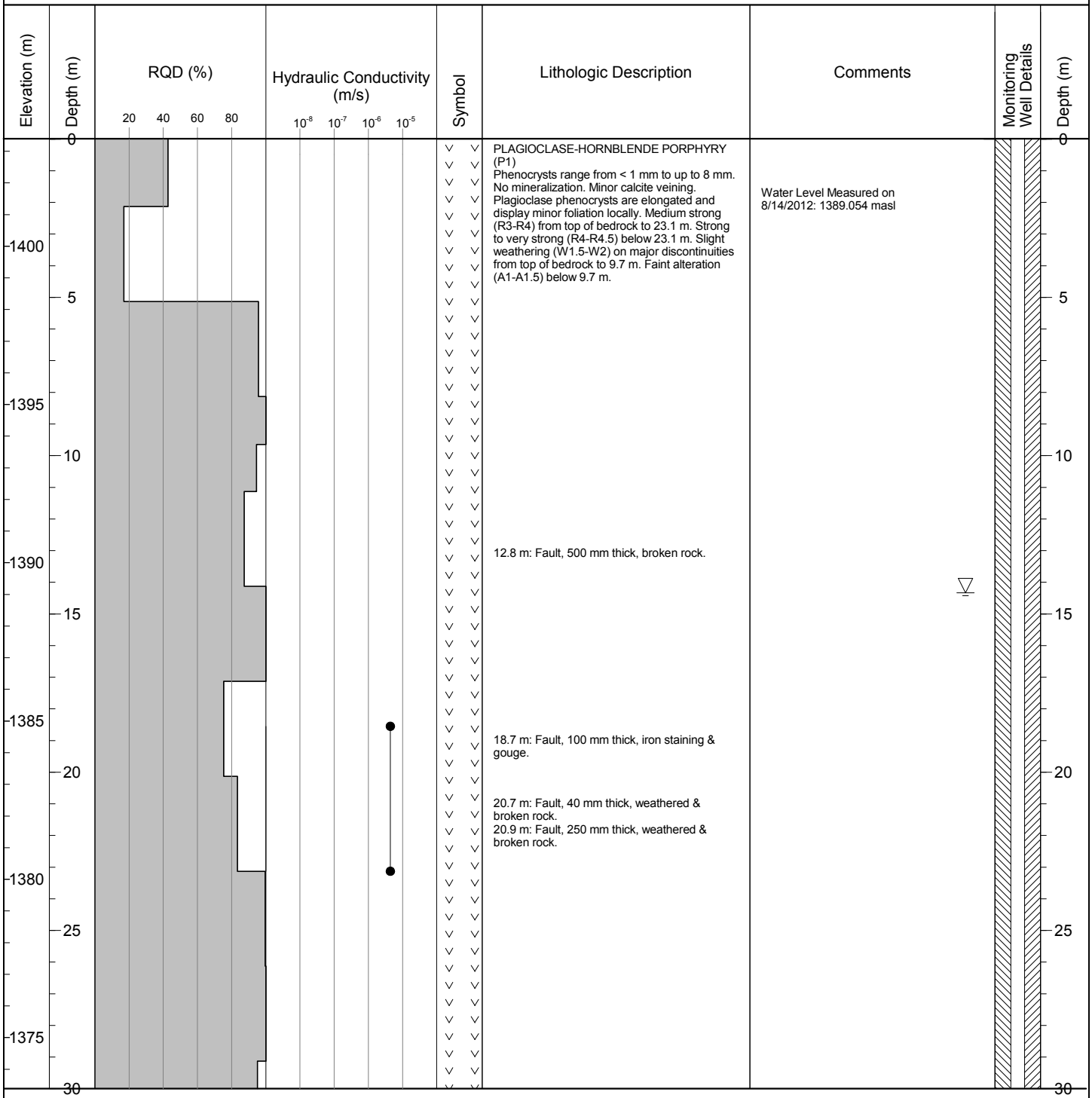
DRILL HOLE # MW-BGC12-BJ-8A

Location: Brucejack

Co-ordinates (m): 426,106E - 6,258,818N
Ground Elevation (m): 1,403.38
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.35
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1403.7
Cased To (m): 1.09

Start date: 16 Jun 12
Finish Date: 18 Jun 12
Final Depth (m): 95.1
Depth To Top Of Rock (m): 0.0
Logged by: LM/RH
Reviewed by: KSJ



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BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

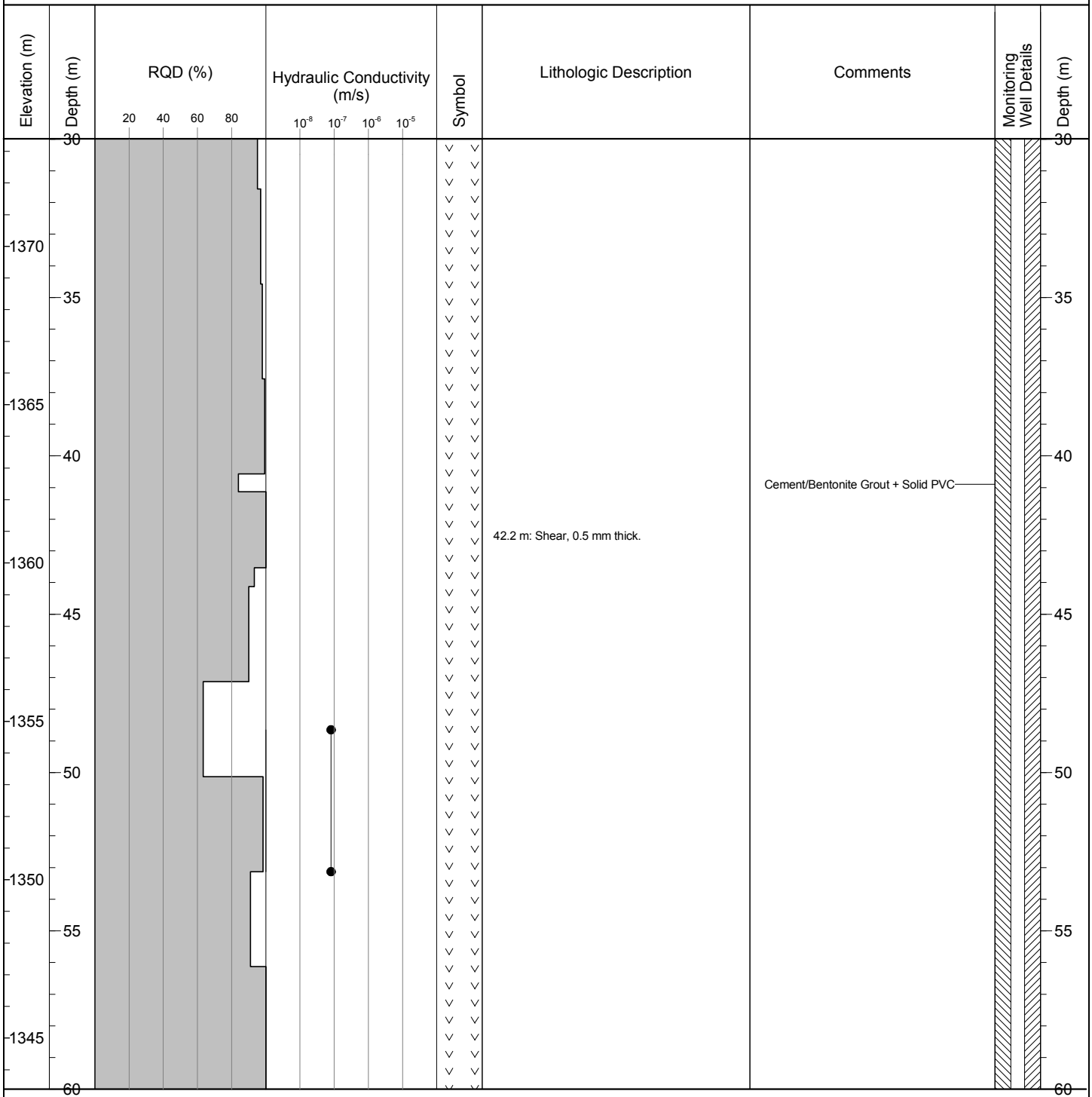
DRILL HOLE # MW-BGC12-BJ-8A

Location: Brucejack

Co-ordinates (m): 426,106E - 6,258,818N
Ground Elevation (m): 1,403.38
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.35
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1403.7
Cased To (m): 1.09

Start date: 16 Jun 12
Finish Date: 18 Jun 12
Final Depth (m): 95.1
Depth To Top Of Rock (m): 0.0
Logged by: LM/RH
Reviewed by: KSJ



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

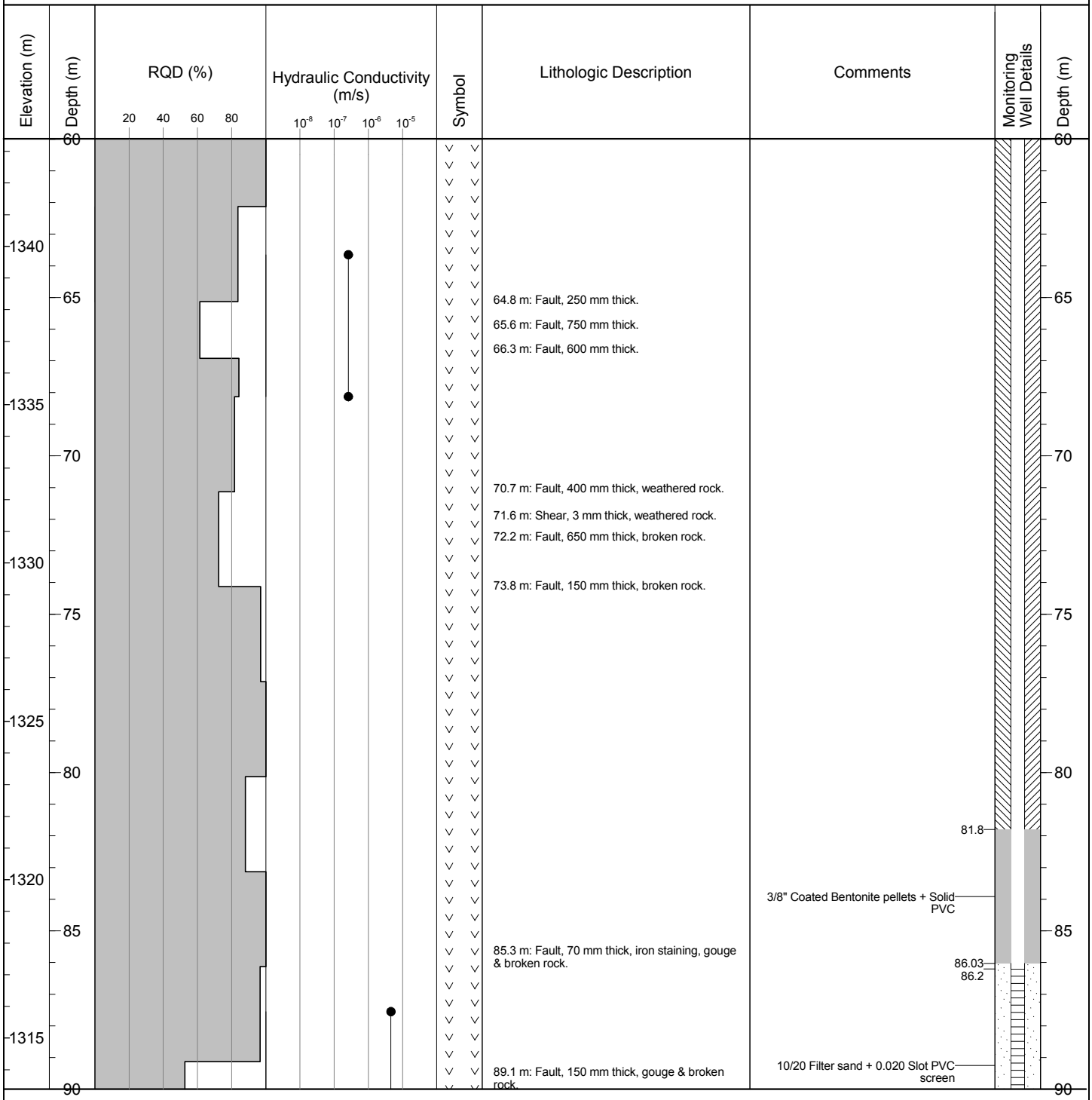
DRILL HOLE # MW-BGC12-BJ-8A

Location: Brucejack

Co-ordinates (m): 426,106E - 6,258,818N
Ground Elevation (m): 1,403.38
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.35
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1403.7
Cased To (m): 1.09

Start date: 16 Jun 12
Finish Date: 18 Jun 12
Final Depth (m): 95.1
Depth To Top Of Rock (m): 0.0
Logged by: LM/RH
Reviewed by: KSJ



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

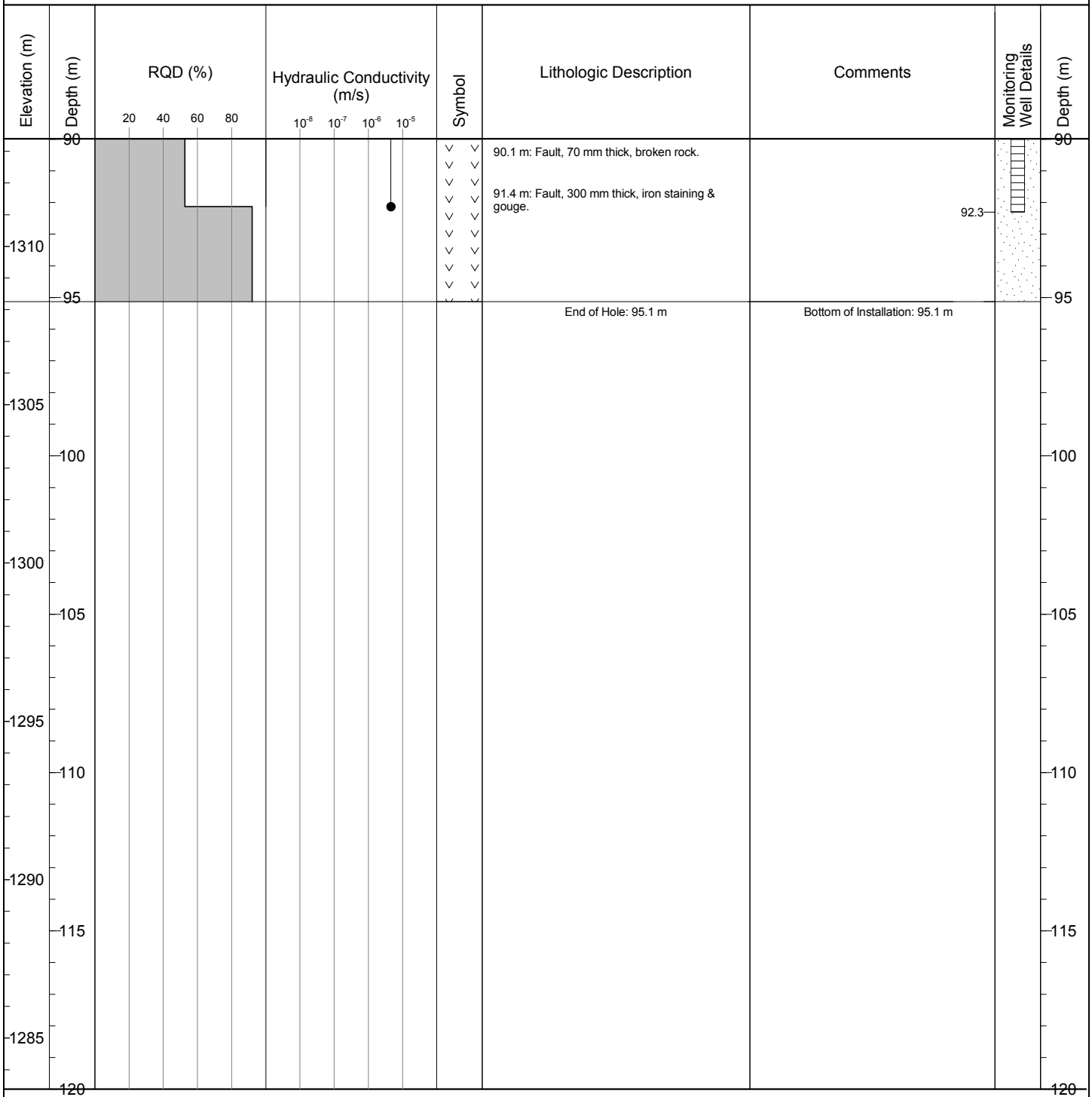
DRILL HOLE # MW-BGC12-BJ-8A

Location: Brucejack

Co-ordinates (m): 426,106E - 6,258,818N
Ground Elevation (m): 1,403.38
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.35
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1403.7
Cased To (m): 1.09

Start date: 16 Jun 12
Finish Date: 18 Jun 12
Final Depth (m): 95.1
Depth To Top Of Rock (m): 0.0
Logged by: LM/RH
Reviewed by: KSJ



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

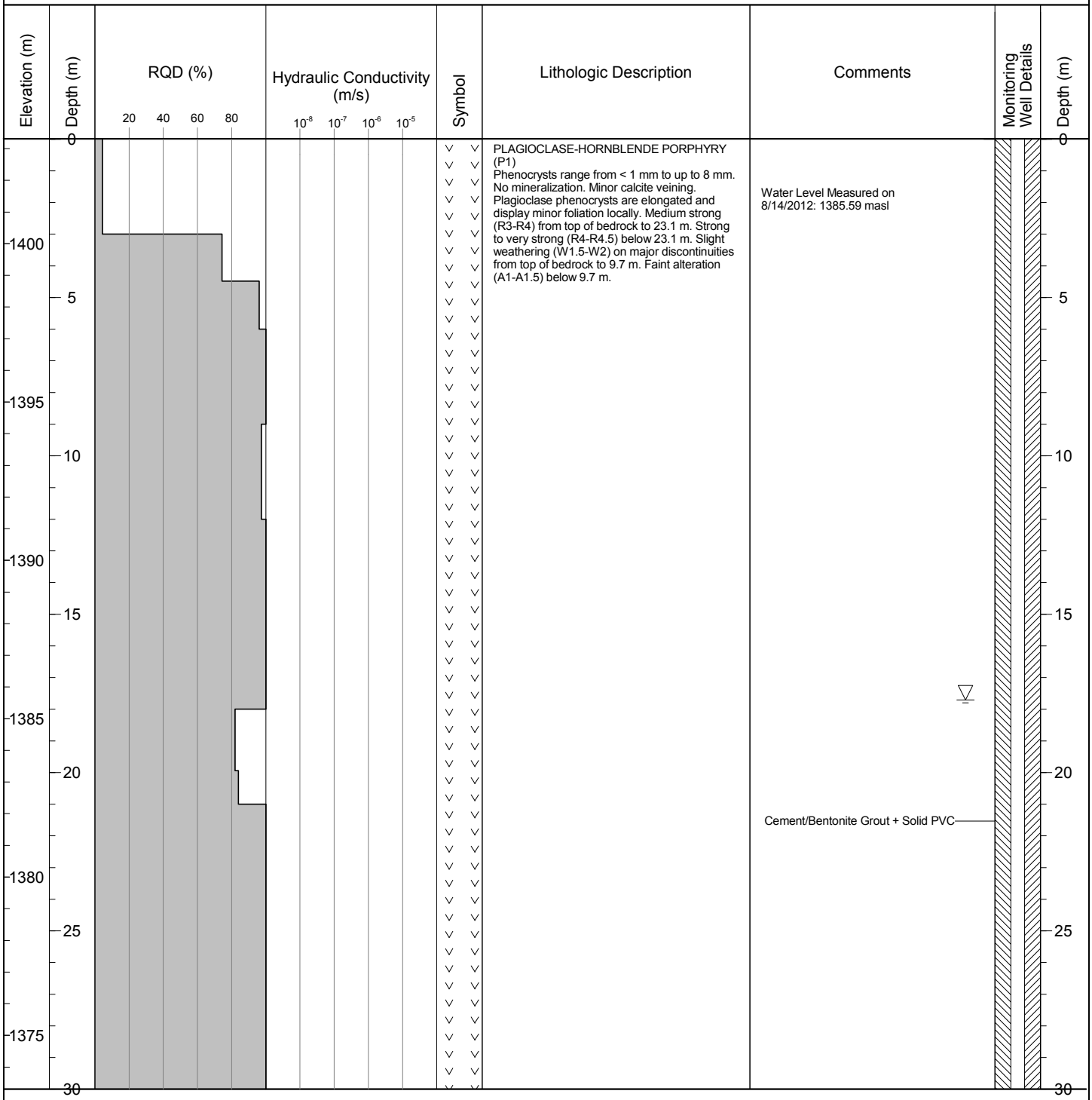
DRILL HOLE # MW-BGC12-BJ-8B

Location: Brucejack

Co-ordinates (m): 426,106E - 6,258,819N
Ground Elevation (m): 1,403.30
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.33
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1403.6
Cased To (m): 1.12

Start date: 18 Jun 12
Finish Date: 19 Jun 12
Final Depth (m): 51.0
Depth To Top Of Rock (m): 0.0
Logged by: LM/RH
Reviewed by: KSJ



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

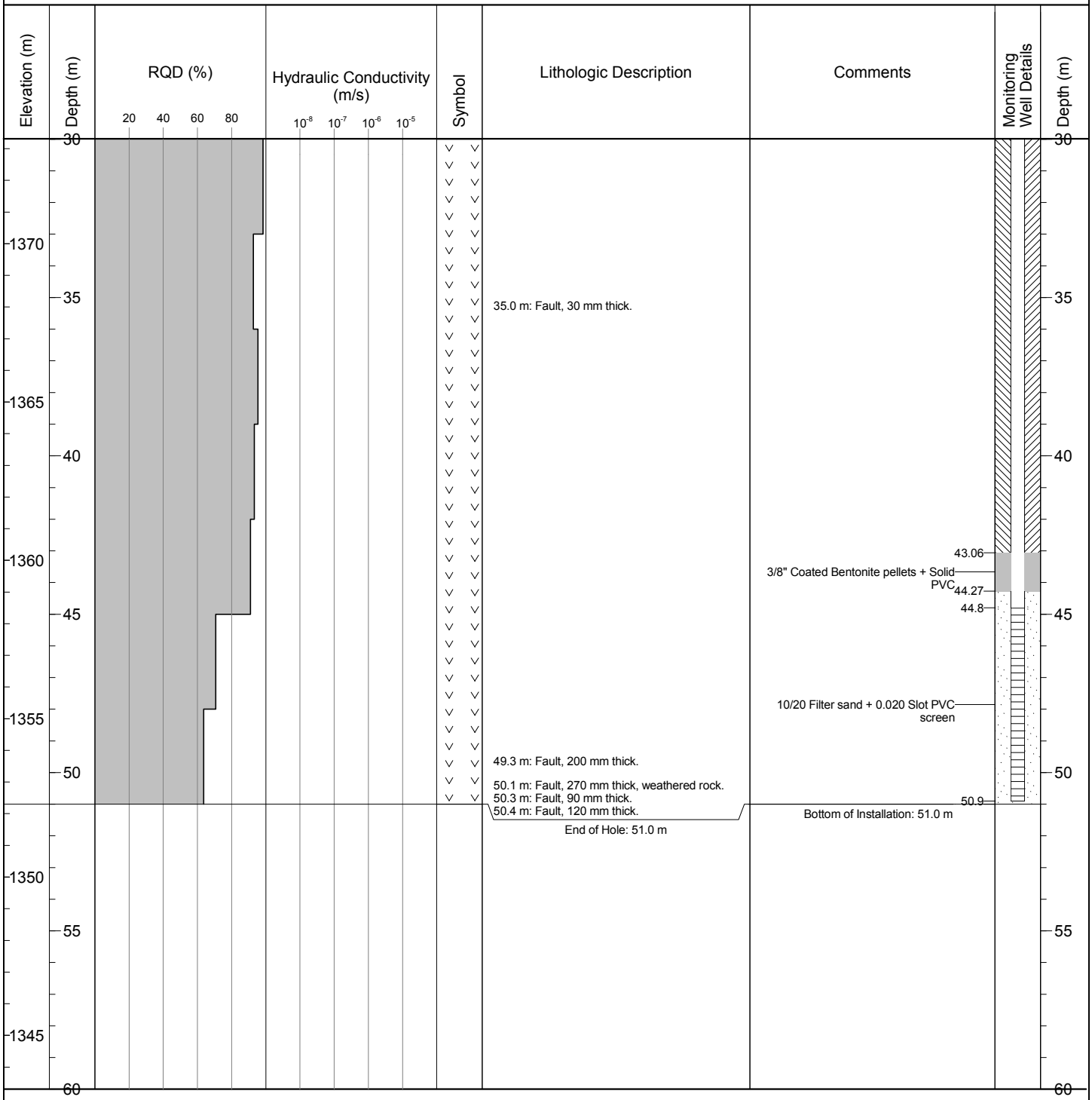
DRILL HOLE # MW-BGC12-BJ-8B

Location: Brucejack

Co-ordinates (m): 426,106E - 6,258,819N
Ground Elevation (m): 1,403.30
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.33
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1403.6
Cased To (m): 1.12

Start date: 18 Jun 12
Finish Date: 19 Jun 12
Final Depth (m): 51.0
Depth To Top Of Rock (m): 0.0
Logged by: LM/RH
Reviewed by: KSJ



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CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

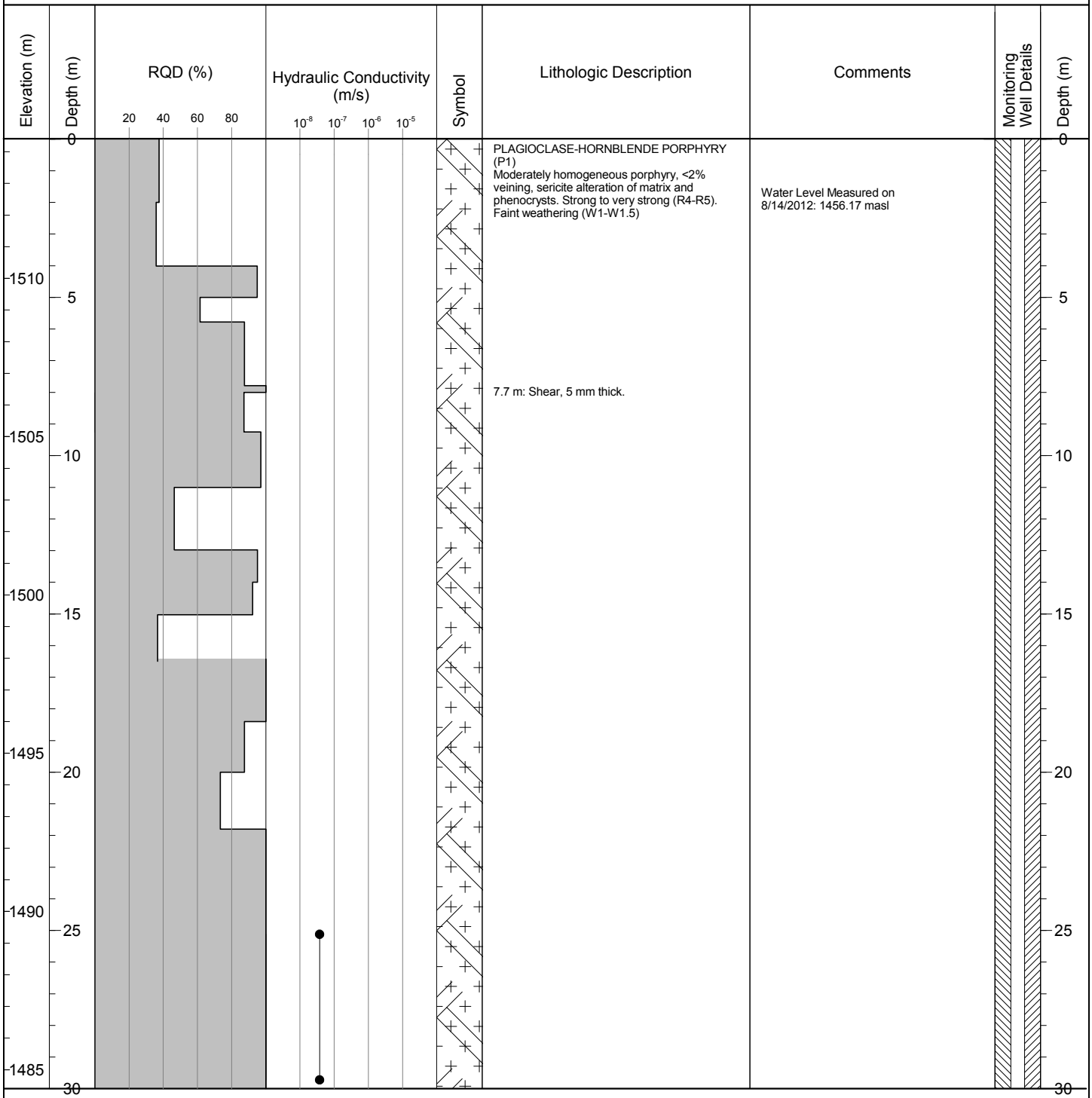
DRILL HOLE # MW-BGC12-BJ-9A

Location: Brucejack

Co-ordinates (m): 426,465E - 6,258,361N
Ground Elevation (m): 1,514.40
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.73
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1515.1
Cased To (m): 1.5

Start date: 01 Aug 12
Finish Date: 04 Aug 12
Final Depth (m): 80.0
Depth To Top Of Rock (m): 0.0
Logged by: DP/LL
Reviewed by: KSJ



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Project: Brucejack
Project No.: 1008-007

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Datum: UTM NAD 83 Zone 9
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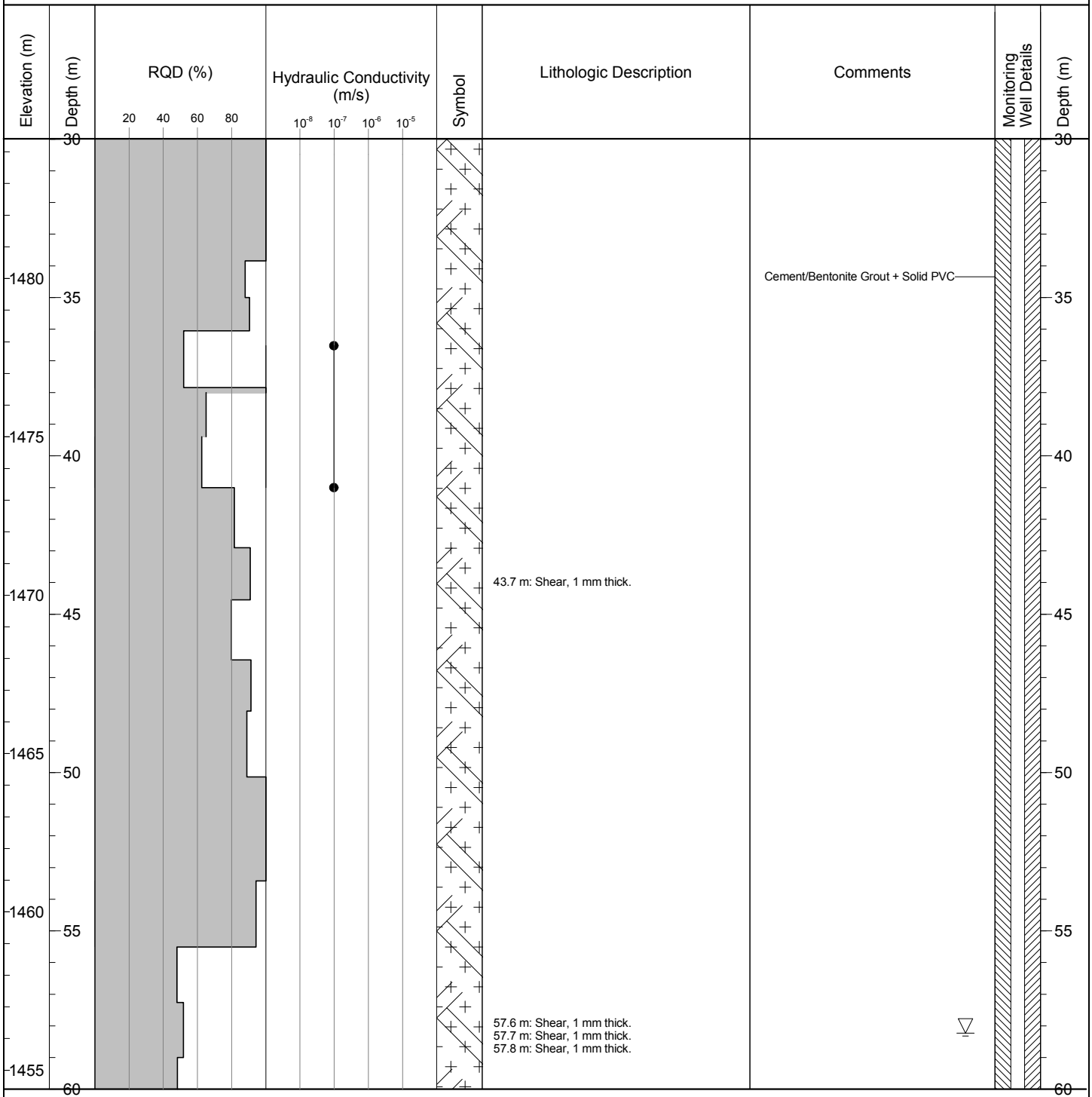
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1515.1
Cased To (m): 1.5

Start date: 01 Aug 12
Finish Date: 04 Aug 12
Final Depth (m): 80.0
Depth To Top Of Rock (m): 0.0
Logged by: DP/LL
Reviewed by: KSJ



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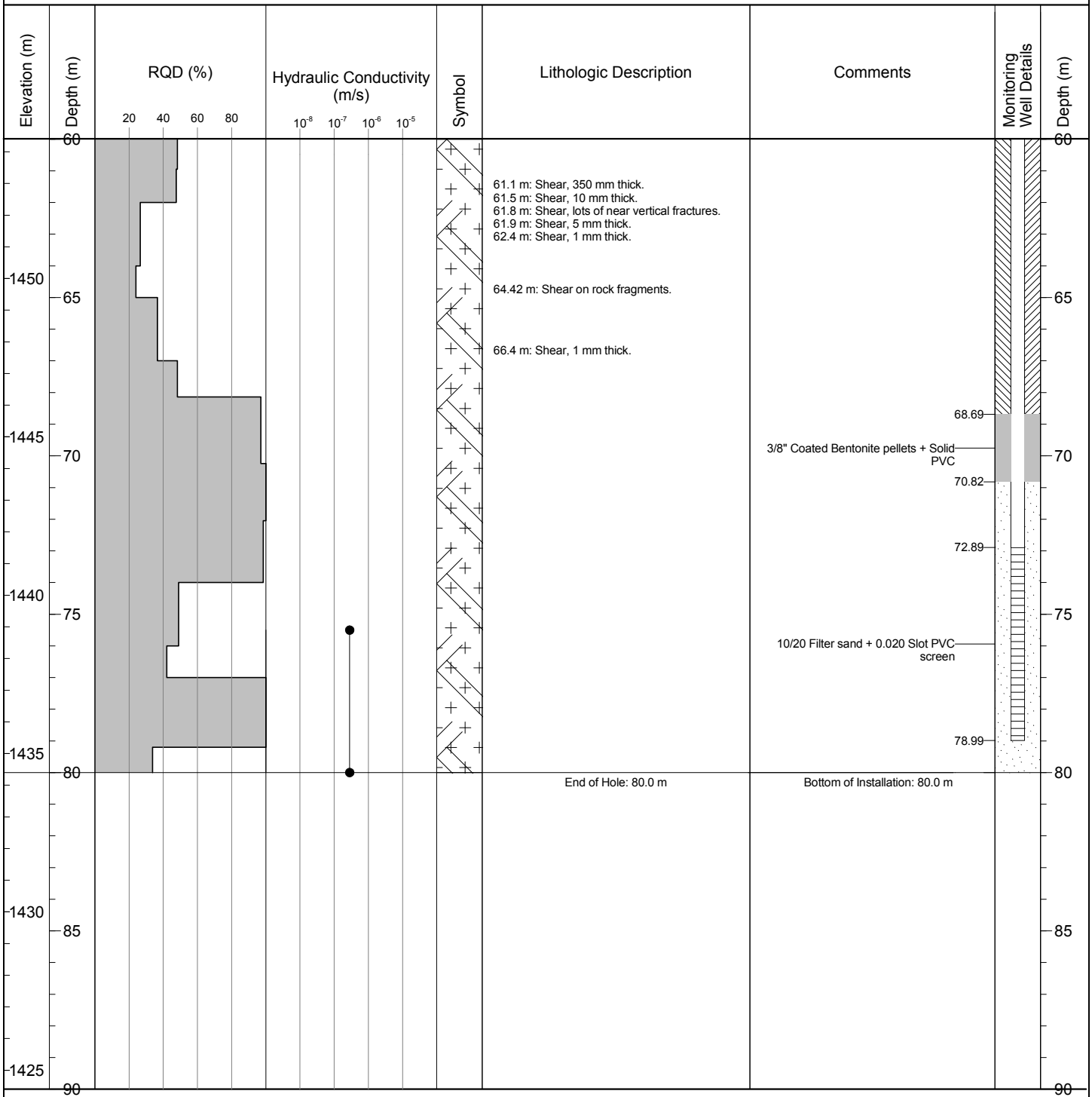

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Project: Brucejack
Project No.: 1008-007

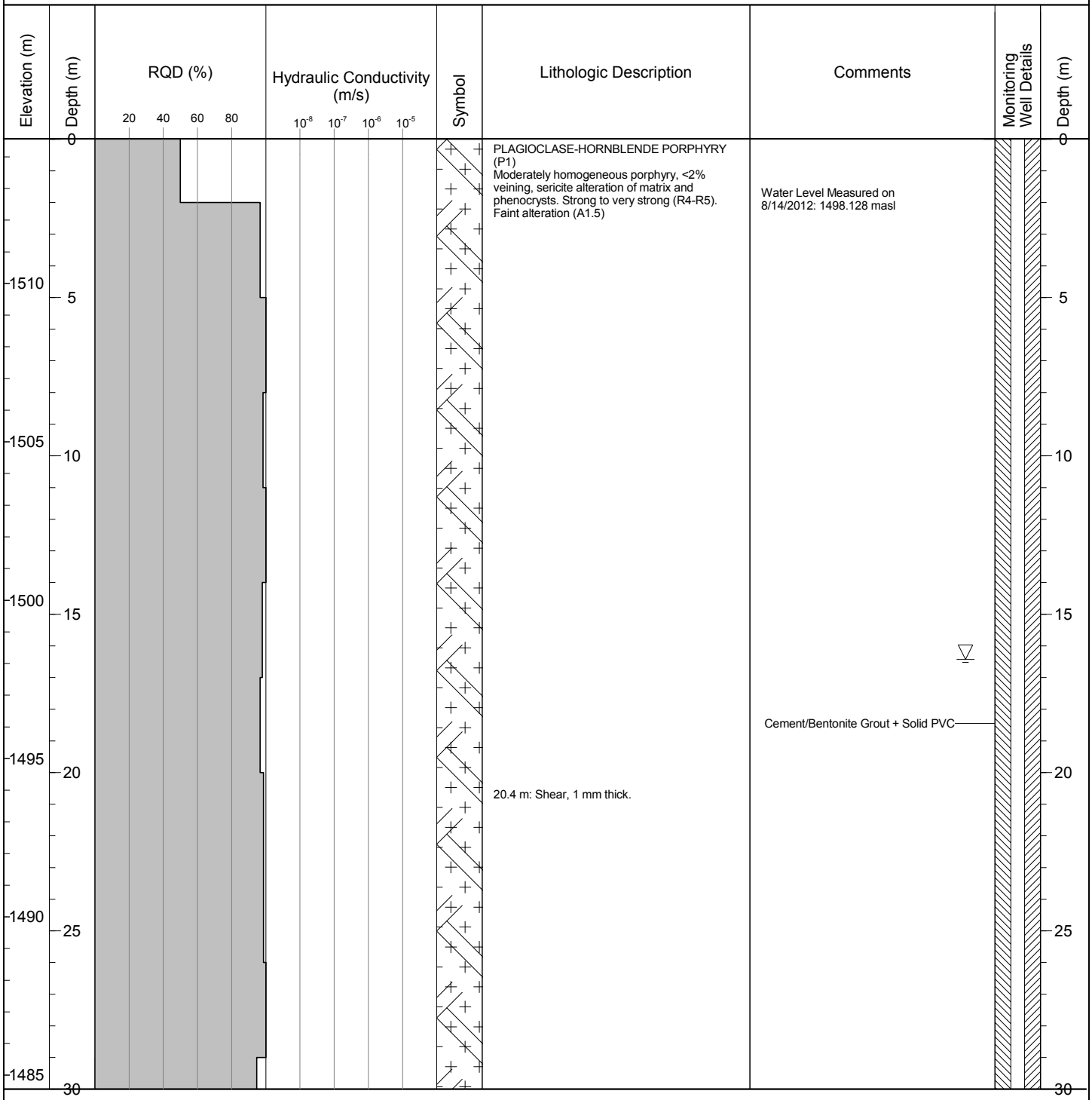
DRILL HOLE # MW-BGC12-BJ-9B

Location: Brucejack

Co-ordinates (m): 426,461E - 6,258,362N
Ground Elevation (m): 1,514.56
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.67
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1515.2
Cased To (m): 1.09

Start date: 30 Jul 12
Finish Date: 01 Aug 12
Final Depth (m): 50.0
Depth To Top Of Rock (m): 0.0
Logged by: DP/LL
Reviewed by: KSJ



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Project: Brucejack
Project No.: 1008-007

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Location: Brucejack

Co-ordinates (m): 426,461E - 6,258,362N
Ground Elevation (m): 1,514.56
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.67
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
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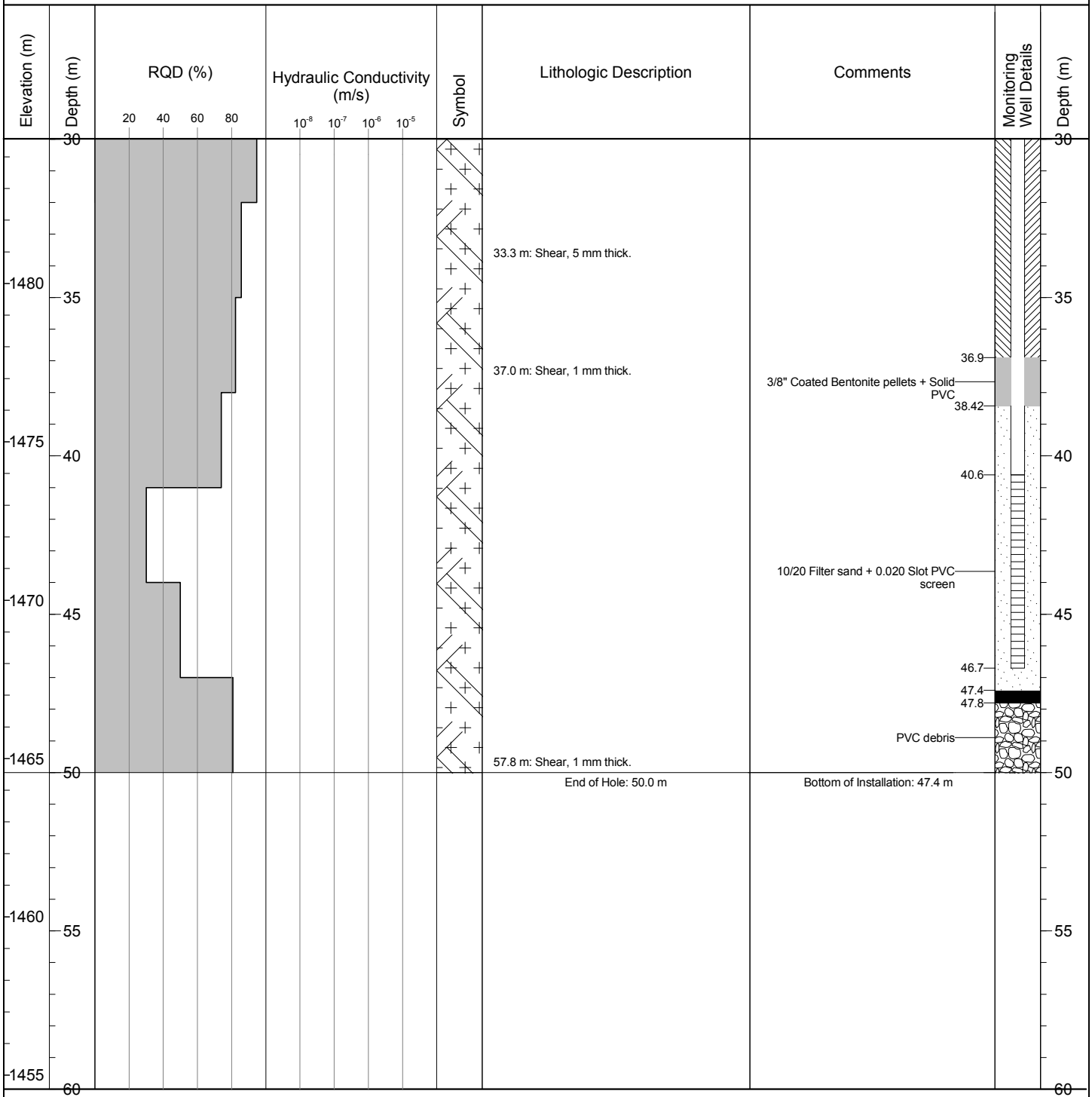
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1515.2
Cased To (m): 1.09

Start date: 30 Jul 12
Finish Date: 01 Aug 12
Final Depth (m): 50.0
Depth To Top Of Rock (m): 0.0
Logged by: DP/LL
Reviewed by: KSJ



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BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

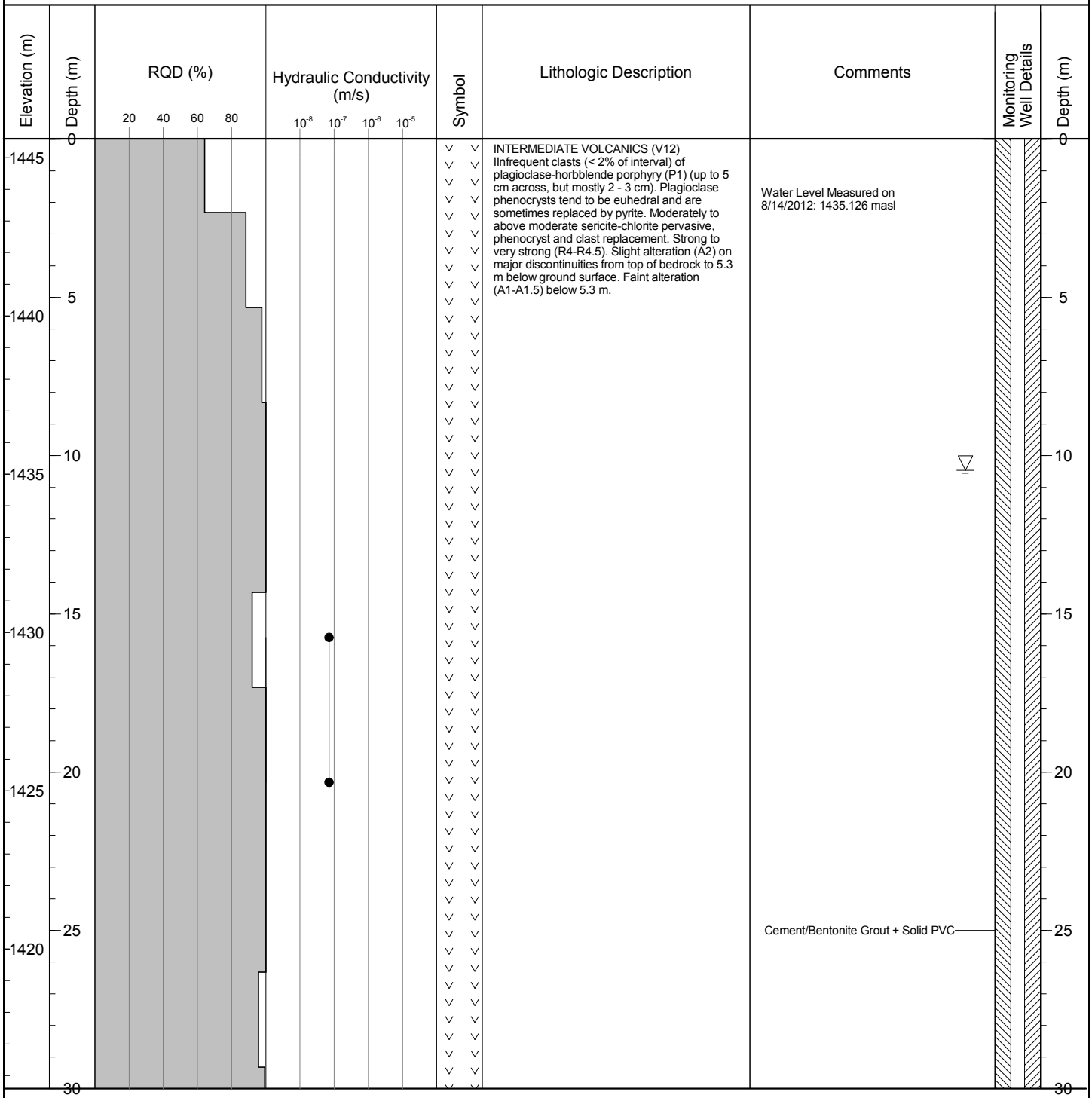
DRILL HOLE # MW-BGC12-BJ-10A

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,989E - 6,258,341N
Ground Elevation (m): 1,445.59
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.38
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1446.0
Cased To (m): NO CASING INSTALLED

Start date: 20 Jun 12
Finish Date: 22 Jun 12
Final Depth (m): 62.3
Depth To Top Of Rock (m): 0.0
Logged by: LM/RH
Reviewed by: KSJ



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Project: Brucejack
Project No.: 1008-007

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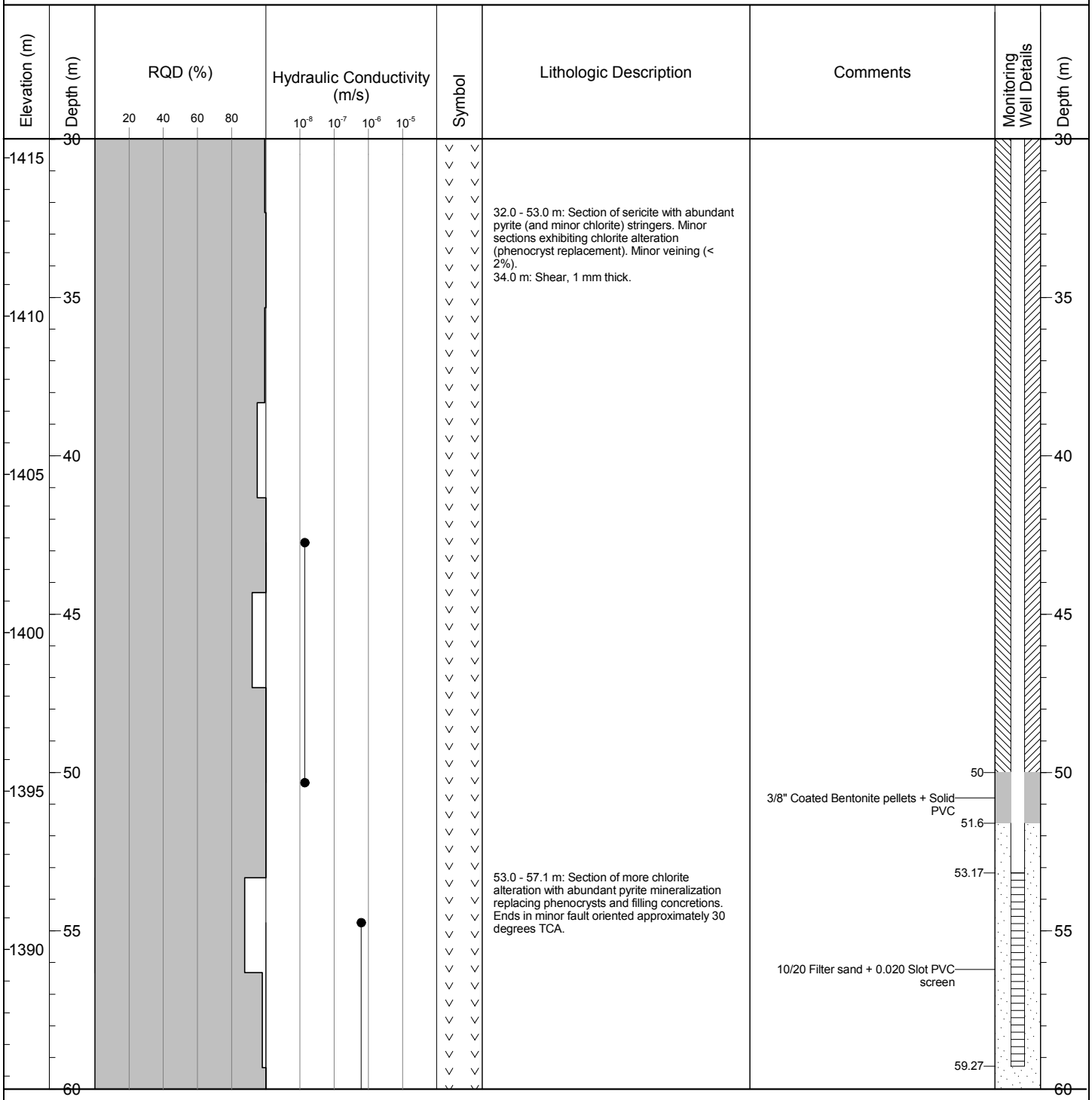
Co-ordinates (m): 426,989E - 6,258,341N
Ground Elevation (m): 1,445.59
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.38
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1446.0
Cased To (m): NO CASING INSTALLED

Start date: 20 Jun 12
Finish Date: 22 Jun 12
Final Depth (m): 62.3
Depth To Top Of Rock (m): 0.0
Logged by: LM/RH
Reviewed by: KSJ



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BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

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Location: Brucejack (Plant Site)

Co-ordinates (m): 426,989E - 6,258,341N
Ground Elevation (m): 1,445.59
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Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.38
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1446.0
Cased To (m): NO CASING INSTALLED

Start date: 20 Jun 12
Finish Date: 22 Jun 12
Final Depth (m): 62.3
Depth To Top Of Rock (m): 0.0
Logged by: LM/RH
Reviewed by: KSJ

Elevation (m)	Depth (m)	RQD (%) (20, 40, 60, 80)	Hydraulic Conductivity (m/s) (10^{-8}, 10^{-7}, 10^{-6}, 10^{-5})	Symbol	Lithologic Description	Comments	Monitoring Well Details	Depth (m)
1385	60					3/8" Coated Bentonite pellets 60.13–60.48		60
					End of Hole: 62.3 m	Bottom of Installation: 60.1 m		
1380	65							65
1375	70							70
1370	75							75
1365	80							80
1360	85							85
	90							90

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Project: Brucejack
Project No.: 1008-007

DRILL HOLE # MW-BGC12-BJ-10B

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,989E - 6,258,341N
Ground Elevation (m): 1,445.64
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.72
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1446.4
Cased To (m): NO CASING INSTALLED

Start date: 22 Jun 12
Finish Date: 22 Jun 12
Final Depth (m): 41.4
Depth To Top Of Rock (m): 0.0
Logged by: LM/RH
Reviewed by: KSJ

Elevation (m)	Depth (m)	RQD (%) (20, 40, 60, 80)	Hydraulic Conductivity (m/s) (10^{-8}, 10^{-7}, 10^{-6}, 10^{-5})	Symbol	Lithologic Description	Comments	Monitoring Well Details	Depth (m)
1445	0				INTERMEDIATE VOLCANICS (V12) Infrequent clasts (< 2% of interval) of plagioclase-horbblende porphyry (P1) (up to 5 cm across, but mostly 2 - 3 cm). Plagioclase phenocrysts tend to be euhedral and are sometimes replaced by pyrite. Moderately to above moderate sericite-chlorite pervasive, phenocryst and clast replacement. Strong to very strong (R4-R4.5). Slight alteration (A2) on major discontinuities from top of bedrock to 5.3 m below ground surface. Faint alteration (A1-A1.5) below 5.3 m.	Water Level Measured on 8/14/2012: 1433.149 masl		0
1440	5							5
1435	10							10
1430	15					Cement/Bentonite Grout + Solid PVC		15
1425	20							20
1420	25							25
	30							30

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BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # MW-BGC12-BJ-10B

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,989E - 6,258,341N
Ground Elevation (m): 1,445.64
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.72
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1446.4
Cased To (m): NO CASING INSTALLED

Start date: 22 Jun 12
Finish Date: 22 Jun 12
Final Depth (m): 41.4
Depth To Top Of Rock (m): 0.0
Logged by: LM/RH
Reviewed by: KSJ

Elevation (m)	Depth (m)	RQD (%) (20, 40, 60, 80)	Hydraulic Conductivity (m/s) (10^{-8}, 10^{-7}, 10^{-6}, 10^{-5})	Symbol	Lithologic Description	Comments	Monitoring Well Details	Depth (m)
1415	30							30
					32.0 - 41.4 m: Section of sericite with abundant pyrite (and minor chlorite) stringers. Minor sections exhibiting chlorite alteration (phenocryst replacement). Minor veining (< 2%).			
1410	35					34.5 3/8" Coated Bentonite pellets + Solid PVC 35.6		35
						38.05		
1405	40				39.0 m: Fault, 100 mm thick, fault on vein.	10/20 Filter sand + 0.020 Slot PVC screen 41.1		40
					End of Hole: 41.4 m	Bottom of Installation: 41.4 m		
1400	45							45
1395	50							50
1390	55							55
	60							60

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BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

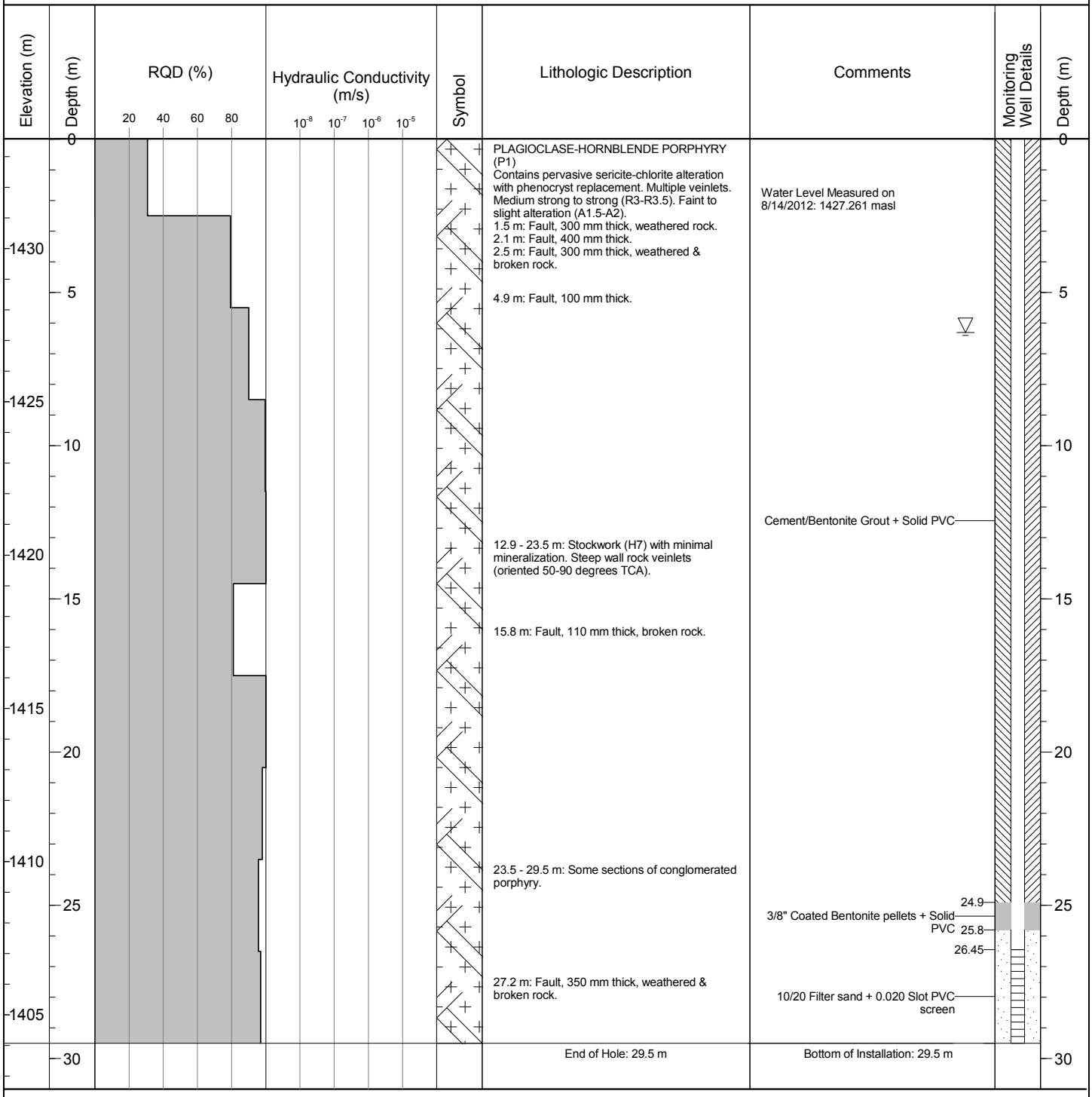
DRILL HOLE # MW-BGC12-BJ-11A

Location: West Zone

Co-ordinates (m): 426,300E - 6,258,595N
Ground Elevation (m): 1,433.57
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.61
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1434.2
Cased To (m): NO CASING INSTALLED

Start date: 22 Jun 12
Finish Date: 26 Jun 12
Final Depth (m): 29.5
Depth To Top Of Rock (m): 0.0
Logged by: LM/RH
Reviewed by: KSJ



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

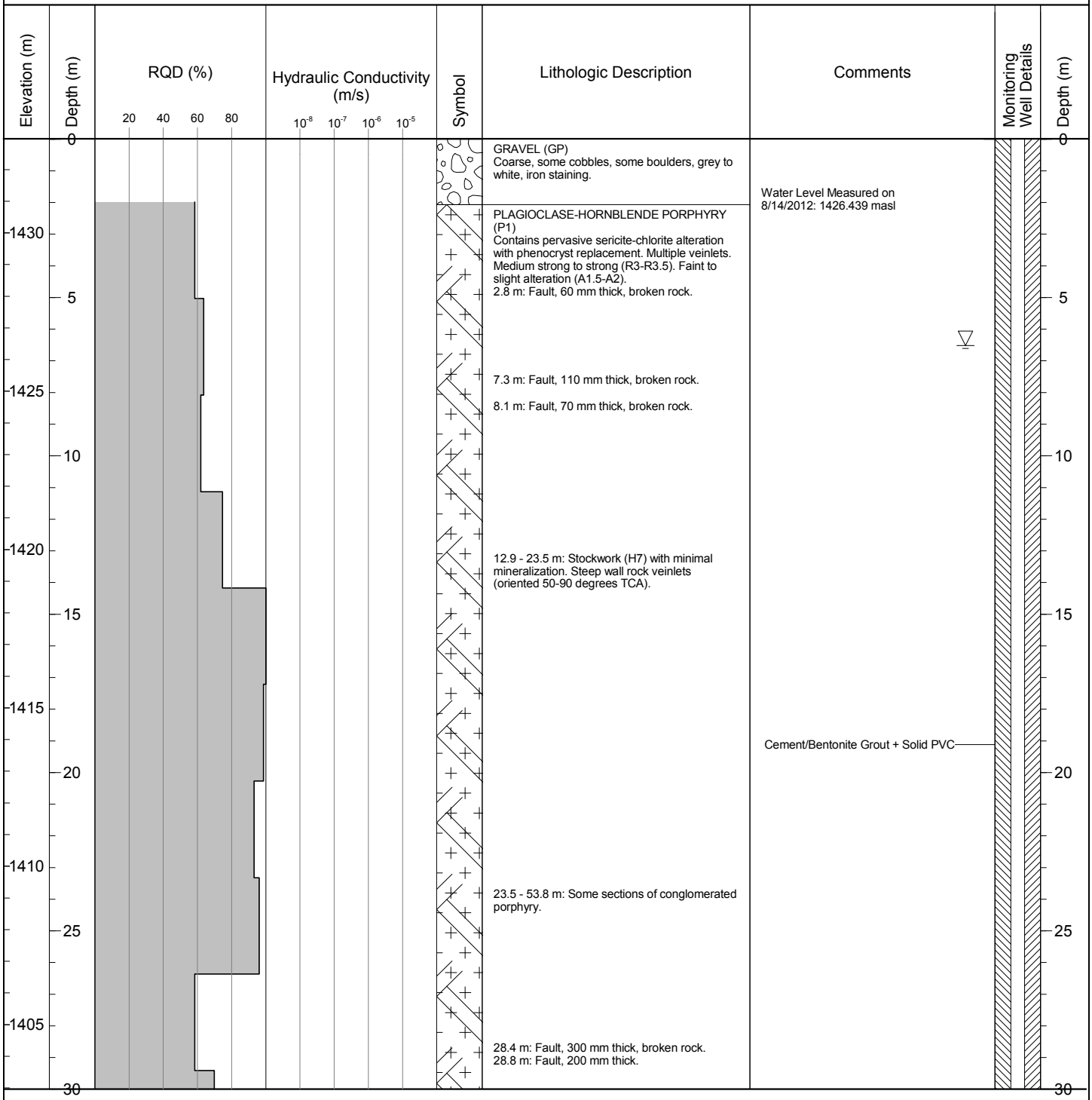
DRILL HOLE # MW-BGC12-BJ-11B

Location: West Zone

Co-ordinates (m): 426,299E - 6,258,595N
Ground Elevation (m): 1,432.96
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.61
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ
Top of PVC Elevation (m): 1433.6
Cased To (m): 1.06

Start date: 26 Jun 12
Finish Date: 28 Jun 12
Final Depth (m): 53.8
Depth To Top Of Rock (m): 2.1
Logged by: LM/RH
Reviewed by: KSJ



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
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Logged by: LM/RH
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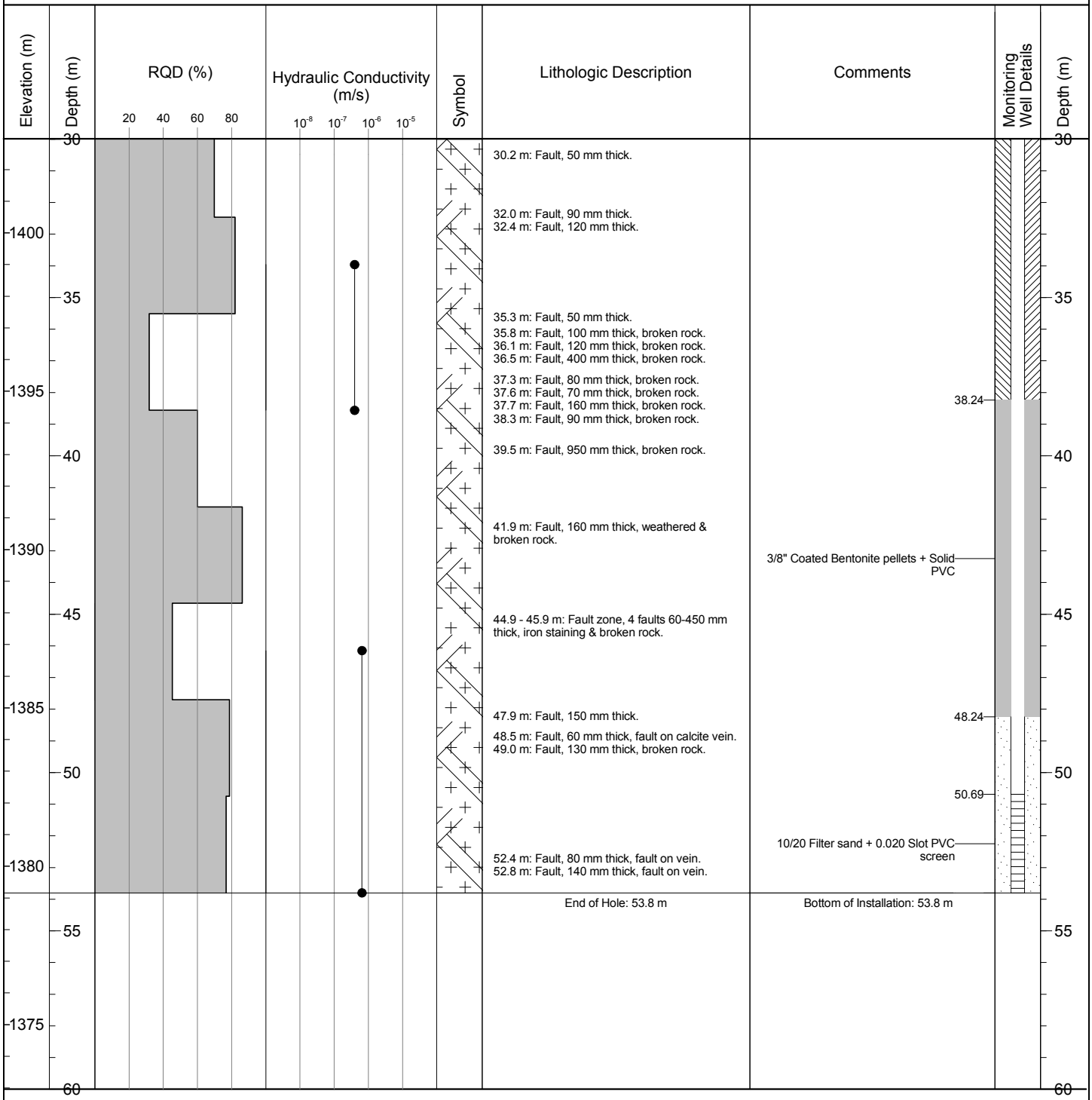


BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

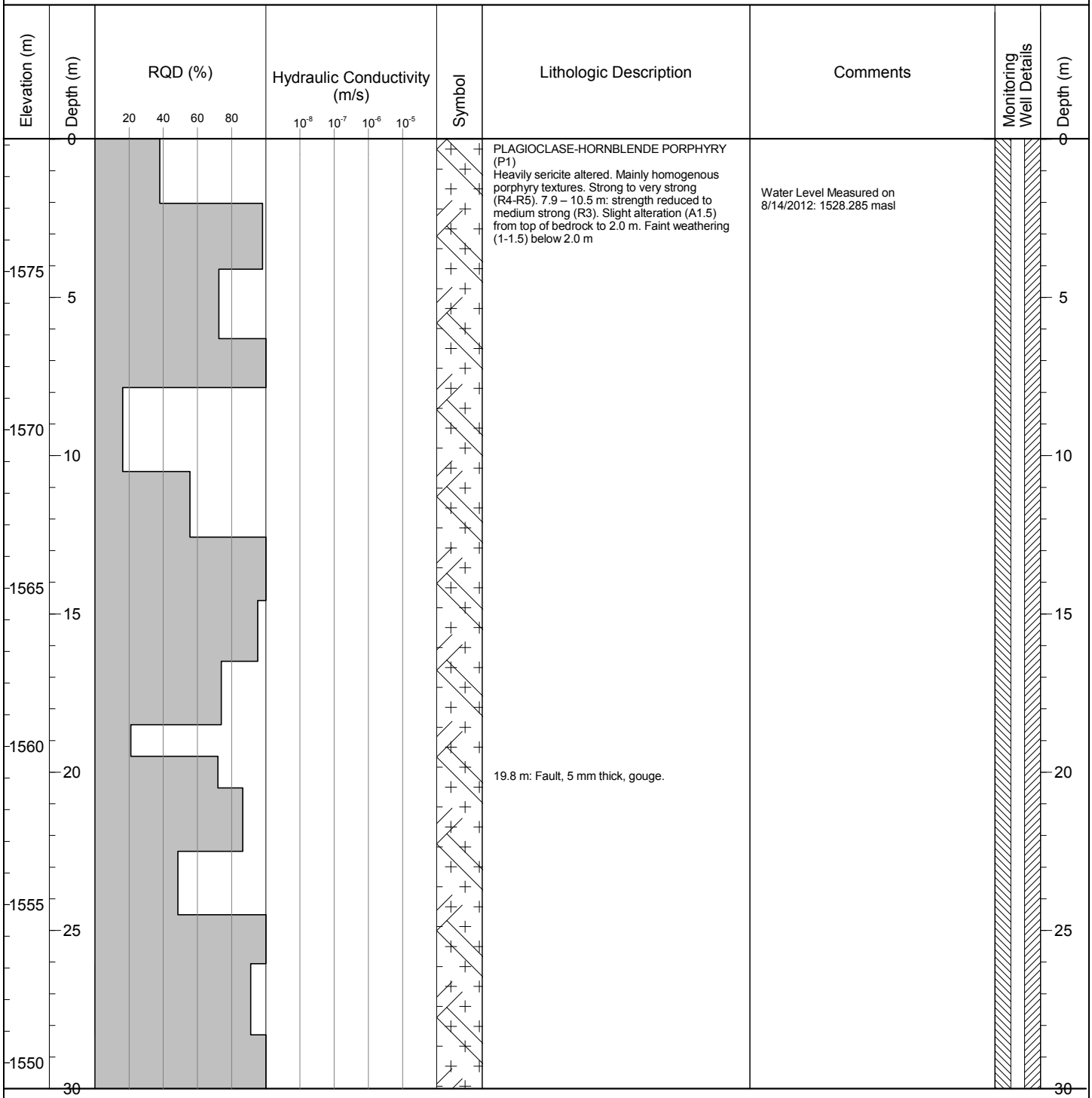
DRILL HOLE # MW-BGC12-BJ-12A

Location: Valley of Kings Zone

Co-ordinates (m): 426,509E - 6,257,807N
Ground Elevation (m): 1,579.19
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.78
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1580.0
Cased To (m): 1.2

Start date: 04 Aug 12
Finish Date: 08 Aug 12
Final Depth (m): 100.0
Depth To Top Of Rock (m): 0.0
Logged by: DP/LL
Reviewed by: KSJ



PLAGIOCLASE-HORNBLENDE PORPHYRY (P1)
Heavily sericite altered. Mainly homogenous porphyry textures. Strong to very strong (R4-R5). 7.9 – 10.5 m: strength reduced to medium strong (R3). Slight alteration (A1.5) from top of bedrock to 2.0 m. Faint weathering (1-1.5) below 2.0 m

19.8 m: Fault, 5 mm thick, gouge.

Water Level Measured on 8/14/2012: 1528.285 masl

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

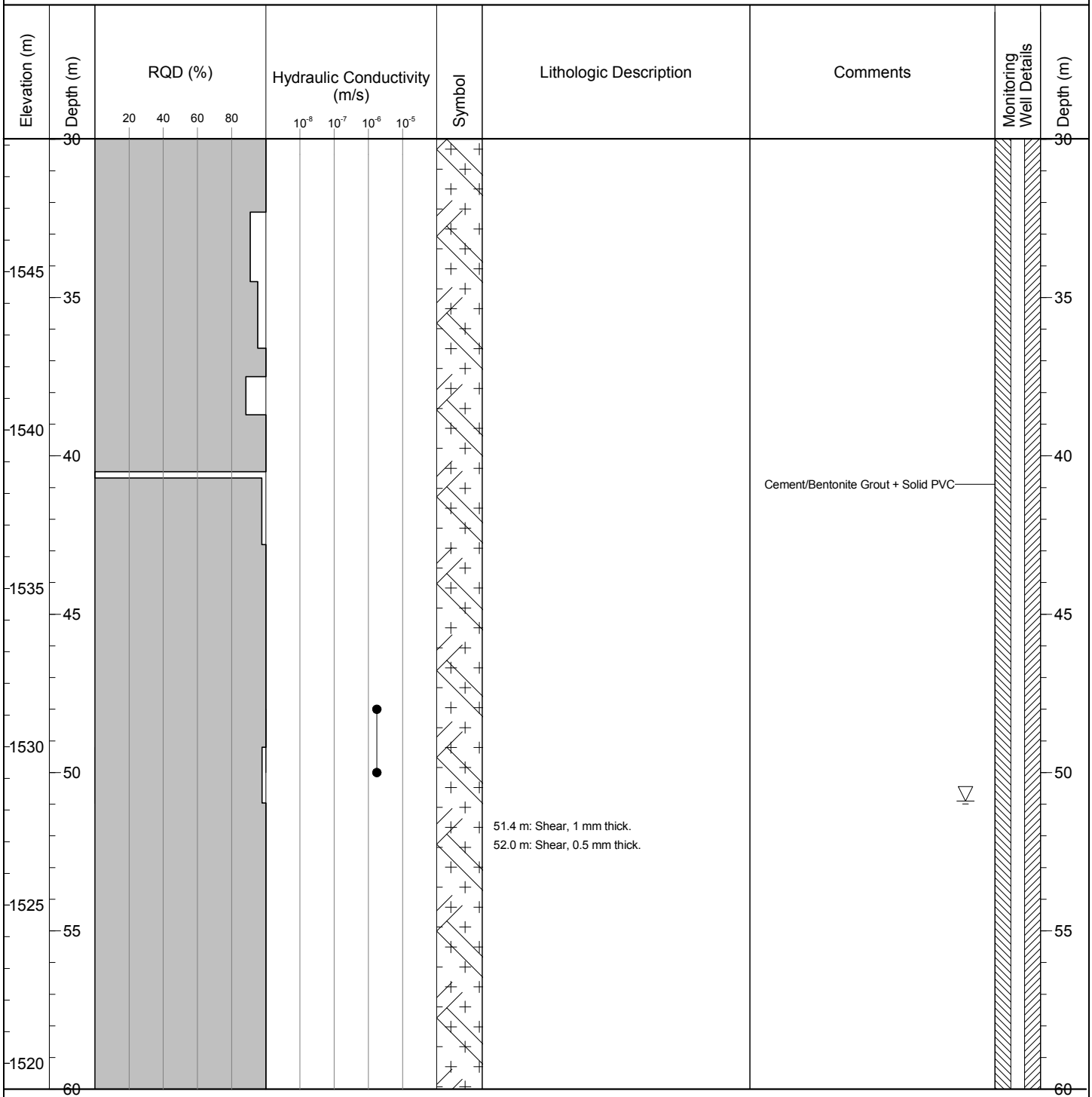
DRILL HOLE # MW-BGC12-BJ-12A

Location: Valley of Kings Zone

Co-ordinates (m): 426,509E - 6,257,807N
Ground Elevation (m): 1,579.19
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.78
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1580.0
Cased To (m): 1.2

Start date: 04 Aug 12
Finish Date: 08 Aug 12
Final Depth (m): 100.0
Depth To Top Of Rock (m): 0.0
Logged by: DP/LL
Reviewed by: KSJ



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

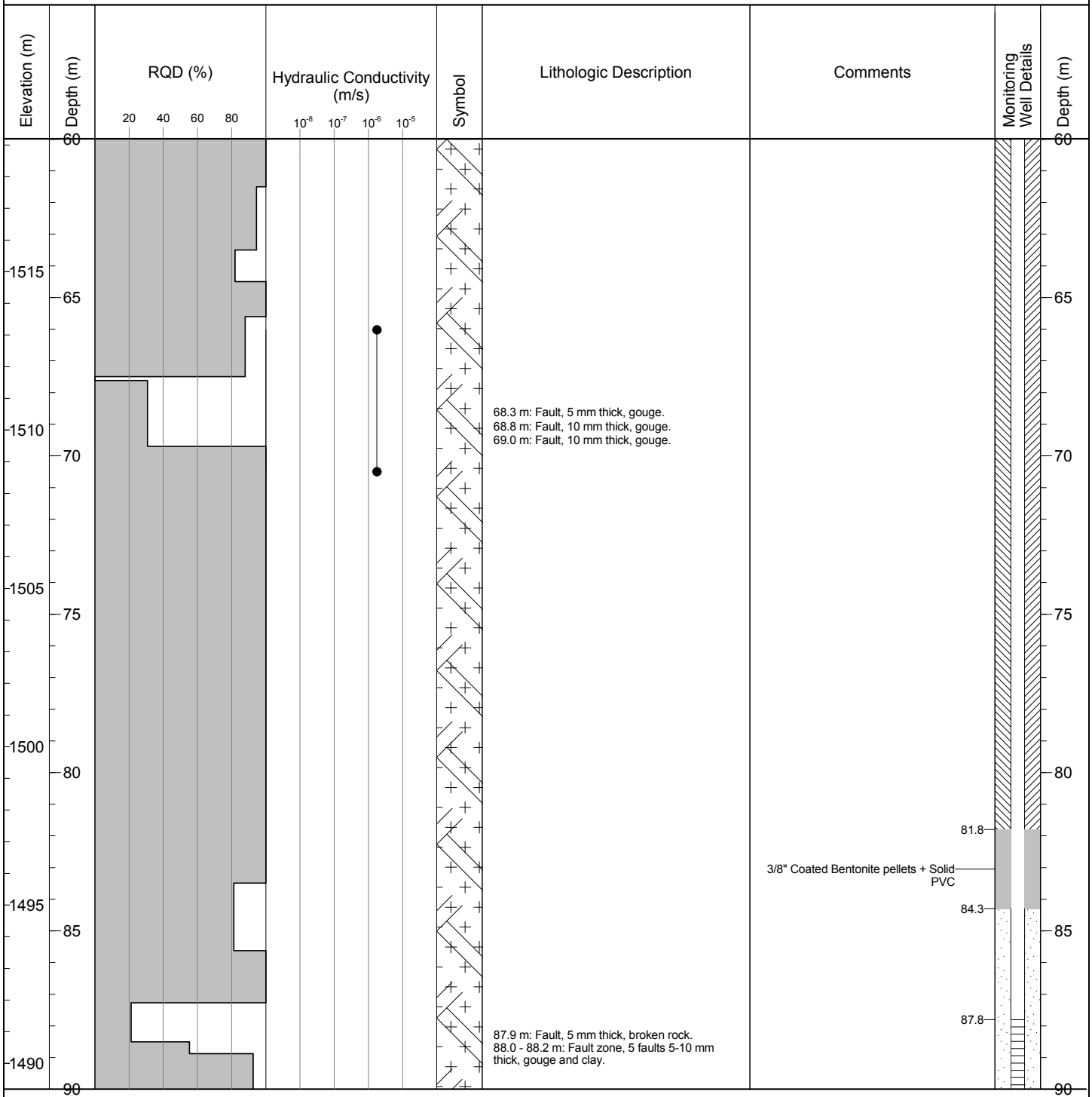
DRILL HOLE # MW-BGC12-BJ-12A

Location: Valley of Kings Zone

Co-ordinates (m): 426,509E - 6,257,807N
Ground Elevation (m): 1,579.19
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.78
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1580.0
Cased To (m): 1.2

Start date: 04 Aug 12
Finish Date: 08 Aug 12
Final Depth (m): 100.0
Depth To Top Of Rock (m): 0.0
Logged by: DP/LL
Reviewed by: KSJ



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AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # MW-BGC12-BJ-12A

Location: Valley of Kings Zone

Co-ordinates (m): 426,509E - 6,257,807N
Ground Elevation (m): 1,579.19
Survey Method: Surveyed
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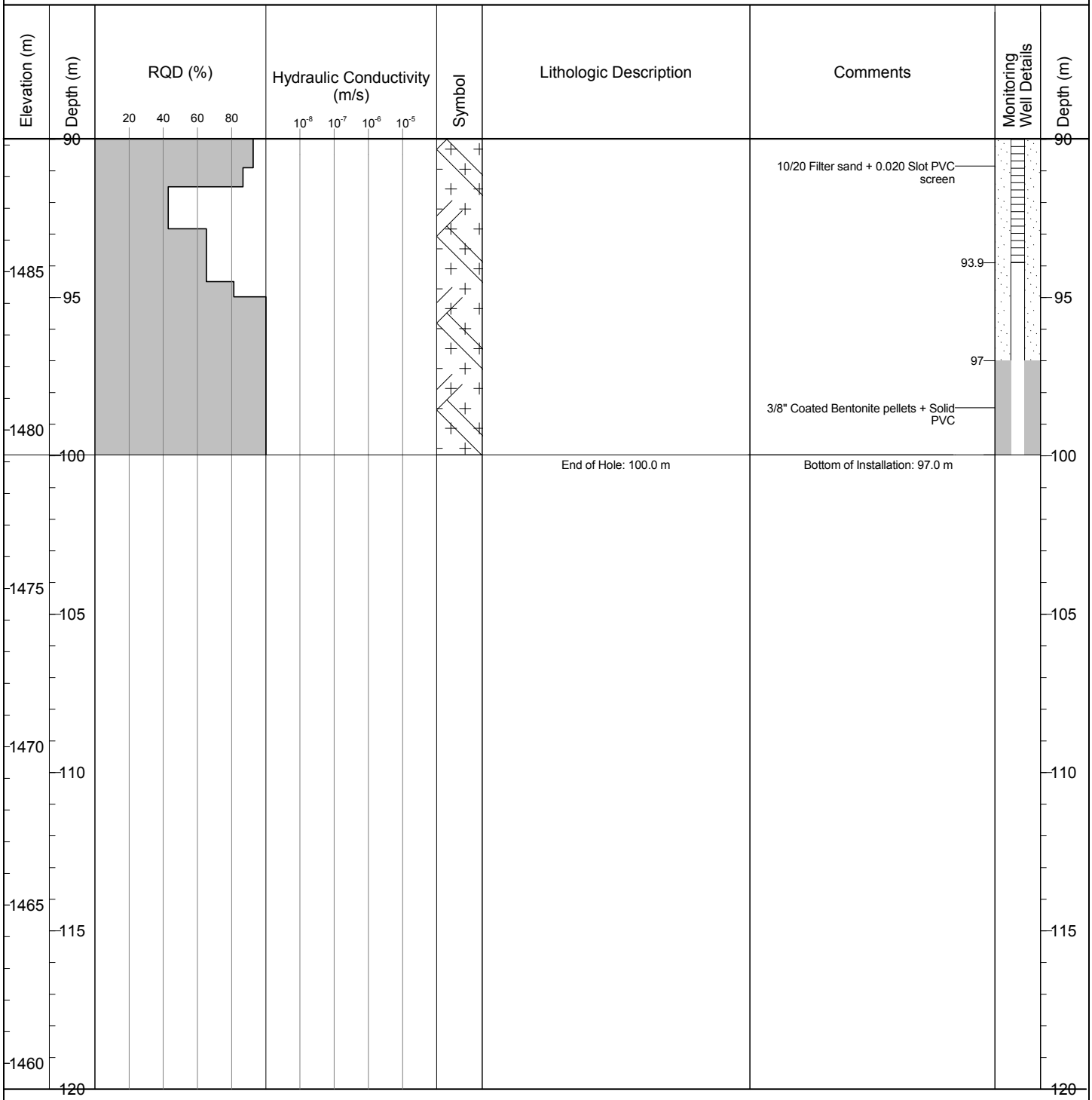
Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1580.0
Cased To (m): 1.2

Start date: 04 Aug 12
Finish Date: 08 Aug 12
Final Depth (m): 100.0
Depth To Top Of Rock (m): 0.0
Logged by: DP/LL
Reviewed by: KSJ



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

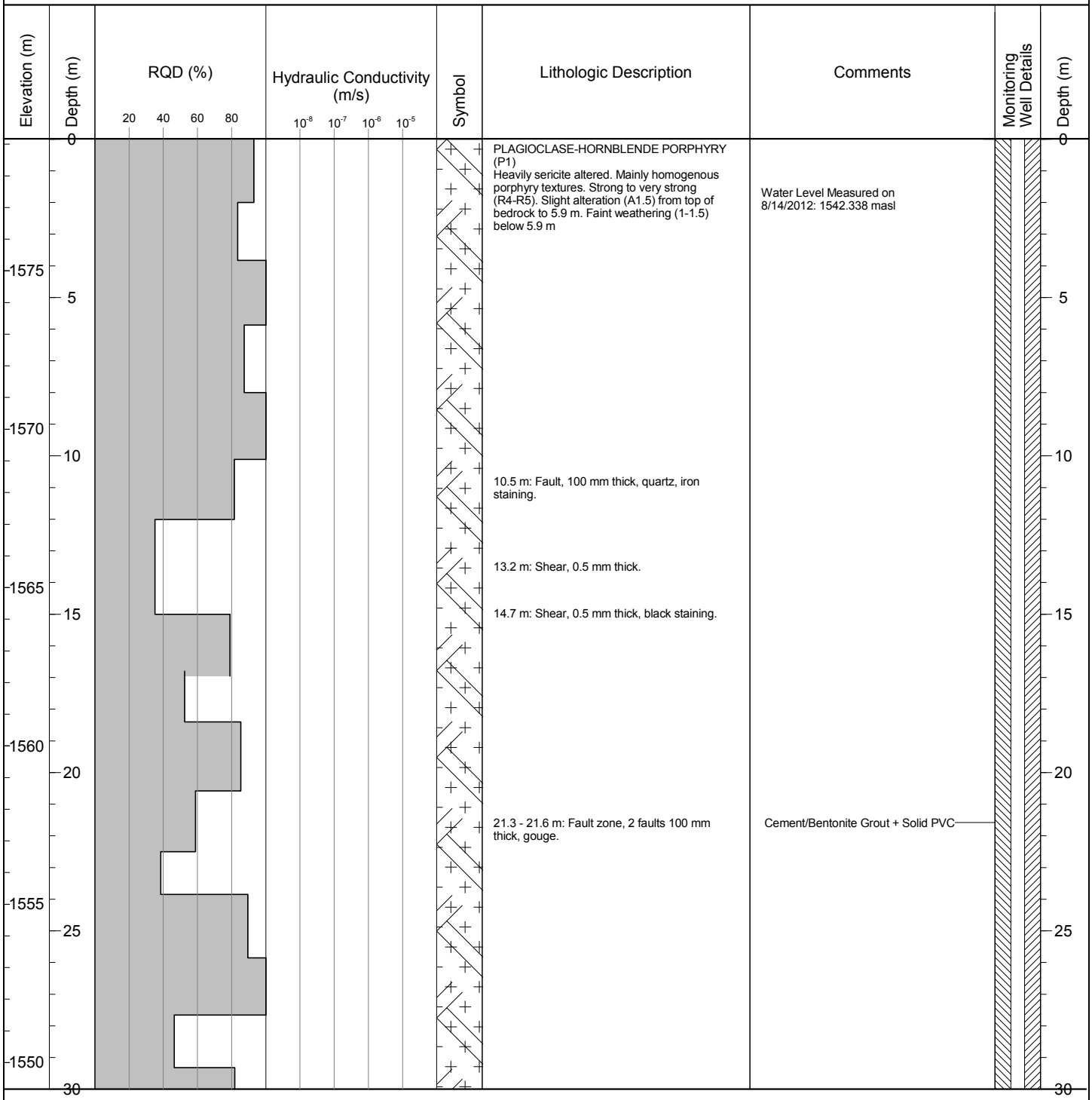
DRILL HOLE # MW-BGC12-BJ-12B

Location: Valley of Kings Zone

Co-ordinates (m): 426,505E - 6,257,807N
Ground Elevation (m): 1,579.16
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.78
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1579.9
Cased To (m): 1

Start date: 09 Aug 12
Finish Date: 10 Aug 12
Final Depth (m): 53.1
Depth To Top Of Rock (m): 0.0
Logged by: DP/LL
Reviewed by: KSJ



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

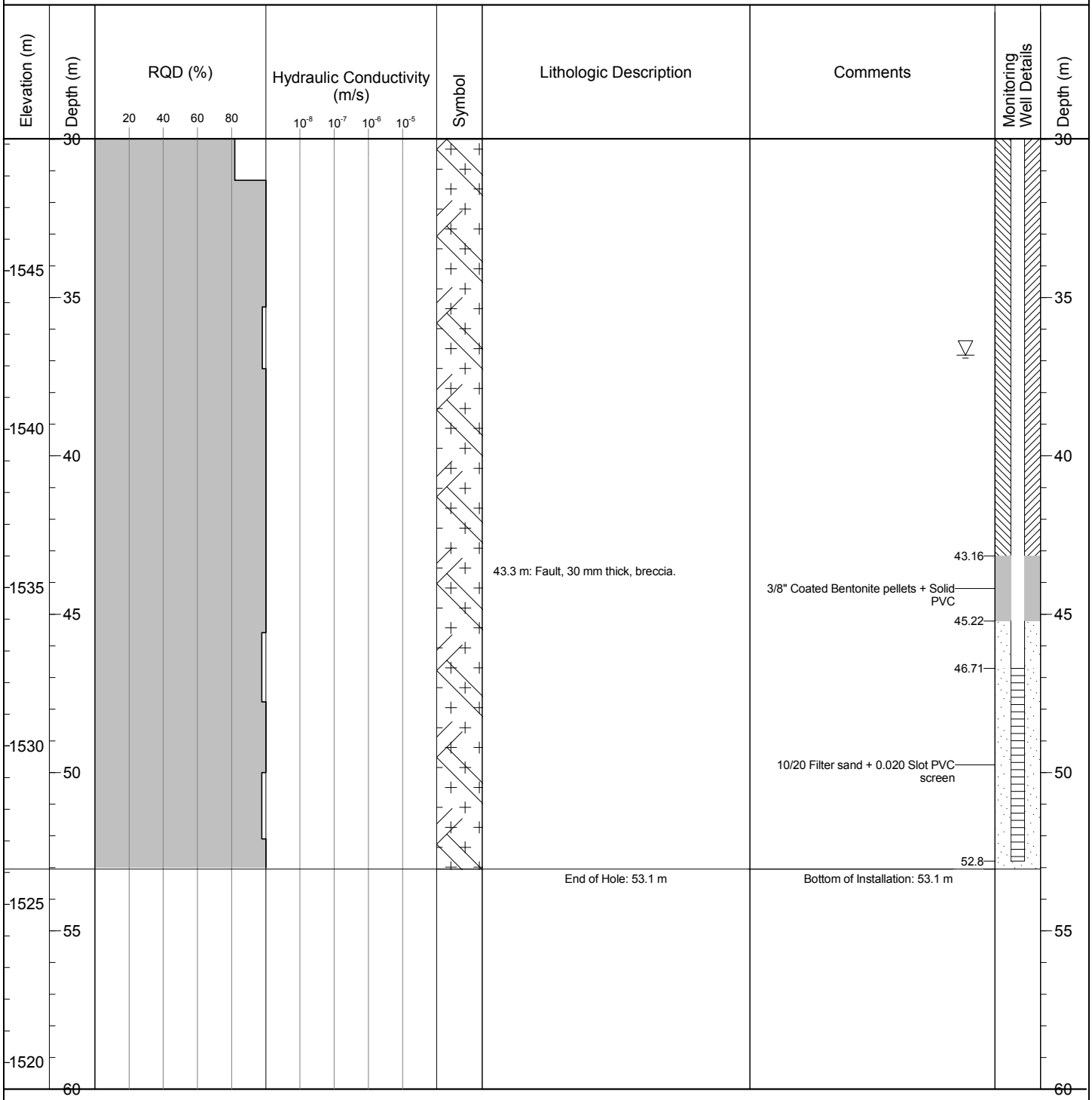
DRILL HOLE # MW-BGC12-BJ-12B

Location: Valley of Kings Zone

Co-ordinates (m): 426,505E - 6,257,807N
Ground Elevation (m): 1,579.16
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Stick Up (m): 0.78
Surface Completion: PVC Stick-Up

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: PQ
Top of PVC Elevation (m): 1579.9
Cased To (m): 1

Start date: 09 Aug 12
Finish Date: 10 Aug 12
Final Depth (m): 53.1
Depth To Top Of Rock (m): 0.0
Logged by: DP/LL
Reviewed by: KSJ



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: Pretium Resources Inc.

BRUCEJACK (HYDROGEO) BRUCEJACK_HYDROGEO.GDL BGC.GDT 6/4/13

APPENDIX C
GEOTECHNICAL DRILL HOLE LOGS

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N	***Drill Designation:*** Heliportable	***Start Date:*** 06 Mar 12
Ground Elevation (m): 1,365.0	***Drilling Contractor:*** Radius	***Finish Date:*** 17 Mar 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 425.3
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 15.1
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** AGC/JND/KM
Trend (°): 131	***Cased To (m) :*** 16.3	***Reviewed By:*** JW

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						OVERBURDEN No Recovery.
1						
2						
3						
4						
5						
6						
7						
8						

Su - kPa
40 80 120 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery
20 40 60 80
Moisture Content & SPT N
W_p% W% W_l%
20 40 60 80

BRUCEJACK (SOIL) BRUCEJACK_SOIL.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description	Su - kPa 40 80 120 160 ▲ UC/2 △ Pocket Pen /2 ● SPT (blows/300mm) ★ % Fines Core Recovery 20 40 60 80 Moisture Content & SPT N W_p% W% W_l% 20 40 60 80
8							
9							
10							
11							
12							
13							
14							
15						Rock encountered at 15.1 m depth. Refer to DH-BGC12-19 rock log.	
16							

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
8			Refer to DH-BGC12-19 Overburden Log						
15			ARENITE (S4) Dark grey, fine grained, massive sandstone, weakly altered, no bedding evident, weakly crackled with calcite veinlets, lower contact is not evident with broken core present; possibly faulted. Medium strong to strong (R3.5-R4). Faint weathering (W1.5) on major discontinuities.						
16									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

16
17
18
19
20
21
22
23
24

D 1.2
D 1.0
D 1.8
D 1.1
D 1.7

20.8 m: Shear, 0.5 mm TC infill, R1. JRC = 8.

BRECCIA-CONGLOMERATE (S2)
Dark purple-grey, broken rock in weakly bedded sandstone, grain size from fine to coarse, polylithic, fragments < 16 cm wide, angular to subangular, sporadically subrounded, larger fragments of sandstone heavily altered with pyrite, sporadic fragments weakly altered with sericite and strongly altered with silicates. Medium strong to very strong (R3-R5). Faint alteration (A1.5) on major discontinuities to 31.1 m. Fresh (A1) below 31.1 m.

21.6 - 21.7 m: Heavily silicified vein with subangular to subrounded fragments < 2.5 cm wide, light to medium grey with lesser purplish-red quartz.

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
24					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
25						D 2.0			
26									
27									
28						D 1.8			
29									
30									
31			30.9 m: Fault, 16 mm FB infill, R0. JRC = 10. Dip/dip direction = 73/206.						
32					FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL	EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG	V. POOR / POOR / FAIR / GOOD / EXT. GOOD	V. CLOSE / CLOSE / MODERATE / WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

Location: West Zone

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Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
32					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
33									
34			34 m: Shear, 0.5 mm aperture. JRC = 6. Dip/dip direction = 70/264.						
35						D 2.4			
36									
37									
38						D 3.2			
39			38.7 - 39.0 m: Low angle felsic dyke, lower contact is 15 degrees TCA, light grey in colour, dyke has disrupted bedding in unit directly below.						
40					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

40
41
42
43
44
45
46
47
48

D 2.0
D 1.8
D 6.3
D 3.1

ARENITE (S4)
Dark grey, medium grained massive sandstone, heavily altered with pyrite, very weakly bedded, upper contact is 50 degrees TCA, lower contact is 25 degrees TCA. Strong to very strong (R4.5). Fresh (A1).

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

48

D 5.1

D 2.3

49

BRECCIA-CONGLOMERATE (S2)
Dark purpleish-grey, broken rock in weakly bedded sandstone, fine to medium grained, polylithic, smaller fragments < 4 cm, subangular with rare subround fragments, locally whitish-grey to light greyish-purple. Medium strong to strong (R3.5-R4). Fresh (A1).

50

50.4 m: Shear, 0.5 mm aperture. JRC = 12. Dip/dip direction = 61/240.

51

Falling head test from 50.9 - 55.5 m. Estimated hydraulic conductivity is 1.6E-07 m/s.

51.6 m: Shear, 0.1 mm aperture. JRC = 10. Dip/dip direction = 74/331.

52

52.5 m: Fault, 15 mm FB infill, R1. JRC = 13. Dip/dip direction = 69/014.

52.7 m: Fault, 8 mm FG infill, R0. JRC = 16. Dip/dip direction = 52/014.

53

53 m: Fault, 0.5 mm FG infill, R0. JRC = 8. Dip/dip direction = 73/357.

D 1.3

53.6 m: Fault, 11 mm FB infill, R2. JRC = 20. Dip/dip direction = 58/360.

53.6 m: Fault, 4 mm FB infill, R2. JRC = 20. Dip/dip direction = 47/247.

54

54.2 m: Fault, 13 mm FB infill, R0. JRC = 20. Dip/dip direction = 54/048.

54.3 m: Fault, 40 mm FB infill, R0. JRC = 8. Dip/dip direction = 47/036.

54.6 m: Shear, 0.5 mm aperture. JRC = 13. Dip/dip direction = 66/250.

55

54.9 m: Fault, 10 mm FB infill, R1. JRC = 6.

55.1 m: Shear, 0.5 mm aperture. JRC = 13.

55.4 m: Shear. JRC = 15. Dip/dip direction = 72/250.

56

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

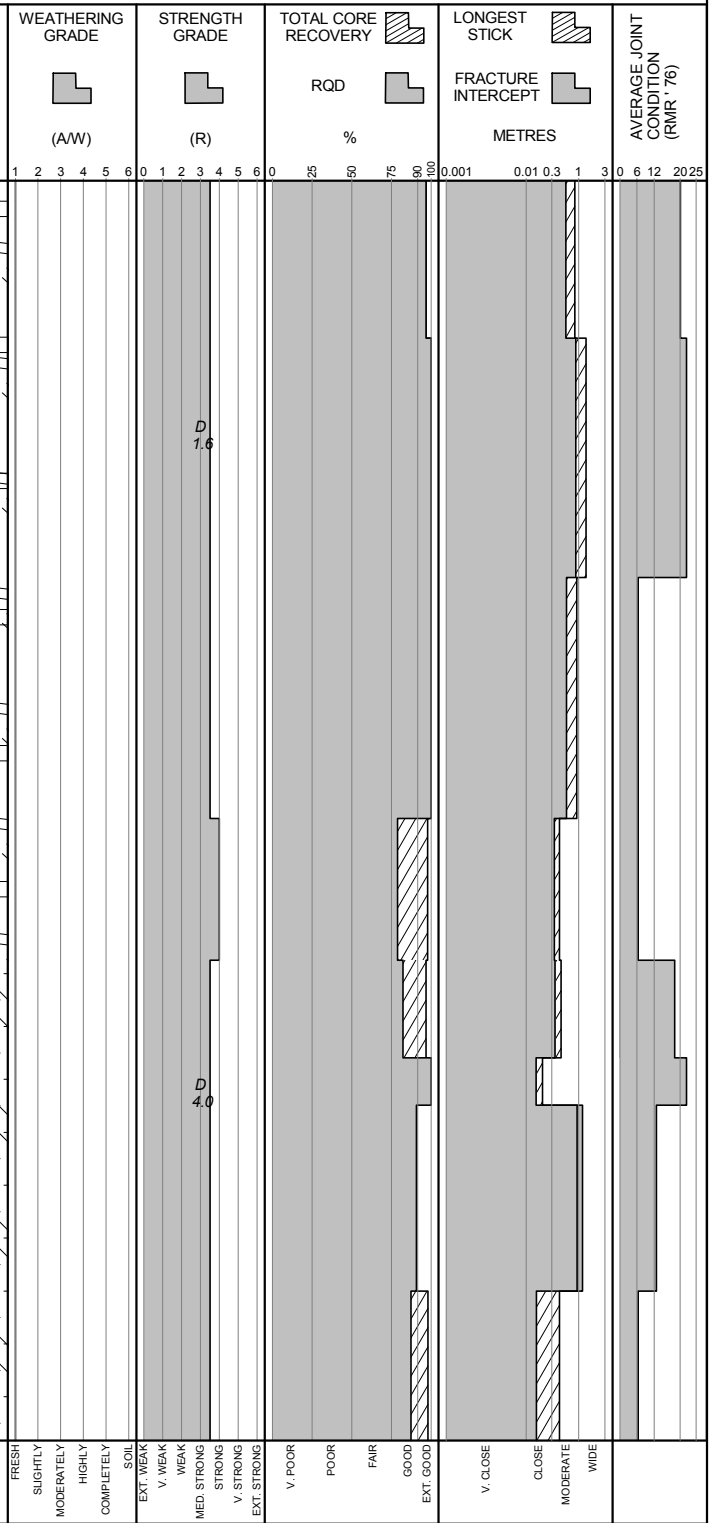
LOG SCALE: 1:50

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
56			56 m: Shear, 0.2 mm aperture. JRC = 13. Dip/dip direction = 39/241.	
57			57.1 m: Shear, 0.2 mm aperture. JRC = 10. Dip/dip direction = 60/233.	
58			58.3 m: Shear, 0.5 mm aperture. JRC = 6. Dip/dip direction = 53/303.	
59			59.1 m: Fault, 6 mm FG infill, R0. JRC = 8. Dip/dip direction = 73/252. 59.2 m: Fault, 5 mm FB infill, R0. JRC = 10.	
60			60.4 m: Fault, 7 mm FB infill, R0. JRC = 16. Dip/dip direction = 83/26.	
61			60.9 m: Fault, 3 mm FB infill, R0. JRC = 6. Dip/dip direction = 57/341. PLAGIOCLASE-HORNBLENDE PORPHYRY (P1) Dark grey, fine grained groundmass with medium grained tabular to subrounded feldspar crystals with selective crystals replaced by calcite, hornblende needles visible with majority replaced by sericite or chlorite, selective sections have sericite replaced feldspar crystals. Medium strong to strong (R3-R4). Fresh (A1).	
62				
63				
64				



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
64			64.1 m: Fault, 85 mm FB infill, R2. JRC = 15. Dip/dip direction = 56/299.			D 3.6			
65									
66									
67						D 4.8			
68									
69									
70									
71									
72									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE; CLOSE; MODERATE; WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

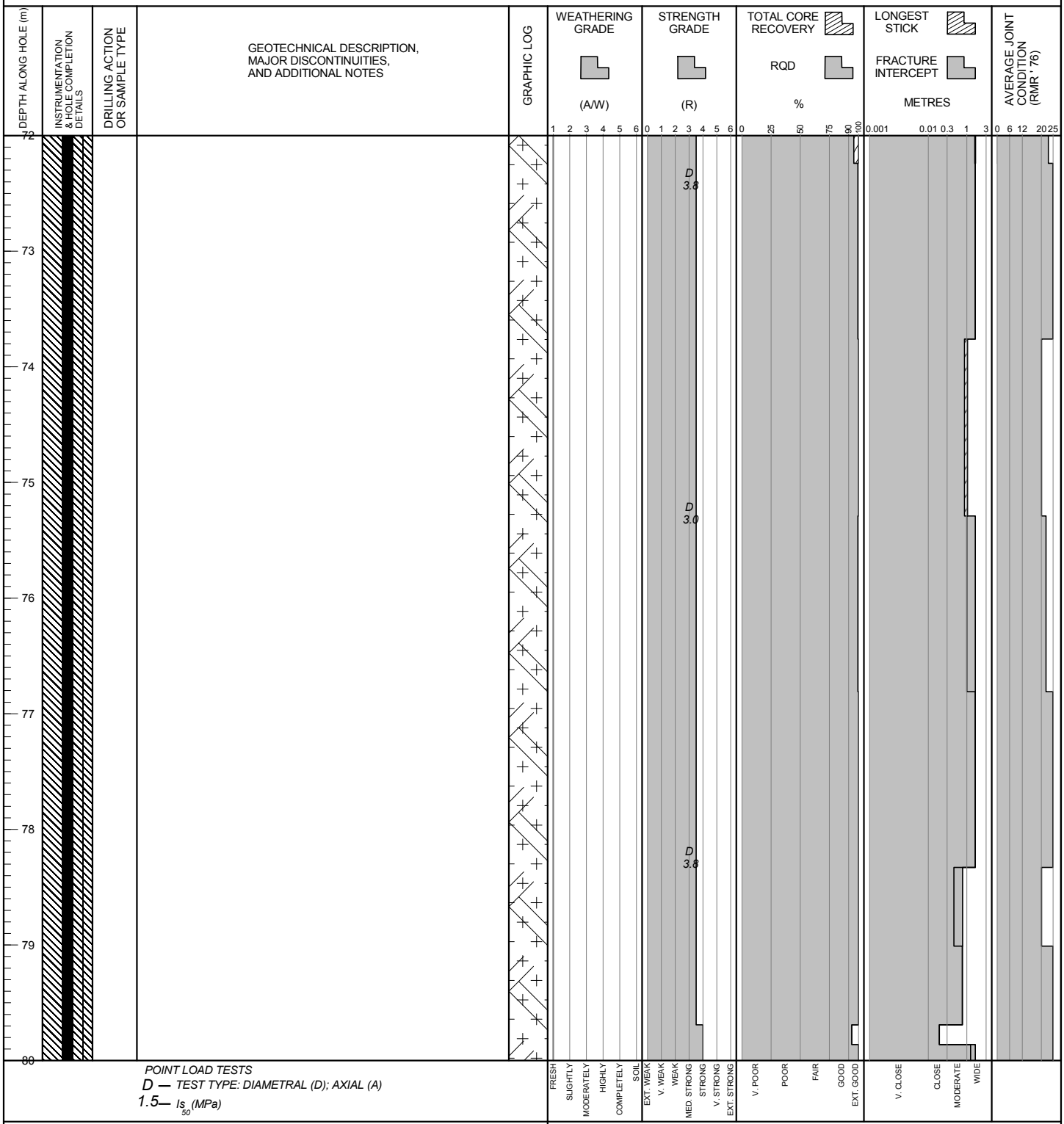
Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N	***Drill Designation:*** Heliportable	***Start Date:*** 06 Mar 12
Ground Elevation (m): 1,365.0	***Drilling Contractor:*** Radius	***Finish Date:*** 17 Mar 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 425.3
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 15.1
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** AGC/JND/KM
Trend (°): 131	***Cased To (m) :*** 16.3	***Reviewed By:*** JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-19

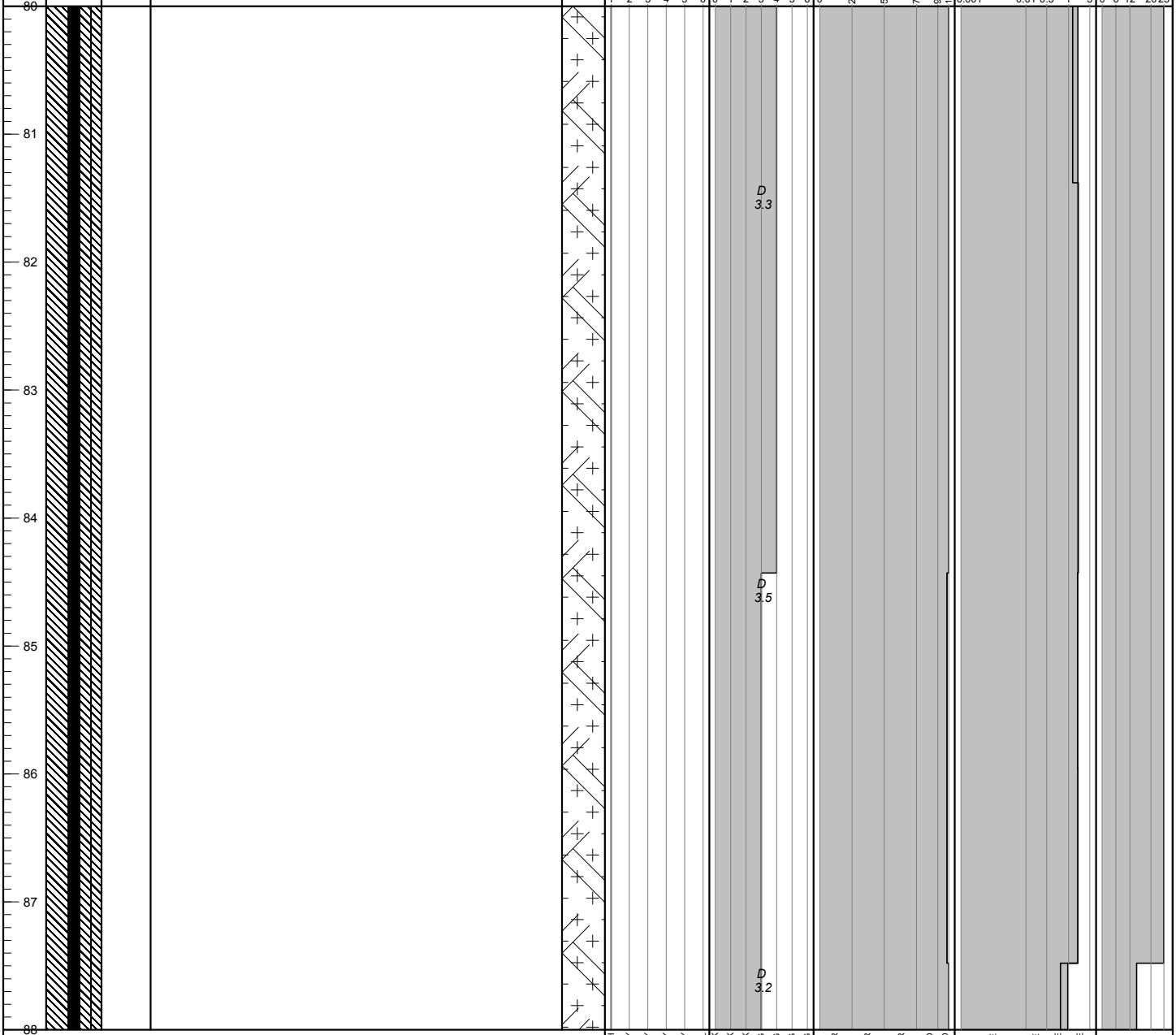
Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
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Final Depth (m): 425.3
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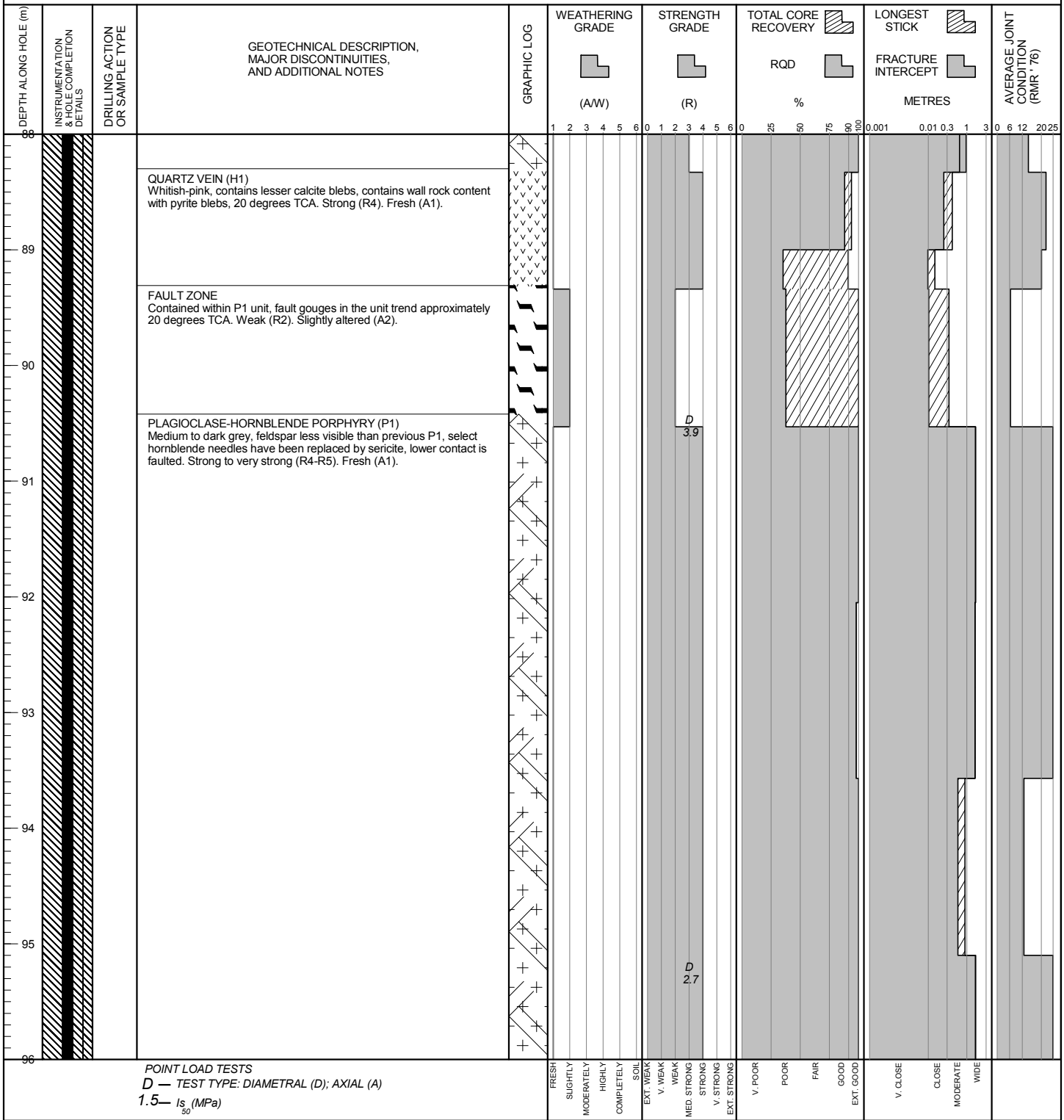
Logged By: AGC/JND/KM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
96			
97			
98			
99			ARENITE (S4) Dark grey, massive immature sandstone, very weakly bedded, resembles P1 locally, rare sericite replaced fragments evident, remnants of fragments evident locally. Strong to very strong (R4-R5). Fresh (A1).
100			
101			
102			
103			
104			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

D 1.0

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

104
105
106
107
108
109
110
111
112

D
2.9

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

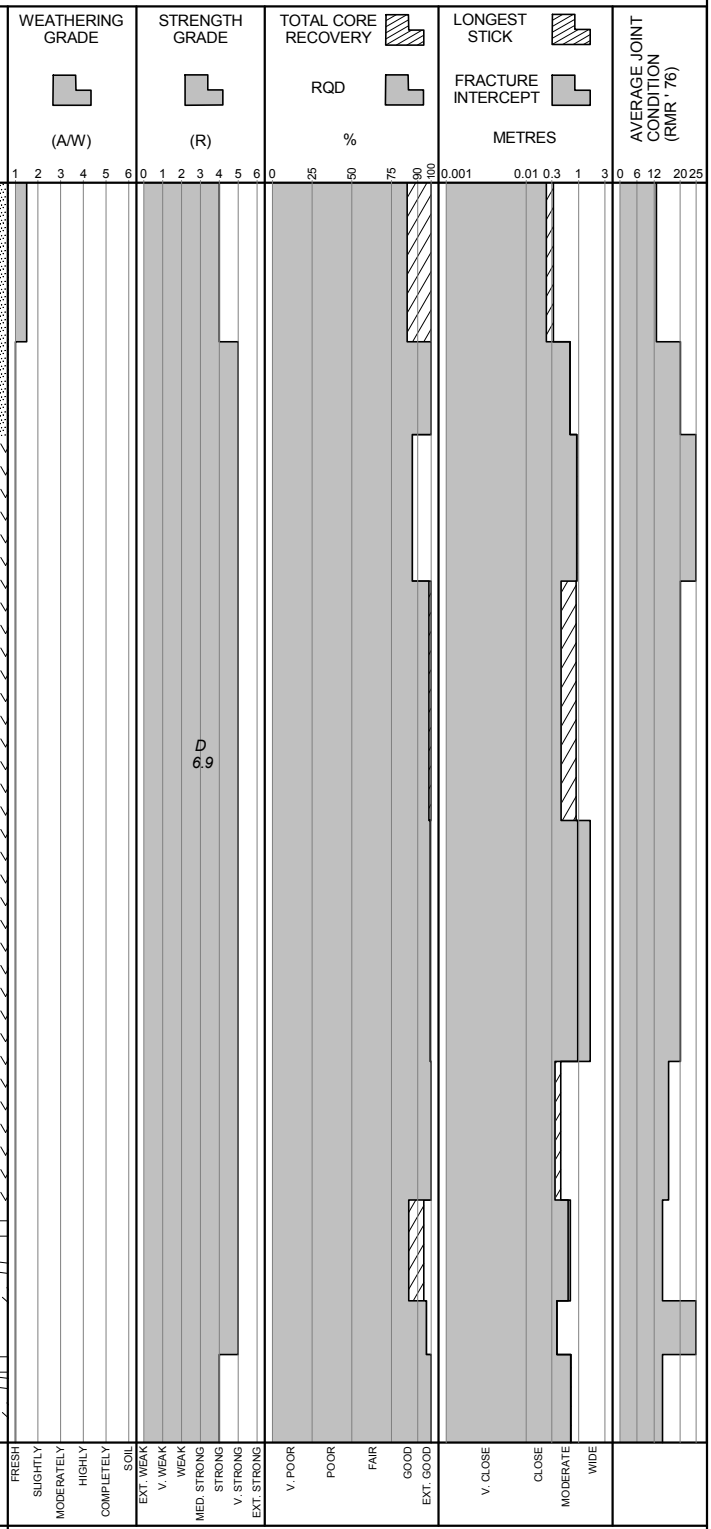
Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
120				
121				
122			INTERMEDIATE VOLCANICS (V12) Medium to light green, calcareous massive intermediate dyke, flow banded at 30 degrees TCA. Very strong (R5). Fresh (A1).	
123				
124				
125				
126				
127			BRECCIA-CONGLOLMERATE (S2) Dark grey, fine grained sandstone with poorly sorted medium grained fragments up to 4 cm wide, fragments are oriented 40 degrees TCA synonymous with foliation, discontinuous zones of broken quartz veins exist, truncated by fault. Strong to very strong (R4-R5). Fresh (A1). 127.0 - 127.5 m: Calcareous massive intermediate dyke.	
128				



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

ARENITE (S4)
Grey, massive to very weakly bedded medium grained sandstone, immature, heavy altered with pyrite, rare subangular fragments evident, up to 138.75 m quartz calcite vein stockwork is evident in discontinuous zones similar to previous sections. Strong to very strong (R4-R5). Fresh (A1).

130.6 m: Fault, 3.5 mm FG infill, R0. JRC = 8. Dip/dip direction = 82/280.

130.5 - 130.7 m: Quartz-calcite vein stockwork (H7), selective sections of the stockwork have quartz fragments caught in the wall rock, wall rock is fine grained sandstone, contacts approximately 20-25 degrees TCA.

D 3.0
D 2.0
D 4.7

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

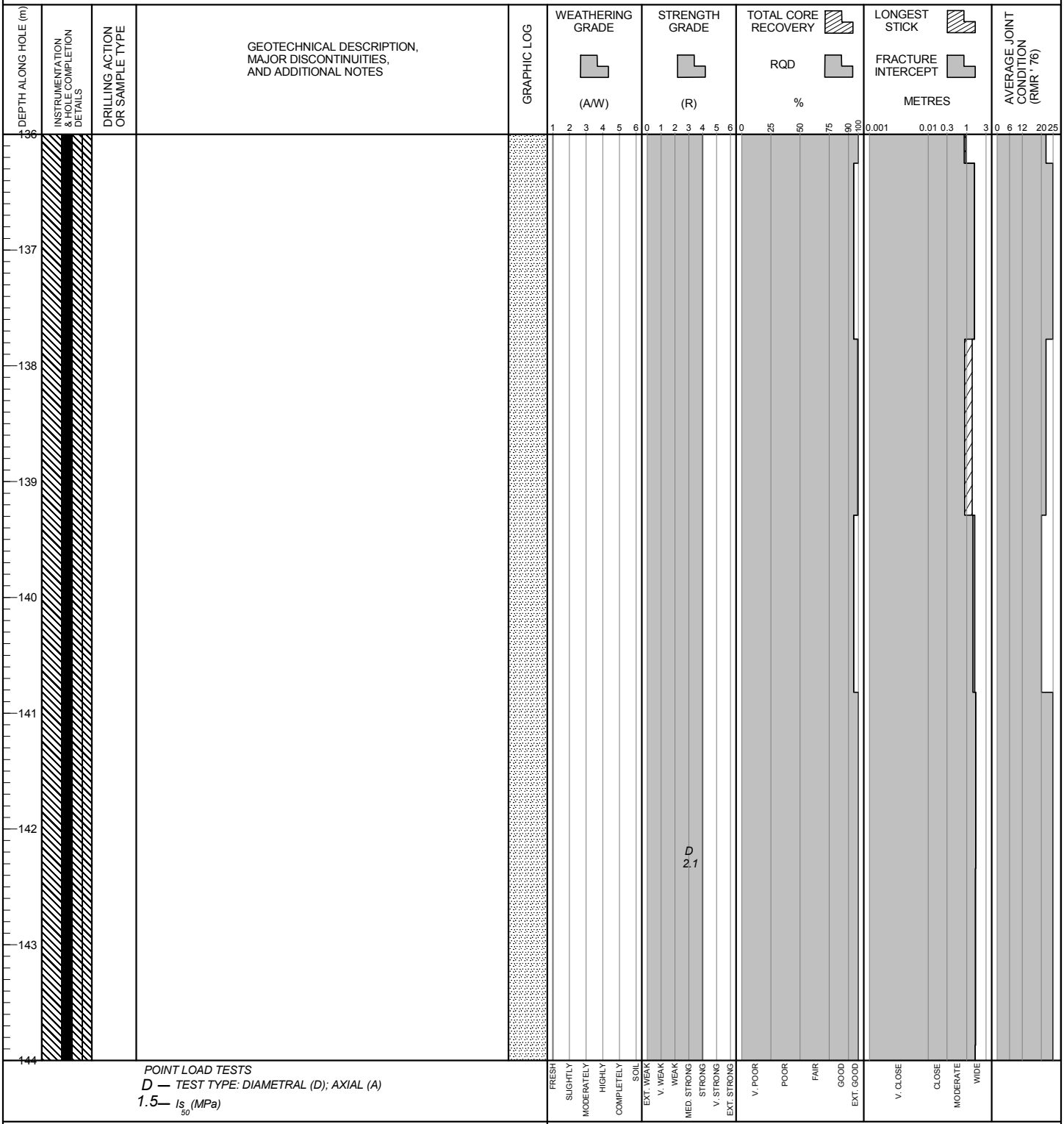
DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

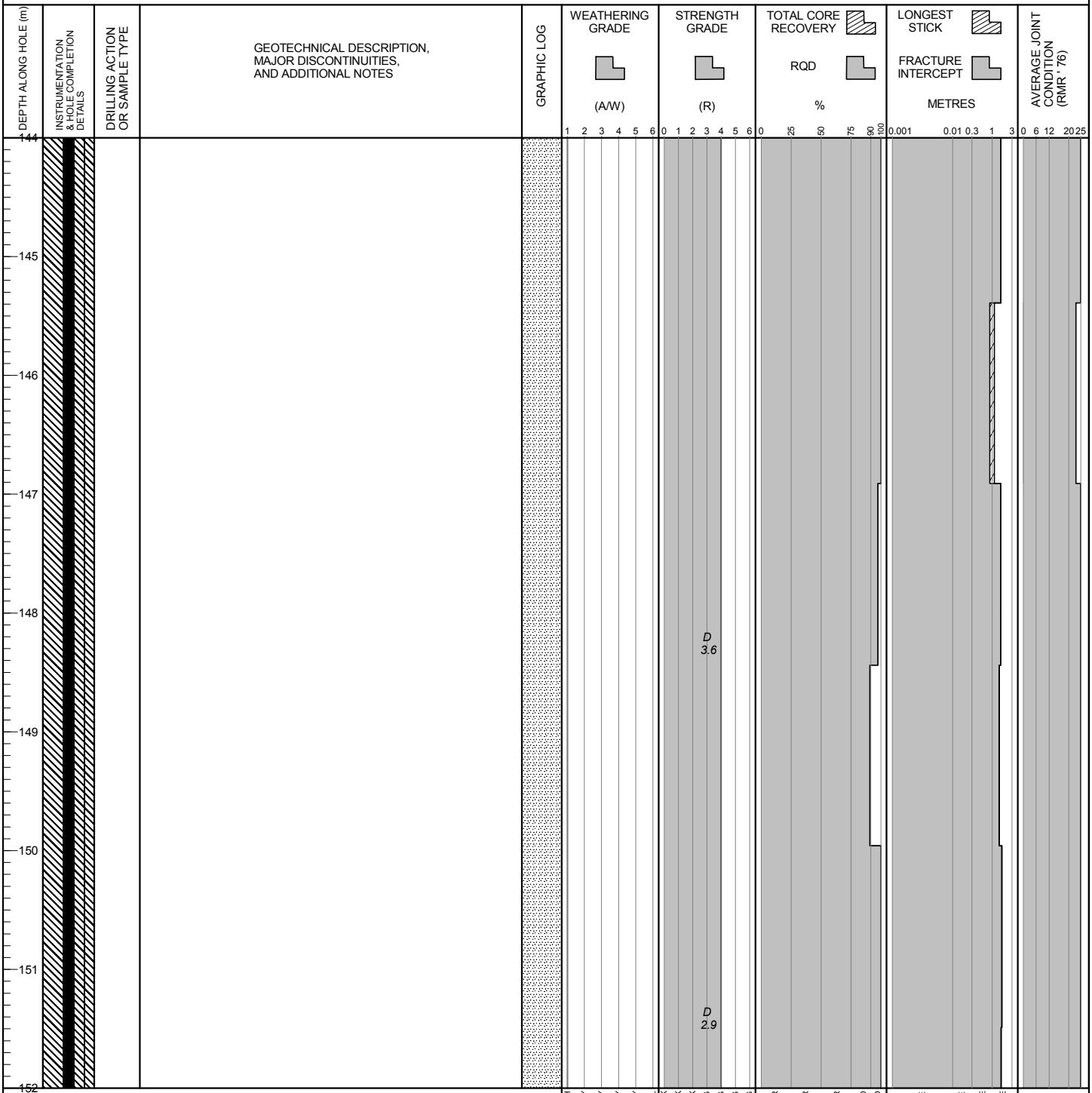
DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

152
153
154
155
156
157
158
159
160

158.7 - 160.5 m: Quartz-calcite vein stockwork (H7) similar to previous zone, slightly more brecciated.

D
4.6

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

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Fluid: Polymer
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Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

160
161
162
163
164
165
166
167
168

162.3 m: Fault, 8 mm FB infill, R0. JRC = 10. Dip/dip direction = 77/273.

166.5 m: Fault, 3 mm FB infill, R0. JRC = 12. Dip/dip direction = 87/294.

167 m: Fault, 2 mm FB infill, R0. JRC = 13. Dip/dip direction = 64/046.

167.2 m: Fault, 0.5 mm FG infill, R0. JRC = 8. Dip/dip direction = 49/227.

D 2.7

D 2.1

POINT LOAD TESTS
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1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

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Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
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Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

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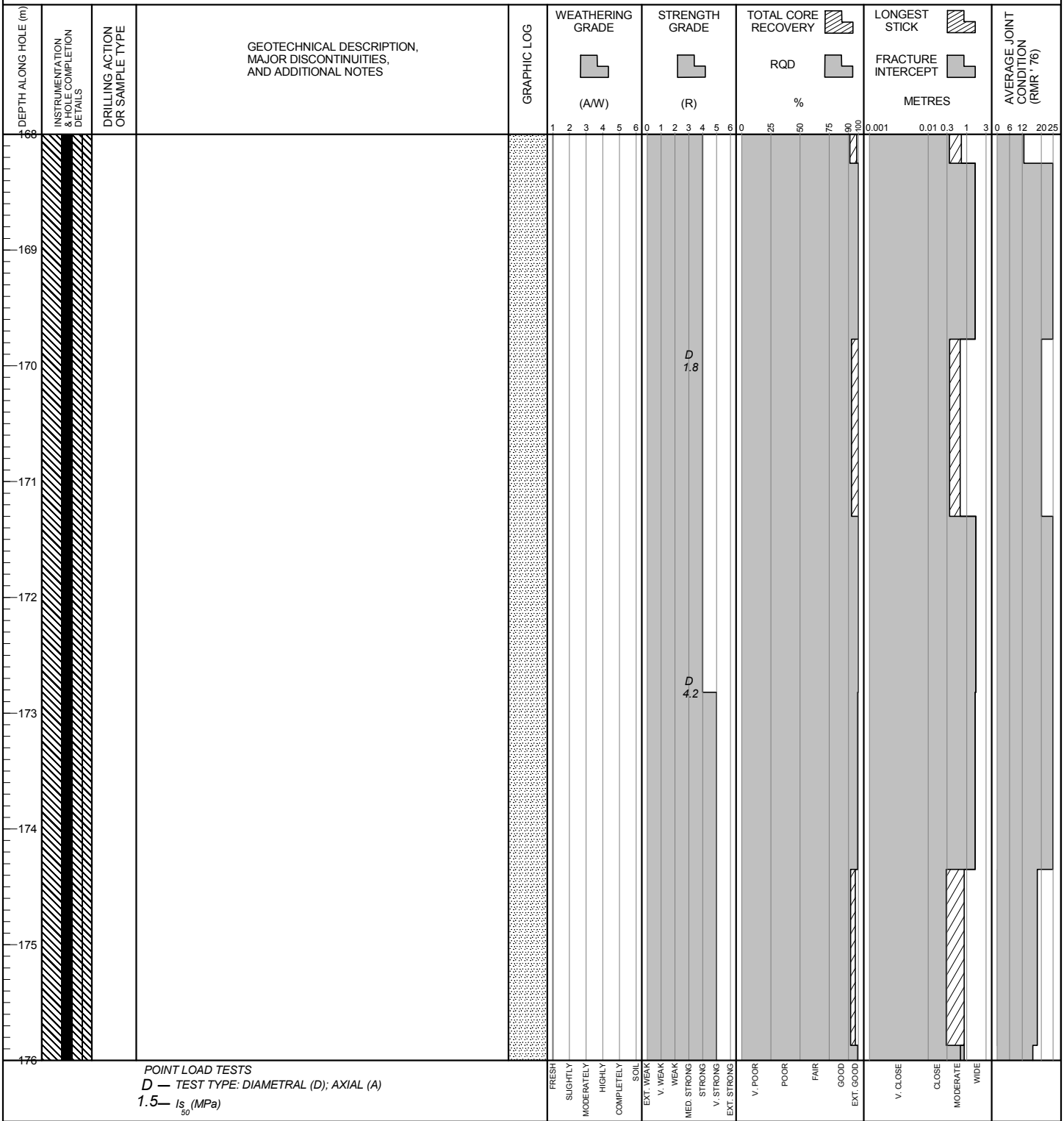

POINT LOAD TESTS
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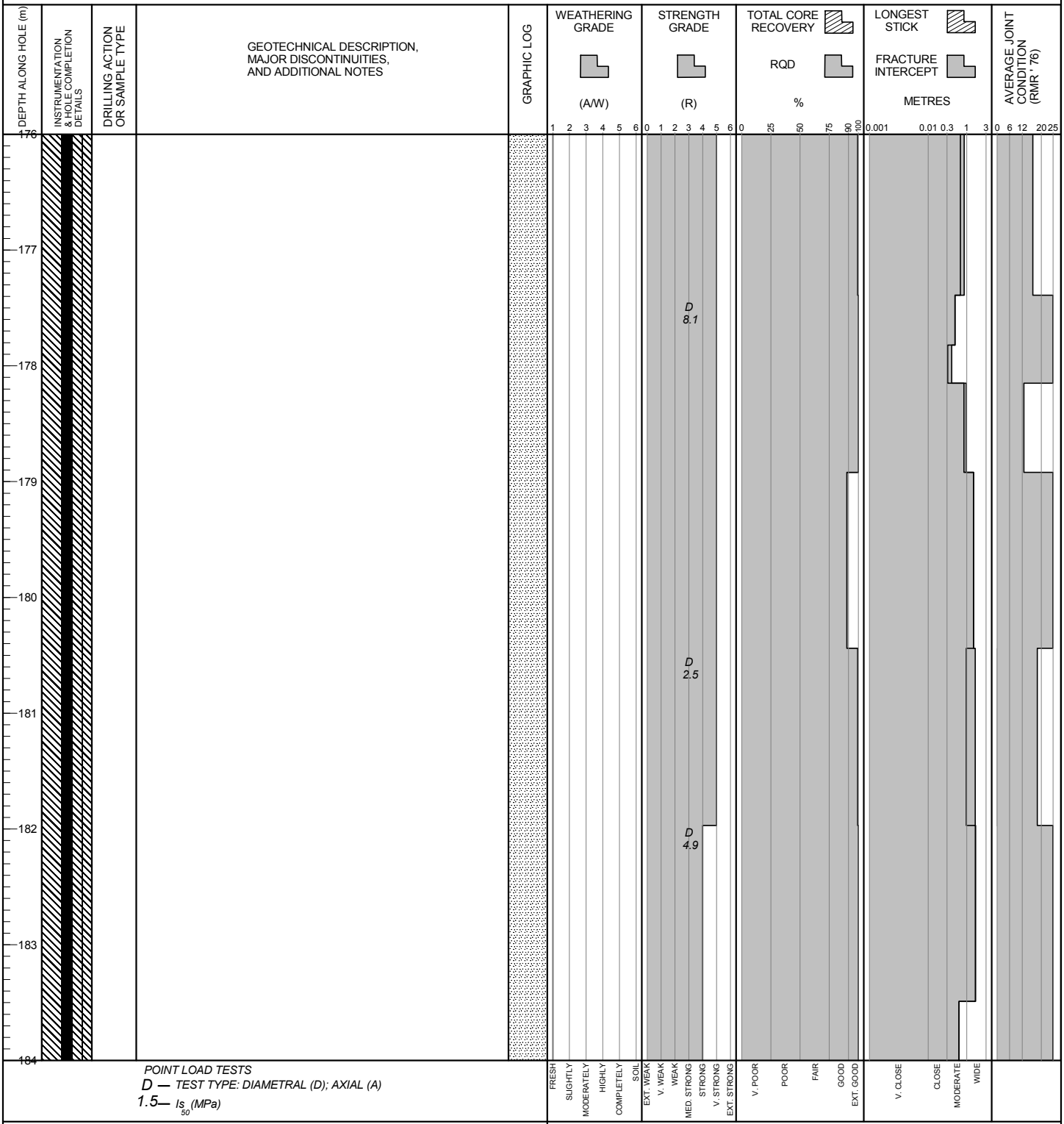

POINT LOAD TESTS
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Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
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Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
184									
185			185.0 - 187.3 m: Stockwork (H7) in sandstone, locally brecciated, quartz veins are < 30 cm wide.			D 3.9			
186									
187			QUARTZ VEIN (H1) White to milky white, mineralized quartz calcite vein, massive, rare wall rock fragments present, locally vein has a greenish colouration due to sericite alteration, oriented roughly 25 degrees TCA, black specks are visible in vein. Strong to very strong (R4-R4.5). Fresh (A1).						
188									
189						D 5.7			
190									
191									
192									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
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Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

192

ARENITE (S4)
Grey, medium grained sandstone brecciated by veining, similar to previous sandstone units. Strong to very strong (R4-R4.5). Fresh (A1).

192.5 - 199.2 m: Stockwork (H7) in sandstone, locally brecciated, quartz veins are < 30 cm wide.

D 5.8

193

194

195

D 6.6

196

196.1 m: Shear, 1 mm aperture. JRC = 12. Dip/dip direction = 81/298.

197

198

D 5.0

199

199.2 m: Shear, 0.2 mm aperture. JRC = 8.

200

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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AN APPLIED EARTH SCIENCES COMPANY

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

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Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

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Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
200			
			QUARTZ VEIN (H1) White to milky white, quartz-calcite vein with weakly altered wall rock fragments. Strong to very strong (R4-R4.5). Fresh (A1).
201			
			201.8 m: Fault, 2 mm FB infill, R1. JRC = 8. Dip/dip direction = 83/189.
202			
			ARENITE (S4) Medium to dark grey, medium grained sandstone, weakly bedded and immature, discontinuous zones of brecciation evident (localized crackle breccia and vein brecciation present), locally vein "fragments" look to have been caught in the sandstone, rare subangular fragments present up to 4 cm wide. Strong to very strong (R4-R4.5). Fresh (A1). 203.1 m: Shear, 1 mm aperture. JRC = 13. Dip/dip direction = 80/347.
203			
204			
205			
206			
207			
208			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG

D 7.2
D 5.5
D 7.2
D 6.2
D 7.2

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR; POOR; FAIR; GOOD; EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE; CLOSE; MODERATE; WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
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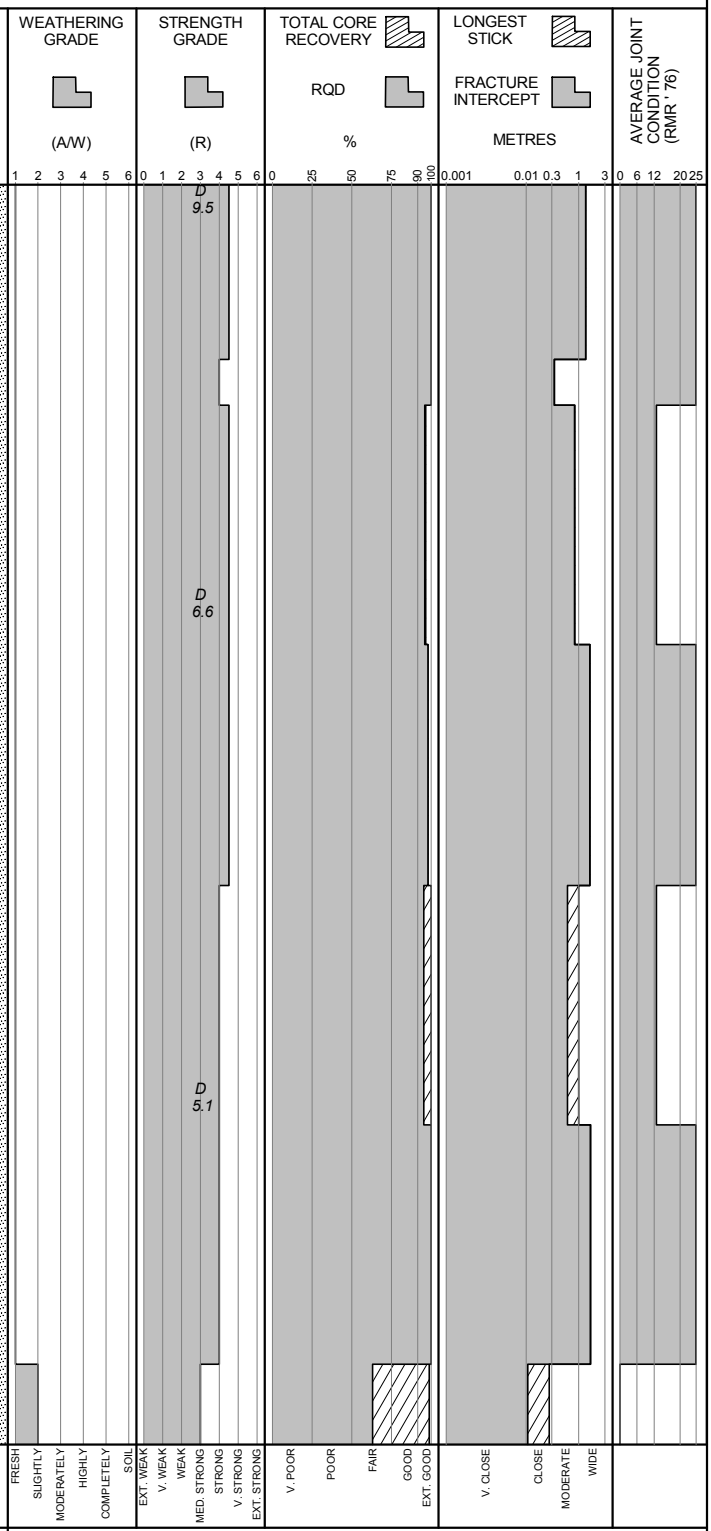
DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
208				
209				
210			209.7 m: Fault, 2 mm FB infill, R0. JRC = 10. Dip/dip direction = 67/354.	
211				
212				
213				
214			213.9 m: Fault, 3 mm FB infill, R1. JRC = 12. Dip/dip direction = 62/358.	
215				
216			Falling head test from 215.5 - 220.1 m. Estimated hydraulic conductivity is 2.6E-07 m/s. 215.6 m: Fault on vein, 2.5 mm FB infill, R0. JRC = 6. Dip/dip direction = 46/013.	



POINT LOAD TESTS
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Logged By: AGC/JND/KM
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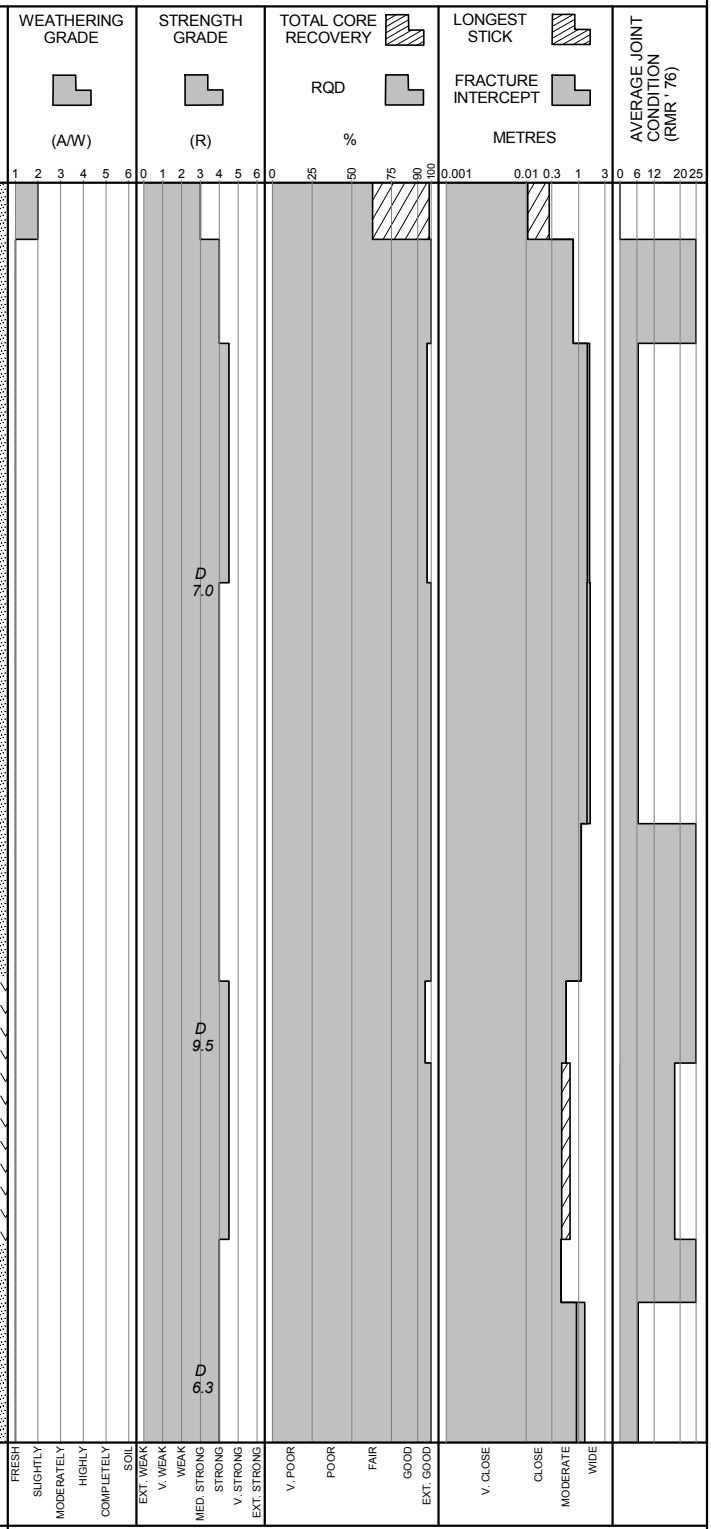
DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
216			215.8 m: Fault, 40 mm FG infill, R0. JRC = 8. Dip/dip direction = 55/348.	
			216.1 m: Fault, 4 mm FG infill, R0. JRC = 10. Dip/dip direction = 54/002.	
			216.1 m: Fault, 4 mm FB infill, R0. JRC = 13.	
			216.3 m: Fault, 8 mm FG infill, R0. JRC = 12. Dip/dip direction = 77/016.	
217				
218				
			218.4 m: Shear, 0.5 mm SE infill, R0. JRC = 8. Dip/dip direction = 60/359.	
219			218.8 m: Fault, 2 mm FB infill, R1. JRC = 12. Dip/dip direction = 42/021.	
220				
221			INTERMEDIATE VOLCANICS (V12) Green, massive intermediate dyke, approximately 10% calcite blebs, chlorite altered fractures, weakly calcareous. Strong to very strong (R4.5). Fresh (A1).	
222				
223			ARENITE (S4) Grey, fine to medium grained sanstone, very weakly bedded, contains sporadic subangular fragments up to 1 cm wide, up to 223.45 m unit is vein brecciated with quartz/calcite filling the spaces between fragments. Strong (R4). Fresh (A1).	
			223.5 m: Fault, 2 mm FB infill, R0. JRC = 8. Dip/dip direction = 42/332.	
224				



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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
224			224.3 - 228.0 m: Mineralized quartz-calcite stockwork in sandstone, minor vein brecciation locally.	
225				
226				
227			227.2 m: Drillhole intersected an old drillhole, water lost.	
228			QUARTZ VEIN (H1) White to milky white, vuggy quartz-calcite vein, weakly mineralized, contains wall rock fragments, possibly sandstone. Strong (R4). Fresh (A1).	
229				
230				
231			STOCKWORK (H7) Medium to light grey, vein brecciated stockwork, quartz-calcite veining, sporadic vugs evident < 2 cm wide. Strong (R4). Fresh (A1).	
232				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

D 5.4

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Client: Pretium Resources Inc.

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

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Trend (°): 131

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Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
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232									
233			QUARTZ VEIN (H1) White to milky white, vuggy quartz-calcite vein, weakly mineralized, contains wall rock fragments. Strong (R4). Fresh (A1).						
234						D 1.9			
235									
236			STOCKWORK (H7) Medium to light grey, stockwork in massive sandstone or porphyry, multiple phases of veining overprinting itself in certain portions of the unit, veining looks to be offset by fracturing. Strong to very strong (R4-R5). Fresh (A1).						
237									
238						D 5.1			
239									
240									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
240					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
241									
242									
243									
244			244 m: Fault, 1 mm FB infill, R0. JRC = 10. Dip/dip direction = 64/238.						
245									
246									
247						D 6.9 D 5.2			
248					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

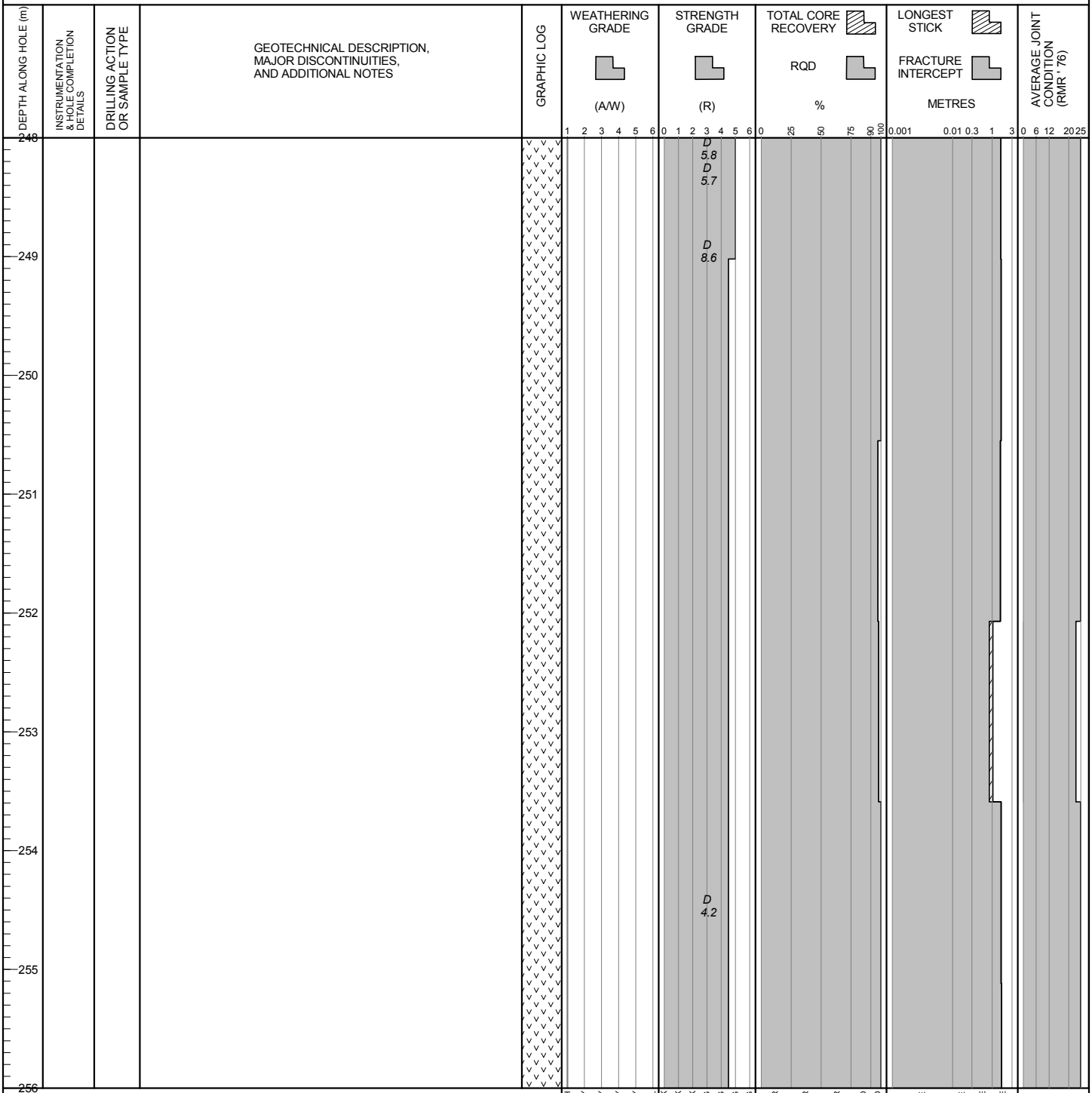
DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

Location: West Zone

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Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
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Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

256
257
258
259
260
261
262
263
264

D 6.0
D 5.4

263.8 m: Shear, 80 mm DX infill, R0. JRC = 10. Dip/dip direction = 36/220.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
V. POOR | POOR | FAIR | GOOD | EXT. GOOD
V. CLOSE | CLOSE | MODERATE | WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
264			264.6 m: Shear, 0.5 mm aperture. JRC = 10. Dip/dip direction = 55/233.	
265			265.1 m: Shear, 60 mm CX infill, R0. JRC = 20. Dip/dip direction = 17/202.	
			VERY SILICEOUS ROCKS (H8) Medium to light purple-grey, heavily silicified rhyolite, upper contact is faulted with unknown orientation, brecciated and chaotic quartz veining present with few veins intact. Medium strong to strong (R3.5-R4). Fresh to faint alterations (A1-A1.5).	
266			STOCKWORK (H7) Grey, stockwork in massive sandstone or porphyry, multiple phases of veining overprinting itself in certain portions of the unit, veining looks to be offset by fracturing, sporadic subangular fragments < 3 cm wide are replaced by sericite. Medium strong to strong (R3.5-R4). Fresh (A1).	
267				
268			VERY SILICEOUS ROCKS (H8) Medium to light purplish-grey, heavily silicified rhyolite, similar to previous H8 unit, heavily vein brecciated, rare subangular fragments < 3 cm wide present, strong sphalerite mineralization. Strong to verry strong (R3.5-R5). Fresh (A1).	
269				
270				
271				
272				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
D 4.2
D 4.6

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

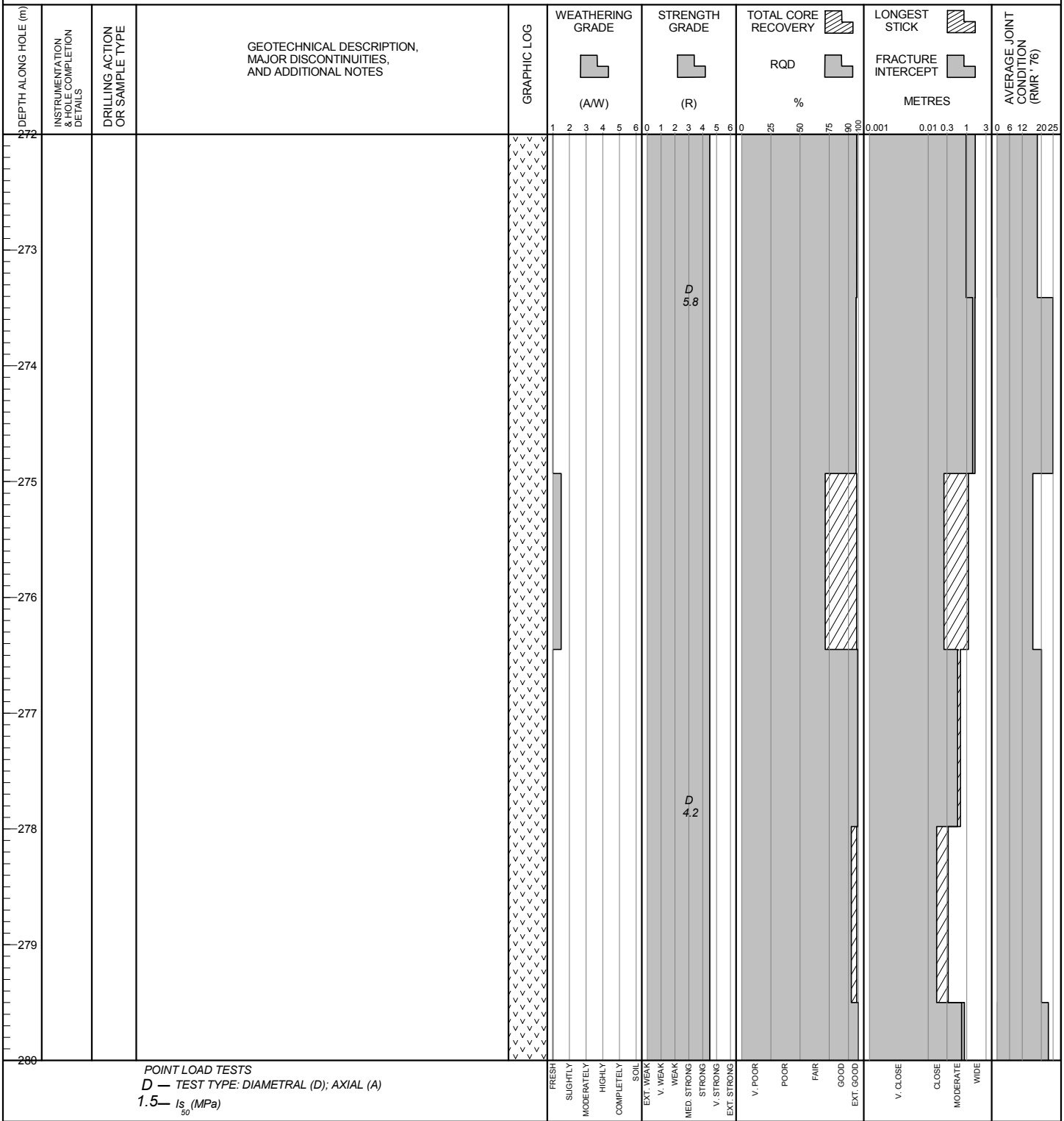
DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
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Core: HQ3
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Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

280

PLAGIOCLASE-HORNBLENDE PORPHYRY (P1)
Medium to light greenish-grey, sericite replaced hornblende and feldspar, contains angular to subangular light grey aphanitic fragments as well as medium to dark grey porphyritic fragments up to 6 cm wide, suggesting a porphyritic flow breccia. Strong to very strong (R4-R5). Fresh (A1).

282.1 m: Fault on vein, 5 mm FG/CX infill. JRC = 16. Dip/dip direction = 25/210.

D 4.7
D 6.8
D 7.3
D 5.3

287.3 m: Shear, 1 mm SE infill, R2. JRC = 4. Dip/dip direction = 50/286.

287.7 m: Shear, 1 mm SE infill, R2. JRC = 4.

287.7 m: Shear, 1 mm SE infill, R2. JRC = 4.

288

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
288			288 m: Shear, 1 mm SE infill, R2. JRC = 8. Dip/dip direction = 78/305.
289			288.8 m: Shear, 0.5 mm aperture. JRC = 4.
290			
291			
292			291.6 m: Shear, 0.5 mm aperture. JRC = 2. Dip/dip direction = 64/272. 291.9 m: Shear, 0.5 mm aperture. JRC = 2. Dip/dip direction = 40/242.
293			293.1 m: Shear, 1 mm CH infill, R2. JRC = 2. Dip/dip direction = 88/267.
294			
295			
296			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 5.2
D 5.9

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
296			
297			297.7 m: Shear, 0.5 mm CH infill, R1. JRC = 8. Dip/dip direction = 34/058.
298			297.8 m: Shear, 0.5 mm aperture. JRC = 8. Dip/dip direction = 82/129.
299			
300			
301			
302			302.5 m: Shear, 2 mm QZ infill, R4. JRC = 12. Dip/dip direction = 72/266.
303			
304			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
D 7.1
D 3.8

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR; POOR; FAIR; GOOD; EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE; CLOSE; MODERATE; WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Drill Method: Diamond
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Fluid: Polymer
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

304
305
306
307
308
309
310
311
312

HYDROTHERMAL BRECCIA (H15)
Medium to light purplish-grey, vein brecciated, contains P1 fragments from the previous unit after 309.49 m, rhyolite fragments are also present. Very strong (R5). Fresh (A1).

PLAGIOCLASE-HORNBLENDE PORPHYRY (P1)
Medium to light greenish-grey, sericite replaced hornblende and feldspar. Very strong (R5). Fresh (A1).

D 6.5
D 5.5
D 6.1
D 8.7

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
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Final Depth (m): 425.3
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
312						D 9.3 D 3.9 D 6.7			
313			Constant head test from 313 - 317.6 m. Estimated hydraulic conductivity is 3.3E-07 m/s.						
314									
315									
316									
317									
318									
319						D 2.5			
320									

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): 1 FRESH; 2 SLIGHTLY; 3 MODERATELY; 4 HIGHLY; 5 COMPLETELY; 6 SOIL
STRENGTH GRADE (R): 0 EXT. WEAK; 1 V. WEAK; 2 WEAK; 3 MED. STRONG; 4 STRONG; 5 V. STRONG; 6 EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 V. POOR; 25 POOR; 50 FAIR; 75 GOOD; 90 100 EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 V. CLOSE; 0.01 0.3 CLOSE; 1 MODERATE; 3 WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
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Drill Designation: Heliportable
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Drill Method: Diamond
Core: HQ3
Fluid: Polymer
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
320			320.1 m: Shear on vein, 35 mm BX/CX infill, R4. JRC = 4. Dip/dip direction = 60/271.	
321				
322				
323				
324			323.6 m: Shear, 2 mm aperture. JRC = 8.	
325				
326				
327			HYDROTHERMAL BRECCIA (H15) Medium to light purplish-grey, vein brecciated, rhyolite fragments present. Very strong (R5). Fresh (A1).	
328			CONGLOMERATE (S3) Medium to light purplish-grey, very altered subangular to subrounded clasts, sericite and silicate replaced. Large clasts or chunks of very siliceous rocks at 340 and 348.5 m. Very strong (R5). Fresh (A1).	

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

D 5.9

D 4.0

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
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Drill Designation: Heliportable
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Core: HQ3
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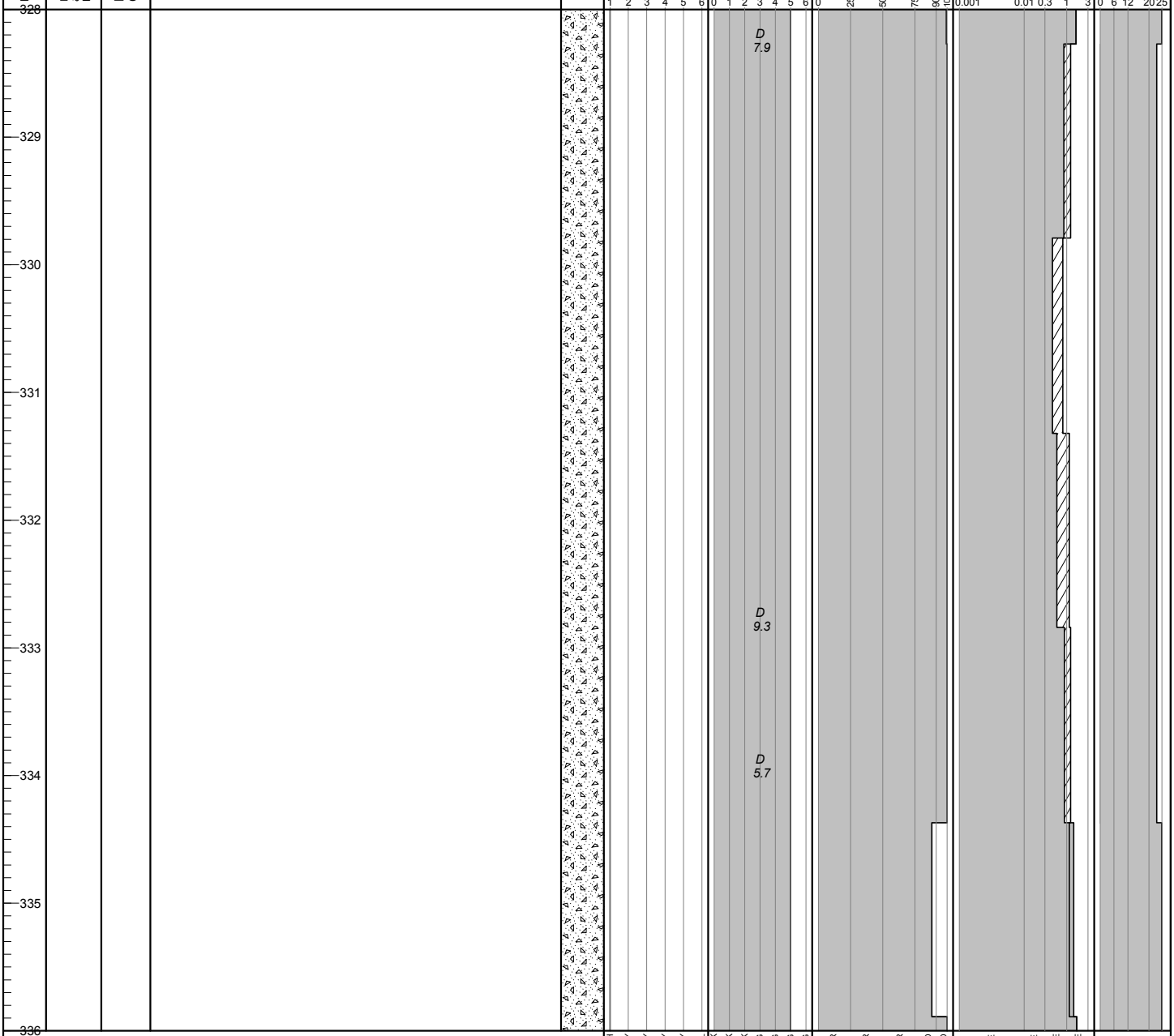


POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-19

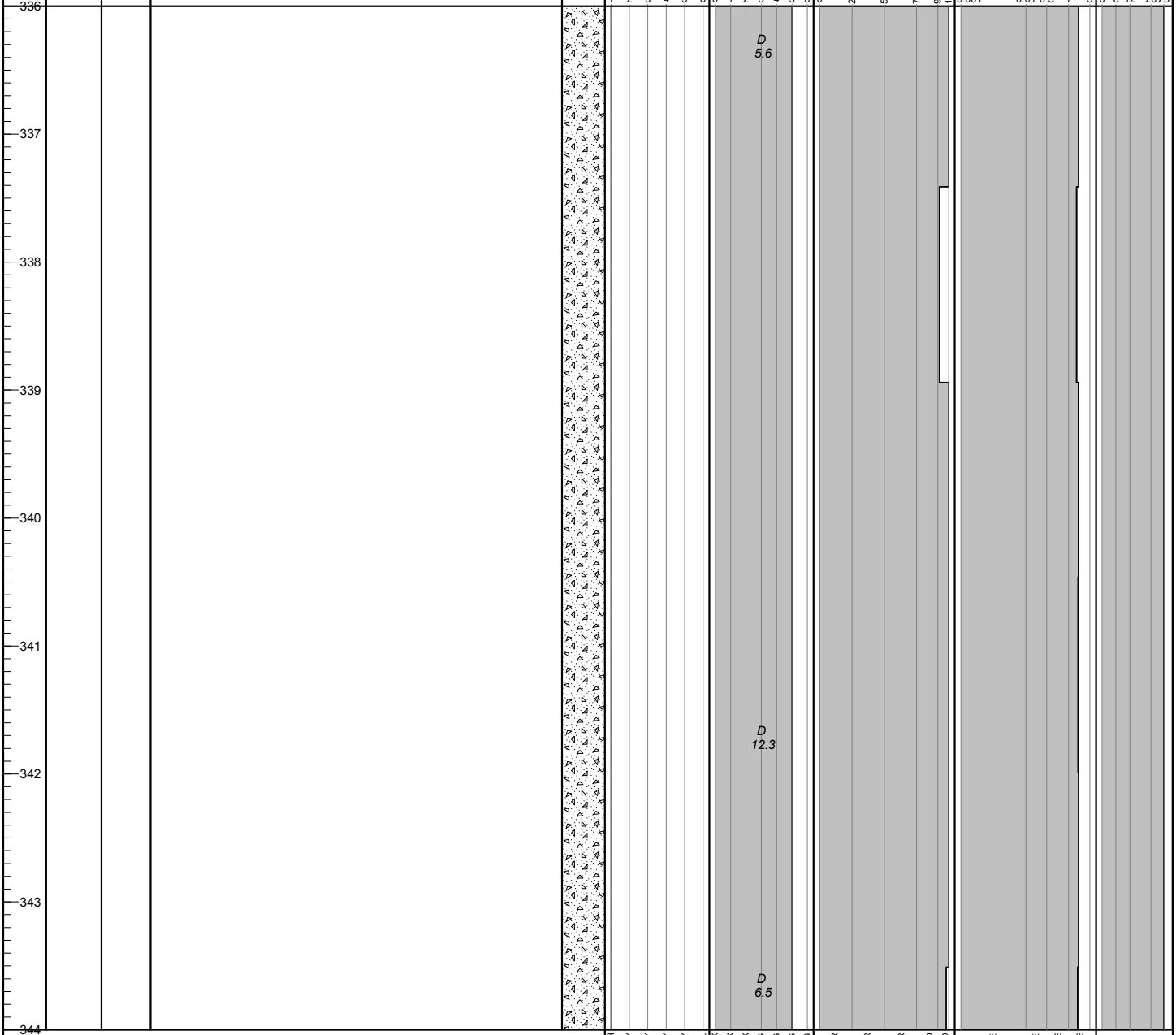
Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
344					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
345									
346									
347						D 1.4			
348			348.1 - 348.5 m: Small layer of rhyolite flow or exhalite; banding is trunctated by unit above.						
349									
350									
351									
352					FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL	EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG	V. POOR / POOR / FAIR / GOOD / EXT. GOOD	V. CLOSE / CLOSE / MODERATE / WIDE	

POINT LOAD TESTS
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
352									
353						D 6.4 D 6.0 D 6.8 D 7.1			
354									
355			ARENITE (S4) Grey, fine grained matrix with some medium grained matrix. Chlorite and pyrite replaced mm-sized fragments or clasts. Very strong (R4.5-R5). Fresh (A1).						
356									
357						D 4.7			
358									
359									
360									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE; CLOSE; MODERATE; WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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Drill Method: Diamond
Core: HQ3
Fluid: Polymer
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Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

360
361
362
363
364
365
366
367
368

D 4.5
D 2.4
D 5.9

367.4 m: Shear, 3 mm FG infill, R0. JRC = 4.
367.4 m: Shear, 12 mm CX/BX infill. JRC = 4. Dip/dip direction = 18/149.
367.6 m: Shear, 10 mm CX/BX infill. JRC = 8. Dip/dip direction =

POINT LOAD TESTS
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1.5— Is_{50} (MPa)

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-19

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Survey Method: Surveyed
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Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
368			31/256.	
369				
370				
371				
372				
			QUARTZ CARBONATE VEIN (H2) Medium to light purple-grey, quartz-rhodocrosite vein running along axis, approximately 10 cm wide, S4/S3 host rock. Very strong (R5). Fresh (A1).	
373				
374			CONGLOMERATE (S3) Grey, sericite replaced matrix, some interbedded sandstone, all clasts are replaced and difficult to tell composition. Very strong to strong (R4-R5). Fresh (A1).	
375				
376				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 6.1
D 6.2
D 11.7

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
384					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 100	0.001 0.01 0.3 1 3	0 6 12 20 25
385						D 5.2			
386									
387									
388						D 5.8			
389									
390			Darker coloured, pyrite replaced matrix below 389.6 m, fairly abundant rhyolite clasts, more clast supported.						
391						D 8.0			
392					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-19

Location: West Zone

Co-ordinates (m): 426,567E - 6,258,826N
Ground Elevation (m): 1,365.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 16.3

Start Date: 06 Mar 12
Finish Date: 17 Mar 12
Final Depth (m): 425.3
Depth To Top Of Rock (m): 15.1
Logged By: AGC/JND/KM
Reviewed By: JW

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392					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
393						D 2.9			
394									
395									
396									
397						D 3.2			
398									
399									
400									

WEATHERING GRADE: FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE: EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

TOTAL CORE RECOVERY / RQD: V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT: V. CLOSE | CLOSE | MODERATE | WIDE

POINT LOAD TESTS
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1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-19

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Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 131

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
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400					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
401			Constant head test from 401.4 - 425.8 m. Estimated hydraulic conductivity is 3.9E-08 m/s.						
402			402.4 m: Small layer of rhyolite flow or exhalite; banding is truncated by unit above.			D 5.8			
403									
404									
405									
406						D 6.5			
407									
408					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
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Project No.1008-007

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408					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 100	0.001 0.01 0.3 1 3	0 6 12 20 25
409						D 5.5			
410									
411			ARENITE (S4) Greenish-grey, interbedded coarse to fine grained sandstone, sericite replaced matrix, light green colour. Very strong (R5). Fresh (A1).						
412									
413						D 10.4			
414									
415									
416					FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL	EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG	V. POOR / POOR / FAIR / GOOD / EXT. GOOD	V. CLOSE / CLOSE / MODERATE / WIDE	

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Project : Brucejack
Project No.1008-007

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416									
417									
418									
419			CONGLOMERATE (S3) Greenish-grey, sericite replaced matrix, light green, some interbedded coarse polymictic sandstone. Very strong (R5). Fresh (A1).						
420									
421						D 12.4			
422						D 8.2 D 10.2			
423									
424									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-19

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Drill Method: Diamond
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Fluid: Polymer
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424									
425						D 13.2			
			END OF DRILLHOLE AT 425.3 m Notes: 1. Vibrating wire piezometer installed at 214.3 m.						
426									
427									
428									
429									
430									
431									
432									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N	***Drill Designation:*** Heliportable	***Start Date:*** 17 Mar 12
Ground Elevation (m): 1,419.0	***Drilling Contractor:*** Radius	***Finish Date:*** 26 Mar 12
Survey Method: Hand Held GPS	***Drill Method:*** Diamond	***Final Depth (m):*** 420.3
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 3.0
Plunge (°): -76	***Fluid:*** Polymer	***Logged By:*** HKM/SW
Trend (°): 222	***Cased To (m) :***	***Reviewed By:*** JW

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						OVERBURDEN AND WEATHERED ROCK Very poor recovery.
3						Rock encountered at 3.0 m depth. Refer to DH-BGC12-20 rock log.

Su - kPa: 40, 80, 120, 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery: 20, 40, 60, 80
Moisture Content & SPT N: W_p%, W%, W_l%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
0			Refer to DH-BGC12-20 Overburden Log						
3			CONGLOMERATE (S3) Light to bright green, polylithic conglomerate with variances in sericite alteration. Clasts vary in size from mm to cm. Very weak to moderately strong (R1-R3.5). Faint to moderate alteration (A1.5-A3.5) on major discontinuities from top of bedrock to 16.5 m. Fresh to faint alteration (A1-A1.5) below 16.5 m. Strength increases to medium strong to strong (R3-R4) from 19.5-33.3 m.			D 2.0			
8									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
8					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 100	0.001 0.01 0.3 1 3	0 6 12 20 25
9						D 4.2			
10									
11									
12						D 6.7			
13									
14									
15			14.5 m: Fault, 60 mm DX/BX infill, R0. JRC = 4. 14.9 m: Fault, 340 mm CX/BX infill, R1. JRC = 4. 15.3 m: Fault, 150 mm CX/BX infill, R1. JRC = 8.						
16					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-20

Location: West Zone

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

16
17
18
19
20
21
22
23
24

17.5 m: Shear, 0.5 mm aperture. JRC = 2.

17.7 m: Shear, 0.5 mm aperture. JRC = 2.

D 1.0

D 7.5

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-20

Location: West Zone

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

24
25
26
27
28
29
30
31
32

25.4 m: Shear, 0.5 mm aperture. JRC = 8.

30.0 - 39.3 m: Finer grained, between coarse sand and matrix supported conglomerate, clasts are much smaller than above.

31.5 m: Shear, JRC = 2.

D 6.6
D 7.5
D 9.5
D 10.6
D 7.0

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
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Datum: UTM NAD 83 Zone 9
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Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
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Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
32				
33			Constant head test from 33.2 - 50 m. Estimated hydraulic conductivity is 3.9E-07 m/s.	
34				
35				
36			36.1 m: Shear, 20 mm CX infill, R1. JRC = 4.	
			36.6 m: Shear, 1 mm CL infill, R0. JRC = 8.	
37			36.9 m: Fault, 60 mm CX/DX infill, R0. JRC = 4. 37 m: Fault, 30 mm CX/DX infill, R0. JRC = 8.	
38			37.9 m: Fault, 25 mm FB infill, R0. JRC = 12.	
39			38.9 m: Shear, 1 mm CX infill, R0. JRC = 12.	
			39.2 m: Shear, 0.5 mm aperture. JRC = 12.	
40			VERY SILICEOUS ROCKS (H8) Purple to blue-grey pebbley rhyolite interbedded with heavily sericite altered rock. At 47 m, rock is pervasively siliceously altered. Medium strong to strong (R2.5-R4.5). Fresh (A1). 39.3 m: Shear, 15 mm CX infill, R0. JRC = 2.	

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 5.9
D 0.1
D 3.1

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5 — Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
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Datum: UTM NAD 83 Zone 9
Plunge (°): -76
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
40			39.8 m: Shear, 40 mm CX infill, R0. JRC = 8.	
41				
42				
43				
44				
45			44.8 m: Shear, 2 mm CX infill, R1. JRC = 2.	
46				
47			46.8 m: Shear, 0.5 mm aperture. JRC = 1. 46.9 m: Shear, 0.5 mm aperture. JRC = 1.	
48				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 2.3
D 8.1

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
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Datum: UTM NAD 83 Zone 9
Plunge (°): -76
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
48				
49				
50				
51				
52			ARENITE (S4) Greenish-grey. Moderately strong to strong (R2.5-R4.5). Fresh (A1). 52.4 m: Shear, 0.5 mm aperture. JRC = 1. 52.7 m: Shear, 0.5 mm aperture. JRC = 4.	
53			53 m: Shear, 0.5 mm aperture. JRC = 2.	
54			54 m: Shear, 0.5 mm aperture. JRC = 2. Dip/dip direction = 58/320. 54.3 m: Shear, 0.5 mm aperture. JRC = 8.	
55				
56				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

D 4.4

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
56			56.2 m: Shear on vein, 0.5 mm aperture. JRC = 8. Dip/dip direction = 60/164.	
57			56.9 m: Shear, 0.5 mm aperture. JRC = 20. 57 m: Shear, 1.5 mm CX infill. JRC = 4. Dip/dip direction = 54/232. 57.2 m: Fault, 2 mm FG infill, R0. JRC = 8. Dip/dip direction = 50/243. 57.4 m: Shear, 0.5 mm aperture. JRC = 12.	
58				
59			CONGLOMERATE (S3) Greenish-grey, polylithic conglomerate; clasts are heavily chloritized. Strong to very strong (R4-R5). Fresh (A1).	
60				
61				
62				
63				
64				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

D 6.5
D 10.3
D 6.4

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-20

Location: West Zone

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
64					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
65									
66						D 6.8			
67						D 6.3 D 7.0			
68									
69			68.8 m: Shear. JRC = 4. Dip/dip direction = 69/284.						
70						D 4.5			
71									
72									

WEATHERING GRADE: FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE: EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD: V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT: V. CLOSE; CLOSE; MODERATE; WIDE

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-20

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72					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
73									
74			74.2 m: Shear, 0.5 mm aperture. JRC = 2.						
75			75.4 m: Shear on vein, 0.5 mm QZ infill. JRC = 20. 75.7 m: Shear on vein, 0.5 mm QZ infill. JRC = 8.			D 6.2			
76									
77									
78									
79									
80					FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL	EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG	V. POOR / POOR / FAIR / GOOD / EXT. GOOD	V. CLOSE / CLOSE / MODERATE / WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-20

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POINT LOAD TESTS
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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
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Reviewed By: JW

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

96
97
98
99
100
101
102
103
104

97.1 m: Shear, 0.5 mm aperture. JRC = 4.

98.1 m: Shear, 0.5 mm aperture. JRC = 8.

100.5 m: Shear, 0.5 mm aperture. JRC = 8.

D 8.6
D 10.0
D 11.6

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

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104					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
			104.7 m: Shear, 0.5 mm aperture. JRC = 8.						
105			104.7 m: Shear, 0.5 mm aperture. JRC = 20. Dip/dip direction = 16/305.						
106						D 9.3			
107			107 m: Shear, 0.5 mm QZ infill, R5. JRC = 8. Dip/dip direction = 62/263.						
			107.7 m: Shear, 0.5 mm QZ infill, R5. JRC = 4. Dip/dip direction = 72/254.						
108									
109									
110									
111									
112			111.9 m: Shear, 1 mm QZ infill, R5. JRC = 12. Dip/dip direction =						

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE: FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE: EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD: V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT: V. CLOSE | CLOSE | MODERATE | WIDE

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DRILL HOLE # DH-BGC12-20

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112

79/289.

D 8.5
D 10.6

D 11.9

115.5 - 123.4 m: Dense vein stockwork overprinting host rock.

115.6 m: Shear, 0.5 mm aperture. JRC = 16. Dip/dip direction = 71/111.

D 5.6

113 114 115 116 117 118 119 120

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

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AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

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Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
120					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
121						D 8.3			
122									
123									
124									
125						D 7.9			
126									
127									
128			Falling head test from 127.7 - 149 m. Estimated hydraulic conductivity is 1.7E-08 m/s.						

POINT LOAD TESTS
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1.5— Is_{50} (MPa)

FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
V. POOR | POOR | FAIR | GOOD | EXT. GOOD
V. CLOSE | CLOSE | MODERATE | WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-20

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Drilling Contractor: Radius
Drill Method: Diamond
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128					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
129									
130									
131						D 12.4			
132			131.6 m: Fault on vein, 40 mm BX/CX infill, R3. JRC = 8. Dip/dip direction = 24/194.						
133									
134									
135						D 7.1			
136					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

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144					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
145									
146									
147									
148									
149						D 7.8			
150									
151									
152									
					FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL	EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG	V. POOR / POOR / FAIR / GOOD / EXT. GOOD	V. CLOSE / CLOSE / MODERATE / WIDE	

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152					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
153						D 9.4			
154									
155			155.2 m: Shear, 0.5 mm CA infill, R3. JRC = 1.						
156						D 10.6			
157									
158									
159			158.7 m: Shear, 0.5 mm aperture. JRC = 1.						
160					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

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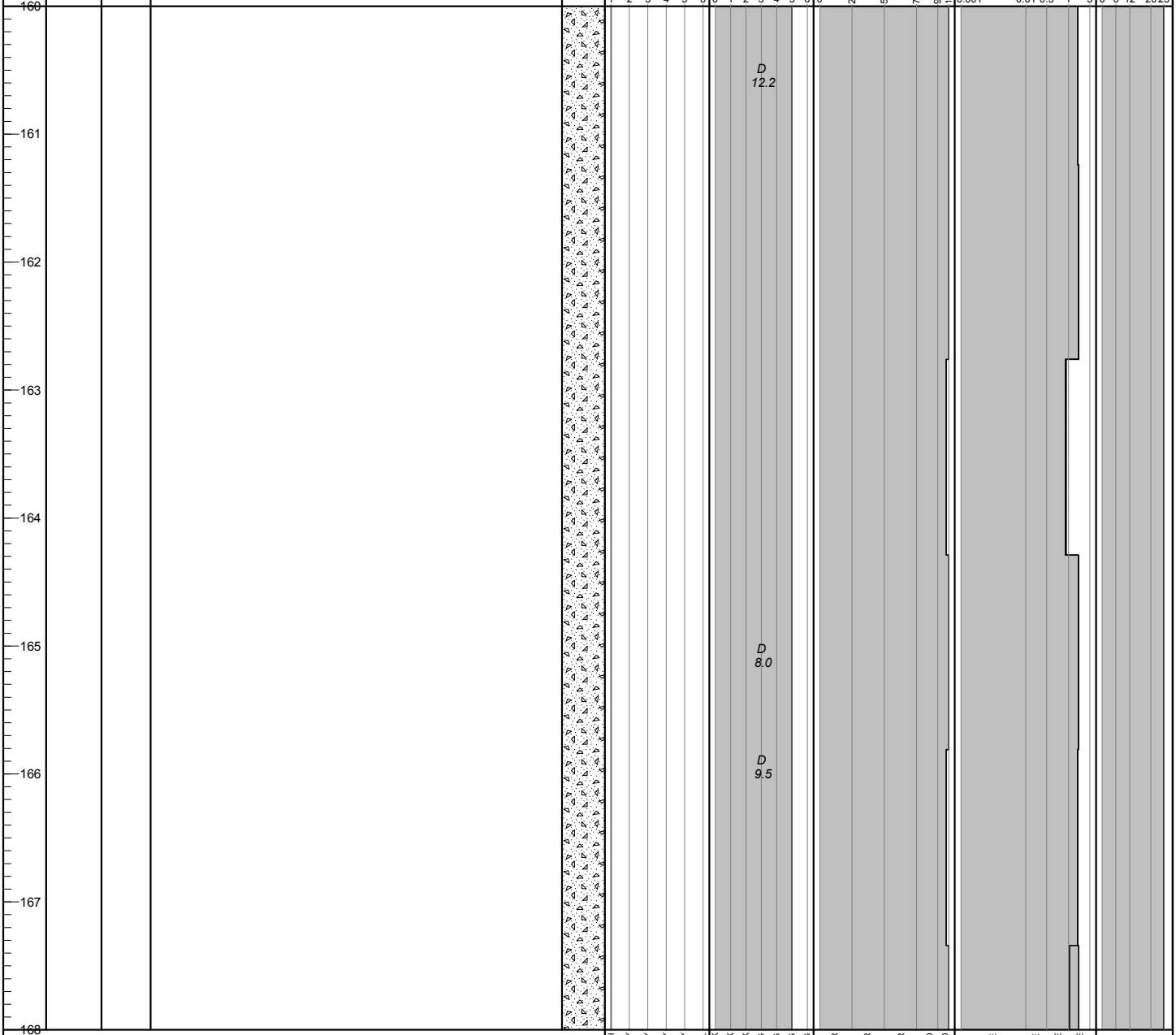

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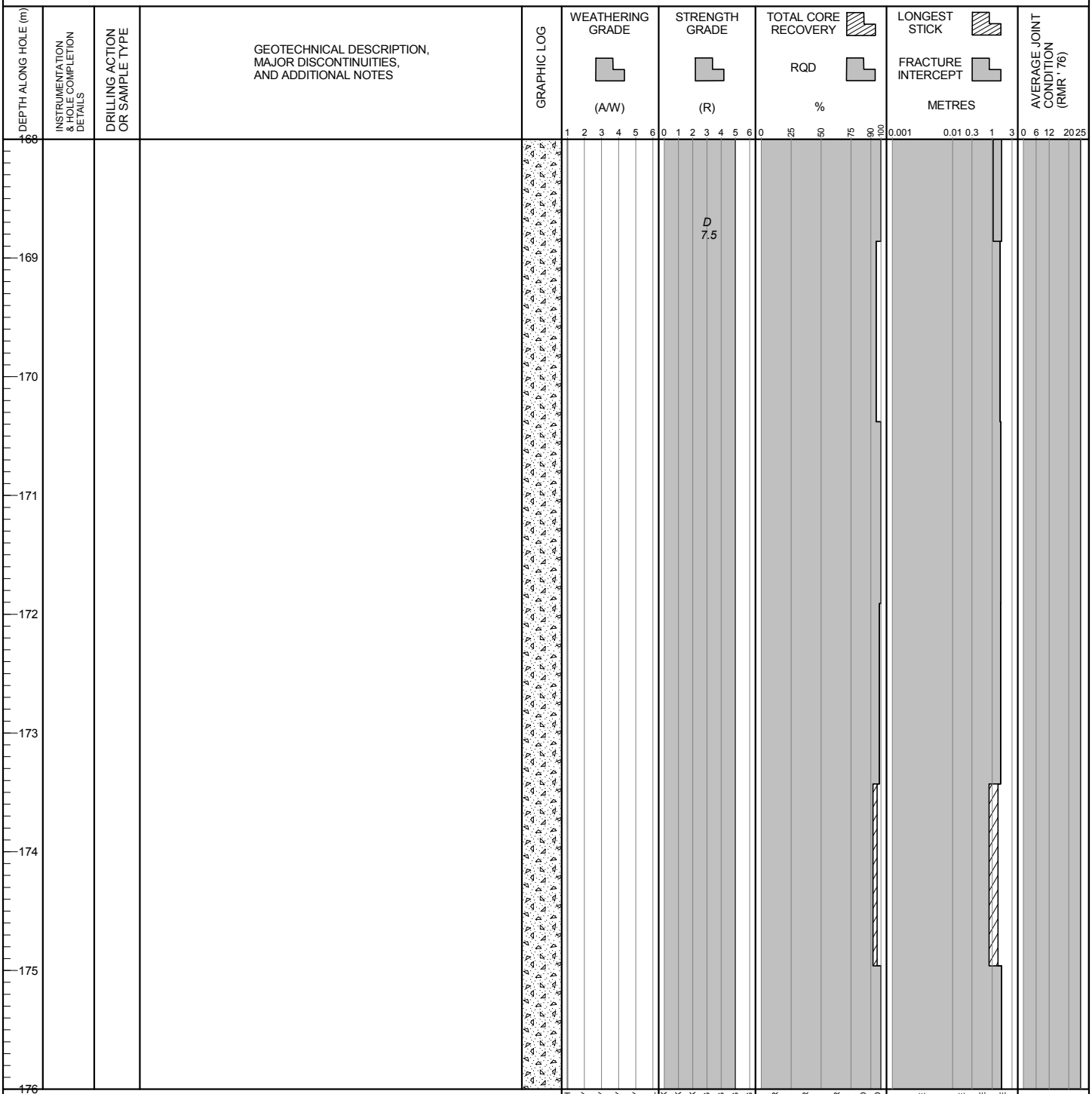

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176					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
177									
178						D 6.6			
179									
180									
181						D 9.1			
182									
183									
184					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

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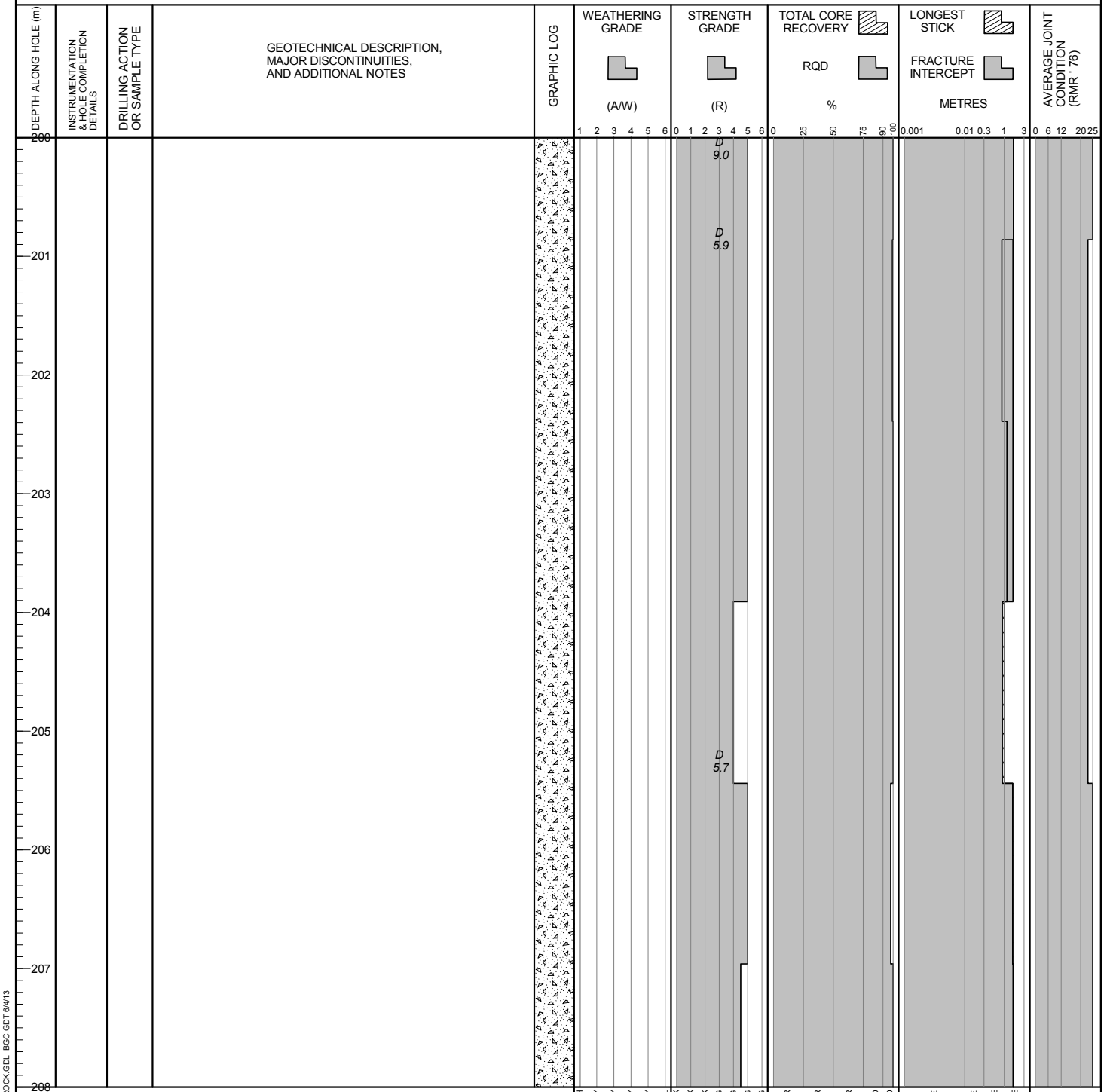

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
208					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
209			ARENITE (S4) Greenish-grey, homolithic volcanic sandstone, chlorite and sericite alteration. Interbedded with coarser grained conglomerate (S3). Strong to very strong (R4-R5). Fresh (A1).						
210									
211									
212									
213						D 13.2			
214									
215									
216					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

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Depth To Top Of Rock (m): 3.0
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POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
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Datum: UTM NAD 83 Zone 9
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Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
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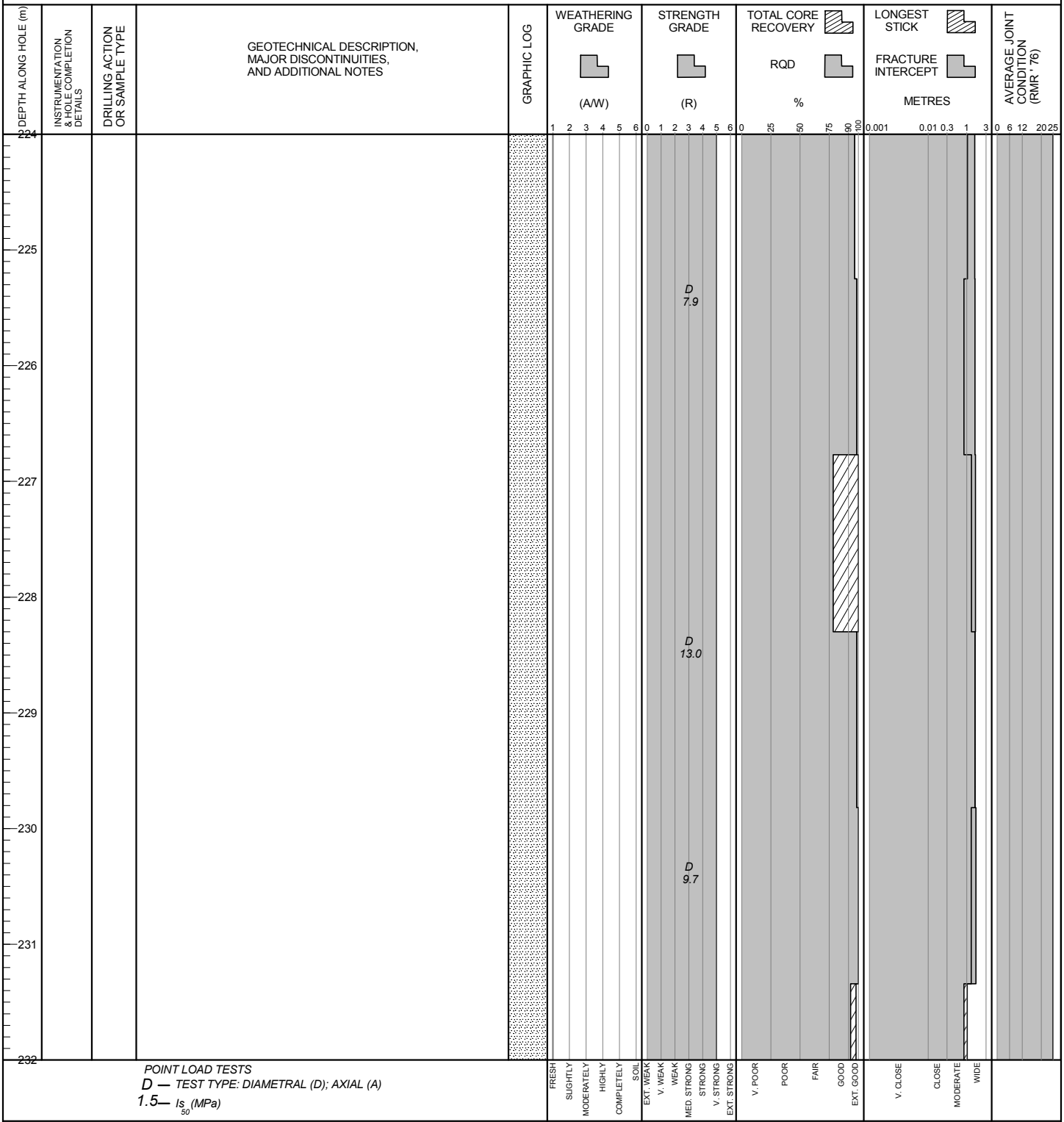
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

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Ground Elevation (m): 1,419.0
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Datum: UTM NAD 83 Zone 9
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Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

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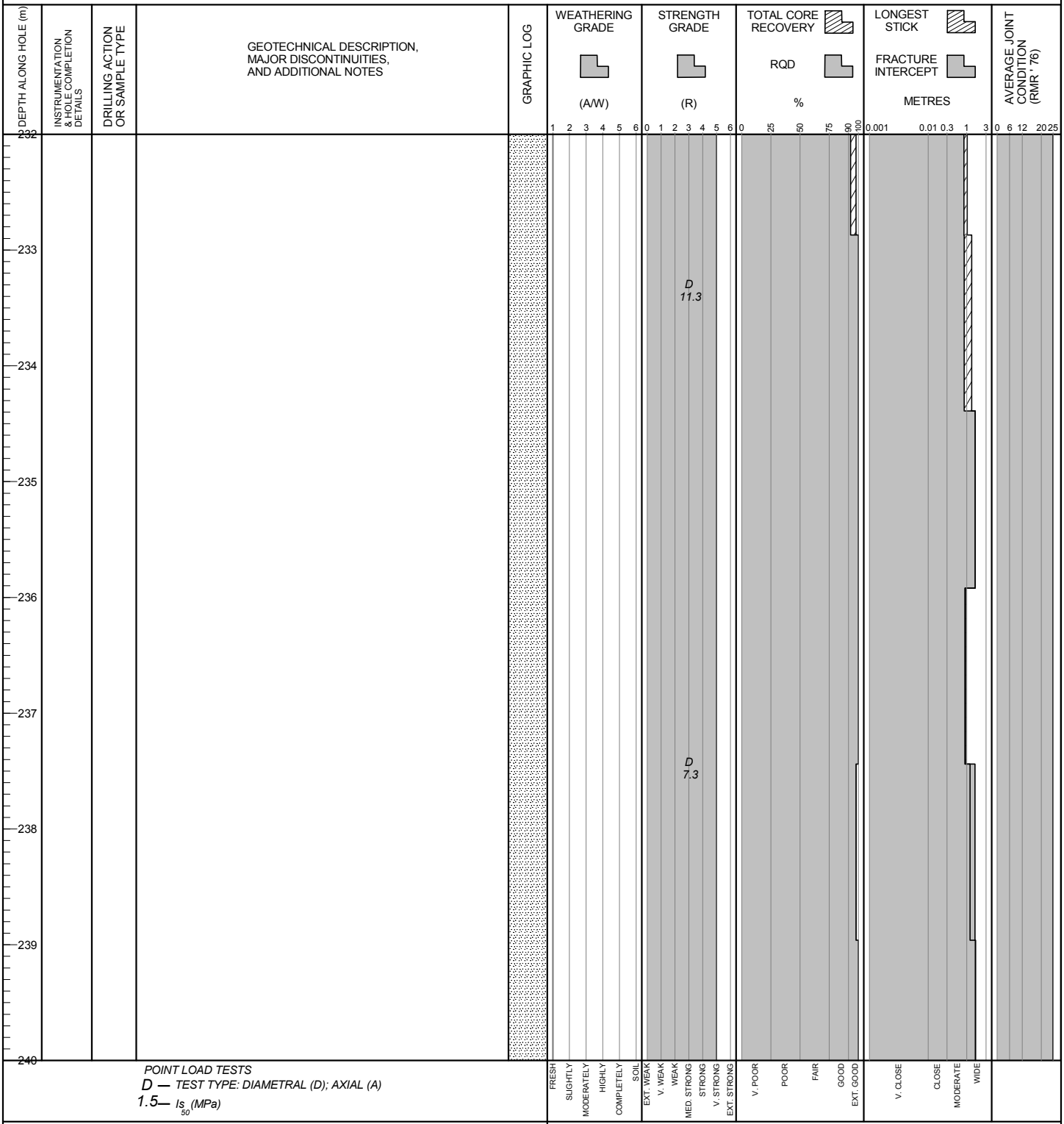

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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DRILL HOLE # DH-BGC12-20

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Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
240			Constant head test from 240.5 - 264.9 m. Estimated hydraulic conductivity is 1.7E-07 m/s. 243.2 m: Shear, 1.5 mm CX infill, R1. JRC = 1. Dip/dip direction = 77/090. 243.3 m: Shear, 1 mm CA infill, R4. JRC = 1. 243.4 m: Shear, 1 mm aperture. JRC = 4.		1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
241						D 7.9			
242									
243									
244									
245									
246						D 6.8			
247						D 8.4			
248					FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL	EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG	V. POOR / POOR / FAIR / GOOD / EXT. GOOD	V. CLOSE / CLOSE / MODERATE / WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
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Datum: UTM NAD 83 Zone 9
Plunge (°): -76
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

248
249
250
251
252
253
254
255
256

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W) 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R) 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD % 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76) 0 6 12 20 25

256
257
258
259
260
261
262
263
264

D
6.9

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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Ground Elevation (m): 1,419.0
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Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

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Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
264					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
265									
266			266 m: Shear, 0.5 mm CA infill, R4. JRC = 12. Dip/dip direction = 82/090.						
267			267.2 m: Shear, 1 mm CA infill, R4. JRC = 12. Dip/dip direction = 79/096. 267.4 m: Shear, 0.5 mm CA infill, R4. JRC = 2. Dip/dip direction = 81/028.			D 6.8			
268									
269									
270									
271			270.7 m: Shear, 0.5 mm aperture. JRC = 12.						
272									

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE: FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE: EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD: V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT: V. CLOSE; CLOSE; MODERATE; WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

272
273
274
275
276
277
278
279
280

D 12.4
D 9.4
D 6.4

279.4 m: Shear, 0.5 mm aperture. JRC = 1. Dip/dip direction = 83/052.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL
EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG
V. POOR / POOR / FAIR / GOOD / EXT. GOOD
V. CLOSE / CLOSE / MODERATE / WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
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Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
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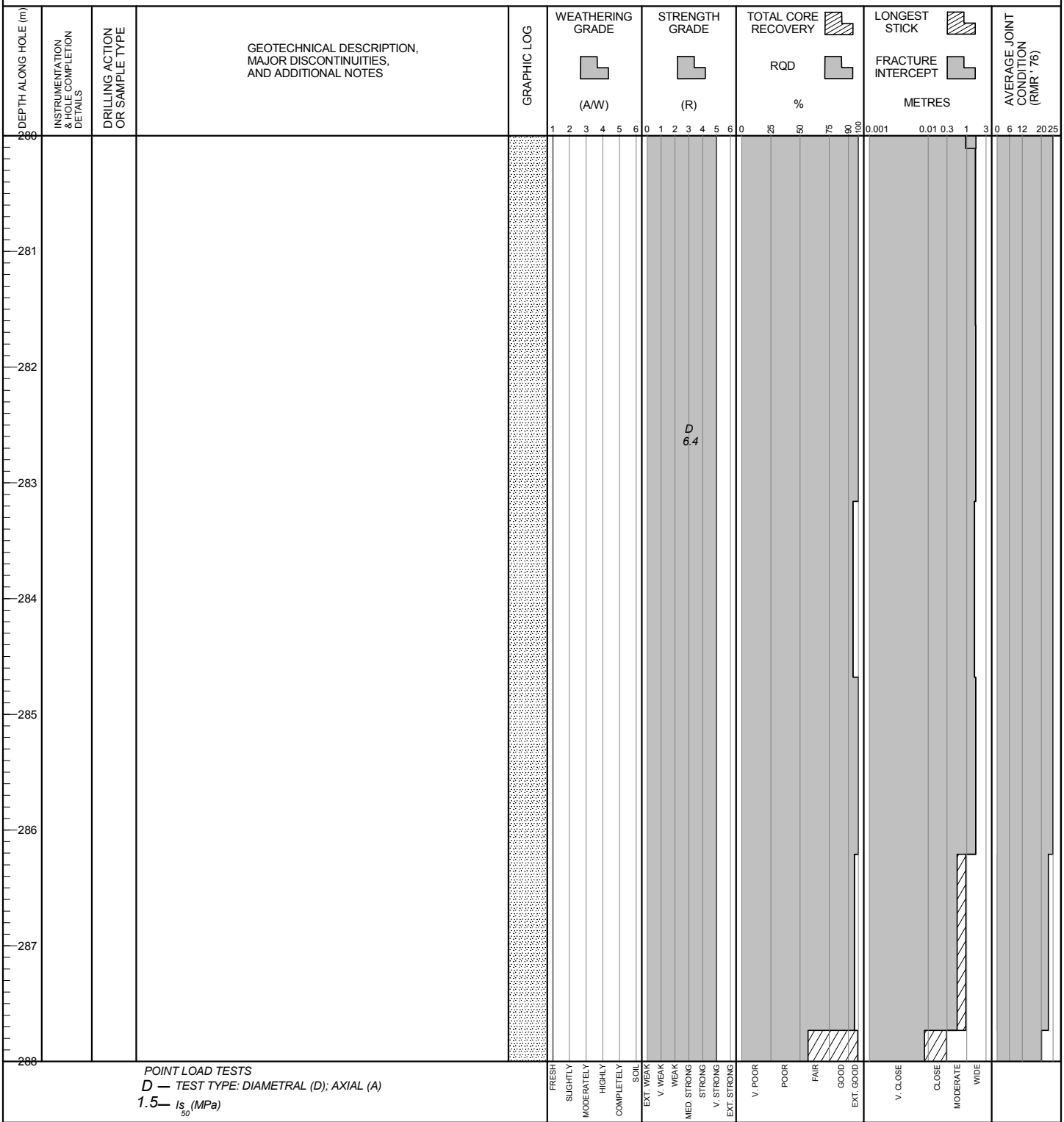
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-20

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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
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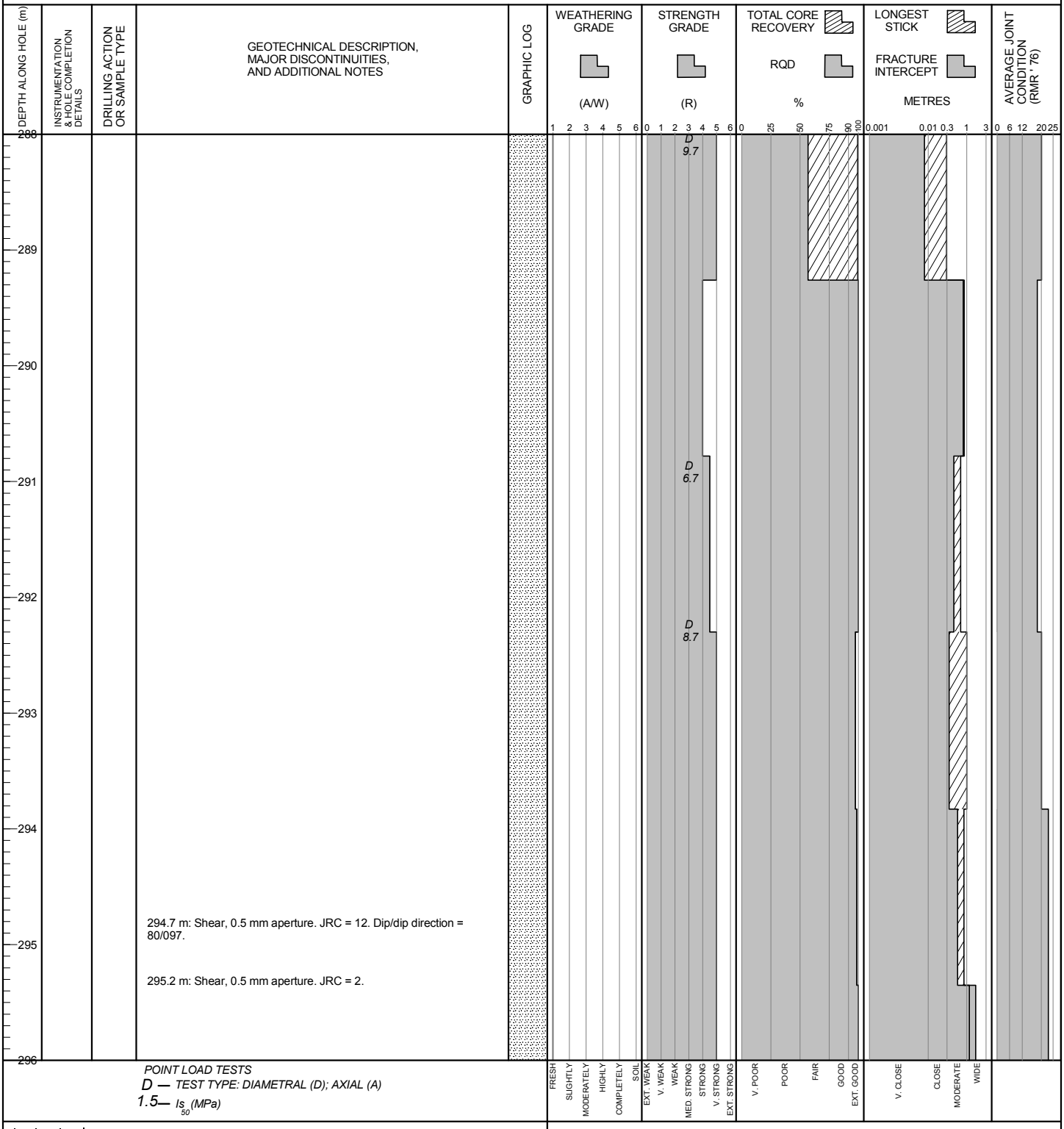
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
296					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
297						D 4.8			
298			298 m: Shear, 1 mm aperture. JRC = 12.						
299									
300			300 m: Shear, 0.5 mm aperture. JRC = 1.						
301									
302			302.4 m: Shear, 1 mm BX infill, R4. JRC = 12.						
303									
304			303.7 m: Shear, 1 mm BX infill, R4. JRC = 20.						

					FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL	EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG	V. POOR / POOR / FAIR / GOOD / EXT. GOOD	V. CLOSE / CLOSE / MODERATE / WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
304			304.2 m: Shear, 0.5 mm aperture. JRC = 20.	
305				
306				
307			307.1 m: Shear, 1 mm CA infill, R4. JRC = 4.	
308				
309			308.8 m: Shear, 1 mm CA infill, R4. JRC = 8. Dip/dip direction = 73/249.	
310				
311				
312			311.2 m: Shear, 1 mm CA infill, R4. JRC = 2.	

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-20

Location: West Zone

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

312 m: 311.9 m: Shear, 2 mm CA infill, R4. JRC = 2. Dip/dip direction = 82/092.

313.7 m: Shear, 0.5 mm aperture. JRC = 2.

319.3 m: Shear, 0.5 mm aperture. JRC = 12. Dip/dip direction = 84/027.

D 4.2

D 9.6

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N	***Drill Designation:*** Heliportable	***Start Date:*** 17 Mar 12
Ground Elevation (m): 1,419.0	***Drilling Contractor:*** Radius	***Finish Date:*** 26 Mar 12
Survey Method: Hand Held GPS	***Drill Method:*** Diamond	***Final Depth (m):*** 420.3
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 3.0
Plunge (°): -76	***Fluid:*** Polymer	***Logged By:*** HKM/SW
Trend (°): 222	***Cased To (m) :***	***Reviewed By:*** JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

320

321

321.1 m: Shear, 0.5 mm aperture. JRC = 1. Dip/dip direction = 68/317.

321.2 m: Shear, 8 mm CX infill, R1. JRC = 4. Dip/dip direction = 73/309.

322

323

322.9 m: Shear, 2 mm CX infill, R2. JRC = 8. Dip/dip direction = 51/294.

324

D
3.8

324.5 m: Shear, 2 mm CL infill, R1. JRC = 4. Dip/dip direction = 81/087.

325

326

326.2 m: Shear, 0.5 mm aperture. JRC = 2.

326.2 m: Shear, 0.5 mm aperture. JRC = 16.

326.8 m: Fault, 2 mm CX infill. JRC = 12.

326.8 m: Fault, 2 mm CX infill. JRC = 4. Dip/dip direction = 80/313.

326.9 m: Fault, 1 mm CX infill. JRC = 12.

327

327 m: Shear, 1 mm aperture. JRC = 8.

328

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

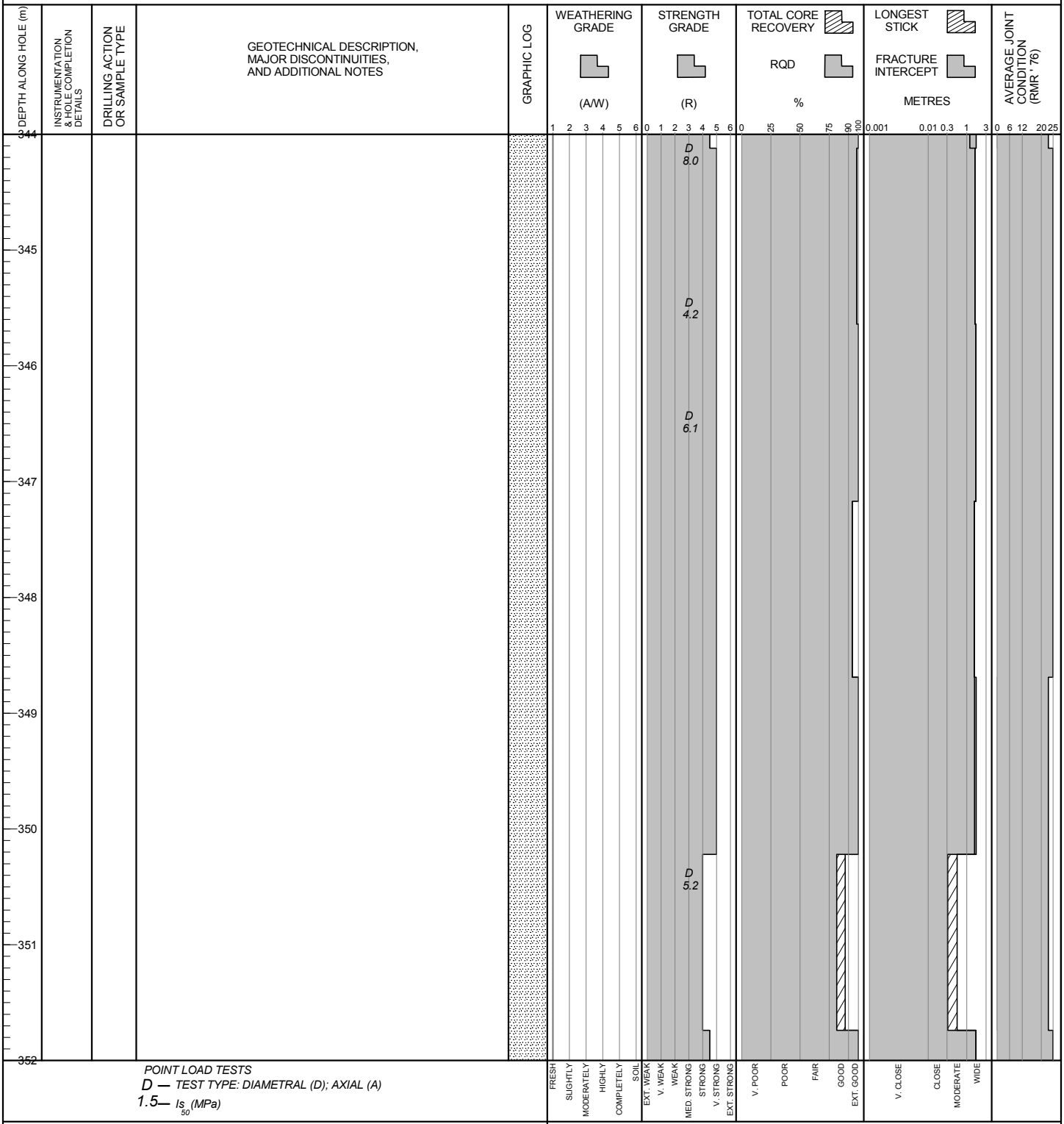
DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
360					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
361									
362									
363									
364			364 m: Shear, 0.5 mm aperture. JRC = 8.						
365									
366			366.3 m: Shear, 0.5 mm aperture. JRC = 1.						
367									
368			367.6 m: Shear, 0.5 mm aperture. JRC = 1.		FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL	EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG	V. POOR / POOR / FAIR / GOOD / EXT. GOOD	V. CLOSE / CLOSE / MODERATE / WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

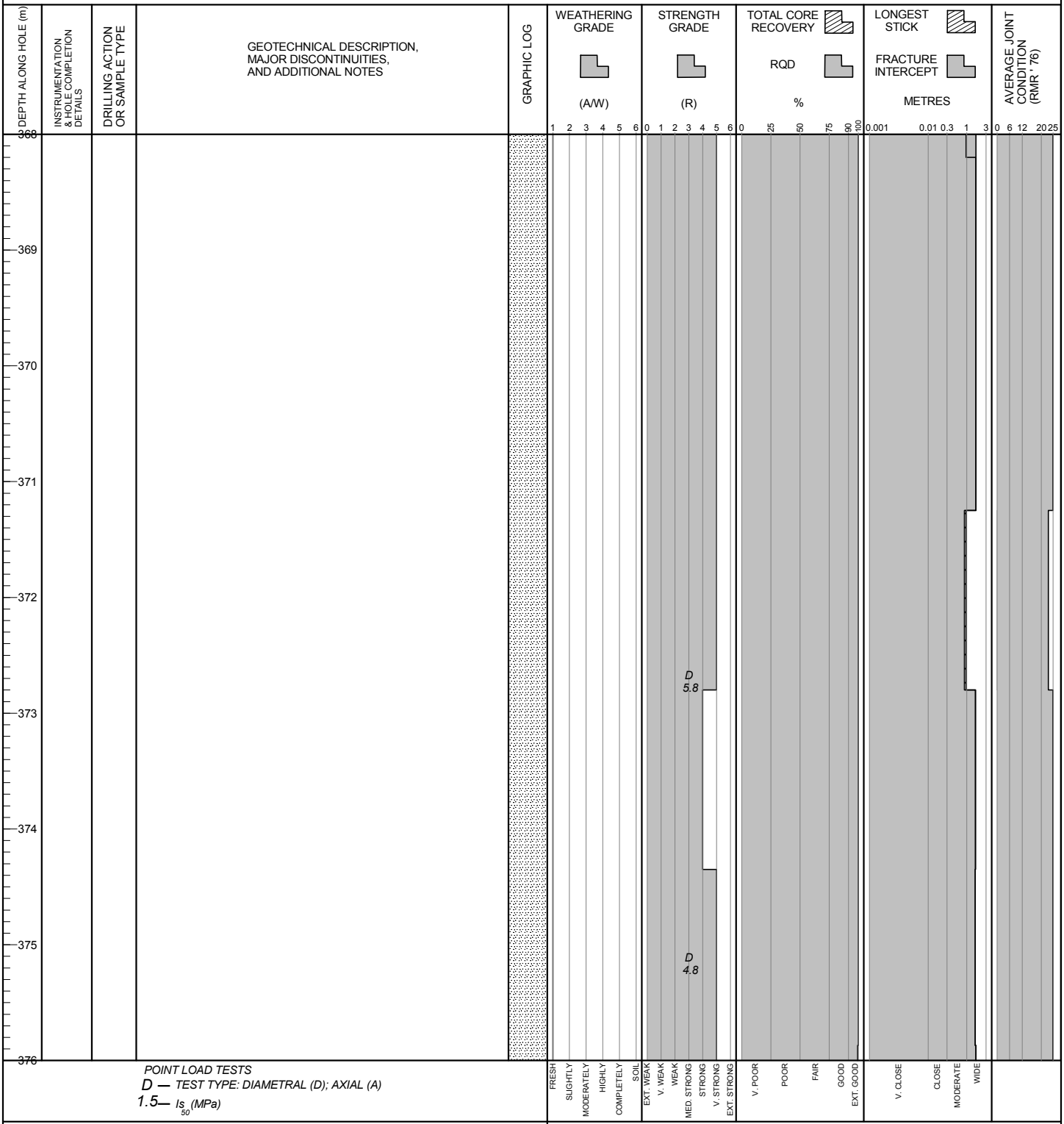
DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
376					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
377									
378									
379						D 6.1			
380									
381			Falling head test from 380.7 - 403.6 m. Estimated hydraulic conductivity is 6.4E-08 m/s.						
382						D 5.8			
383									
384					FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL	EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG	V. POOR / POOR / FAIR / GOOD / EXT. GOOD	V. CLOSE / CLOSE / MODERATE / WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

408
409
410
411
412
413
414
415
416

410.4 m: Shear, 0.5 mm aperture. JRC = 20.

414.1 m: Shear, 0.5 mm aperture. JRC = 12.

414.2 m: Shear, 0.5 mm aperture. JRC = 8. Dip/dip direction = 78/071.

414.8 m: Shear, 0.5 mm aperture. JRC = 2. Dip/dip direction = 71/058.

415.3 m: Shear, 0.5 mm aperture. JRC = 2. Dip/dip direction = 82/067.

D 8.5

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-20

Location: West Zone

Co-ordinates (m): 426,552E - 6,258,607N
Ground Elevation (m): 1,419.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -76
Trend (°): 222

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) :

Start Date: 17 Mar 12
Finish Date: 26 Mar 12
Final Depth (m): 420.3
Depth To Top Of Rock (m): 3.0
Logged By: HKM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
416					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
417									
418									
419									
420									
			END OF DRILLHOLE AT 420.3 m						
421									
422									
423									
424									

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE: FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE: EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
RQD: V. POOR; POOR; FAIR; GOOD; EXT. GOOD
FRACTURE INTERCEPT: V. CLOSE; CLOSE; MODERATE; WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N	***Drill Designation:*** Heliportable	***Start Date:*** 28 Mar 12
Ground Elevation (m): 1,499.0	***Drilling Contractor:*** Radius	***Finish Date:*** 09 Apr 12
Survey Method: Hand Held GPS	***Drill Method:*** Diamond	***Final Depth (m):*** 556.6
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 1.8
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** HKM/JND/LL
Trend (°): 145	***Cased To (m) :*** 1.8	***Reviewed By:*** JW

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						OVERBURDEN No Recovery.
2						Rock encountered at 1.8 m depth. Refer to DH-BGC12-21 rock log.

Su - kPa: 40, 80, 120, 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery: 20, 40, 60, 80
Moisture Content & SPT N: W_p%, W%, W_l%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
0				
1			Refer to DH-BGC12-21 Overburden Log	
2			PLAGIOCLASE-HORNBLENDE PORPHYRY (P1) Light greenish-grey, porphyry with mm-scale phenocrysts in a fine grained ground mass. Strong to very strong (R4-R5.5). Faint alteration (A1-A1.5) on major discontinuitues from top of bedrock to 26.2 m. Fresh (A1) below 26.2 m. Strength decreases to medium strong to strong (R3-R4) below 169.5 m.	
3				
4			4 m: Shear, ST infill. JRC = 8.	
5			5 m: Shear, 0.5 mm ST infill. JRC = 8. 5.2 m: Shear, 0.5 mm ST infill. JRC = 12.	
6				
7				
8			7.8 m: Shear, 0.5 mm aperture. JRC = 12.	

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)

8
9
10
11
12
13
14
15
16

10.9 m: Shear, 0.5 mm CH infill, R2. JRC = 12.
11 m: Shear, 0.5 mm aperture. JRC = 8.
11.2 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 12.
11.4 m: Shear, 0.5 mm aperture. JRC = 8.

13.4 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 4.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
16			15.9 m: Shear, 0.5 mm aperture. JRC = 8.
17			17.4 m: Shear, 0.5 mm FE infill, R4. JRC = 8.
18			17.9 m: Shear on vein, 0.5 mm QZ infill. JRC = 15. 18.1 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 8.
19			
20			
21			
22			
23			
24			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

24
25
26
27
28
29
30
31
32

30.8 m: Fault on vein, 6 mm FB infill, R0. JRC = 8. Dip/dip direction = 33/047.

30.8 m: Shear on vein, mm FE infill, R2. JRC = 10.

31.2 m: Shear, 0.5 mm aperture. JRC = 12.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
32				
33			33.3 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 8. Dip/dip direction = 53/108.	
34			34.1 m: Shear, 0.5 mm aperture. JRC = 13. Dip/dip direction = 47/097.	
35				
36				
37			Constant head test from 36.6 - 50.6 m. Estimated hydraulic conductivity is 1.6E-07 m/s.	
38			38 m: Shear on vein, 1 mm QZ infill, R4. JRC = 10.	
39				
40				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

40.4 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 8.

40.7 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 6. Dip/dip direction = 54/268.

42.6 m: Shear, 0.5 mm aperture. JRC = 13.

46.4 m: Shear on vein, 0.5 mm CH infill, R2. JRC = 13. Dip/dip direction = 75/256.

46.8 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 13. Dip/dip direction = 85/294.

47.8 m: Shear on vein, 1.5 mm BX infill, R3. JRC = 13. Dip/dip

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

48

direction = 88/302.

48.3 m: Shear on vein, 0.5 mm CH infill, R2. JRC = 15. Dip/dip direction = 86/303.

49

49.2 m: Fault, 2 mm FB infill, R1. JRC = 8. Dip/dip direction = 54/261.

50

51

51.3 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 8.
51.4 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 20.

52

53

54

55

56

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
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Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

56
57
58
59
60
61
62
63
64

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
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Logged By: HKM/JND/LL
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DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

64
65
66
67
68
69
70
71
72

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

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Ground Elevation (m): 1,499.0
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Plunge (°): -75
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

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DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

72
73
74
75
75.6 m: Shear, 0.5 mm aperture. JRC = 4. Dip/dip direction = 80/228.
76
77
78
78.7 m: Shear on vein, QZ infill. JRC = 8. Dip/dip direction = 49/278.
79
79.5 m: Shear, 0.5 mm aperture. JRC = 8. Dip/dip direction = 85/288.
80

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

80
81
82
83
83.2 m: Shear, 0.5 mm CA infill. JRC = 4.
83.3 m: Shear, 0.5 mm CA infill. JRC = 4.
84
85
86
87
87.5 m: Shear, 0.5 mm aperture. JRC = 4.
88

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
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Drill Designation: Heliportable
Drilling Contractor: Radius
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Core: HQ3
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

88

89.7 m: Shear, 0.5 mm CA infill. JRC = 4. Dip/dip direction = 47/217.

89

89.9 m: Shear, 1 mm aperture. JRC = 4.

90

90.4 m: Shear on vein, 0.5 mm CA infill. JRC = 8.

91

91.7 m: Shear on vein, 0.5 mm CA infill. JRC = 12. Dip/dip direction = 72/231.

92

93

94

94.3 m: Shear, 2 mm BX infill. JRC = 1. Dip/dip direction = 58/243.

95

94.9 m: Shear, 0.5 mm aperture. JRC = 12.

95.2 m: Shear, 0.5 mm aperture. JRC = 2. Dip/dip direction = 45/208.

96

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

BGC ENGINEERING INC.
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LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

96
97
98
99
100
101
102
103
104

97.7 m: Shear on vein, 0.5 mm CA infill. JRC = 15. Dip/dip direction = 85/273.

100.7 m: Shear, 2 mm aperture. JRC = 15.

101.4 m: Shear, 0.5 mm aperture. JRC = 12.

101.9 m: Shear, 0.5 mm CA infill. JRC = 13.

102.9 m: Shear on vein, 1 mm CA infill. JRC = 20.

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
104				
105				
106				
107			106.7 m: Shear on vein, 0.5 mm CA infill. JRC = 13. Dip/dip direction = 52/095. 106.9 m: Shear on vein, 1 mm CA infill. JRC = 15.	
108				
109			109.3 m: Shear on vein, 0.5 mm aperture. JRC = 8. Dip/dip direction = 44/201. 109.7 m: Shear, 0.5 mm aperture. JRC = 12. 109.9 m: Shear on vein, 1 mm CA infill. JRC = 4. 109.9 m: Shear, 0.5 mm aperture. JRC = 8.	
110			110.4 m: Shear, 0.5 mm aperture. JRC = 2.	
111			110.8 m: Shear, 0.5 mm CH infill. JRC = 4. Dip/dip direction = 37/181.	
112				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

112
112.2 m: Shear on vein, 30 mm BX infill. JRC = 1. Dip/dip direction = 29/073.
113
113.5 m: Shear, 0.5 mm aperture. JRC = 4.
113.9 m: Shear on vein, mm CA infill. JRC = 8.
114
114.3 m: Shear on vein, 1 mm aperture. JRC = 8.
115
116
116.1 m: Shear, 0.5 mm aperture. JRC = 12.
117
116.9 m: Shear, 1 mm aperture. JRC = 15.
117.1 m: Shear, 0.5 mm aperture. JRC = 4.
117.3 m: Shear, 0.5 mm CA infill. JRC = 8.
117.8 m: Shear, 2 mm aperture. JRC = 8.
118
119
119 m: Shear, 0.5 mm aperture. JRC = 8.
120

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
120			120.5 m: Shear on vein, 0.5 mm CA infill. JRC = 4.						
121									
122						D 8.9			
123			123.1 m: Shear, 0.5 mm aperture. JRC = 12.						
124									
125			124.6 m: Shear, 0.5 mm CA infill. JRC = 8.			D 8.2			
126			126.5 m: Shear on vein, 1 mm CA infill. JRC = 4.			D 7.1 D 11.0			
127			127.2 m: Shear on vein, 1 mm CH infill. JRC = 4.						
128			127.7 m: Shear, 0.5 mm CA infill. JRC = 15.						

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE; CLOSE; MODERATE; WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
128			128.2 m: Shear on vein, 1 mm CA infill. JRC = 4. Dip/dip direction = 48/226.
			128.5 m: Shear on vein, 2 mm CA infill. JRC = 4. Dip/dip direction = 28/205.
			128.8 m: Shear on vein, 1 mm CA infill. JRC = 15. Dip/dip direction = 51/233.
129			
130			
			130.3 m: Shear on vein, 1 mm CA infill. JRC = 8.
			130.3 m: Shear, 0.5 mm CA infill. JRC = 4.
			130.9 m: Shear on vein, 1 mm CA infill. JRC = 13.
131			
			Constant head test from 131.4 - 148.1 m. Estimated hydraulic conductivity is 3.5E-08 m/s.
132			
			132.1 m: Shear on vein, 0.5 mm CA infill. JRC = 12.
133			
			133.7 m: Shear on vein, 1 mm CA infill. JRC = 8. Dip/dip direction = 61/233.
134			133.9 m: Shear, 1 mm CA infill. JRC = 4. Dip/dip direction = 61/282.
			134.1 m: Shear on vein, 1 mm CA infill. JRC = 13. Dip/dip direction = 43/250.
			134.7 m: Shear, 0.5 mm aperture. JRC = 12.
135			
			135.3 m: Shear, 0.5 mm CA infill, R4. JRC = 4. Dip/dip direction = 85/254.
			135.6 m: Shear, 0.5 mm CH infill, R3. JRC = 20.
			135.6 m: Shear, 0.5 mm CA infill, R4. JRC = 20.
136			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

D 5.7
D 7.5
D 3.1

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
136			135.7 m: Shear, 1 mm CA infill. JRC = 15.
			135.8 m: Shear, 1 mm CA infill. JRC = 13.
			136.4 m: Shear on vein, 0.5 mm aperture. JRC = 8.
			136.4 m: Shear, 0.5 mm CA infill, R2. JRC = 8. Dip/dip direction = 62/308.
			136.7 m: Shear on vein, 0.5 mm CA infill. JRC = 15.
137			
138			
139			
			139.6 m: Shear, 0.5 mm CA infill. JRC = 12.
140			
141			141 m: Shear, 0.5 mm CA infill. JRC = 8.
			141.1 m: Shear, 0.5 mm CA infill. JRC = 8.
			141.2 m: Shear, CH infill. JRC = 15. Dip/dip direction = 62/268.
142			
			142.2 m: Shear, CH infill. JRC = 15.
			142.3 m: Shear, 0.5 mm CA infill, R3. JRC = 2.
			142.4 m: Shear, 0.5 mm CA infill. JRC = 4.
			142.5 m: Shear, 0.5 mm aperture. JRC = 4.
143			142.8 m: Shear, 110 mm BX infill. JRC = 12.
			143.6 m: Shear, 0.5 mm aperture. JRC = 12. Dip/dip direction = 53/200.
144			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 6.1
D 11.6
D 3.8

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
144			144.1 m: Shear on vein, 0.5 mm CA infill. JRC = 8. Dip/dip direction = 63/198.
			144.5 m: Shear on vein, 0 mm CA infill, R4. JRC = 13. Dip/dip direction = 65/202.
			144.7 m: Shear, 0.5 mm CH infill. JRC = 15.
145			145.1 m: Shear, 0.5 mm CA infill. JRC = 8.
			145.2 m: Shear, 0.5 mm CA infill. JRC = 4.
			145.6 m: Shear on vein, 0.5 mm CA infill. JRC = 8. Dip/dip direction = 27/219.
146			146.1 m: Shear on vein, 0.5 mm CA infill. JRC = 12.
147			147.2 m: Shear, 0.5 mm aperture. JRC = 1.
			147.2 m: Shear, 0.5 mm aperture. JRC = 2. Dip/dip direction = 48/209.
148			
149			149 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 8.
150			
151			151.4 m: Shear, 0.5 mm aperture. JRC = 10.
			151.5 m: Shear, 0.5 mm aperture. JRC = 8. Dip/dip direction = 47/042.
152			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 1.6
D 10.1

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

152
153
154
154.3 m: Shear, 0.5 mm aperture. JRC = 4.
155
156
157
156.9 m: Shear, 0.5 mm aperture. JRC = 4.
158
158.3 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 8. Dip/dip direction = 89/095.
159
159.6 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 10.
160

D 5.9
D 5.4
D 4.0

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
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Drill Designation: Heliportable
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Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

160
161
162
163
164
165
166
167
168

D 4.0
D 1.9
D 4.6
D 7.8

166.1 m: Fault, 1 mm FB infill, R0. JRC = 6. Dip/dip direction = 67/318.

167.2 m: Shear, 1 mm aperture. JRC = 15.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
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Datum: UTM NAD 83 Zone 9
Plunge (°): -75
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
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Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)

168
169
170
171
172
173
174
175
176

171.2 m: Fault, 1.5 mm FB infill, R0. JRC = 20.

173.2 m: Shear, 1 mm CA infill, R2. JRC = 13.

D 4.9
D 7.0

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

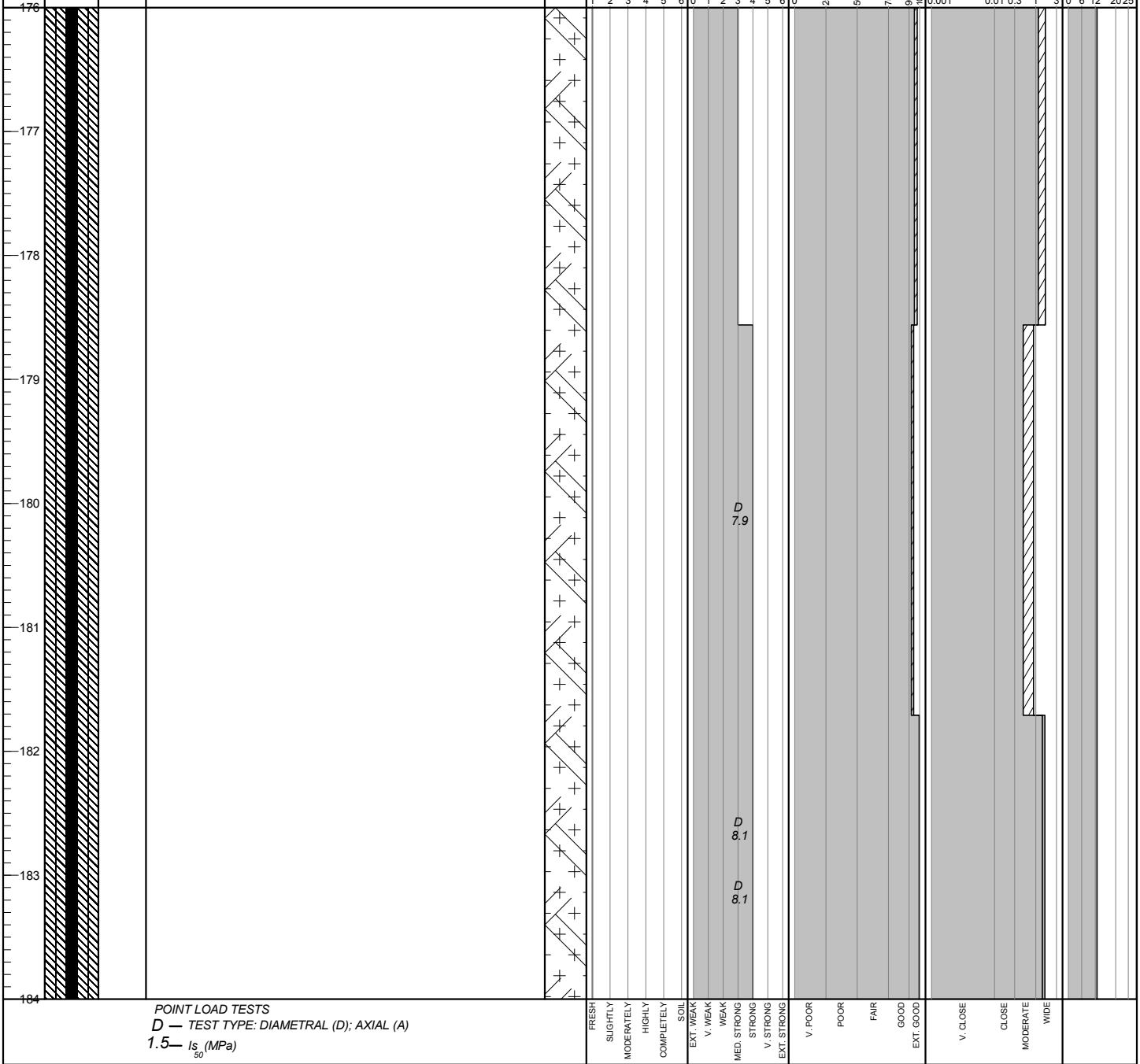
Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)



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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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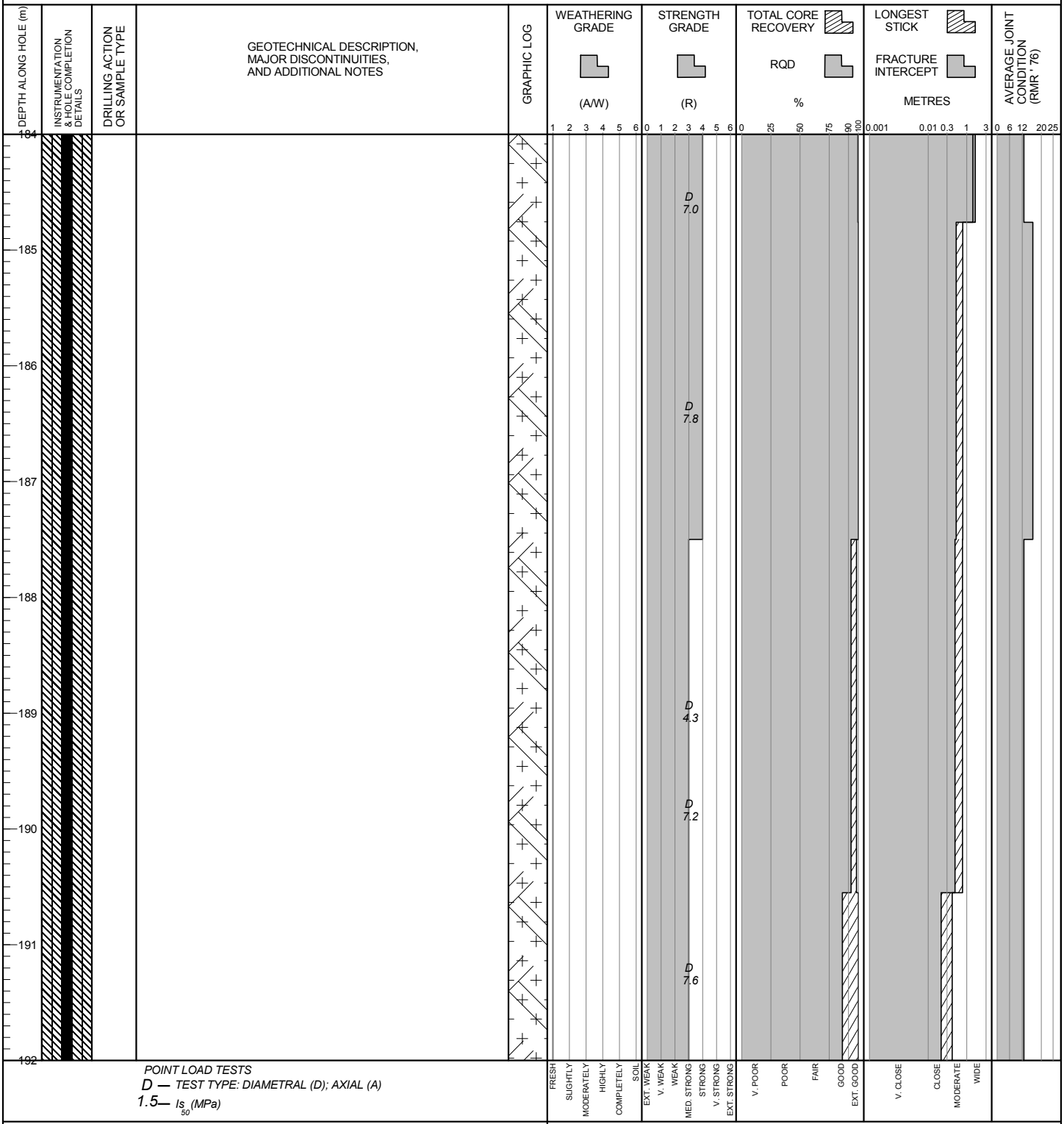

POINT LOAD TESTS
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1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

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Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

192.4 m: Shear, 0.5 mm aperture. JRC = 8.

192.8 m: Shear, 0.5 mm aperture. JRC = 8.

193.1 m: Shear, 0.5 mm aperture. JRC = 8. Dip/dip direction = 58/205.

193.9 m: Shear, 0.5 mm aperture. JRC = 4. Dip/dip direction = 55/209.

194.5 m: Shear, 10 mm aperture. JRC = 8.

197.7 m: Shear, 1 mm aperture. JRC = 8.

198.1 m: Shear, 0.5 mm aperture. JRC = 8.

D 5.6

D 7.6

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

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Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
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Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
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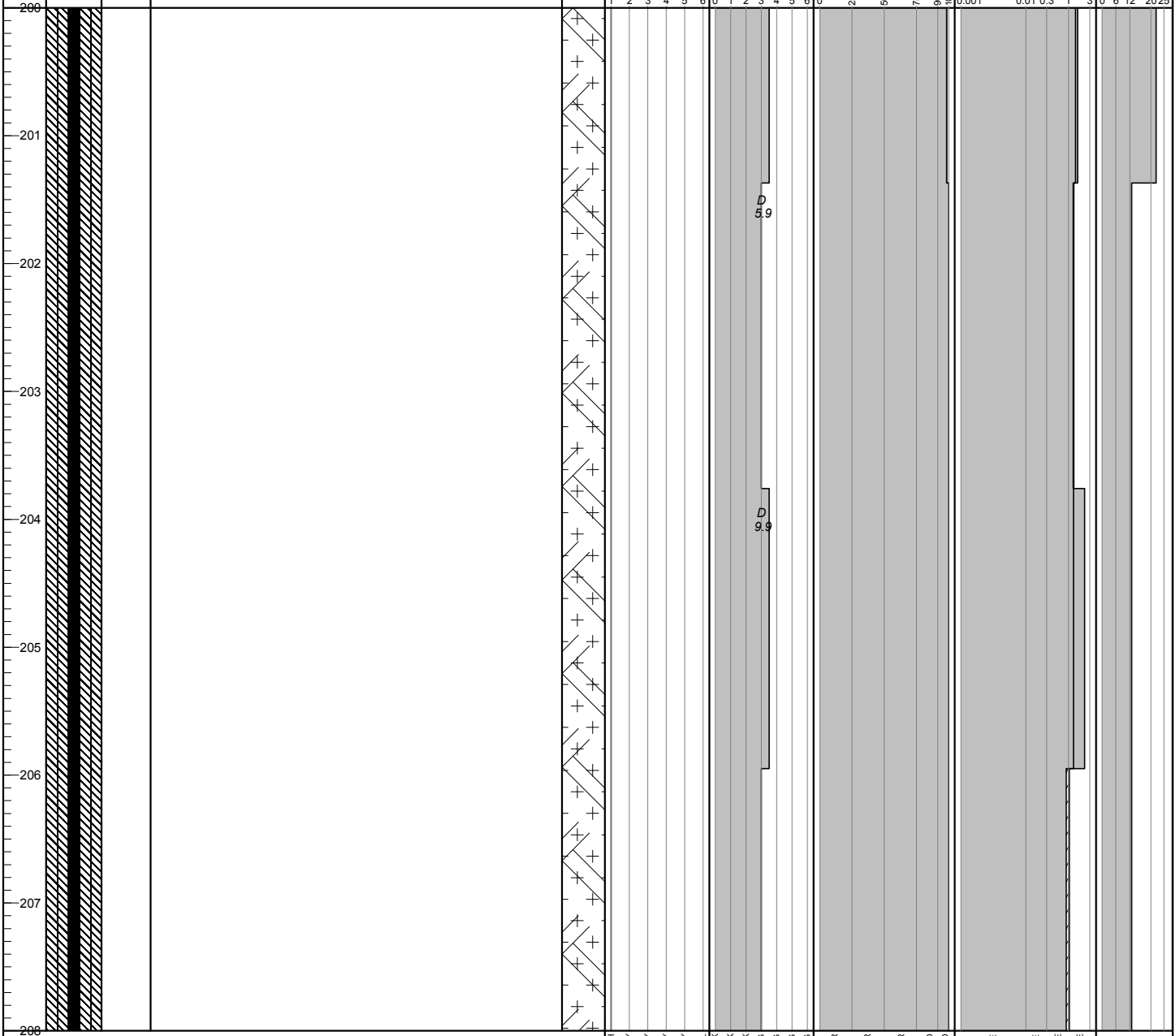
DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
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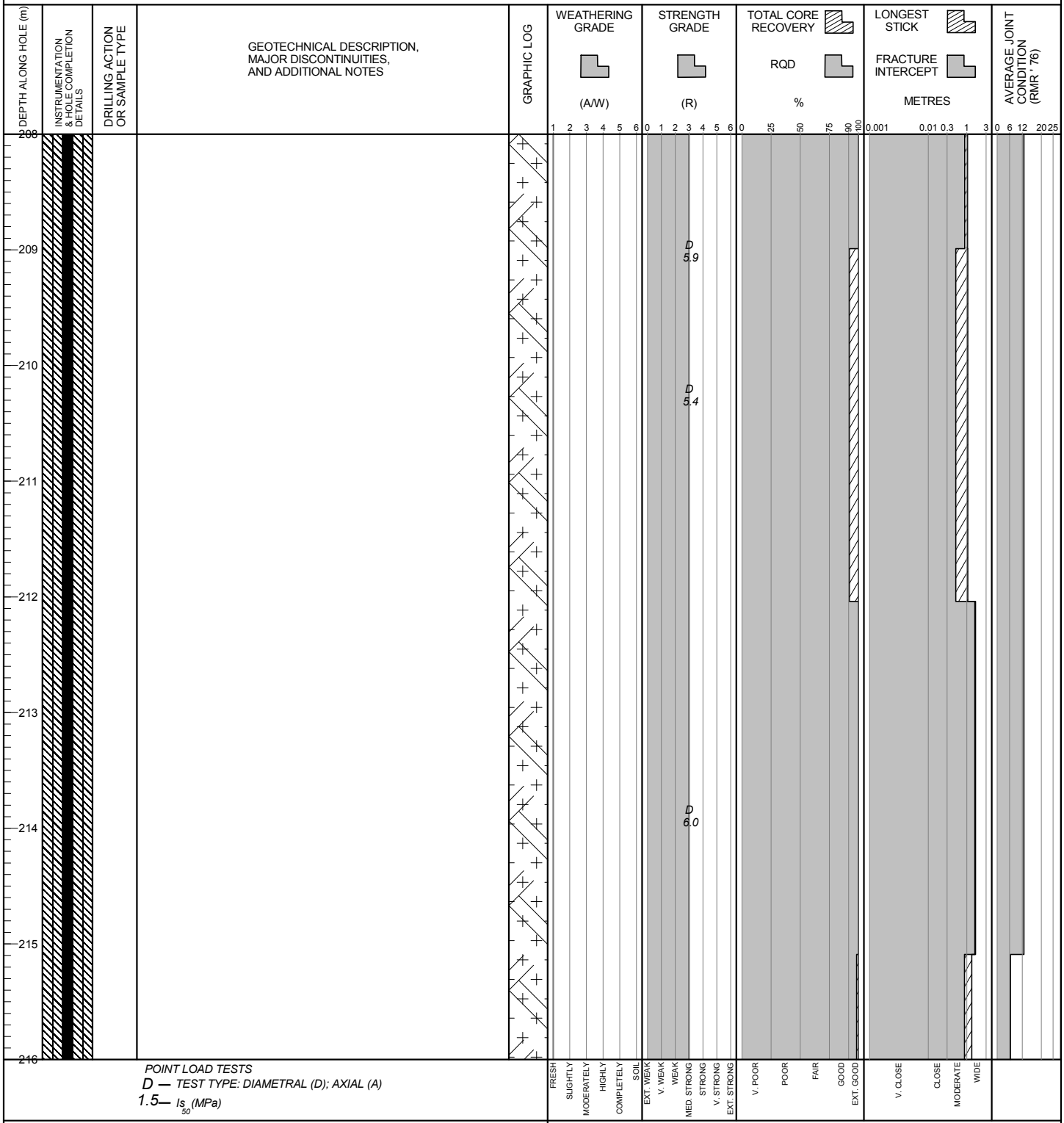

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

216
217
218
219
220
221
222
223
224

217.2 m: Shear, 0.5 mm aperture. JRC = 4.

D 11.9
D 10.7
D 5.2

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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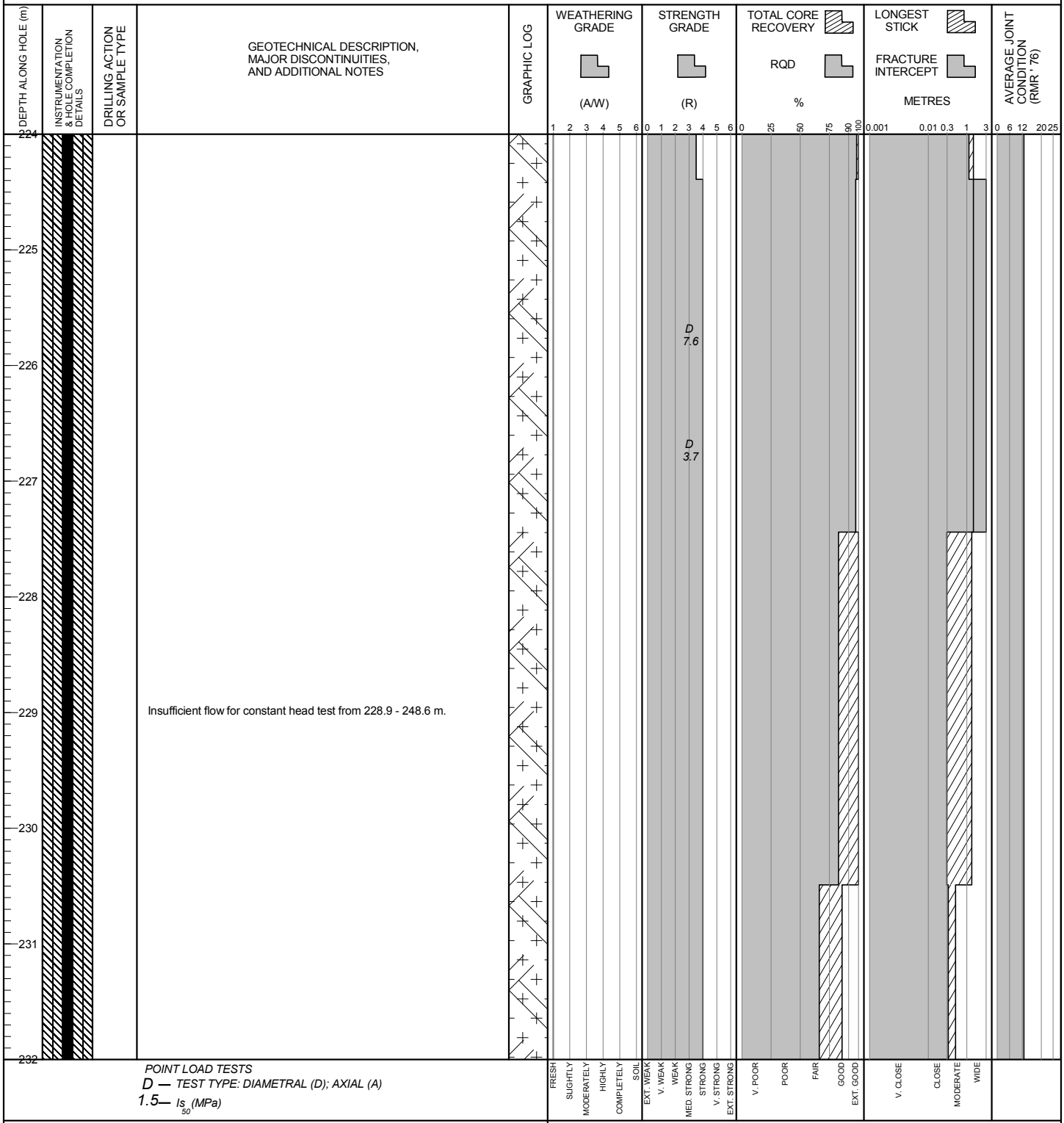

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Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

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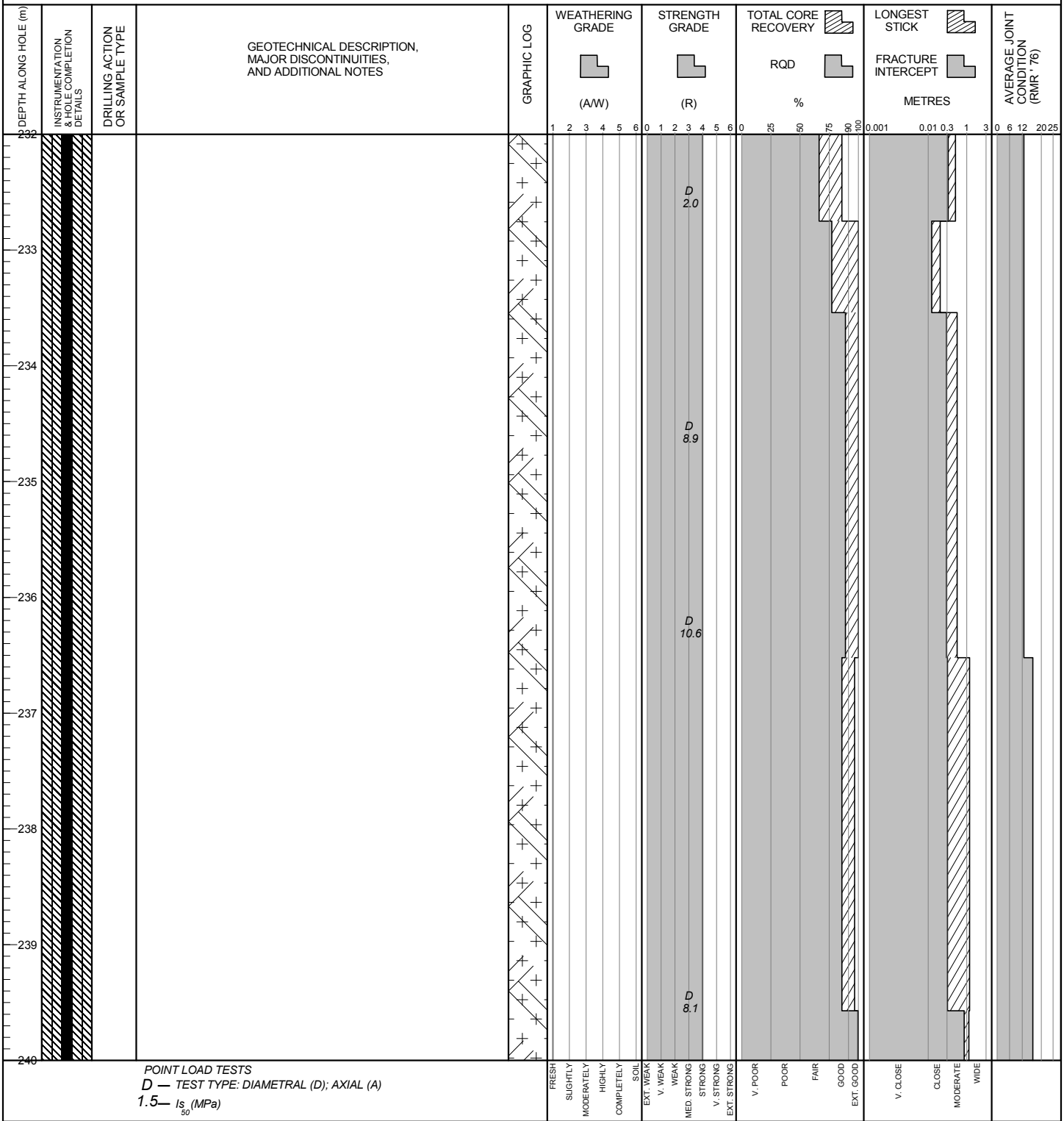

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Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
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Depth To Top Of Rock (m): 1.8
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
240			240 m: Shear, 0.5 mm aperture. JRC = 12.						
241									
242									
243						D 10.2			
244						D 4.1			
245						D 8.7			
246						D 9.9			
247						D 5.3			
248									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
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248
249
250
251
252
253
254
255
256

D 5.5

D 7.5

250.2 m: Fault, 1 mm FB infill. JRC = 13.

MAFIC DYKE (V6)
Dark green dyke. Stong (R4). Faint alteration (A1.5).

253.5 m: Fault, 0.5 mm FB infill. JRC = 13.

254 m: Fault, 1.5 mm FB infill. JRC = 13. Dip/dip direction = 69/327.

PLAGIOCLASE-HORNBLENDE PORPHYRY (P1)
Light greenish-grey to grey. Strong (R4). Faint weathering (A1-A1.5).

255.5 m: Fault, 40 mm FG infill, R0.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-21

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Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
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256.1 m: Fault, 210 mm FB infill, R0.
256.3 m: Fault, 70 mm FB infill, R2.
256.5 m: Fault, 1 mm FB infill, R0.
256.5 m: Fault, 1 mm FB infill, R0.
256.6 m: Fault, 60 mm FB infill, R0.
256.7 m: Fault, 70 mm FB infill, R1.
256.8 m: Fault, 5 mm FB infill, R0. Dip/dip direction = 25/157.
256.9 m: Fault on vein, 70 mm FB infill, R0.
258.2 m: Fault, 0.5 mm FB infill, R1. JRC = 13.
258.4 m: Fault, 30 mm FB infill.
258.5 m: Fault, 2 mm FB infill. JRC = 13.

D 1.4
D 2.7
D 8.2

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

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Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
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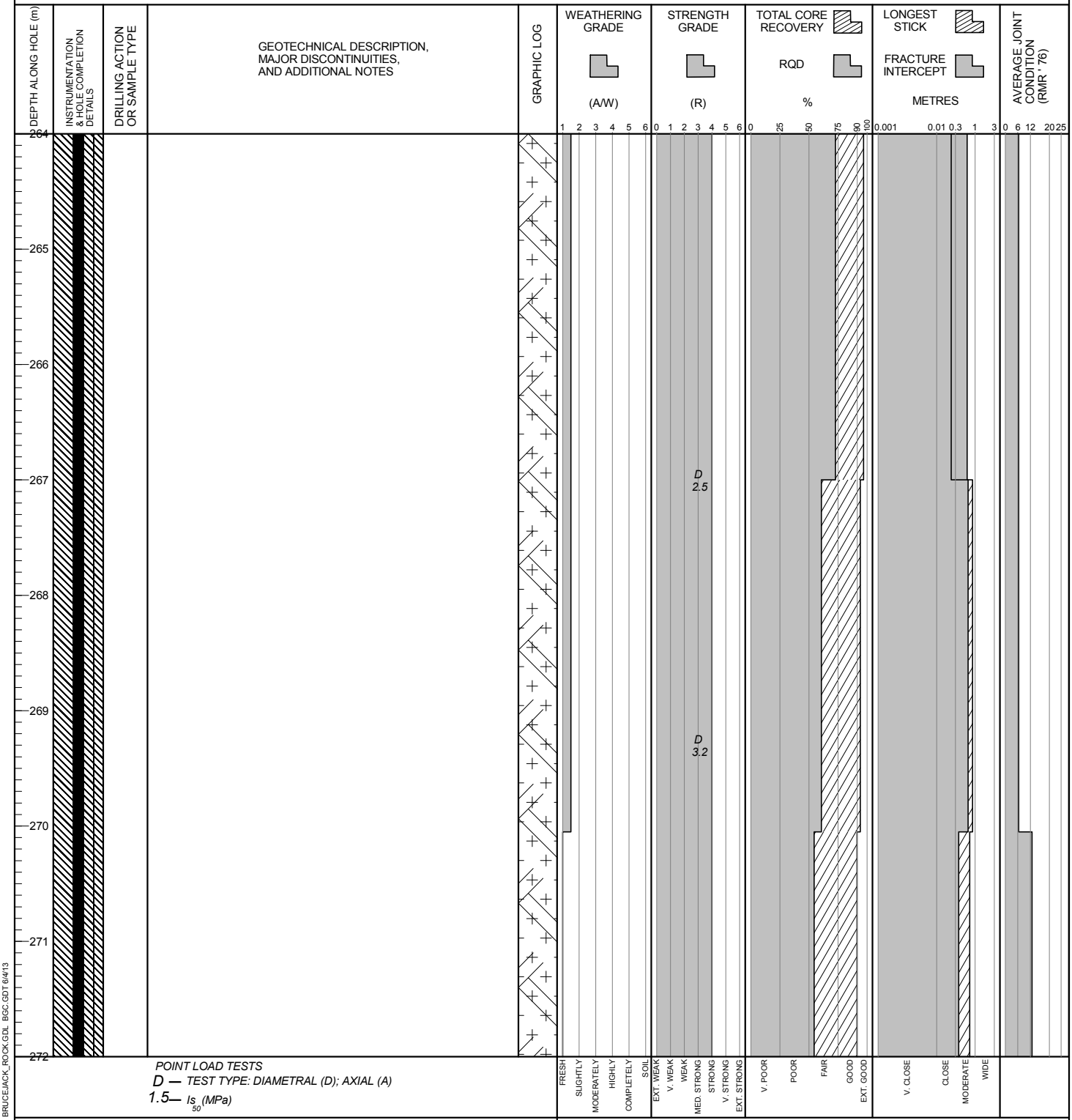

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
272			272.4 m: Fault, 500 mm FB infill, R3.
273			273.3 m: Fault, 1 mm FB infill, R3. JRC = 13.
			273.6 m: Fault, 10 mm FG infill, R2.
274			274.1 m: Fault, 11 mm FG infill, R2. JRC = 13.
275			
276			276.2 m: Fault, 10 mm FB infill. JRC = 13.
			276.4 m: Fault, 10 mm FB infill, R2. JRC = 13. Dip/dip direction = 50/040.
			276.6 m: Fault, 5 mm FB infill, R2. JRC = 13.
277			276.9 m: Fault, 50 mm FB infill, R2. JRC = 13. Dip/dip direction = 83/338.
278			
279			278.8 m: Fault, 10 mm FG infill, R2. JRC = 12. Dip/dip direction = 64/282.
280			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 2.5
D 5.2
D 5.8

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
280			280.2 m: Fault, 60 mm FB infill, R3. JRC = 13. Dip/dip direction = 59/270.		1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
281									
282									
283									
284						D 8.0			
285						D 8.0			
286									
287									
288					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
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Datum: UTM NAD 83 Zone 9
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Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
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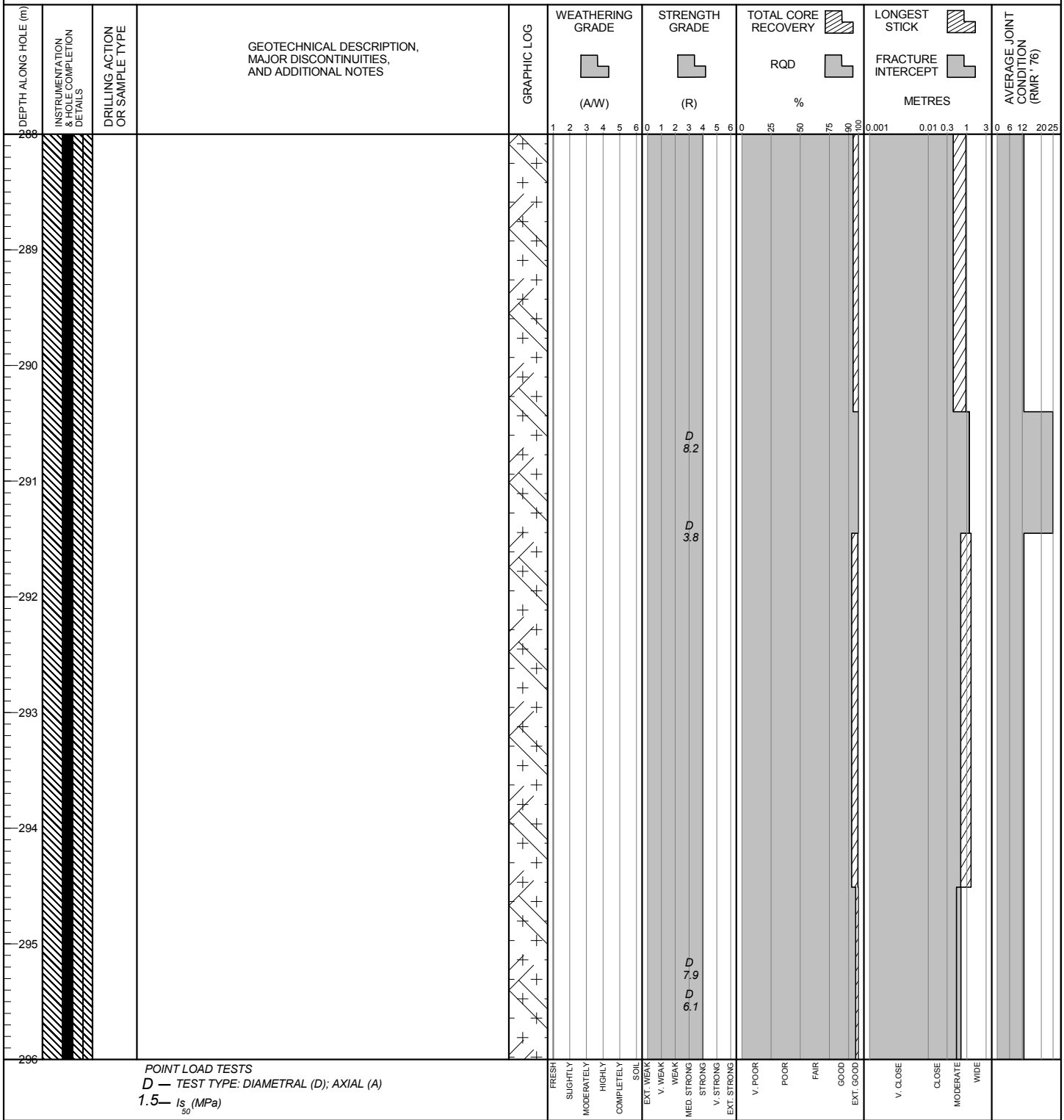
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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DRILL HOLE # DH-BGC12-21

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Datum: UTM NAD 83 Zone 9
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Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
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Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

296

PELITE (S5)
Light greenish-grey, silty to sandy concretion bearing sedimentary rock. Medium strong to strong (R3-R4). Fresh (A1).

D 7.4

297

D 5.4

D 8.4

298

299

300

301

302

302 m: Fault, 70 mm FB infill, R4. JRC = 13. Dip/dip direction = 81/316.

D 1.5

303

MAFIC DYKE (V6)
Green dyke with lower margin at 35 degrees TCA. Strong (R4). Faint alteration (A1.5).

304

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
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Datum: UTM NAD 83 Zone 9
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

304

STOCKWORK (H7)
Greyish-white. Strong (R4). Faint alteration (A1.5).

305

D 6.1

306

ARENITE (S4)
Light greenish-grey, interbedded silts and fine sands, well sorted. Medium strong to very strong (R3-R4.5). Fresh (A1).

306.1 m: Shear, 0.5 mm CX infill. JRC = 13.

307

307.1 - 309.0 m: Stockwork veining.

308

308.6 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 13.

309

D 6.7

D 10.7

310

311

311.4 - 312.7 m: Stockwork quartz-carbonate veining.

312

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
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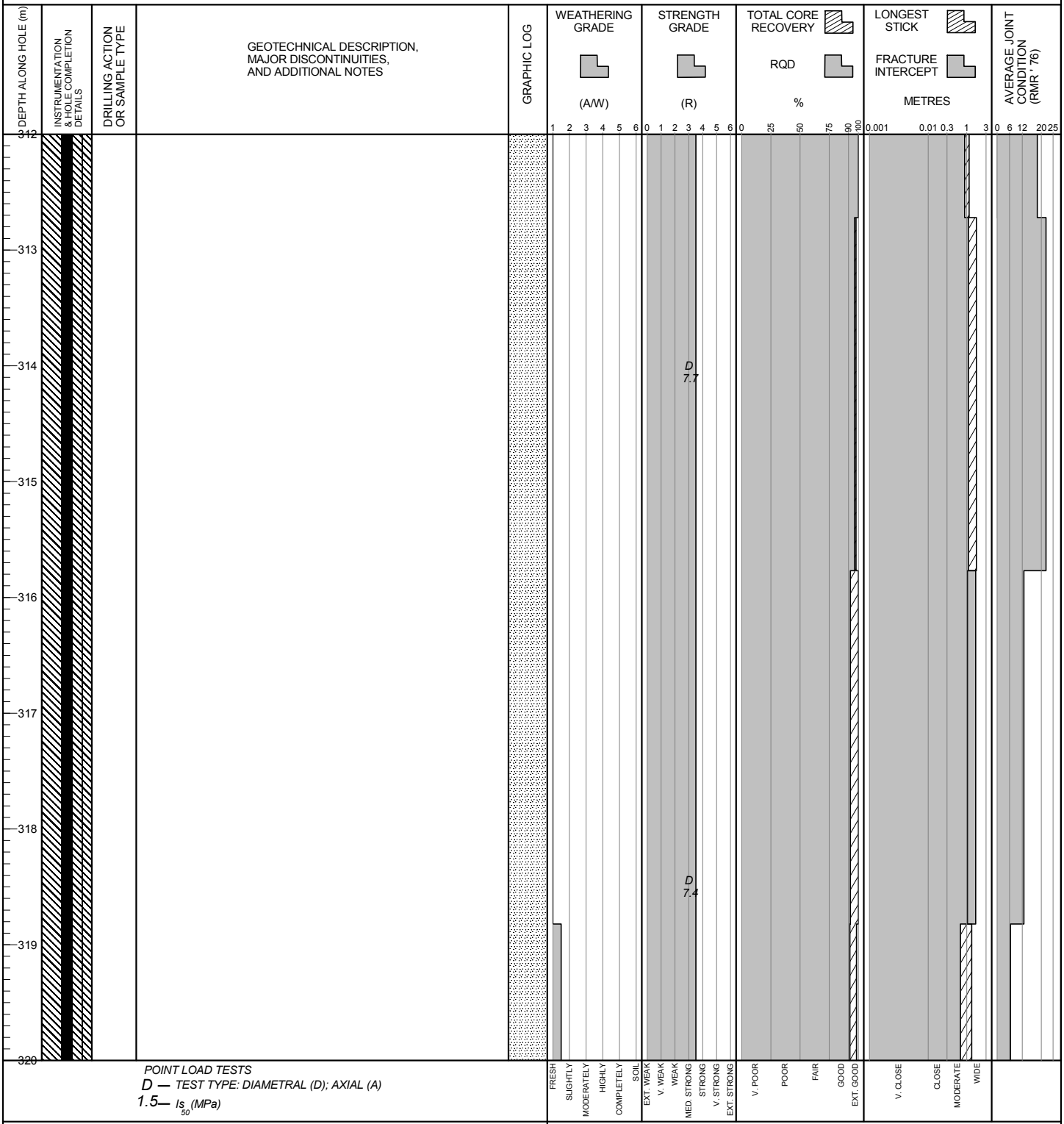
Logged By: HKM/JND/LL
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)

320
321
322
323
324
325
326
327
328

D 6.1
D 3.3

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

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Drill Method: Diamond
Core: HQ3
Fluid: Polymer
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328
329
330
331
332
333
334
335
336

330.0 - 333.49 m: Stockwork veining.

Constant head test from 331 - 349.3 m. Estimated hydraulic conductivity is 3.8E-08 m/s.

335.2 m: Fault, 30 mm FB infill, R3. JRC = 13.

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

D 3.2
D 4.2
D 7.5

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Core: HQ3
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336.1 m: Fault, 50 mm FB infill, R2. JRC = 20.

336.9 m: Fault, 40 mm FG infill, R0. JRC = 20. Dip/dip direction = 80/293.

D 0.3

D 4.6

WEATHERING GRADE: FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE: EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

TOTAL CORE RECOVERY / RQD: V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT: V. CLOSE | CLOSE | MODERATE | WIDE

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
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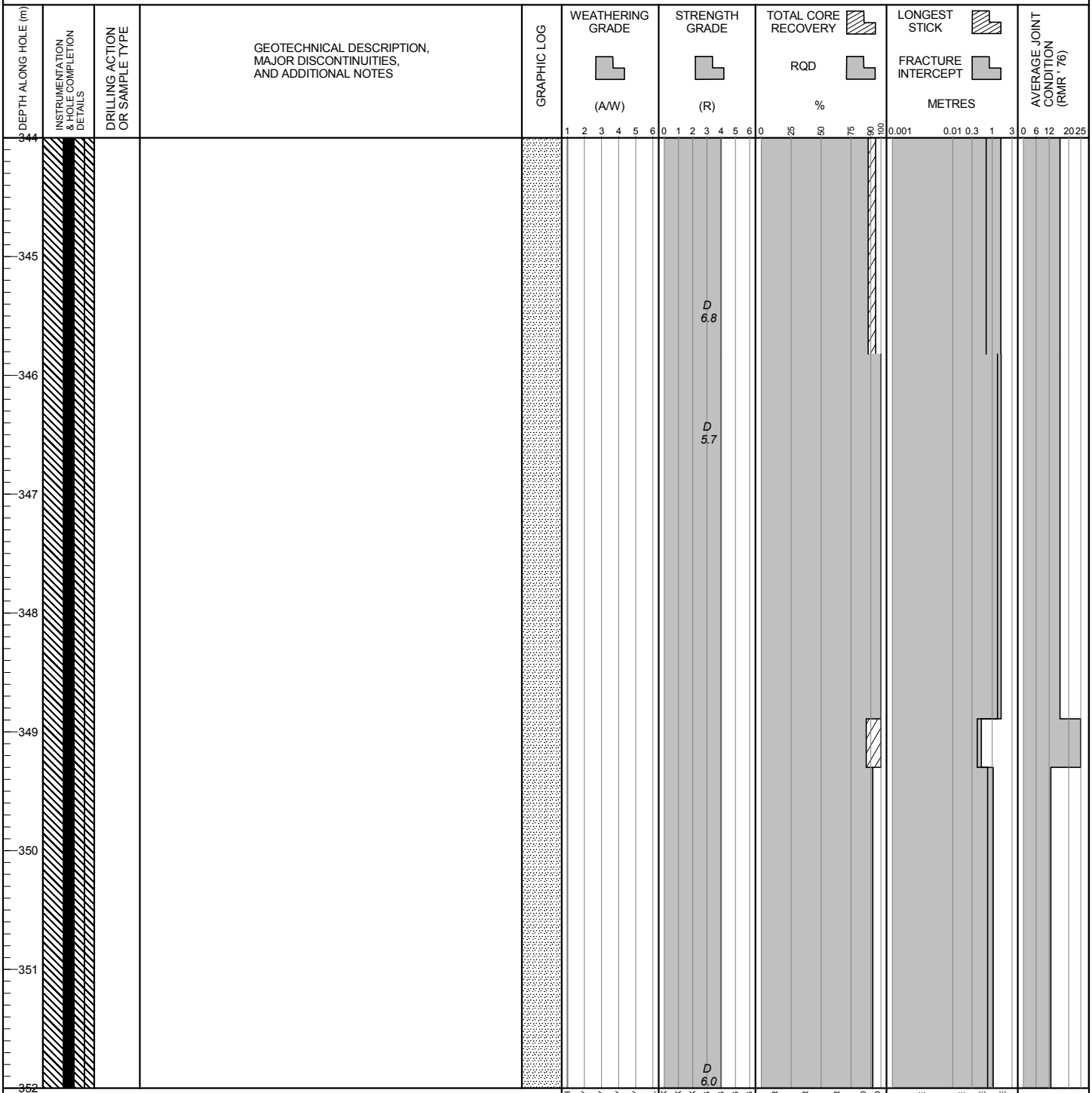

POINT LOAD TESTS
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1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

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DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

352
353
354
355
356
357
358
359
360

D 6.9
D 4.0
D 6.5
D 4.9
D 2.7
D 1.7

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
V. POOR | POOR | FAIR | GOOD | EXT. GOOD
V. CLOSE | CLOSE | MODERATE | WIDE

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360
361
362
363
364
365
366
367
368

D
7.1

364.5 - 378.7 m: Stockwork veining.

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

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368
369
370
371
372
373
374
375
376

D 6.3
D 7.1
D 10.8
D 9.3
D 7.6
D 7.9

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
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Survey Method: Hand Held GPS
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376
377
378
379
380
381
382
383
384

PELITE (S5)
Light greenish-grey, interbedded fine sands and silts, sericite altered, concretions in silty sections. Strong (R4). Fresh (A1).

D 7.8
D 6.5
D 10.2

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

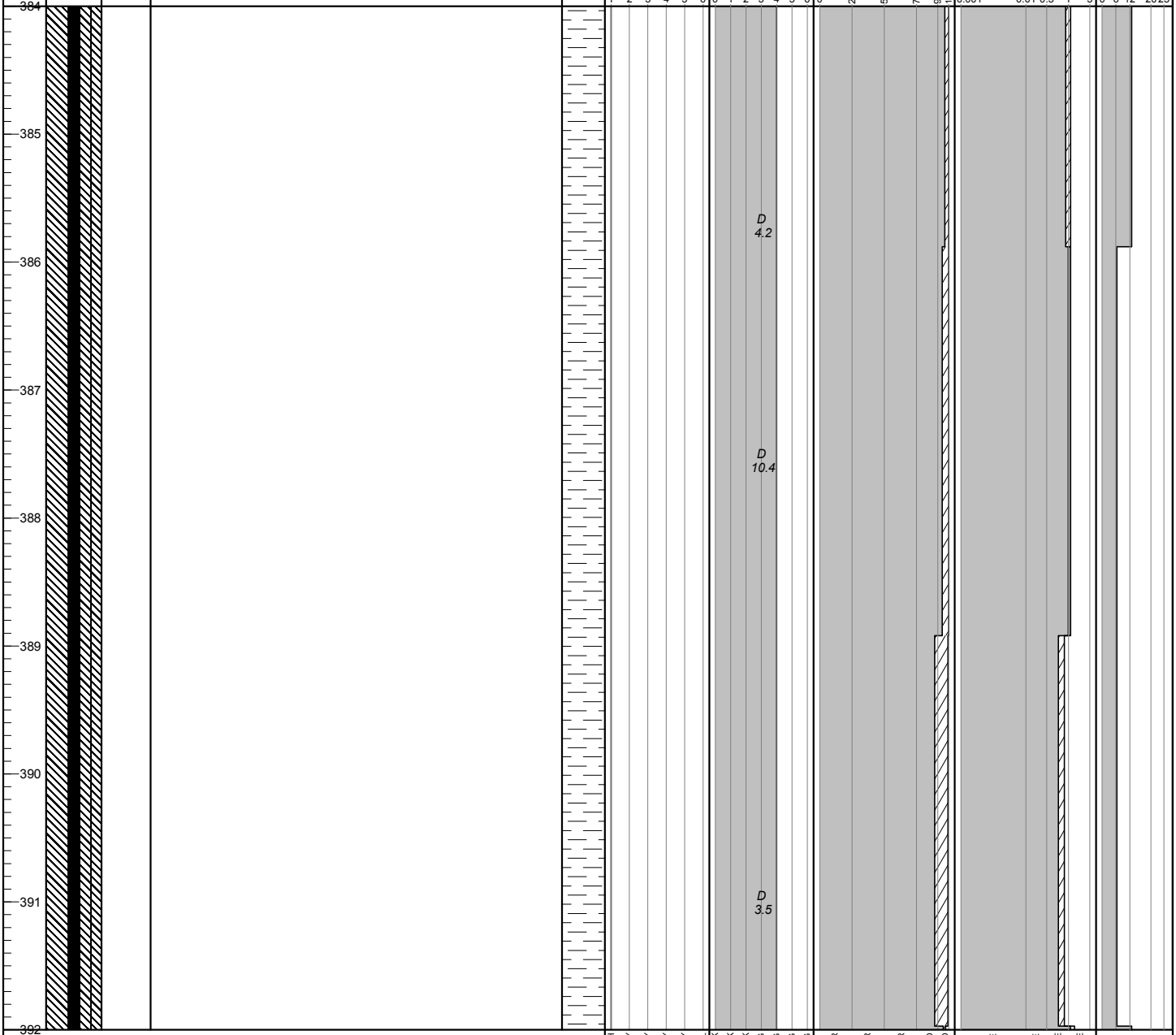
Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)



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DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

392
393
394
395
396
397
398
399
400

396.3 - 403.2 m: Stockwork veining.

D 4.2
D 6.5

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
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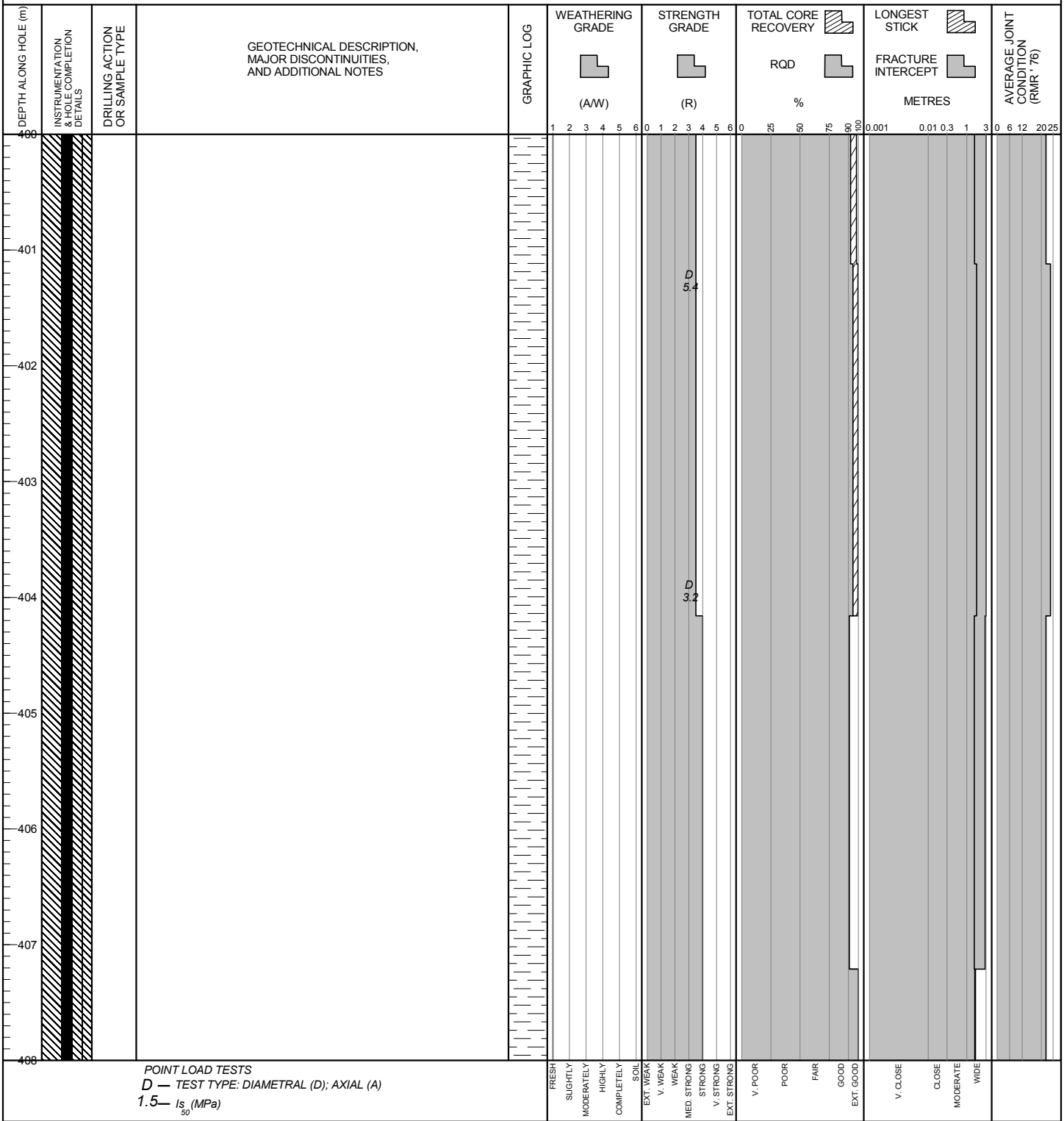

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408
409
410
411
412
413
414
415
416

409.9 - 412.2 m: Stockwork veining.

412.2 m: Rock becomes very foliated with light green, fine grained and elongate dark grey fragments.

D 10.0
D 5.6

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

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416
417
418
419
420
421
422
423
424

D 6.5
D 10.7
D 4.8
D 5.4
D 1.6

Arenite (S4)
Light greenish-grey, silty sand to fine grained sandstone. Strong (R3.5-R4.5). Fresh (A1).

POINT LOAD TESTS
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424			424.3 m: Fault, 20 mm FG infill, R2. JRC = 12. Dip/dip direction = 22/223.			D 5.0			
425									
426									
427			427.5 m: Fault, 20 mm FB infill, R3. JRC = 12. Dip/dip direction = 28/211. 427.8 m: Fault, 30 mm FB infill, R3. JRC = 12.						
428									
429						D 7.9			
430			429.7 - 433.1 m: Stockwork veining.						
431						D 4.9			
432									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE; CLOSE; MODERATE; WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

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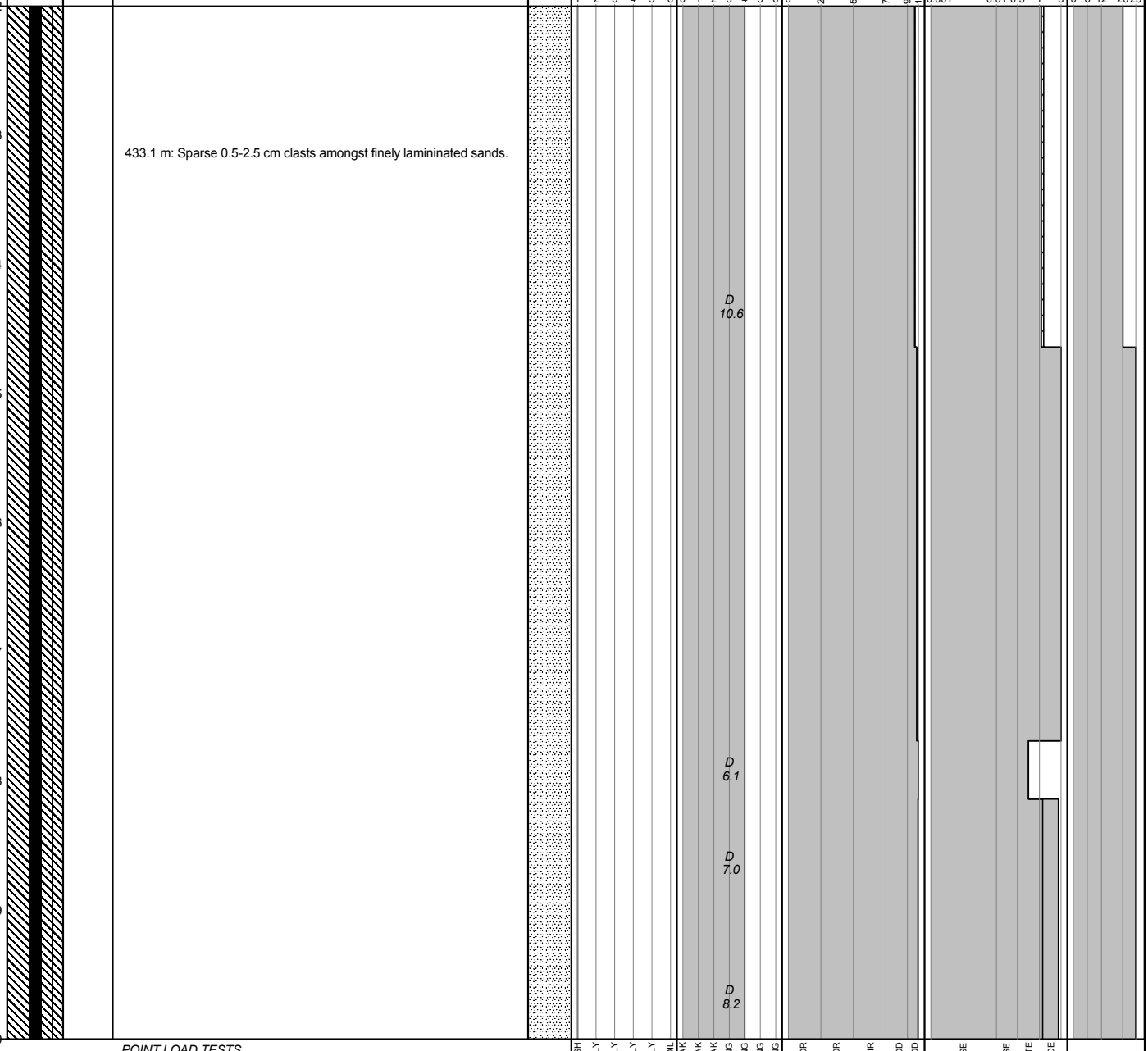

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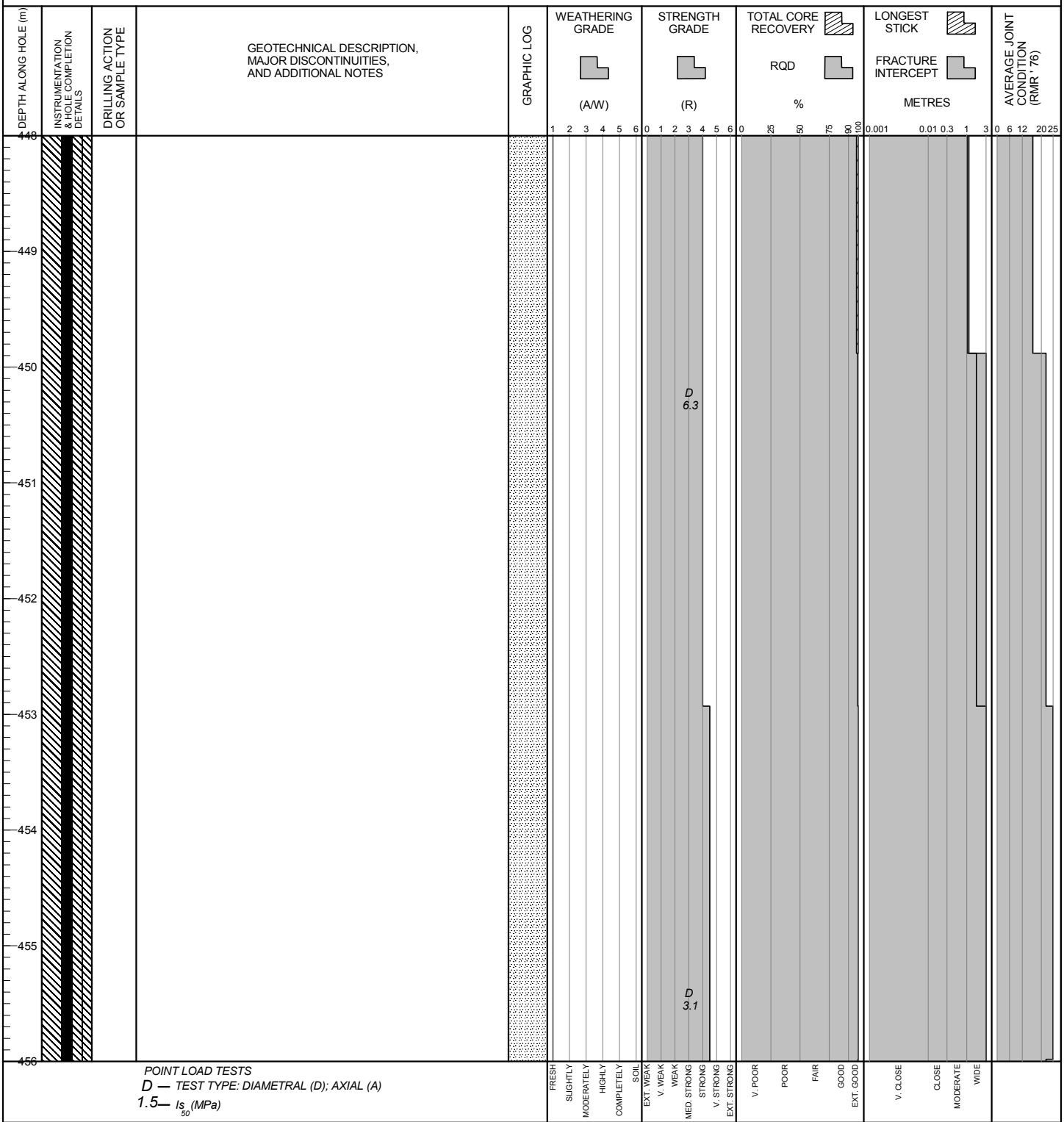

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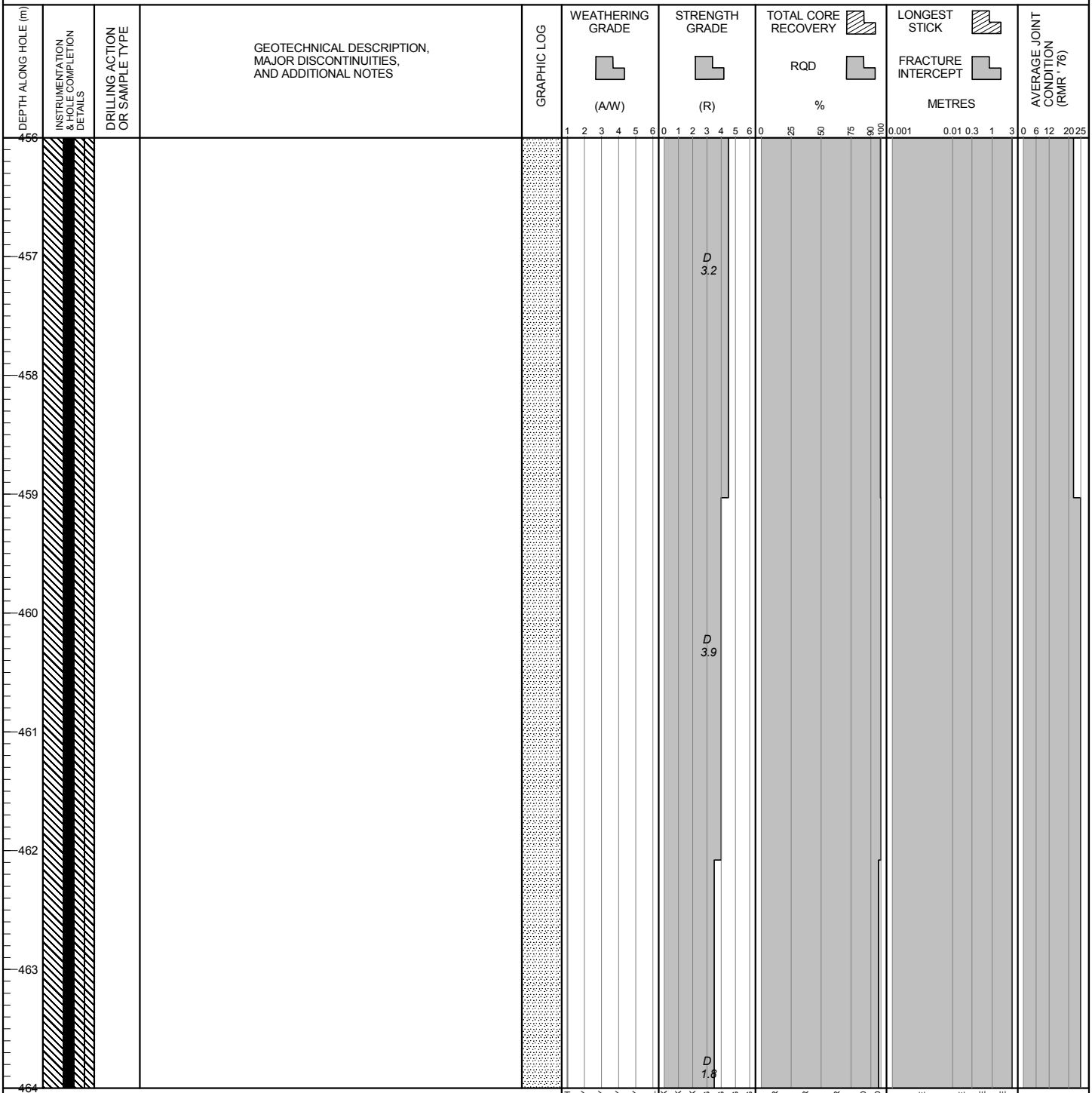

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464
465
466
467
468
469
470
471
472

D 6.6
D 5.1
D 7.1
D 6.6
D 6.7
D 8.5

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
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472
473
474
475
476
477
478
479
480

D 11.9
D 10.7
D 10.2

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
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480					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
481									
482			482.4 - 490.5 m: Multiphase veining with web-like mineralized veining.						
483									
484									
485						D 8.6			
486						D 3.8			
487									
488					FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL	EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG	V. POOR / POOR / FAIR / GOOD / EXT. GOOD	V. CLOSE / CLOSE / MODERATE / WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

488
489
490
491
492
493
494
495
496

490.5 m: Sandstone is fine to medium grained with no bedding or laminations.

D 10.3

D 5.5

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
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Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

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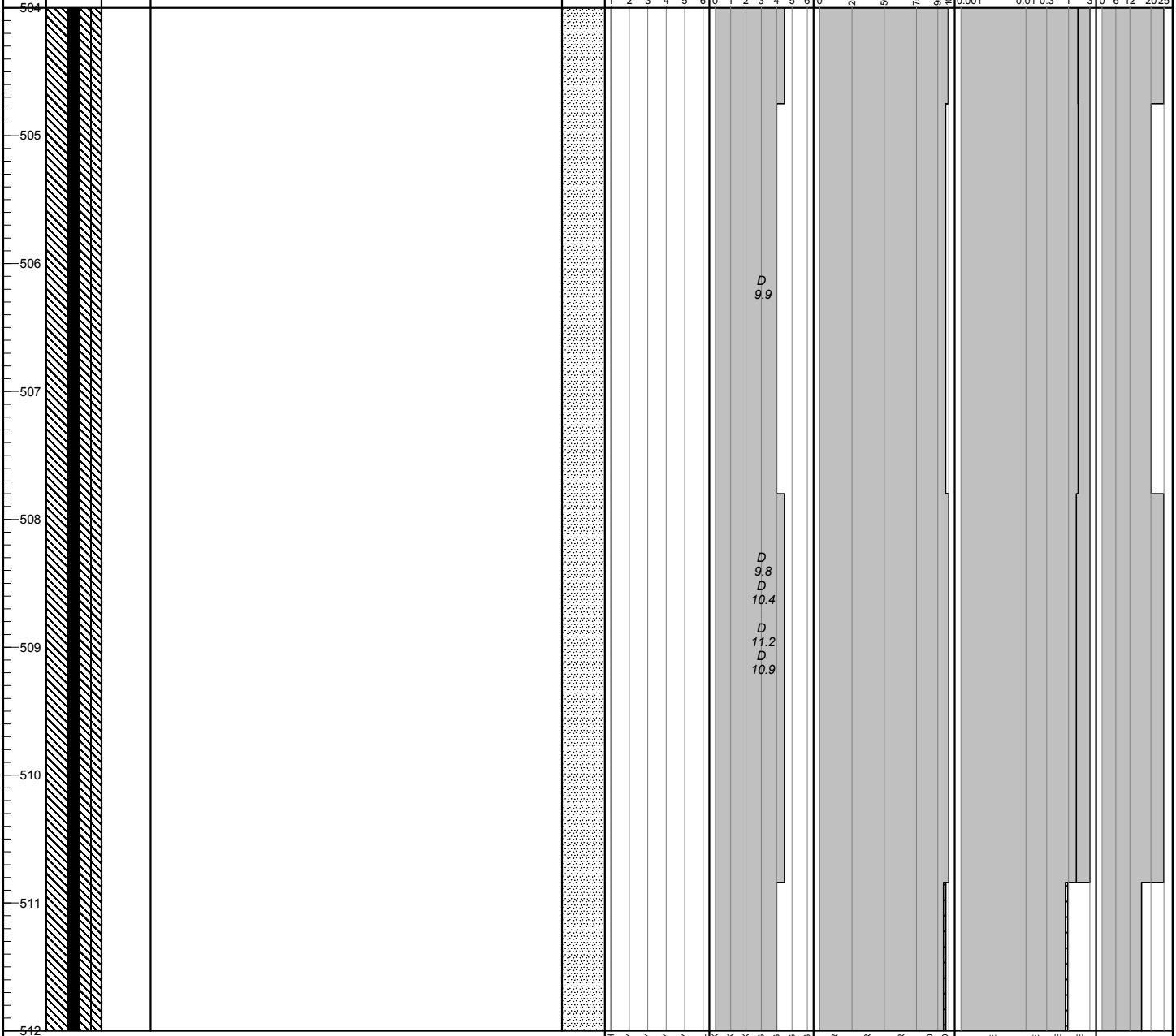

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

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512
513
514
515
516
517
518
519
520

D 6.6
D 3.6
D 7.3

QUARTZ SILICATE VEIN (H3)
White, siliceous vein with wall rock breccia, primarily silica. Strong (R4). Fresh (A1).

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-21

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Core: HQ3
Fluid: Polymer
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

520
521
522
523
524
525
526
527
528

ARENITE (S4)
Light grey to light greenish-grey, fairly well sorted, fine to very fine grained sandstone. Strong (R4). Fresh (A1).

D 10.2
D 6.8
D 6.9

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

Co-ordinates (m): 426,406E - 6,258,223N
Ground Elevation (m): 1,499.0
Survey Method: Hand Held GPS
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 145

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Mar 12
Finish Date: 09 Apr 12
Final Depth (m): 556.6
Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

526
529
530
531
532
533
534
535
536

D 5.4
D 6.1

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

Location: Valley of Kings Zone

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536
537
538
539
540
541
542
543
544

D 4.1
D 8.0
D 4.9
D 5.3

543.1 - 547.7 m: Stockwork veining, lower portion contains silicate flooding around wall rock fragments.

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-21

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Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

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Depth To Top Of Rock (m): 1.8
Logged By: HKM/JND/LL
Reviewed By: JW

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544
545
546
547
548
549
550
551
552

D 3.4
D 4.3
D 6.5
D 4.7

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
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LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

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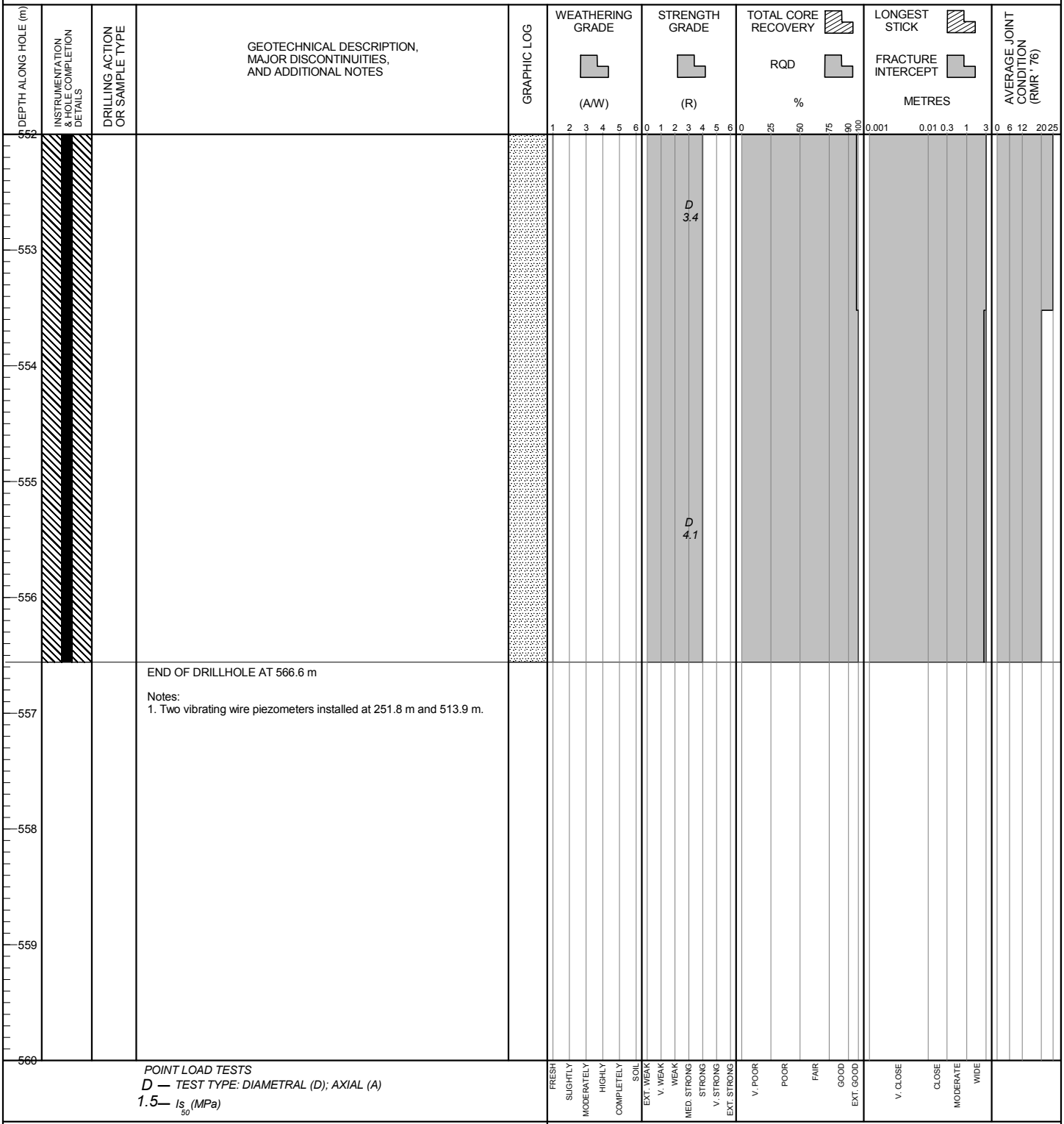

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
Finish Date: 25 Apr 12
Final Depth (m): 585.8
Depth To Top Of Rock (m): 2.3
Logged By: LL/LH
Reviewed By: JW

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						OVERBURDEN AND WEATHERED ROCK Very poor recovery.
1						
2						
						Rock encountered at 2.3 m depth. Refer to DH-BGC12-22 rock log.
3						
4						
5						
6						
7						
8						

Su - kPa
40 80 120 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery
20 40 60 80
Moisture Content & SPT N
W_p% W% W_l%
20 40 60 80

BRUCEJACK (SOIL) BRUCEJACK_SOIL.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
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Final Depth (m): 585.8
Depth To Top Of Rock (m): 2.3
Logged By: LL/LH
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
0				
1			Refer to DH-BGC12-22 Overburden Log	
2				
3			CONGLOMERATE (S3) Medium to light grey, subrounded clasts up to 5 cm in width, selective clasts look to be stretched and elongated. Medium strong to strong (R3-R4.5). Faint alteration (A1-A1.5) on major discontinuities.	
4				
5				
6				
7			7.2 m: Fault, 20 mm FB/FG infill, R2. JRC = 12.	
8				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

D 4.0
D 3.7
D 4.2

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
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Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
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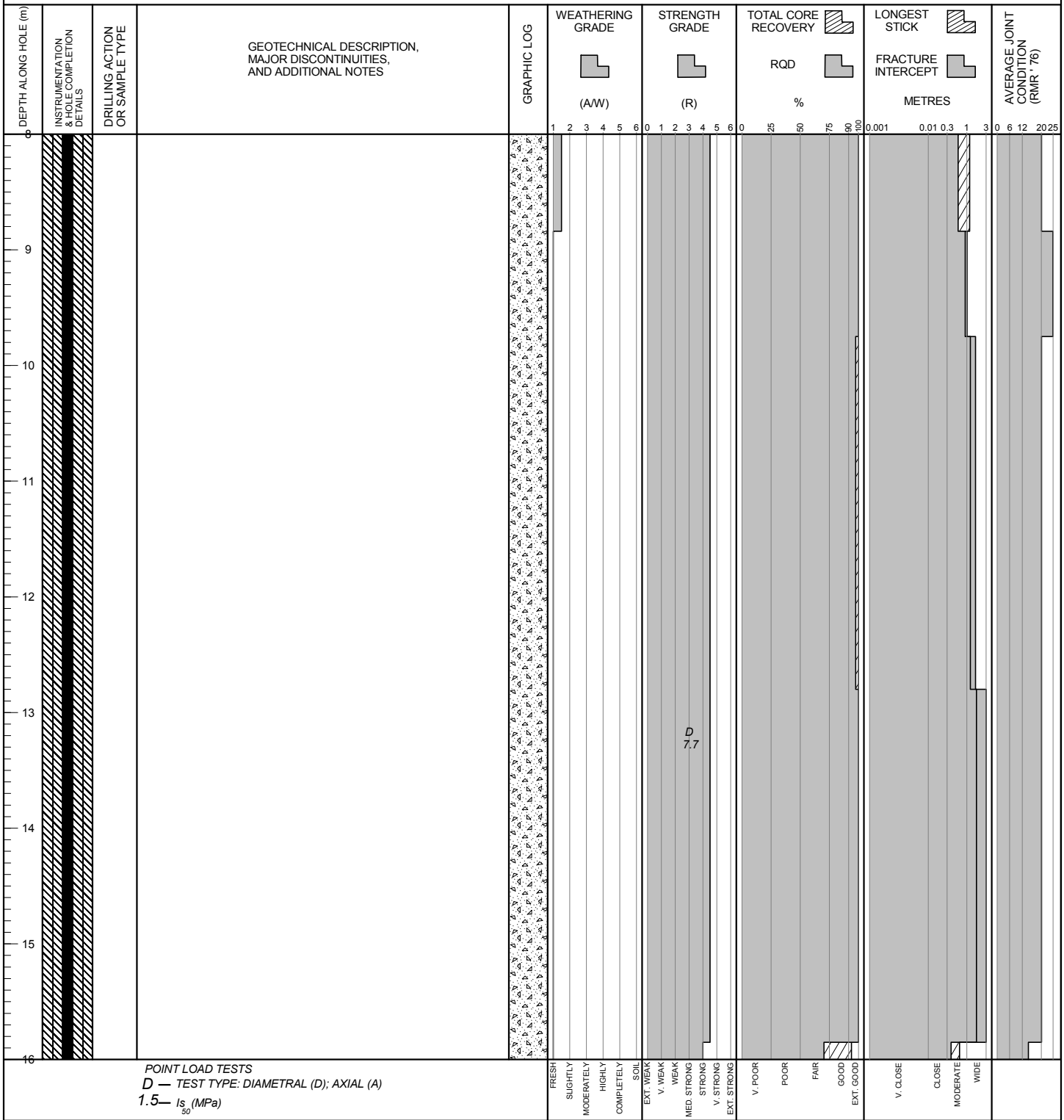

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

FAULT ZONE
Contained within in the pebble conglomerate unit, orientation is variable from 40 to 70 degrees TCA based on gouge orientation. Medium strong to strong (R3-R4). Faint alteration (A1-A1.5) on major discontinuities.

17.4 m: Fault, 50 mm FB/FG infill, R2. JRC = 15.

17.5 m: Fault, 20 mm FB/FG infill, R2. JRC = 15.

17.8 m: Fault, 600 mm FB/FG infill, R2. JRC = 8.

20.9 m: Fault, 130 mm FB/FG infill, R2. JRC = 13.

21.9 m: Fault, 50 mm FB infill, R2.

ARENITE (S4)
Medium to light grey, coarse grained sandstone with pebble sized clasts present, very weakly bedded, contains rare quartz fragments up to 5 cm. Medium strong to very strong (R3.5-R4.5). Faint alteration (A1-A1.5) to 61.6 m. Fresh (A1) below 61.6 m.

D 4.9

D 2.8

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

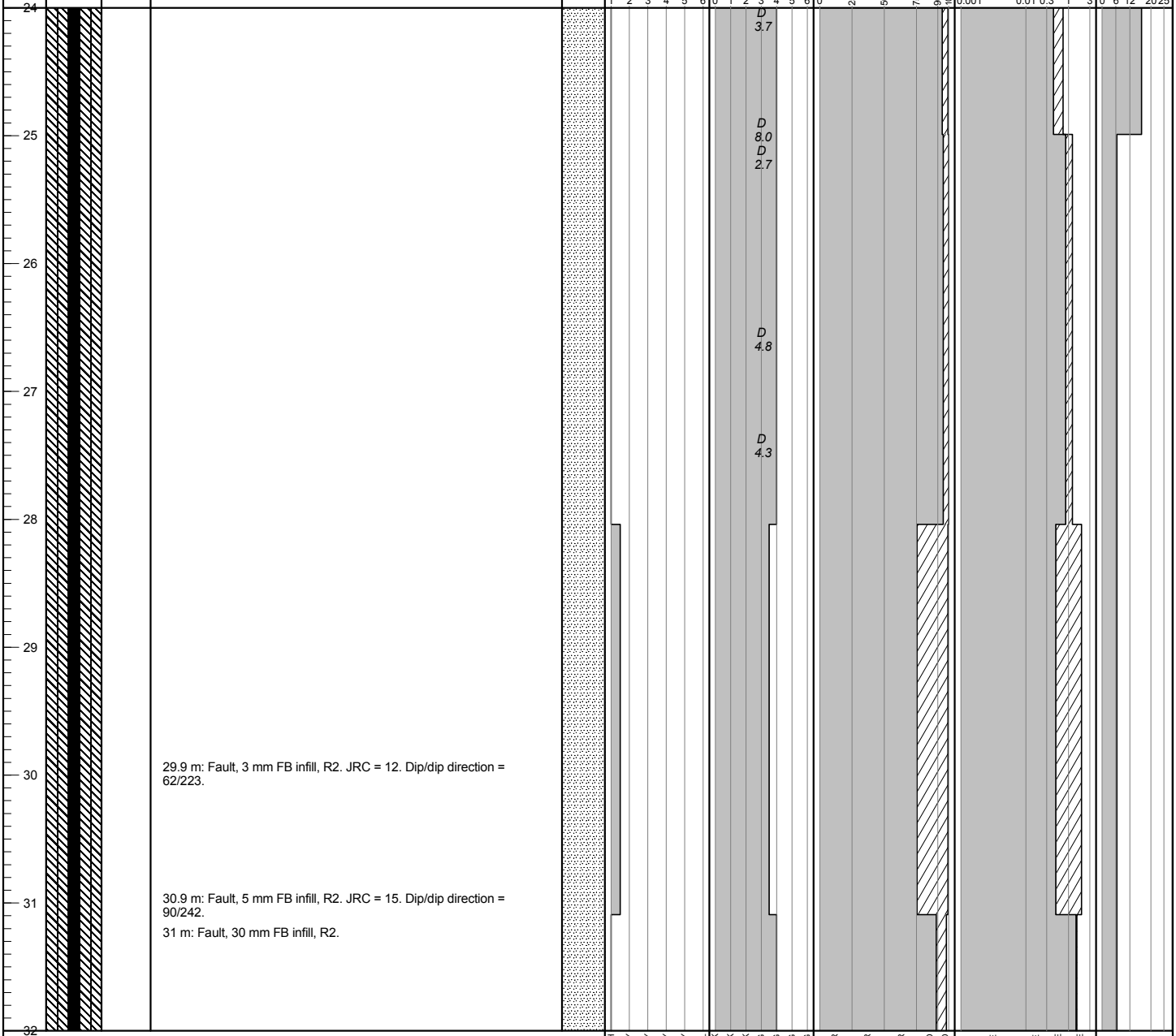
Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
Finish Date: 25 Apr 12
Final Depth (m): 585.8
Depth To Top Of Rock (m): 2.3
Logged By: LL/LH
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)



29.9 m: Fault, 3 mm FB infill, R2. JRC = 12. Dip/dip direction = 62/223.

30.9 m: Fault, 5 mm FB infill, R2. JRC = 15. Dip/dip direction = 90/242.

31 m: Fault, 30 mm FB infill, R2.

POINT LOAD TESTS
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1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

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Datum: UTM NAD 83 Zone 9
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Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
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Final Depth (m): 585.8
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
32			32.5 m: Fault, 160 mm BX infill, R2.						
33						D 6.4			
34									
35						D 3.1			
36									
37									
38									
39									
40						D 9.6 D 6.2			

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR; POOR; FAIR; GOOD; EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE; CLOSE; MODERATE; WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5 — Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
Finish Date: 25 Apr 12
Final Depth (m): 585.8
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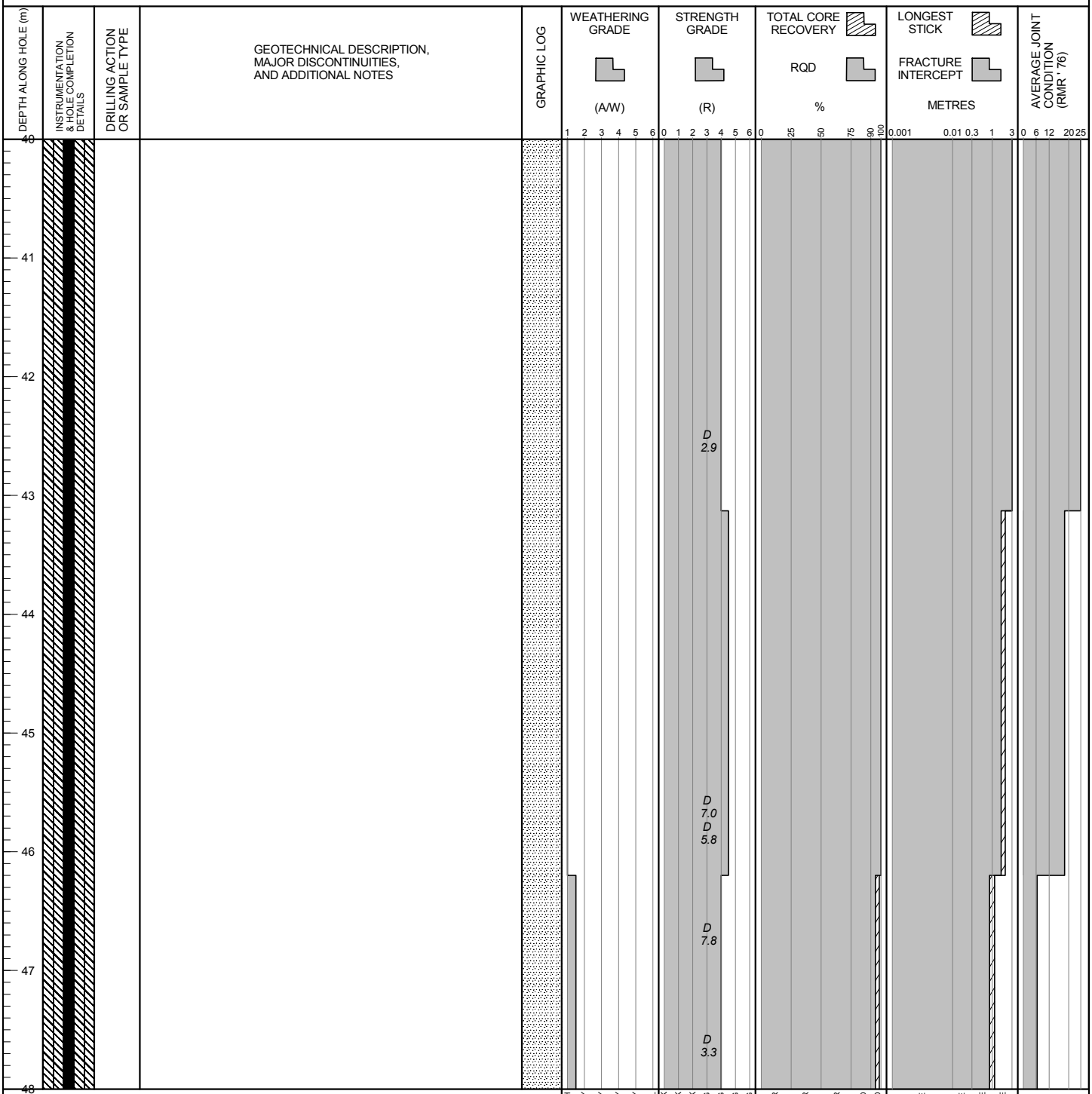
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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DRILL HOLE # DH-BGC12-22

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
48					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
49									
50						D 7.5			
51			Constant head test from 50.9 - 61.6 m. Estimated hydraulic conductivity is 1.9E-08 m/s.						
52									
53						D 2.6			
54			53.9 m: Fault, 15 mm FB/FG infill, R2. 53.9 - 54.2 m: Fault containing chunks of a quartz-calcite vein up to 5 cm wide, oriented 70 degrees TCA. 54 m: Fault, 2 mm FB/FG infill, 2. JRC = 20. 54 m: Fault, 30 mm BX/FB infill, R3. 54.2 m: Fault, 20 mm FB/FG infill, R2. JRC = 13. Dip/dip direction = 45/191. 54.3 m: Fault, 50 mm FB/FG infill, R2.						
55									
56					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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Datum: UTM NAD 83 Zone 9
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Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

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DEPTH ALONG HOLE (m)
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DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

56
57
58
59
60
61
62
63
64

D 3.8
D 5.2

60 m: Fault, 20 mm BX/FB infill, R2. JRC = 15.

60.2 m: Fault, 60 mm FB/FG infill, R0. JRC = 20. Dip/dip direction = 62/214.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL
EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG
V. POOR / POOR / FAIR / GOOD / EXT. GOOD
V. CLOSE / CLOSE / MODERATE / WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-22

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Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

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POINT LOAD TESTS
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Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
72					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
73									
74									
75						D 2.1			
76						D 4.2			
77			QUARTZ SULPHIDE VEIN (H4) Medium to light purple-grey quartz vein with approximately 60% pyrite, quartz vein is occasionally obscured by pyrite, oriented 15 degrees TCA, conatins wall rock from previous sandstone unit. Strong (R4). Fresh (A1).						
78									
79									
80			ARENITE (S4) Medium to light grey, coarse grained sandstone with pebble sized clasts present, very weakly bedded. Strong (R4). Fresh (A1).						

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL
EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG
V. POOR / POOR / FAIR / GOOD / EXT. GOOD
V. CLOSE / CLOSE / MODERATE / WIDE

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-22

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Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

80
81
82
83
84
85
86
87
88

VERY SILICEOUS ROCKS (H8)
Medium to light purplish-grey, strongly silicified rhyolite, fairly uniform and moderately fractured, contains subangular rhyolite fragments up to 3 cm. Medium strong to strong (R3-R4). Fresh (A1).

D 4.0
D 2.1
D 4.5
D 3.9
D 4.2
D 4.9
D 3.2

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

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Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
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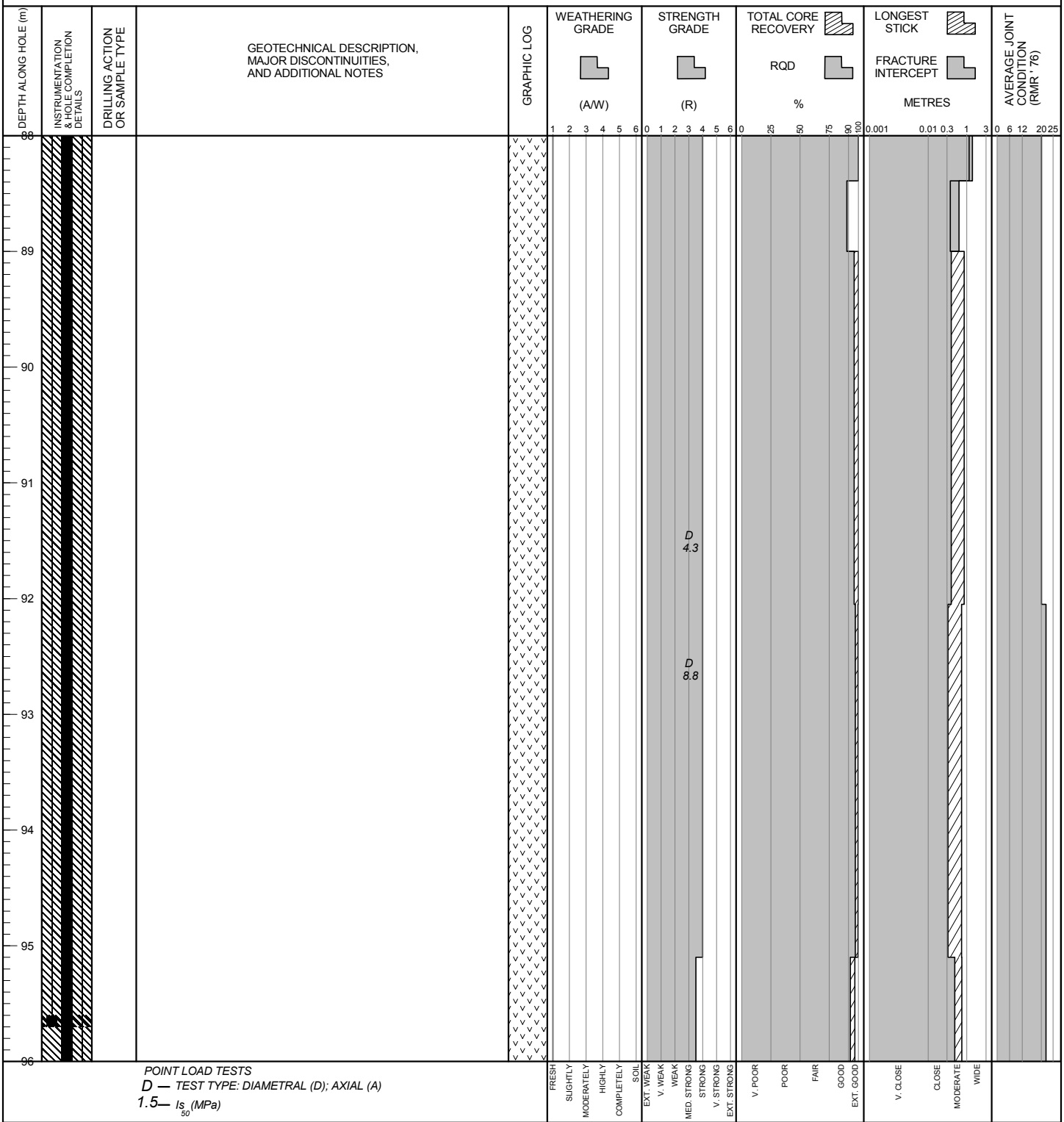

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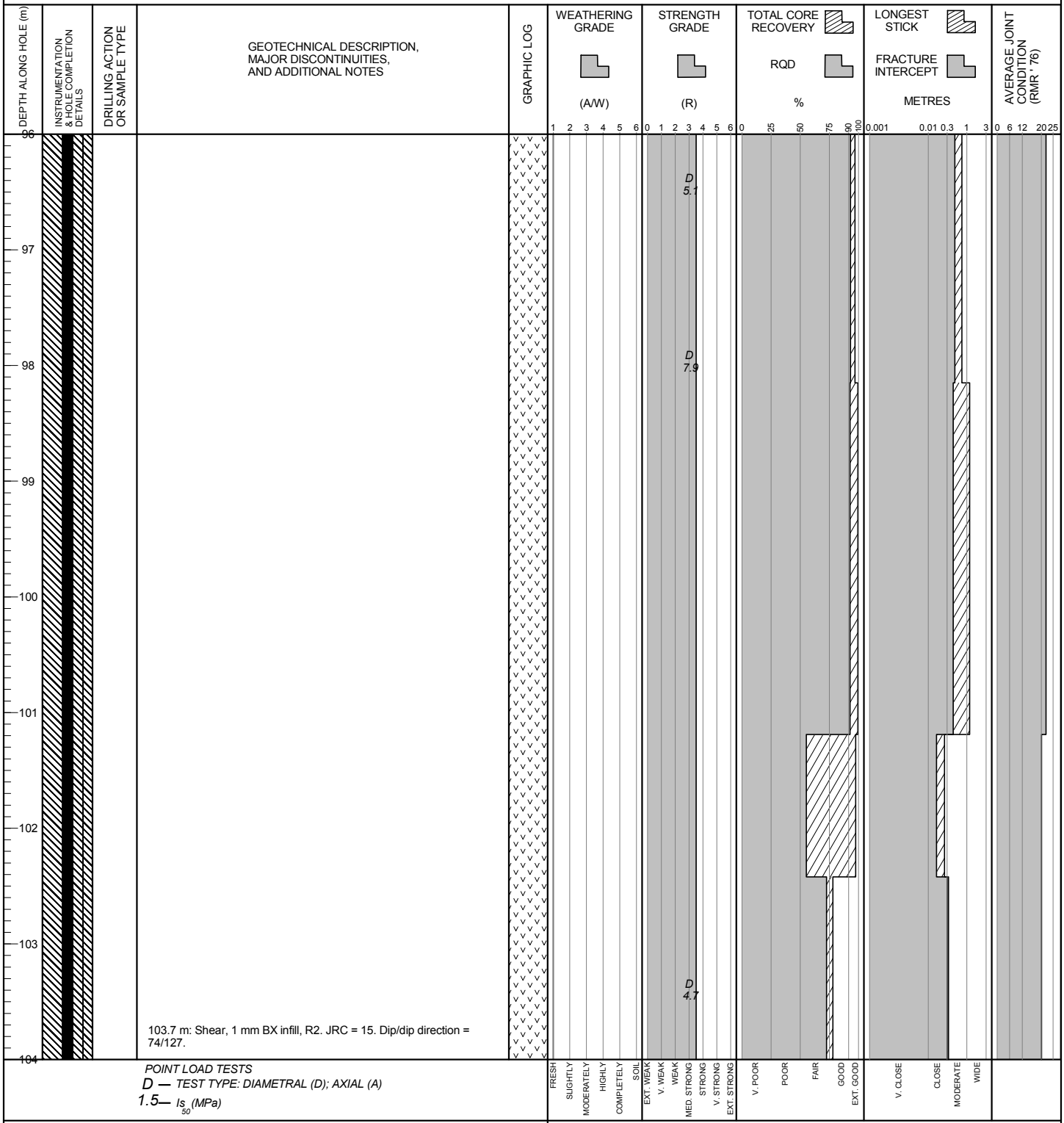

POINT LOAD TESTS
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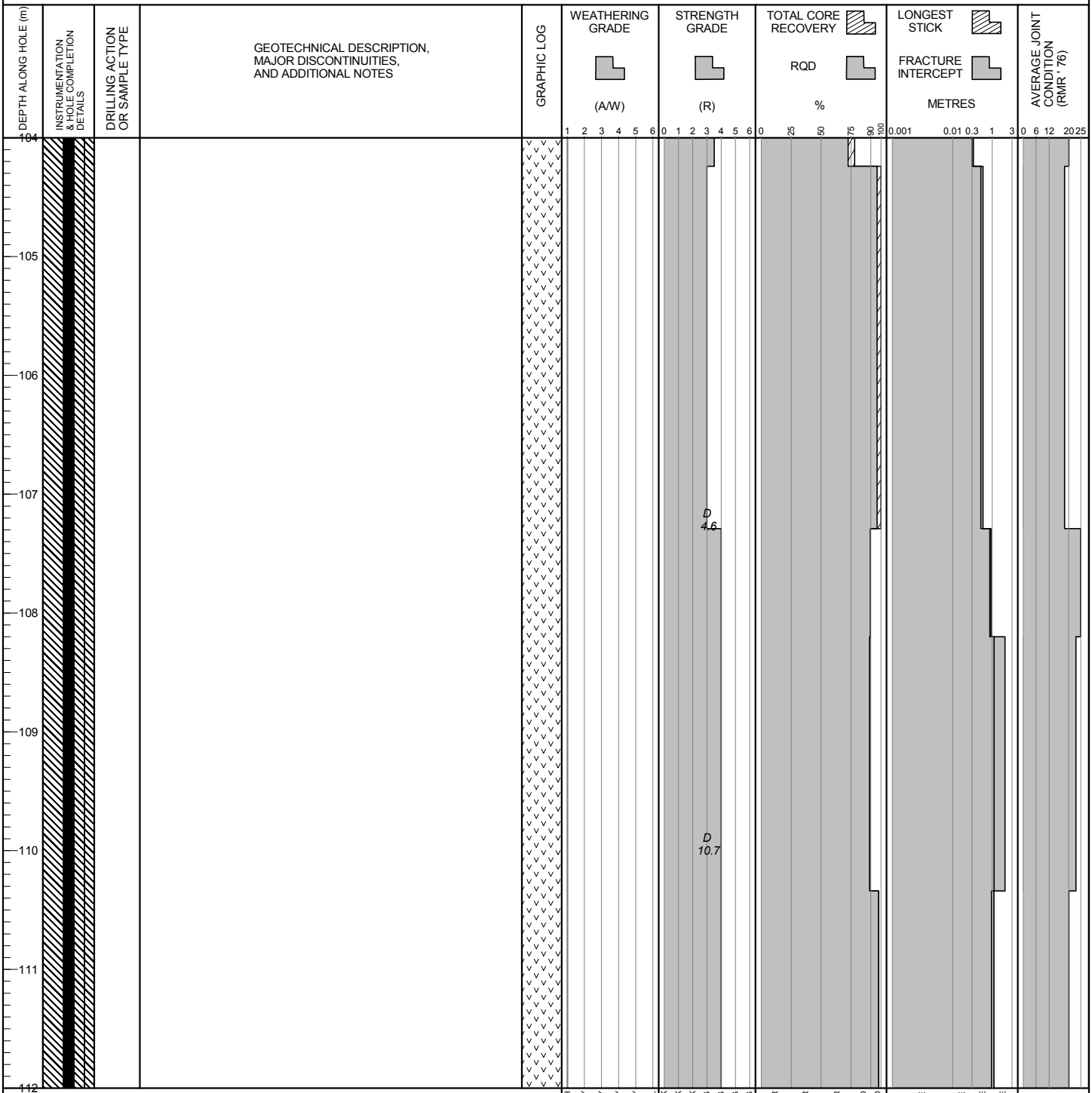

POINT LOAD TESTS
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DEPTH ALONG HOLE (m)
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GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)

112
113
114
115
116
117
118
119
120

ARENITE (S4)
Medium to light grey, pebble rich sandstone, variably altered. Medium strong to strong (R3-R3.5). Fresh (A1).

115.2 - 115.4 m: Fault, moderately to strongly developed, oriented 85 degrees TCA.

115.6 m: Fault, 40 mm FB infill, R2. JRC = 13. Dip/dip direction = 63/198.

D 5.7
D 5.9
D 4.0
D 2.3
D 5.2

POINT LOAD TESTS
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1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

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GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

120
121
122
123
123.4 m: Fault, 1.5 mm SE/FB infill, R0. JRC = 12. Dip/dip direction = 72/234.

123.9 m: Fault, 20 mm SE/FB infill, R0. JRC = 20. Dip/dip direction = 76/237.

124
125
D 5.5
126
127
128

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
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Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
Finish Date: 25 Apr 12
Final Depth (m): 585.8
Depth To Top Of Rock (m): 2.3
Logged By: LL/LH
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

128
129
130
131
132
133
134
135
136

VERY SILICEOUS ROCKS (H8)
Medium to light purplish-grey, strongly silicified rhyolite with m-scale sericitized interbeds, variably fractured but fairly uniform, sericitized sections are massive. Medium strong to strong (R3-R4). Fresh (A1).

D 1.3
D 7.0
D 8.7

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
Finish Date: 25 Apr 12
Final Depth (m): 585.8
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Logged By: LL/LH
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

136
137
138
139
140
141
142
143
144

138.7 m: Fault, 7 mm FB/FG infill, R0. JRC = 15. Dip/dip direction = 86/219.

142.1 m: Fault, 60 mm FB infill, R1. JRC = 20. Dip/dip direction = 67/048.

D 5.2
D 9.2

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Drilling Contractor: Radius
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Fluid: Polymer
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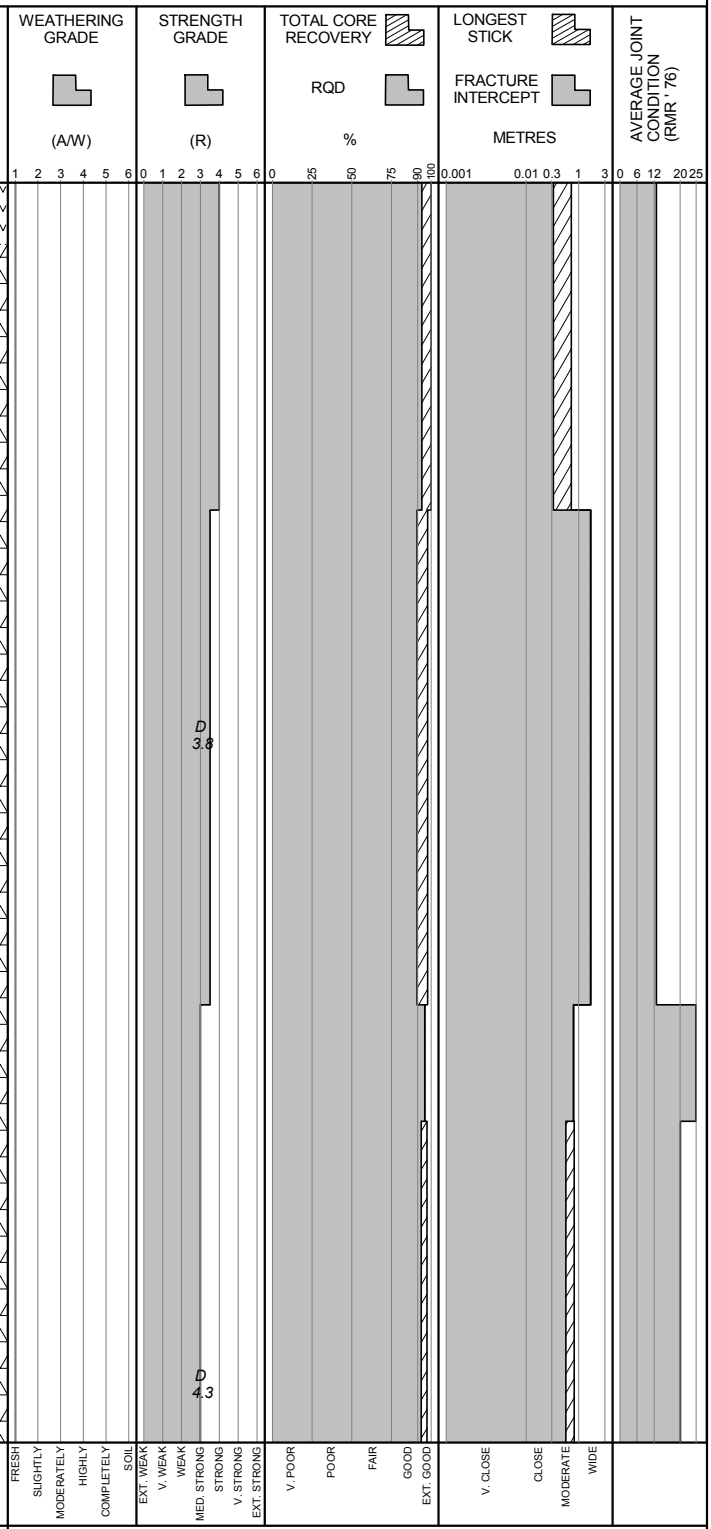
DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
144			144.4 m: Sporadic green translucent very strong sericite mottles up to 1m, fragments generally remain very silicified, sporadically replaced by sericite.
145			
146			145.9 m: Fault, 1 mm FB infill, R2. JRC = 20.
147			
148			
149			148.9 m: Fault, 5 mm FB infill, R1. JRC = 15. Dip/dip direction = 56/030.
150			
151			
152			



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
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Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
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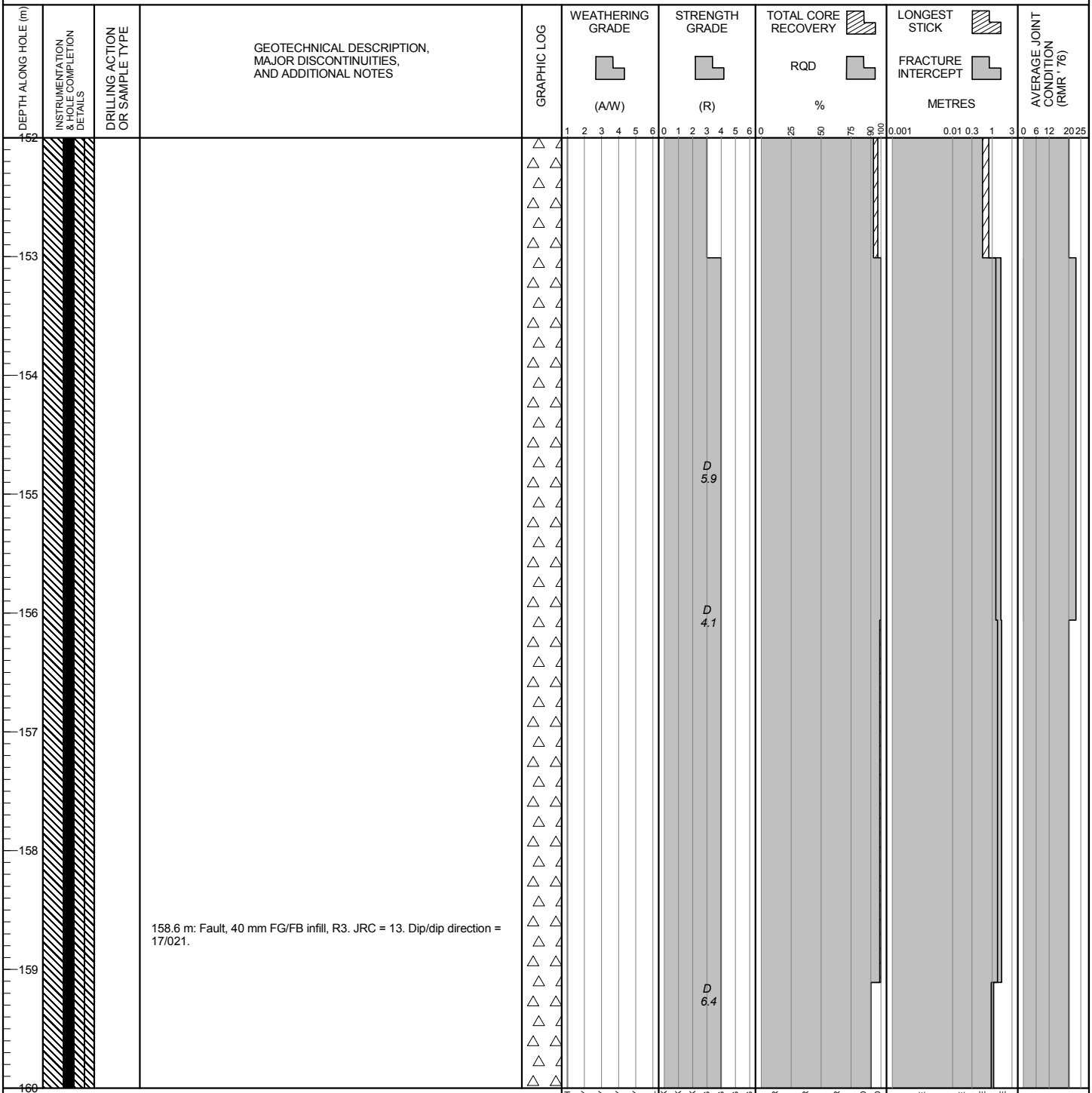
Logged By: LL/LH
Reviewed By: JW



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Location: Valley of Kings Zone

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Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
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DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)

160
161
162
163
164
165
166
167
168

D 3.8

D 4.0

162.8 m: Fault, 100 mm FB infill, R2. JRC = 13. Dip/dip direction = 81/216.

164.2 m: Fault, 20 mm FB infill, R2. JRC = 15. Dip/dip direction = 63/222.

WEATHERING GRADE: FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD: V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT: V. CLOSE, CLOSE, MODERATE, WIDE

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
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POINT LOAD TESTS
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Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
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Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

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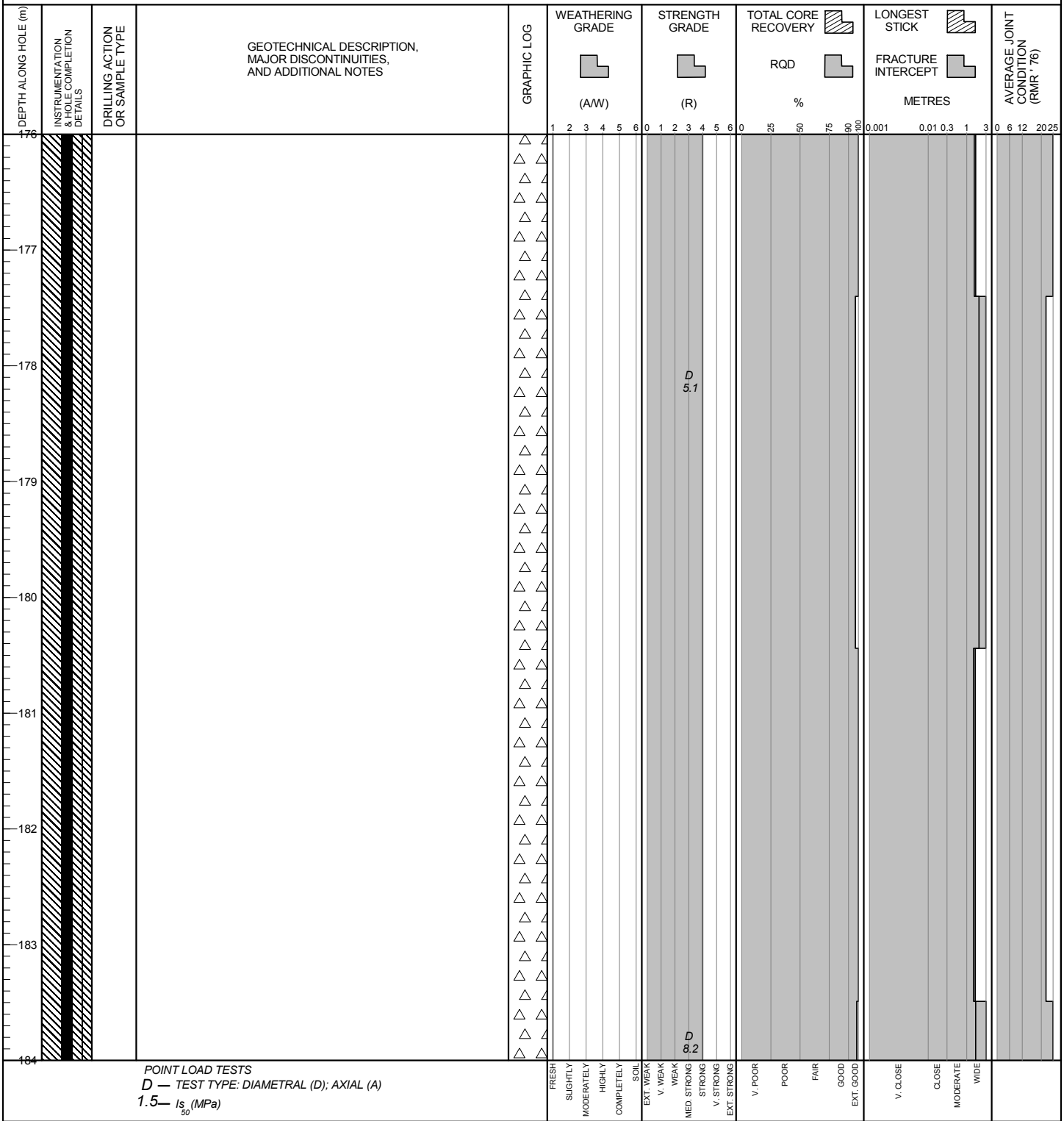

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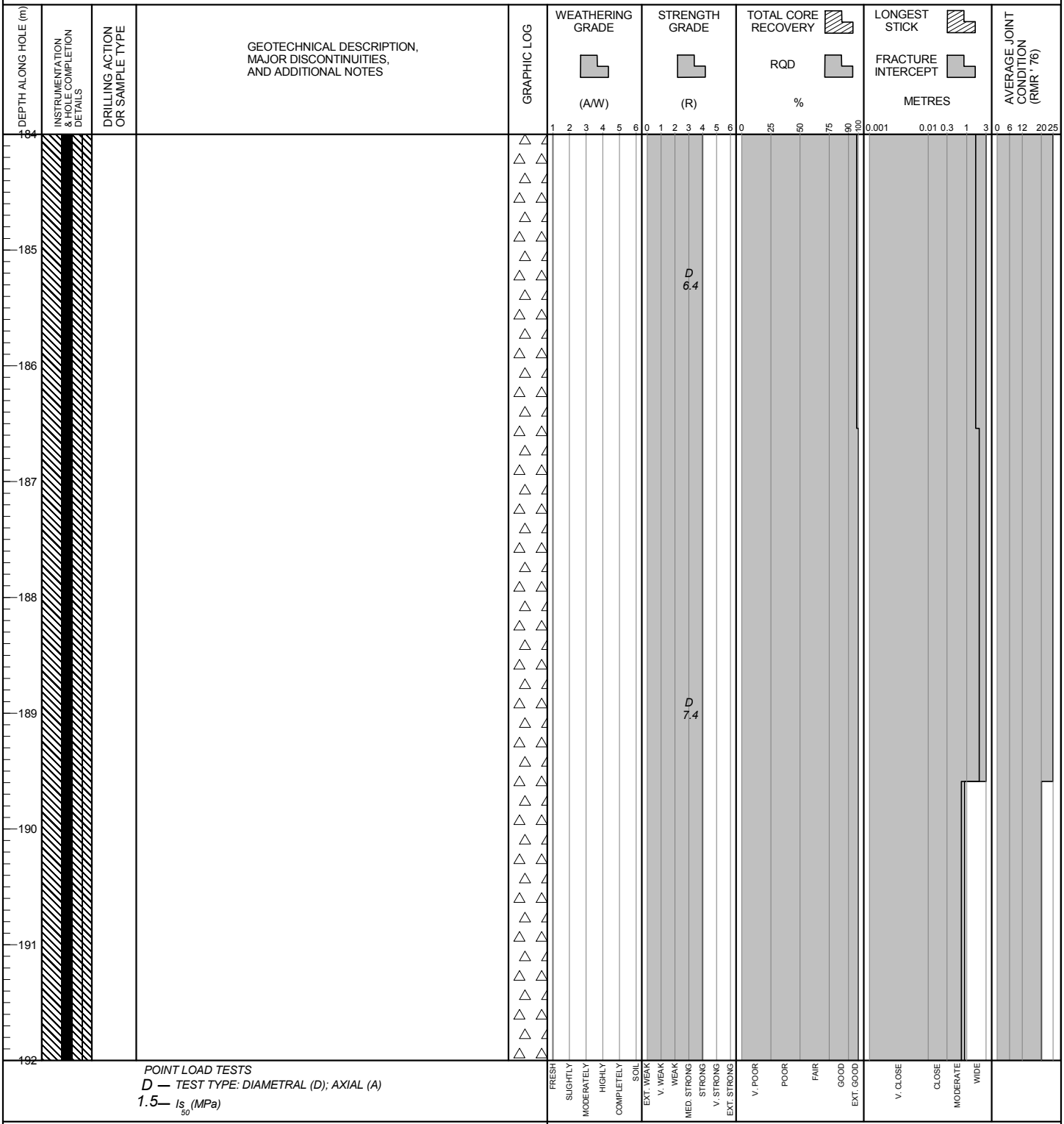

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N	***Drill Designation:*** Heliportable	***Start Date:*** 11 Apr 12
Ground Elevation (m): 1,539.8	***Drilling Contractor:*** Radius	***Finish Date:*** 25 Apr 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 585.8
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 2.3
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** LL/LH
Trend (°): 036	***Cased To (m) :*** 2.3	***Reviewed By:*** JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

192
193
194
195
196
197
198
199
200

INTERMEDIATE VOLCANICS (V12)
Medium to light grey, cobble-sized matrix supported fragmental unit in a massive tuffaceous unit, weakly foliated locally, fragments are < 30 cm wide & cobble to pebble size. Medium strong to strong (R3.5-R4). Fresh (A1).

D 9.5

D 7.0

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
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Final Depth (m): 585.8
Depth To Top Of Rock (m): 2.3
Logged By: LL/LH
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DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)

200
201
202
203
204
205
206
207
208

D 5.3
D 6.6

206.3 m: Shear on vein, 0.5 mm aperture. JRC = 8.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL
EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG
V. POOR / POOR / FAIR / GOOD / EXT. GOOD
V. CLOSE / CLOSE / MODERATE / WIDE

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Fluid: Polymer
Cased To (m) : 2.3

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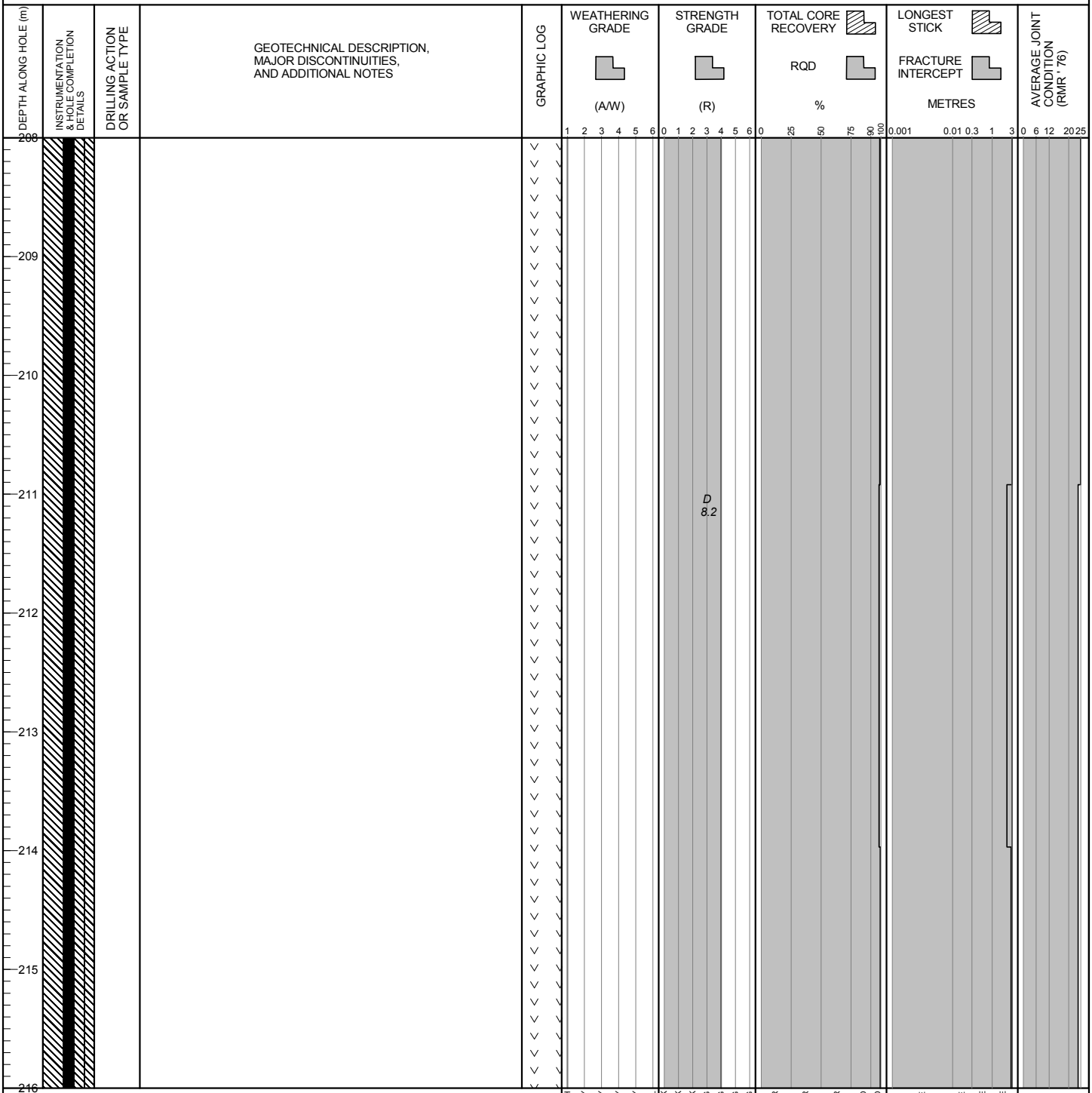

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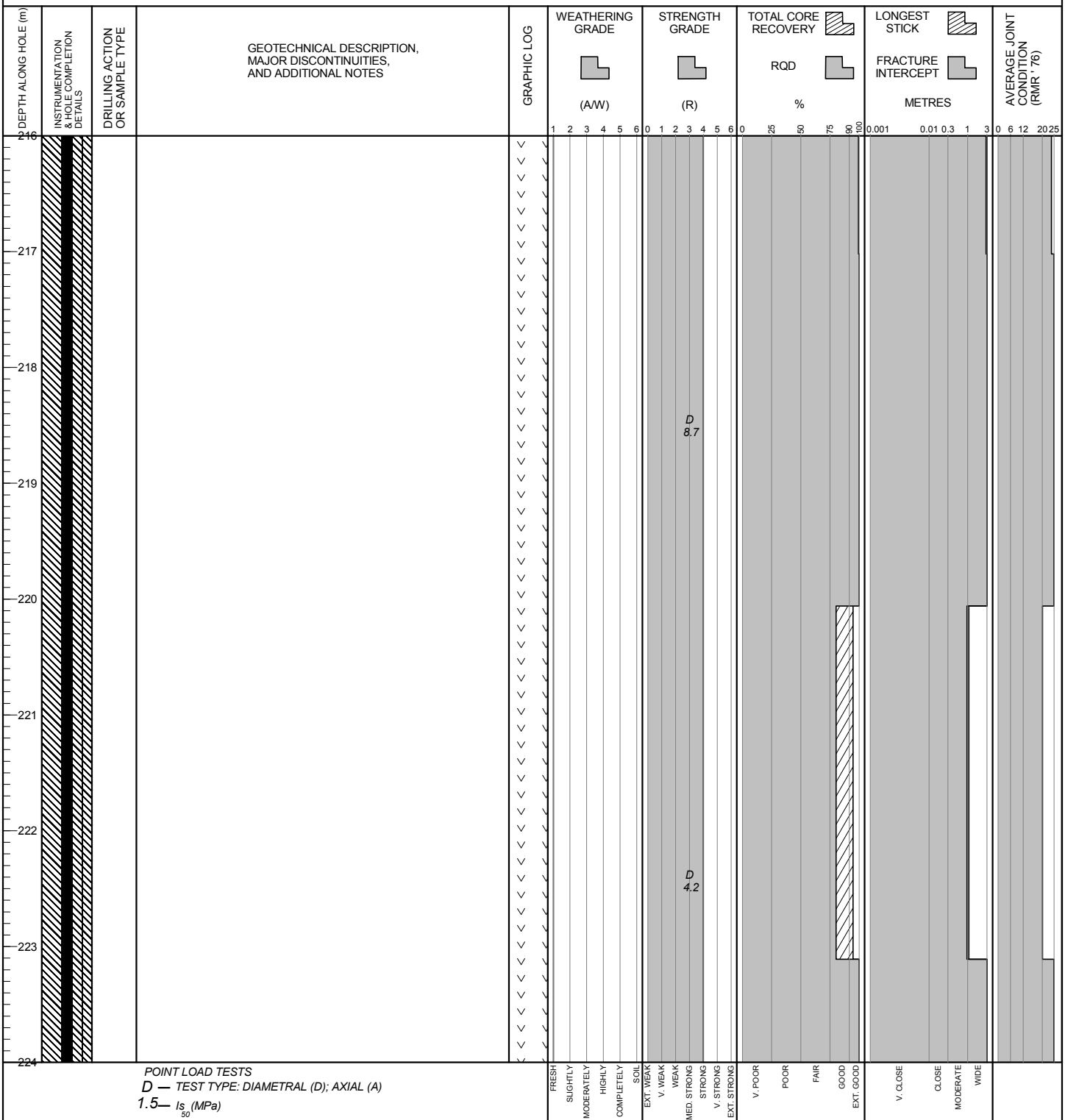

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DEPTH ALONG HOLE (m)
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DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W) 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R) 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD % 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76) 0 6 12 20 25

224
225
226
227
228
229
230
231
232

D 9.0
D 10.0
D 9.2
D 6.1
D 7.0
D 7.0

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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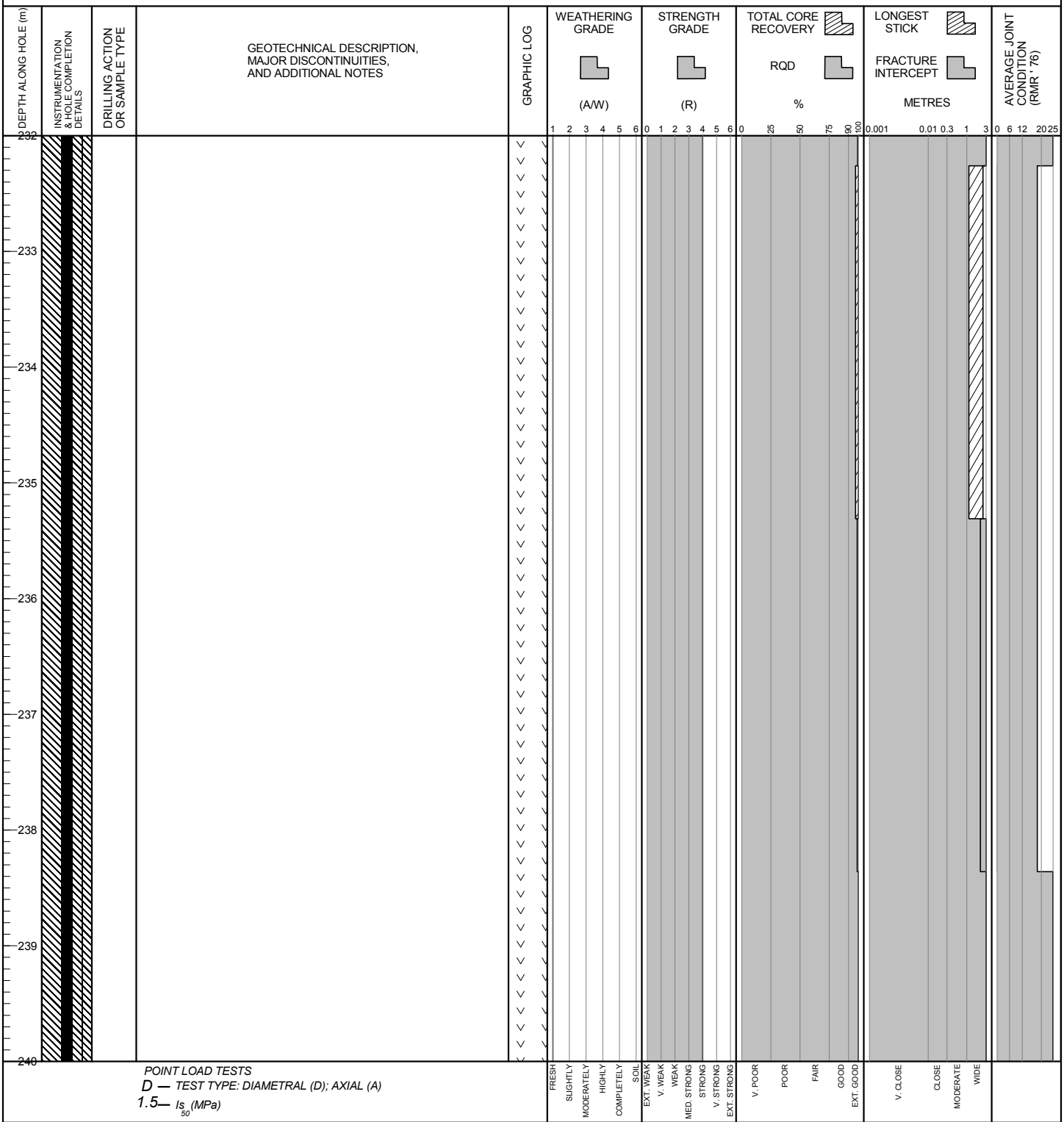

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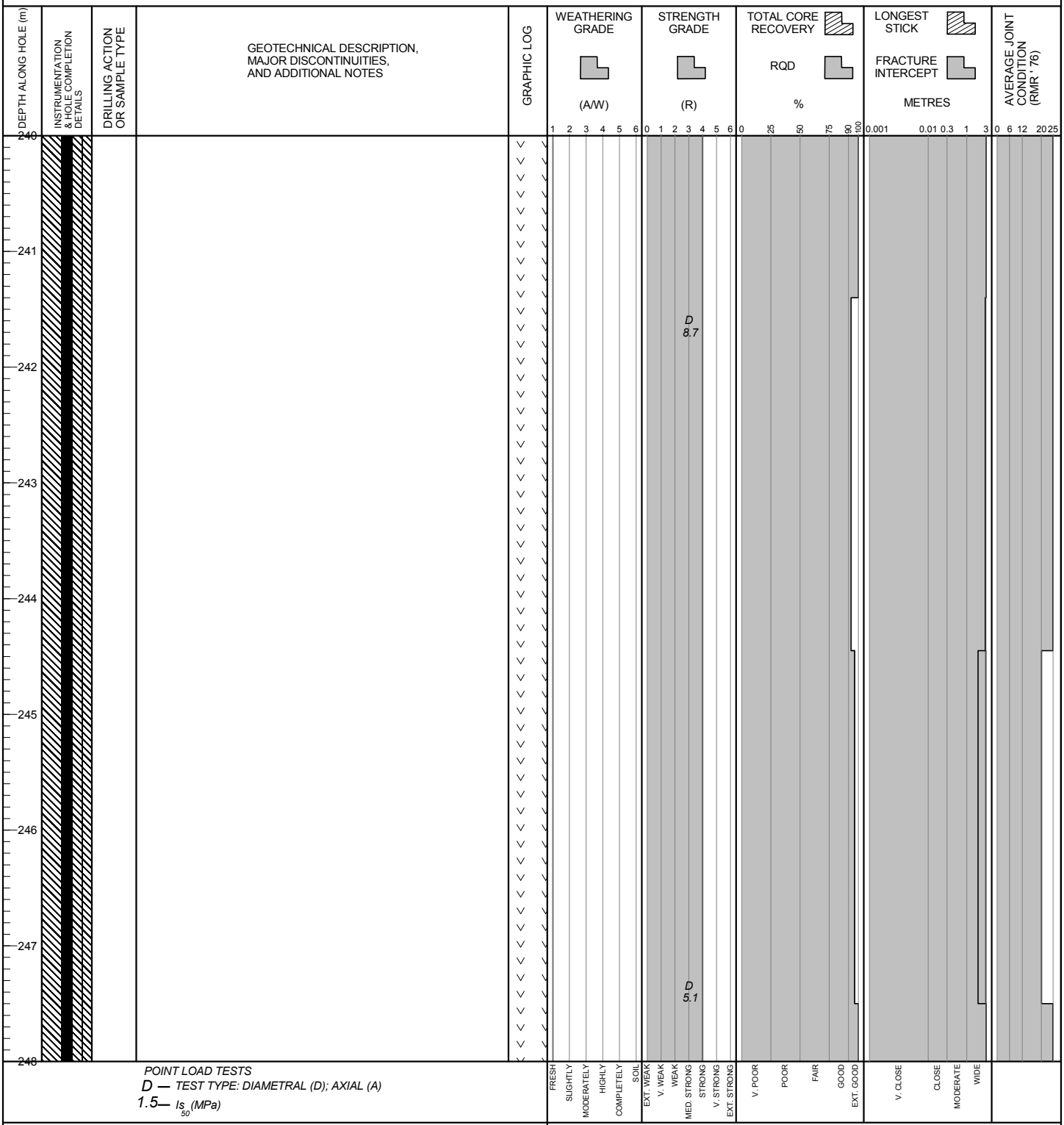


POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

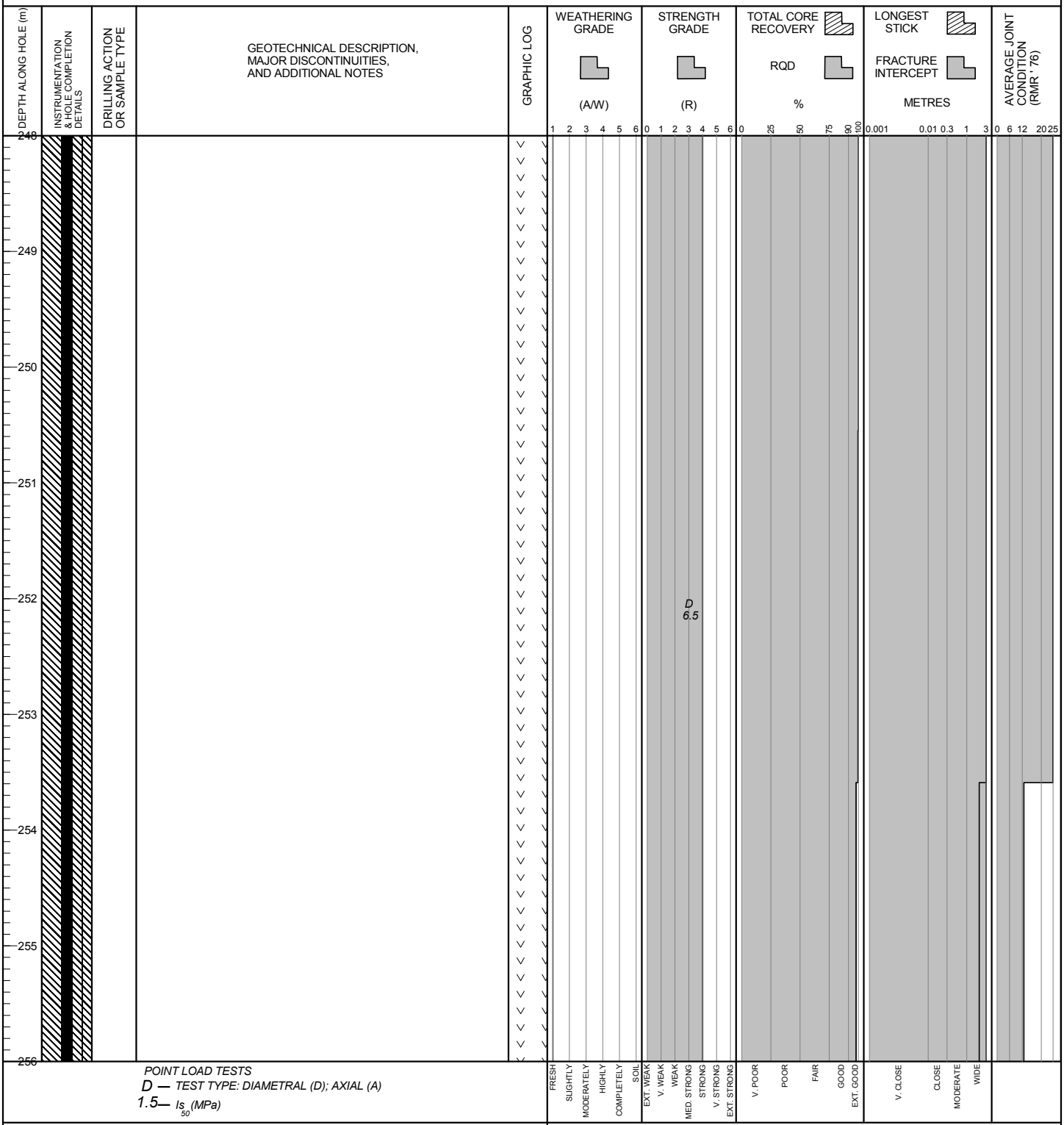
DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
Finish Date: 25 Apr 12
Final Depth (m): 585.8
Depth To Top Of Rock (m): 2.3
Logged By: LL/LH
Reviewed By: JW



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DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)

256
257
258
259
260
261
262
263
264

Constant head test from 258.2 - 271.9 m. Estimated hydraulic conductivity is 1.2E-07 m/s.

D
3.9

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD: 0 25 50 75 90 100 % — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT: 0.001 0.01 0.3 1 3 METRES — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

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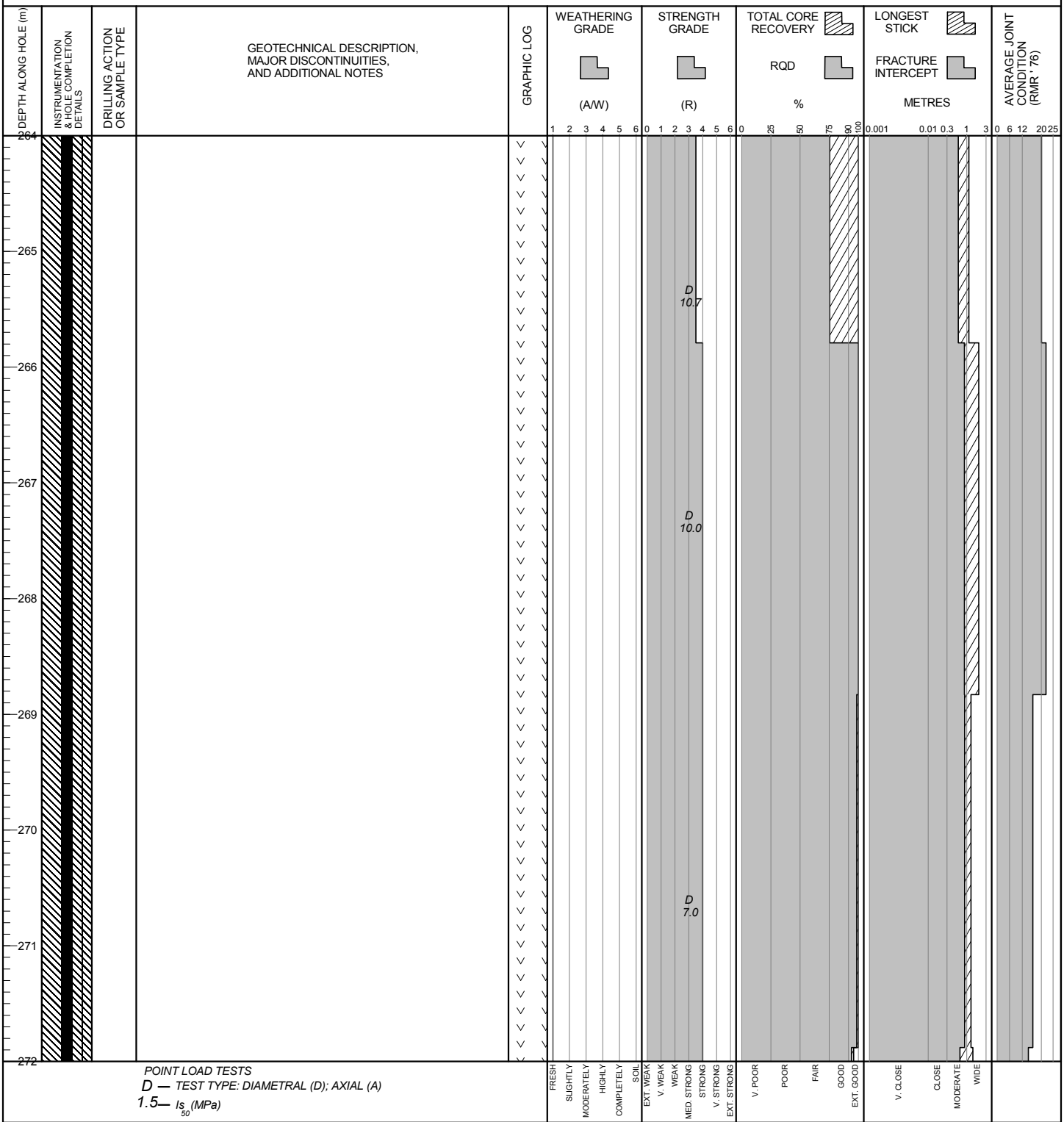

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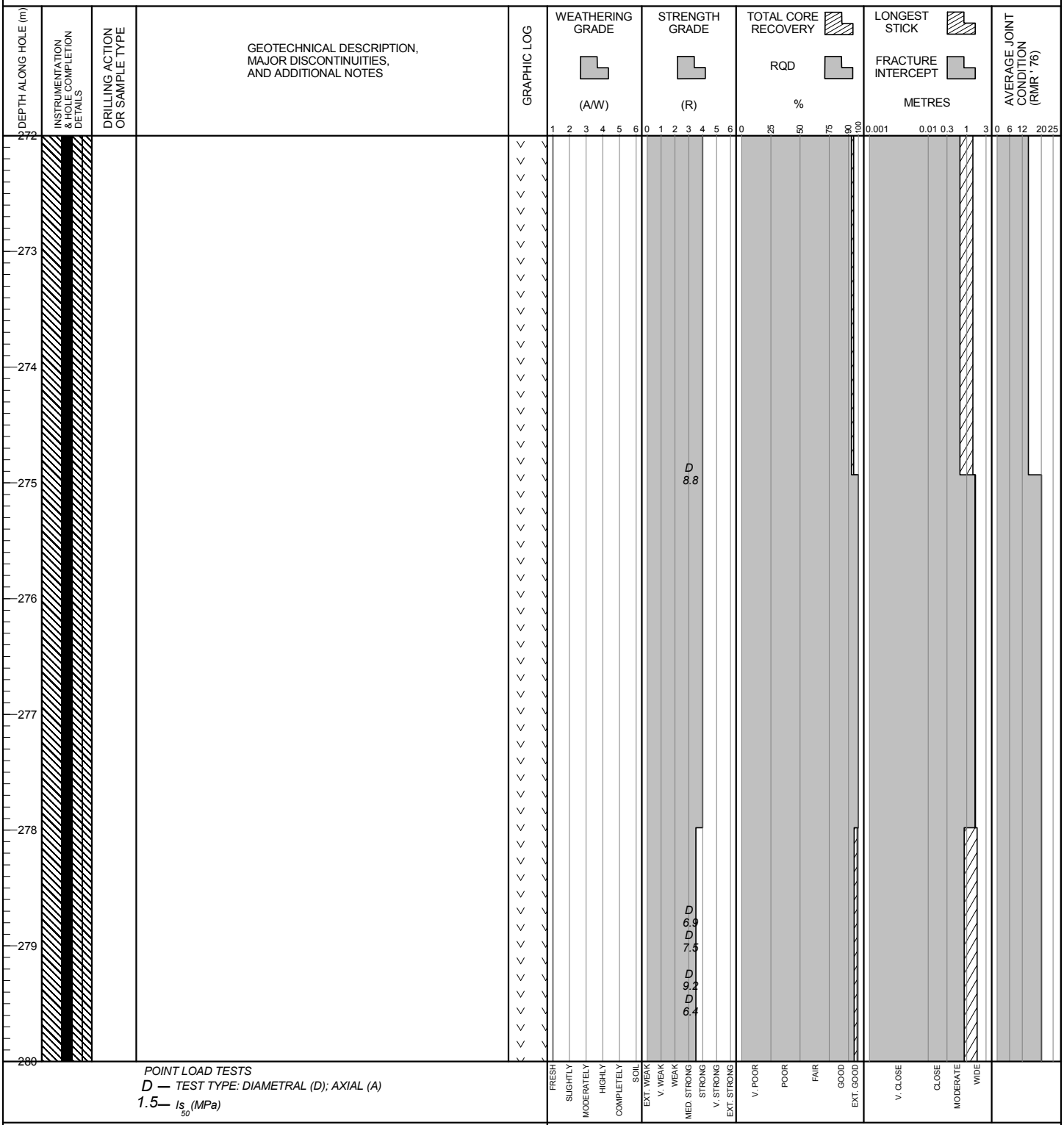

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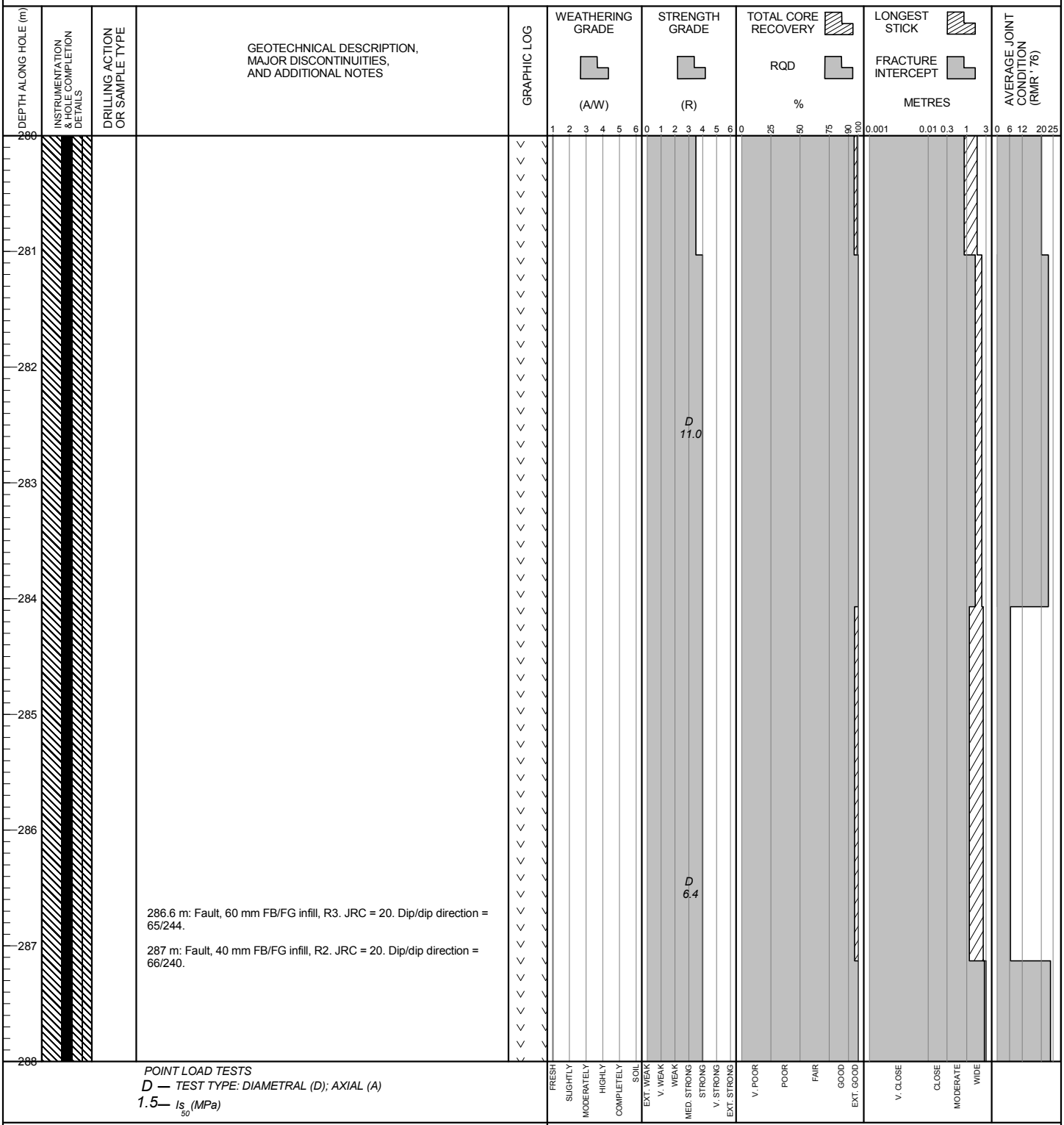

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

288
289
290
291
292
293
294
295
296

D 7.2

QUARTZ VEIN (H1)
White to milky-white quartz vein, contains some traces of base metal sulphides (sphalerite), oriented 35 degrees TCA. Strong (R4). Fresh (A1).

INTERMEDIATE VOLCANICS (V12)
Grey, cobble-sized matrix supported fragmental unit in a massive tuffaceous unit, weakly foliated locally, fragments are < 30 cm wide and cobble to pebble size. Sericite and chlorite altered fragments. Strong (R4). Fresh (A1).

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
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Project No.1008-007

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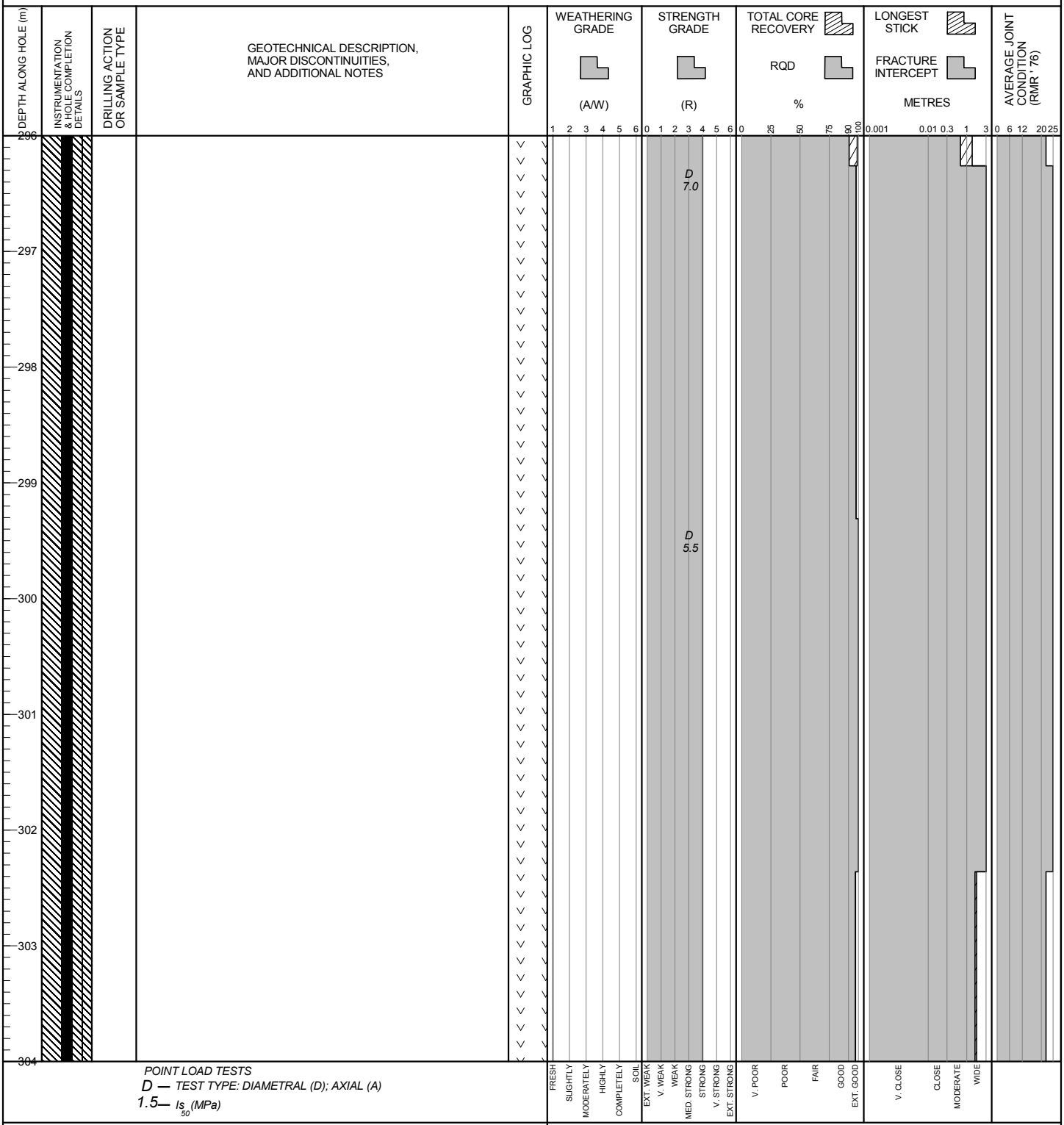

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304			304.2 m: Fault, 15 mm FB infill, R4. JRC = 13. Dip/dip direction = 73/217.						
305									
306									
307									
308									
309									
310									
311									
312									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

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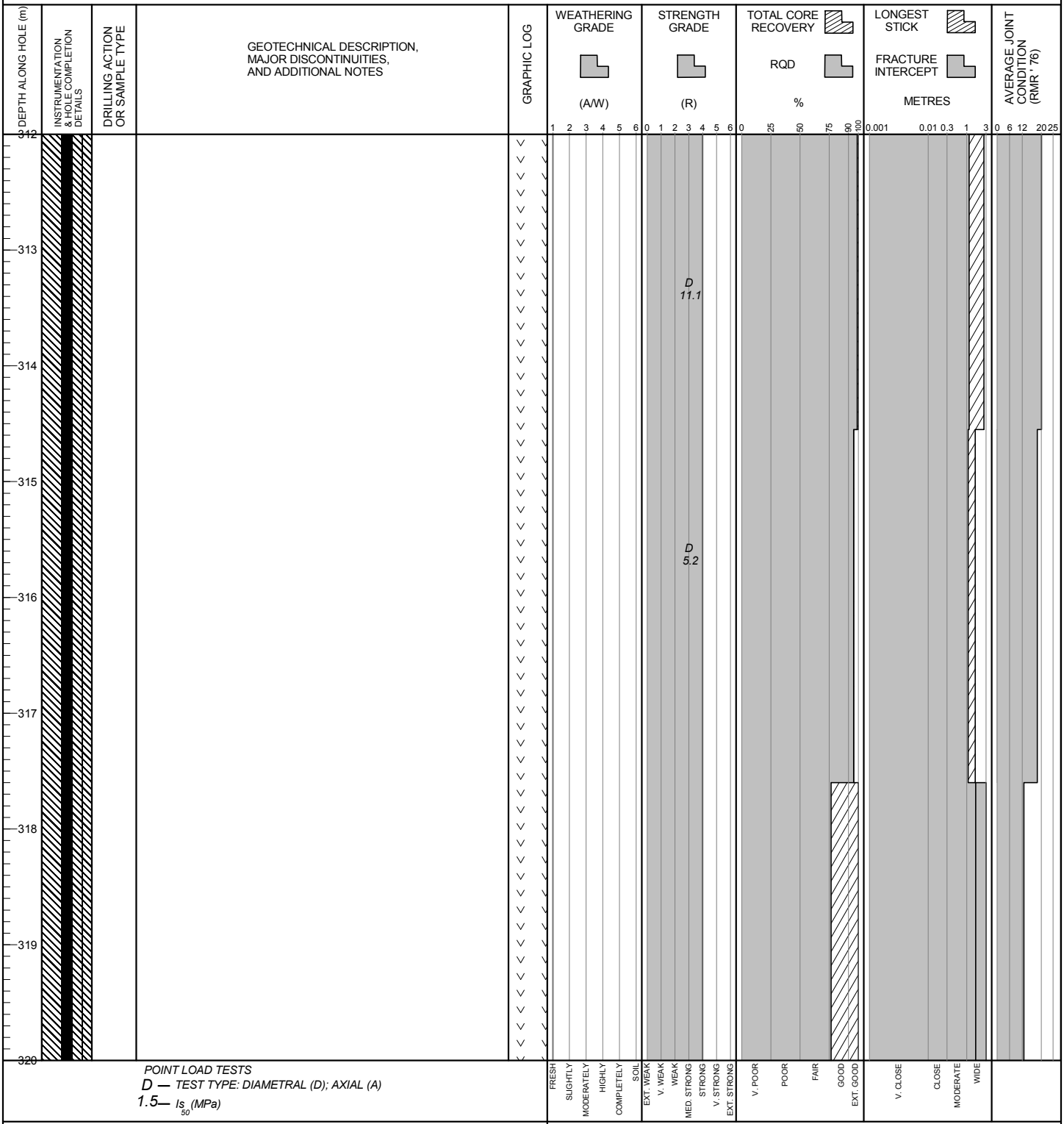

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GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)

320
321
322
323
324
325
326
327
328

FAULT ZONE
Rubbly, oriented 60 degrees TCA. Strong (R4). Fresh (A1).

321.9 m: Fault, 120 mm FG/FB infill, R2. JRC = 15. Dip/dip direction = 38/296.

CONGLOMERATE (S3)
Medium to dark grey, immature matrix supported pebble conglomerate, rare cobble sized clasts, moderately to poorly sorted, no visible bedding, dark gray matrix with pyrite in matrix. Strong (R3.5-R4). Fresh (A1).

324 m: Fault, 180 mm FB infill, R4. JRC = 13. Dip/dip direction = 50/252.

D 5.3

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL
EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG
V. POOR / POOR / FAIR / GOOD / EXT. GOOD
V. CLOSE / CLOSE / MODERATE / WIDE

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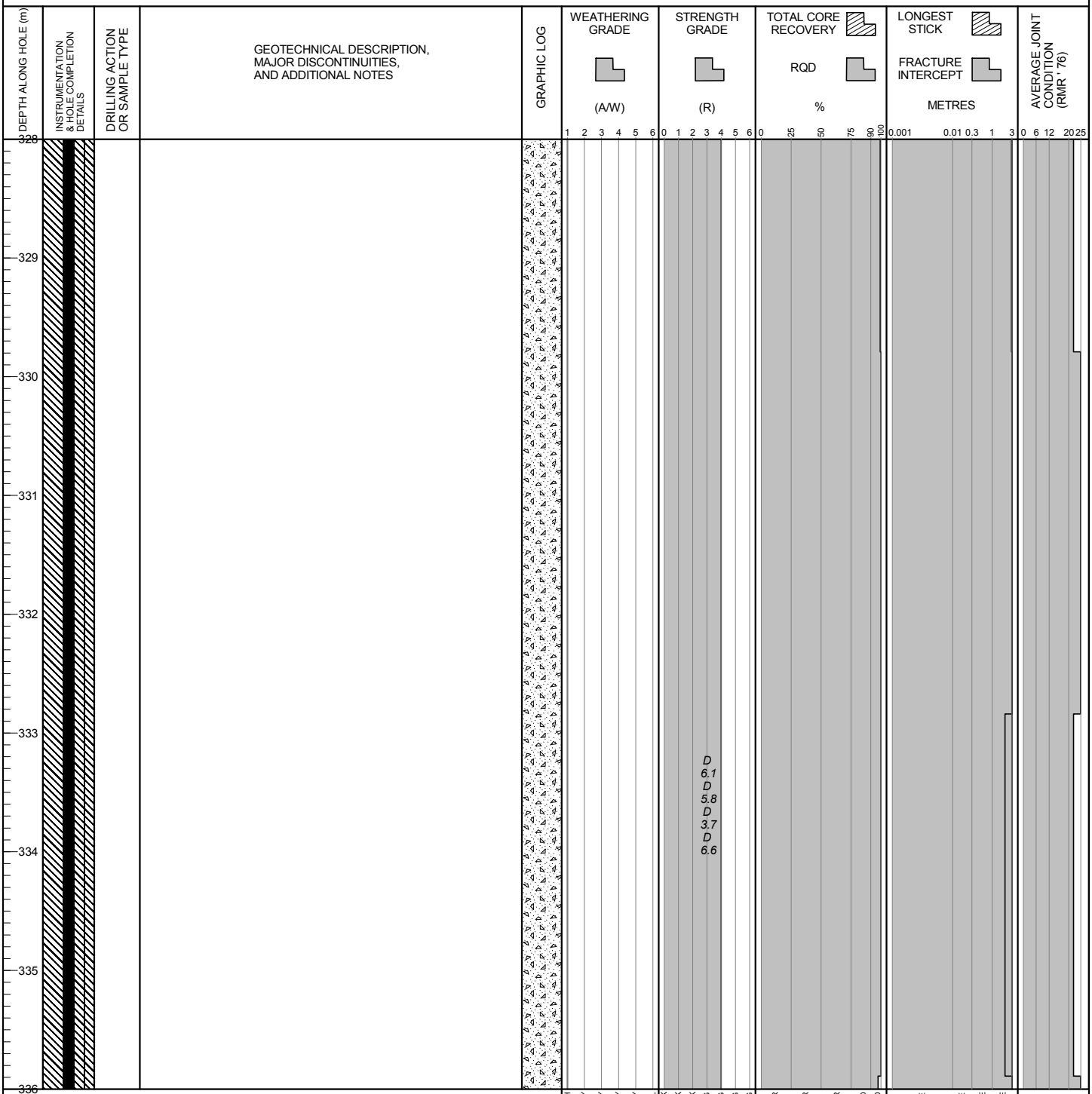

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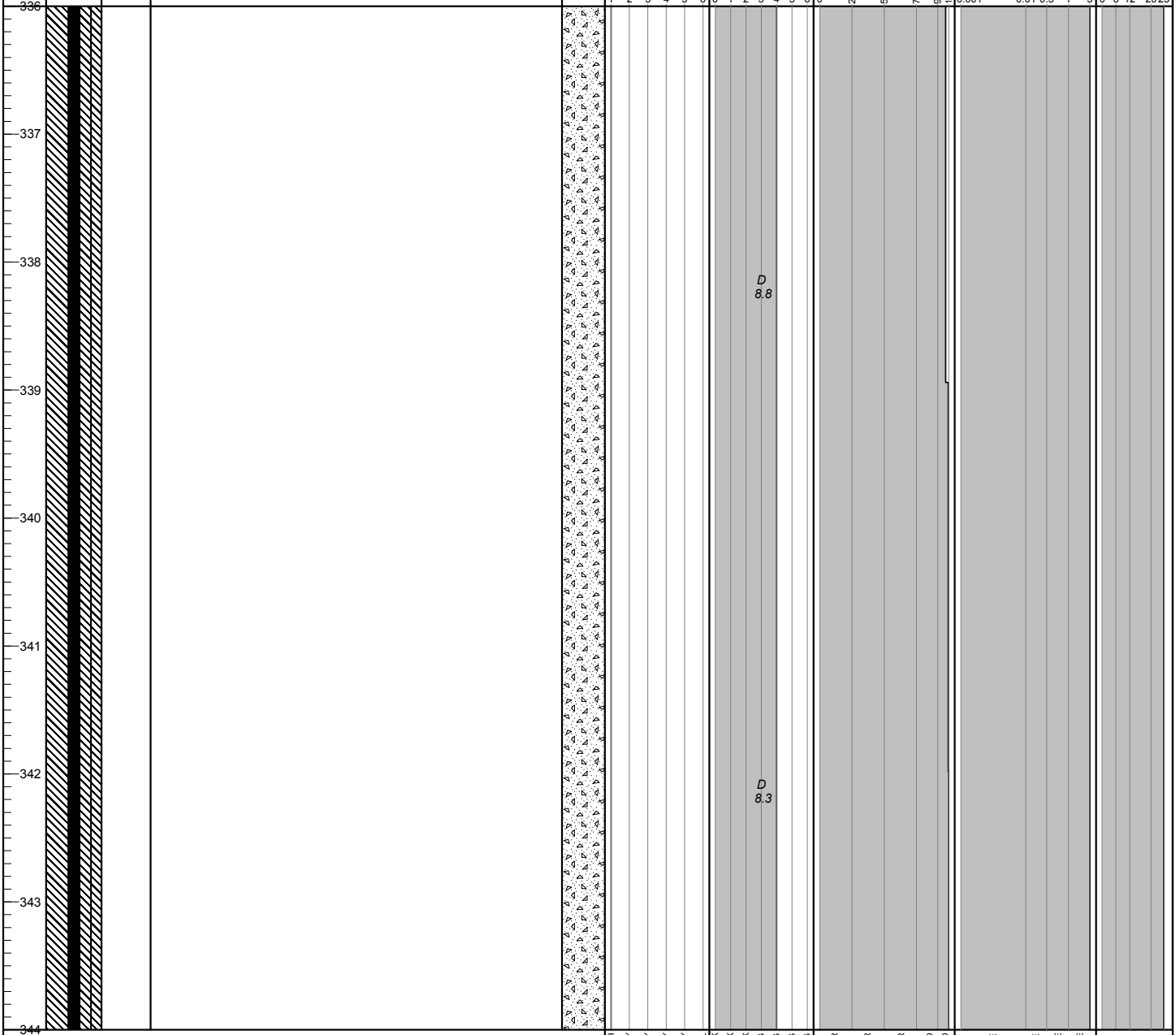

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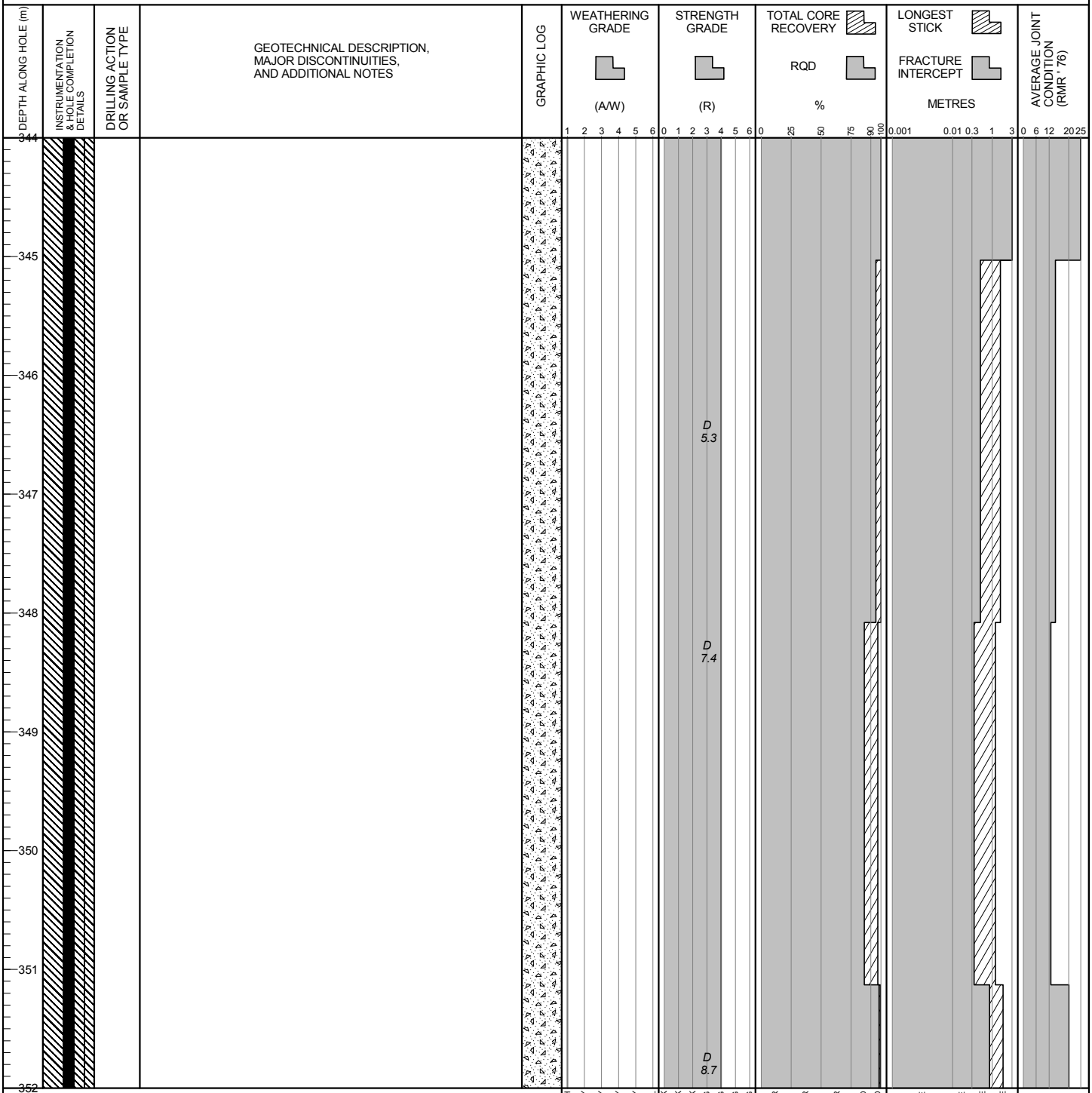

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GRAPHIC LOG
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STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

352
353
354
355
356
357
358
359
360

358.9 m: Fault, 1 mm FG infill, R0. JRC = 12. Dip/dip direction = 68/212.

D
8.4

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
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Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
Finish Date: 25 Apr 12
Final Depth (m): 585.8
Depth To Top Of Rock (m): 2.3
Logged By: LL/LH
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

360

VERY SILICEOUS ROCKS (H8)
Medium to light purplish-grey, strongly silicified rhyolite, moderately fractured, pyrite is disseminated in fractures. Strong (R4). Fresh (A1).

361

Constant head test from 361.8 - 381.6 m. Estimated hydraulic conductivity is 4.3E-08 m/s.

D 4.5

362

363

D 4.1

364

365

CONGLOMERATE (S3)
Medium to light grey, matrix supported pebble conglomerate, immature with angular clasts, contains chunks of rhyolite, becomes moderately to strongly silicified after 370 m. Strong (R3.5-R4). Fresh (A1).

366

367

368

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

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368
369
370
371
372
373
374
375
376

ARENITE (S4)
Grey-green, interbedded sandstone and conglomerate units on a m-scale, conglomerate is matrix supported with sericite replaced clasts, contains concretions in sandstone sections. Strong (R3.5-R4.5). Fresh (A1).

374.3 - 379.7 m: Stockwork within sandstone, consists of veinlets and veins with wall rock fragments within them.

D
4.5

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
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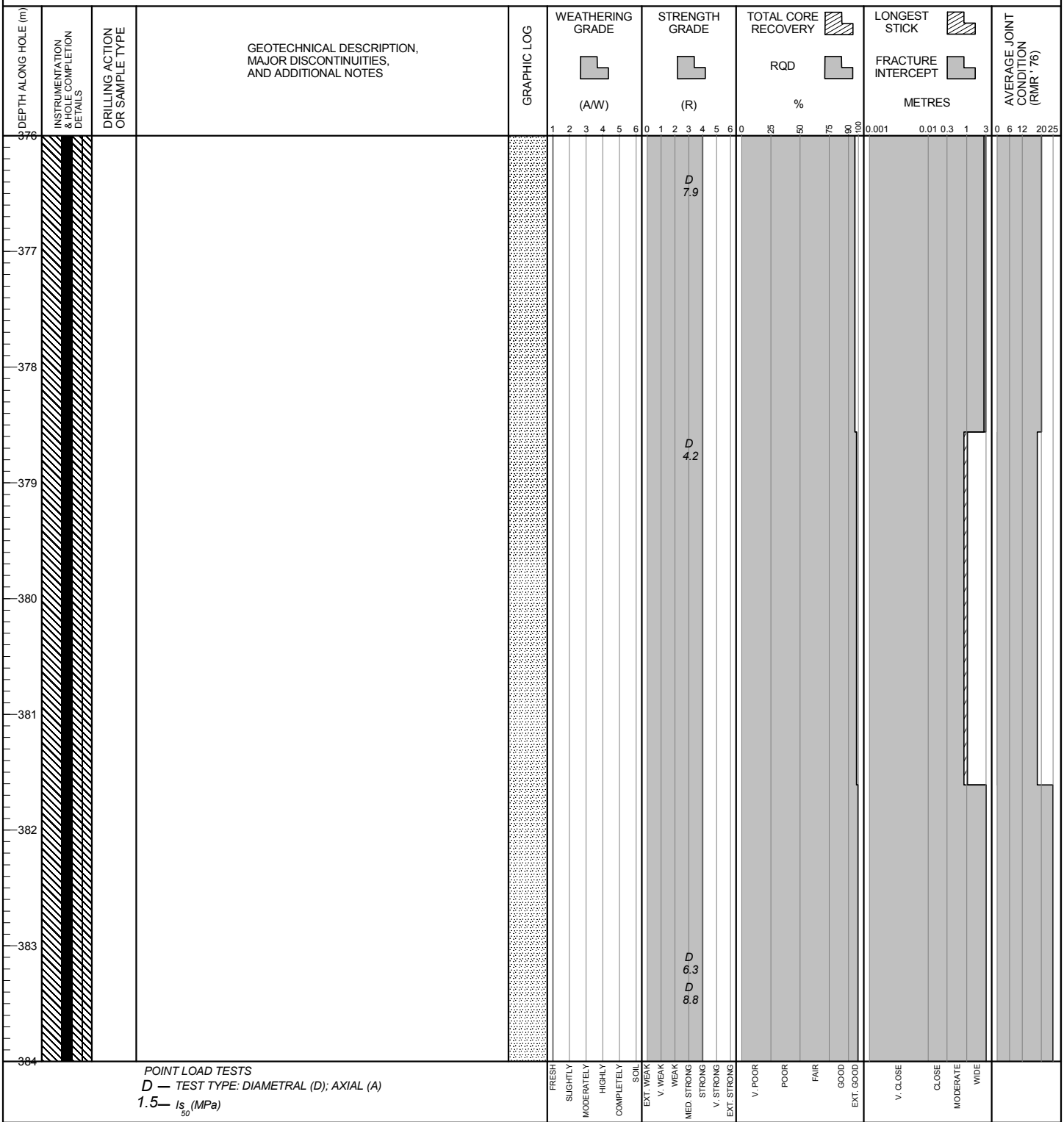

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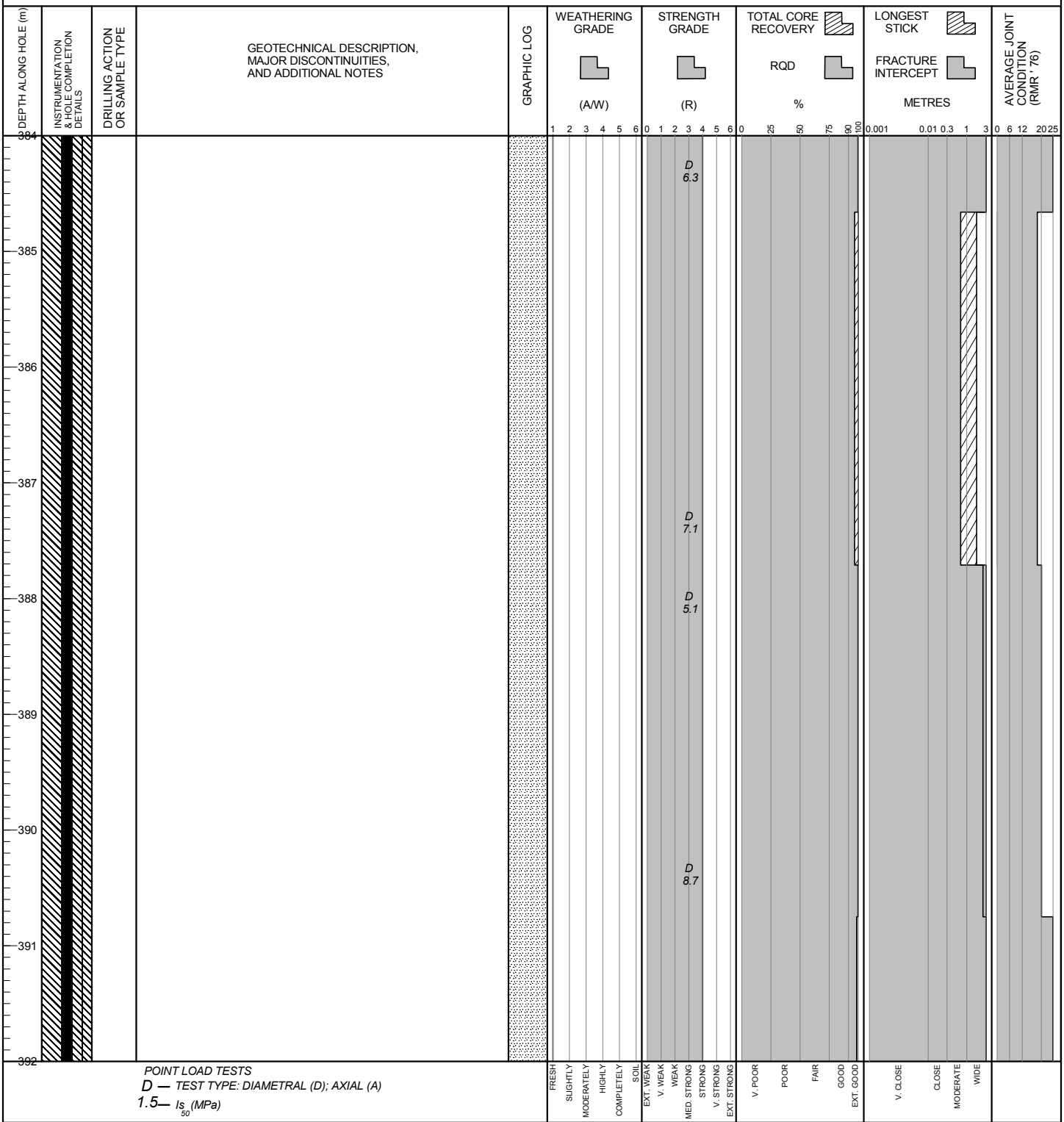

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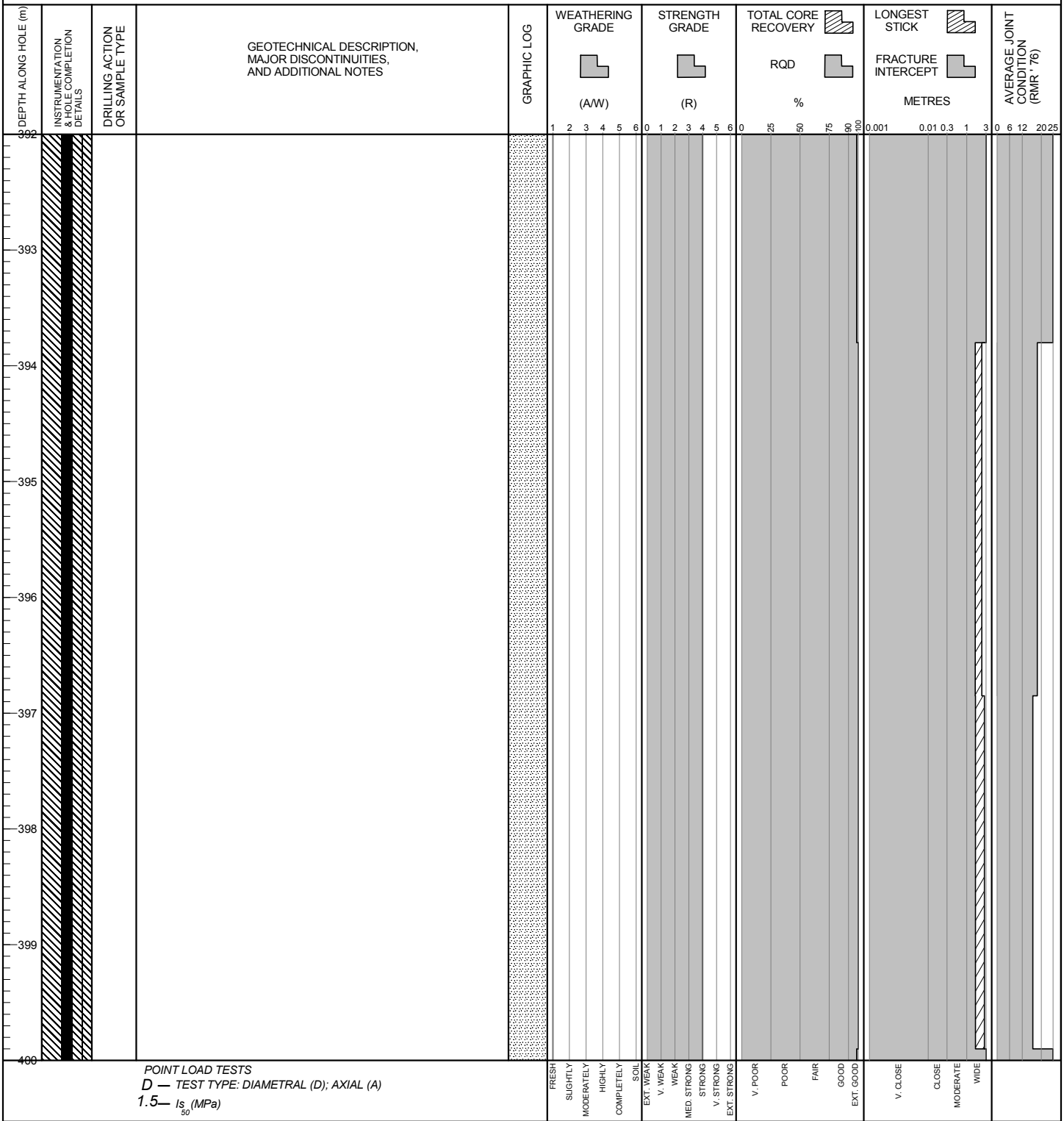

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GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

400
401
402
403
404
405
406
407
408

D 4.2
D 3.2
D 5.6

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

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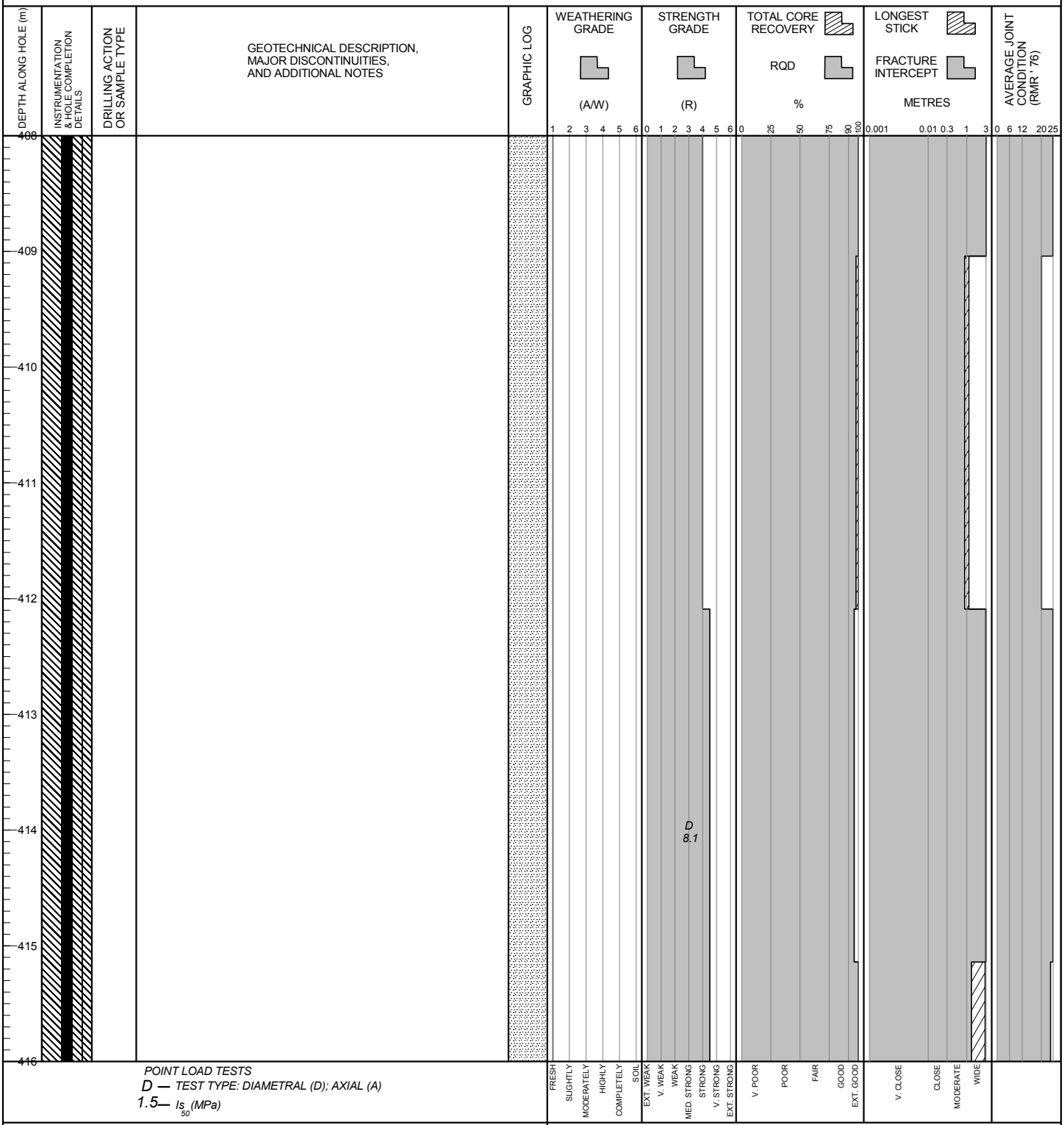

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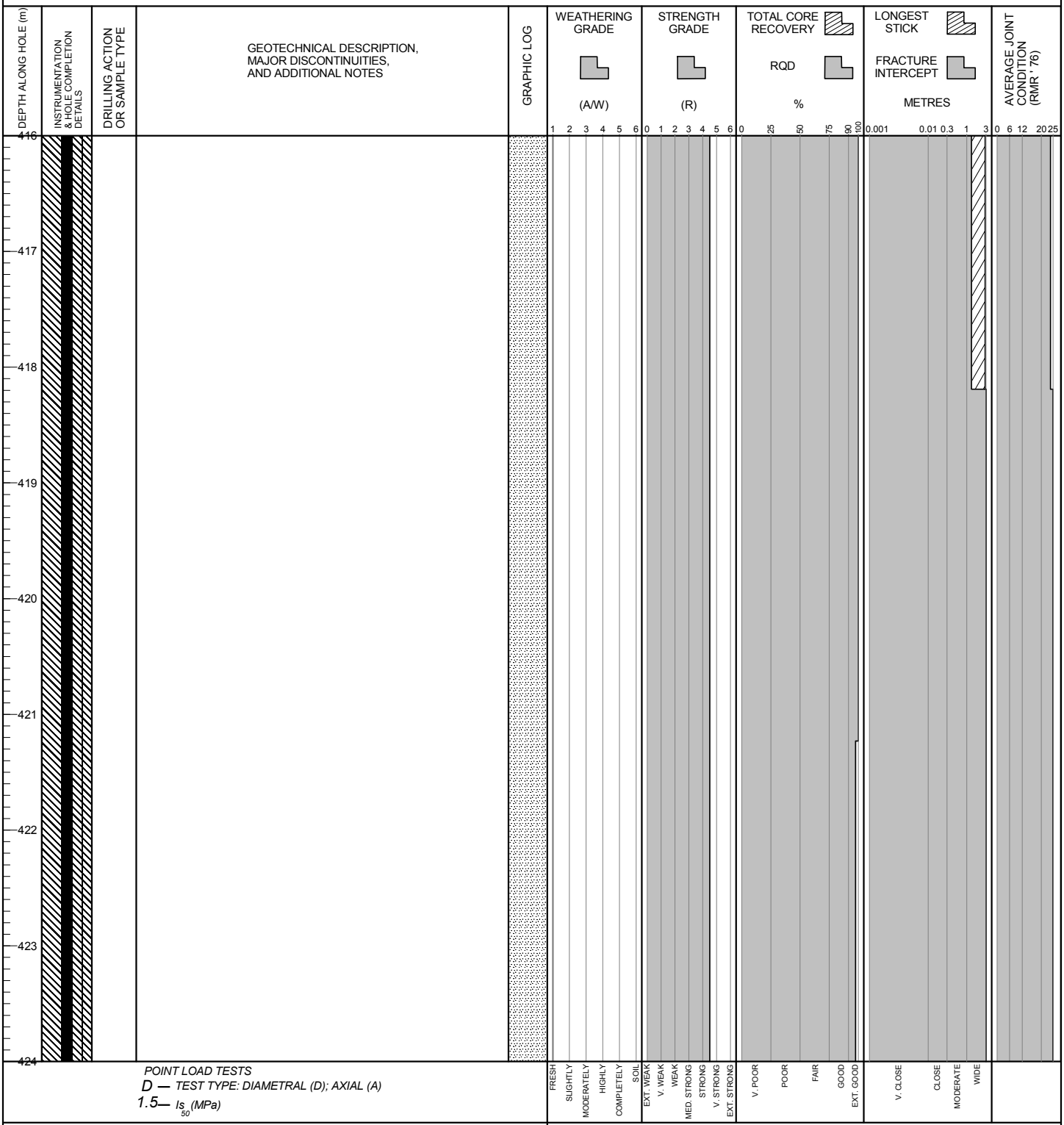

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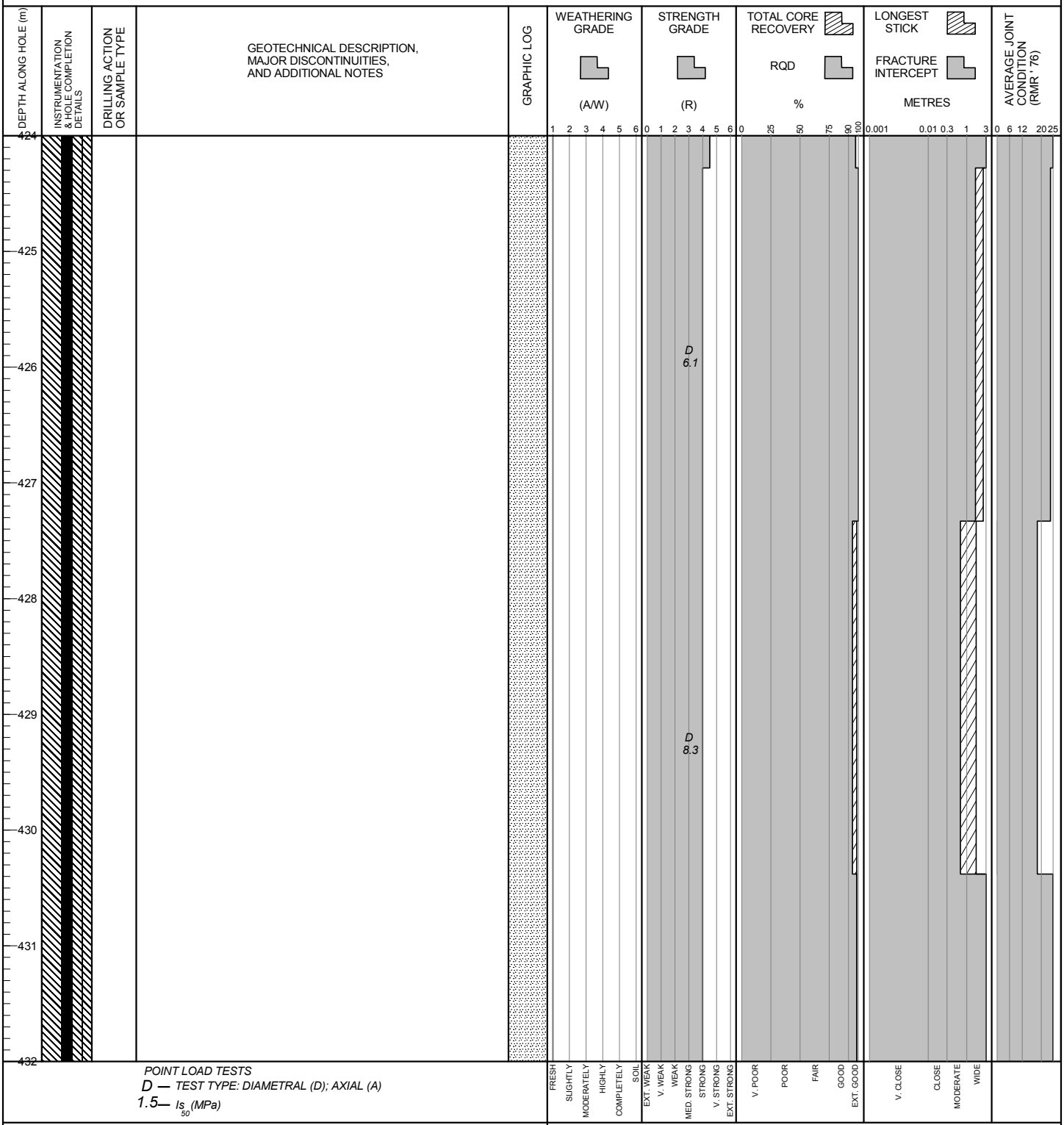

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GRAPHIC LOG
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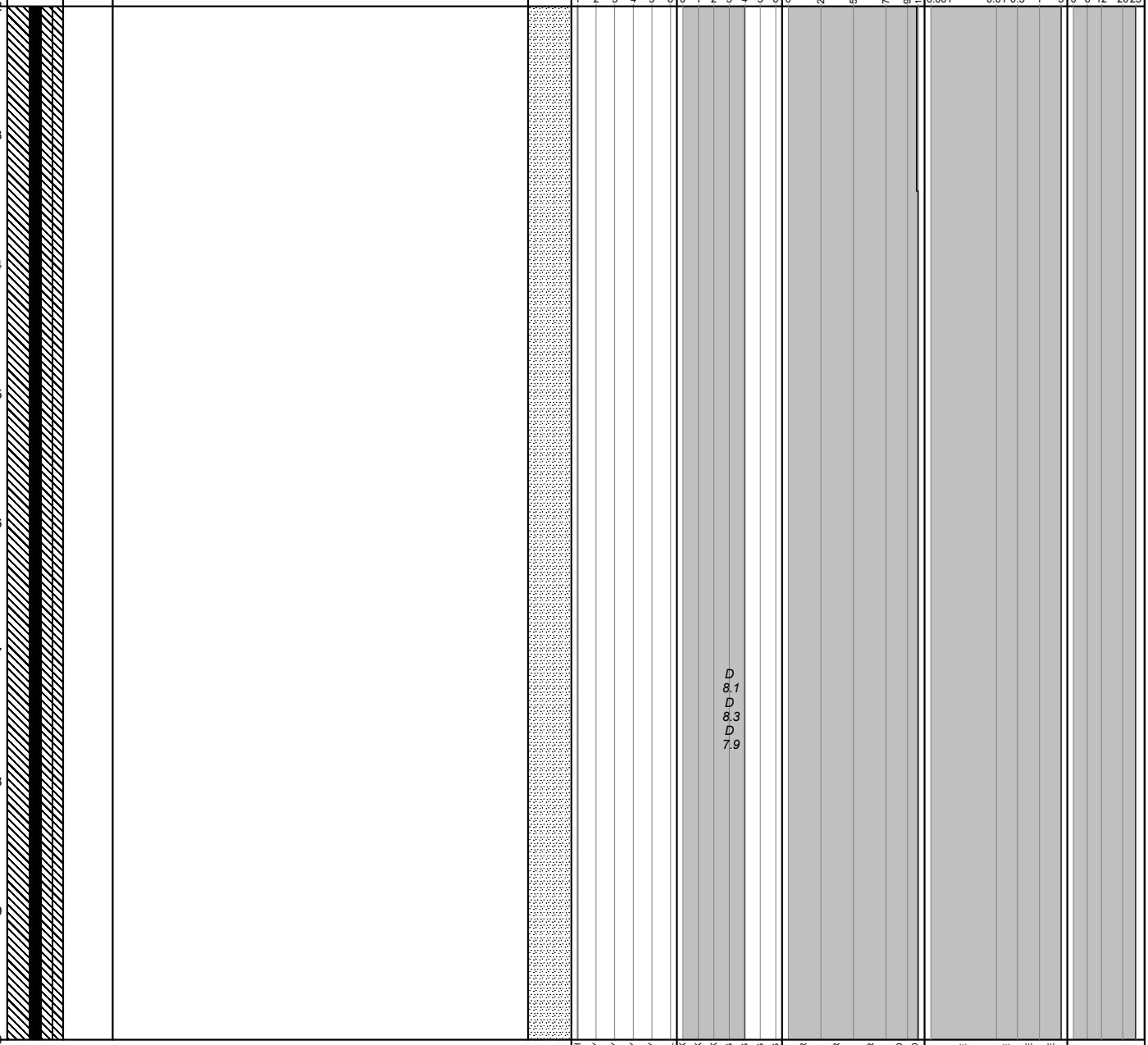
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)



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TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

440
441
442
443
444
445
446
447
448

D
6.3

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
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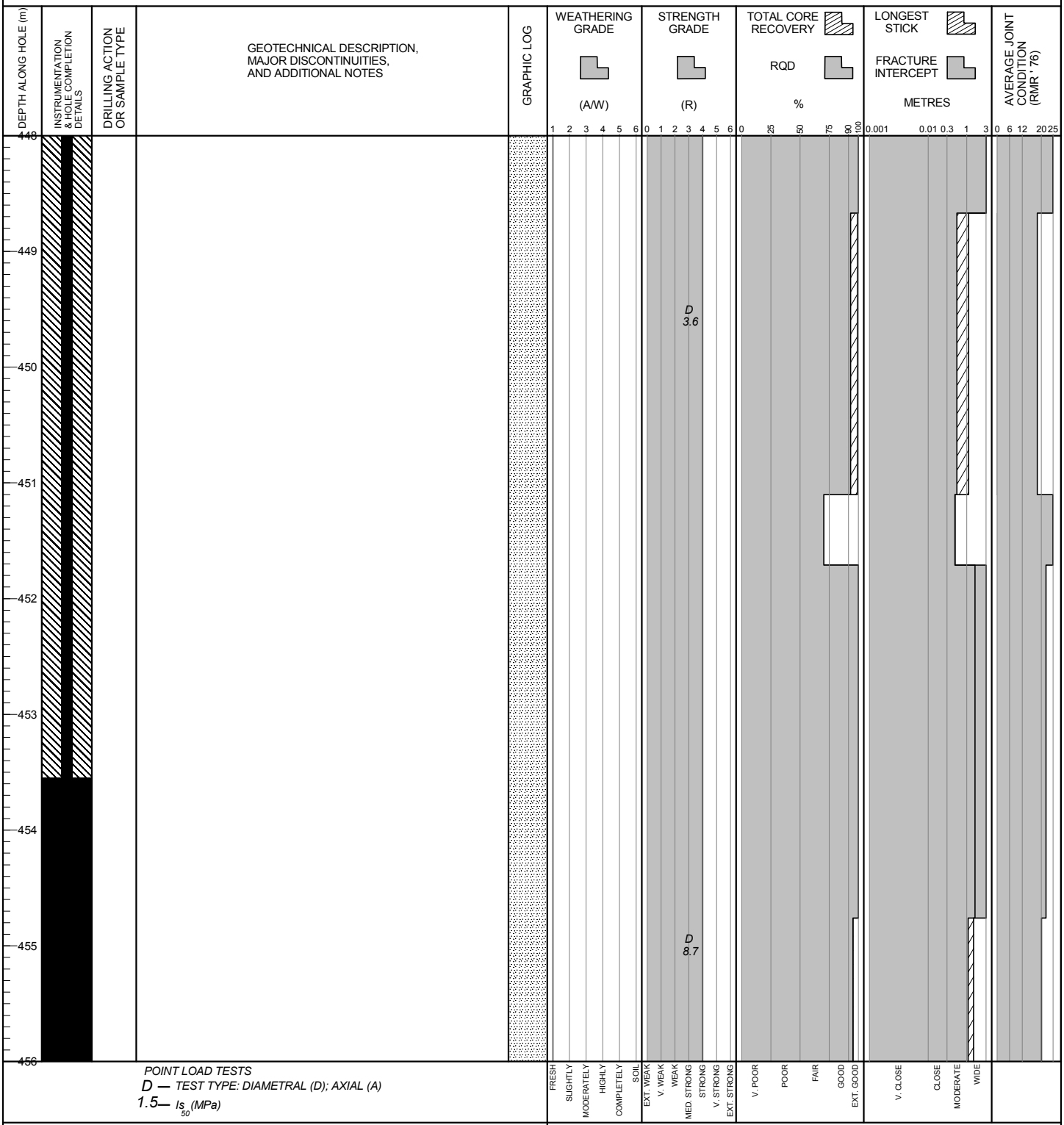

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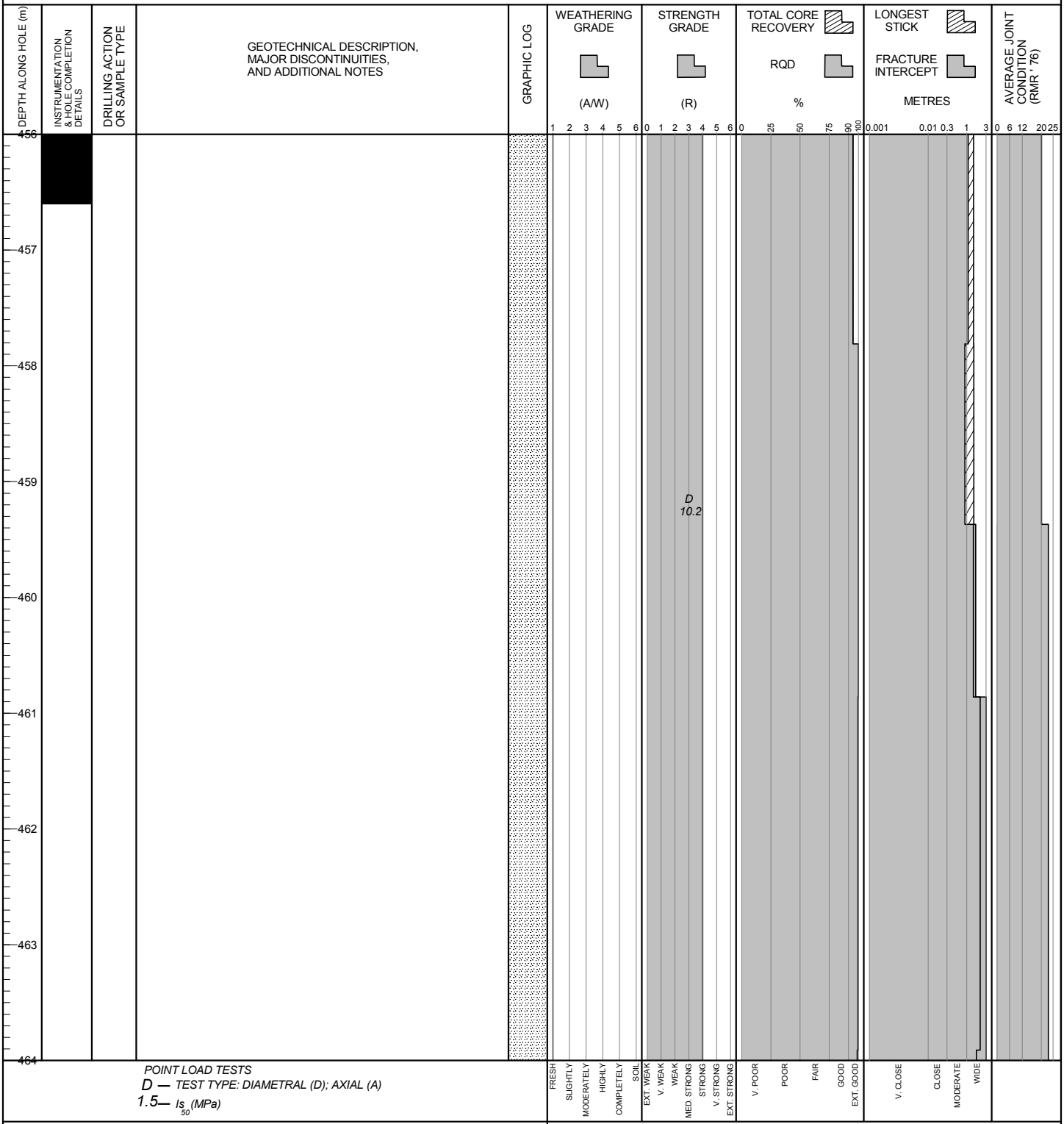

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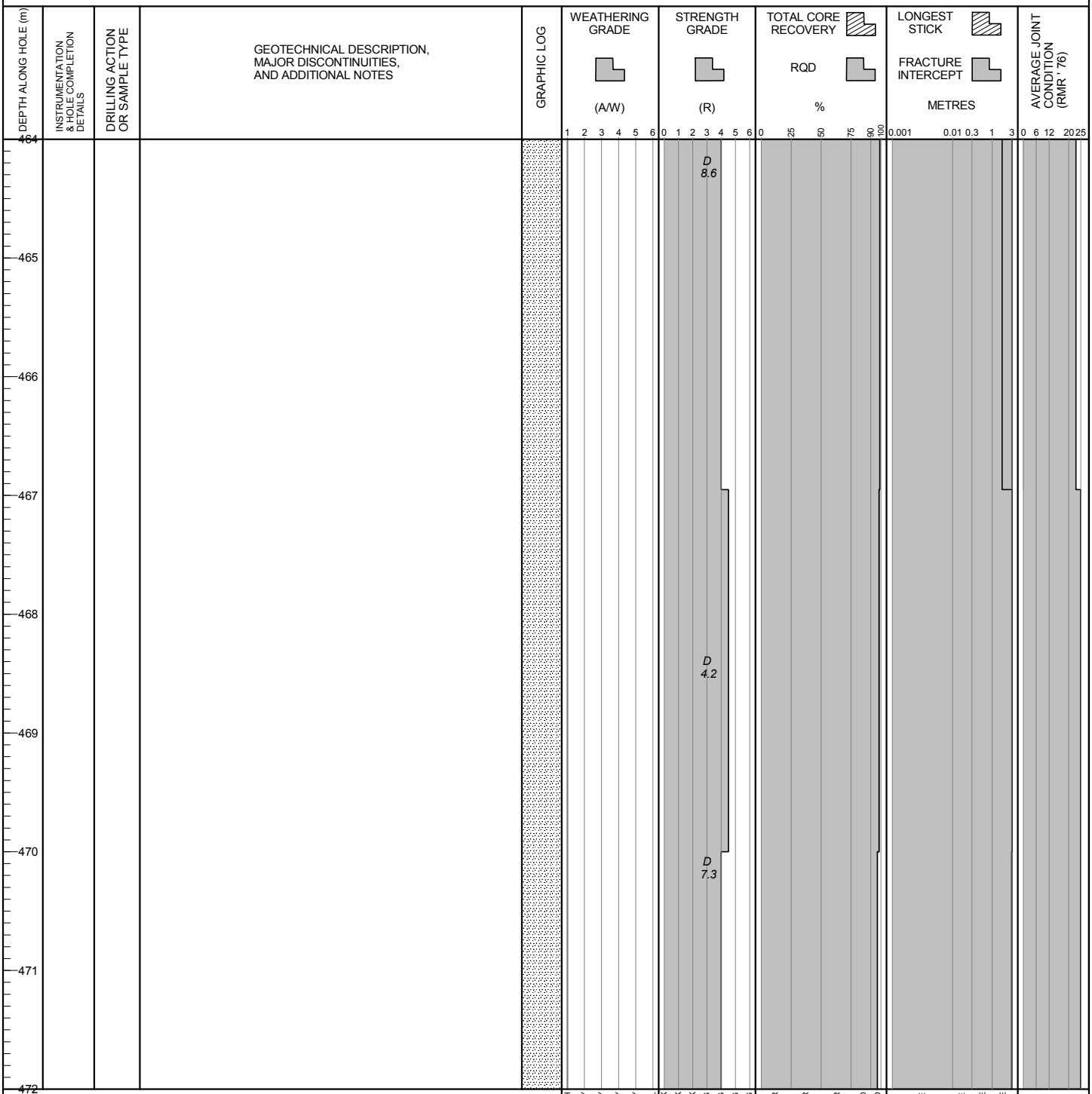

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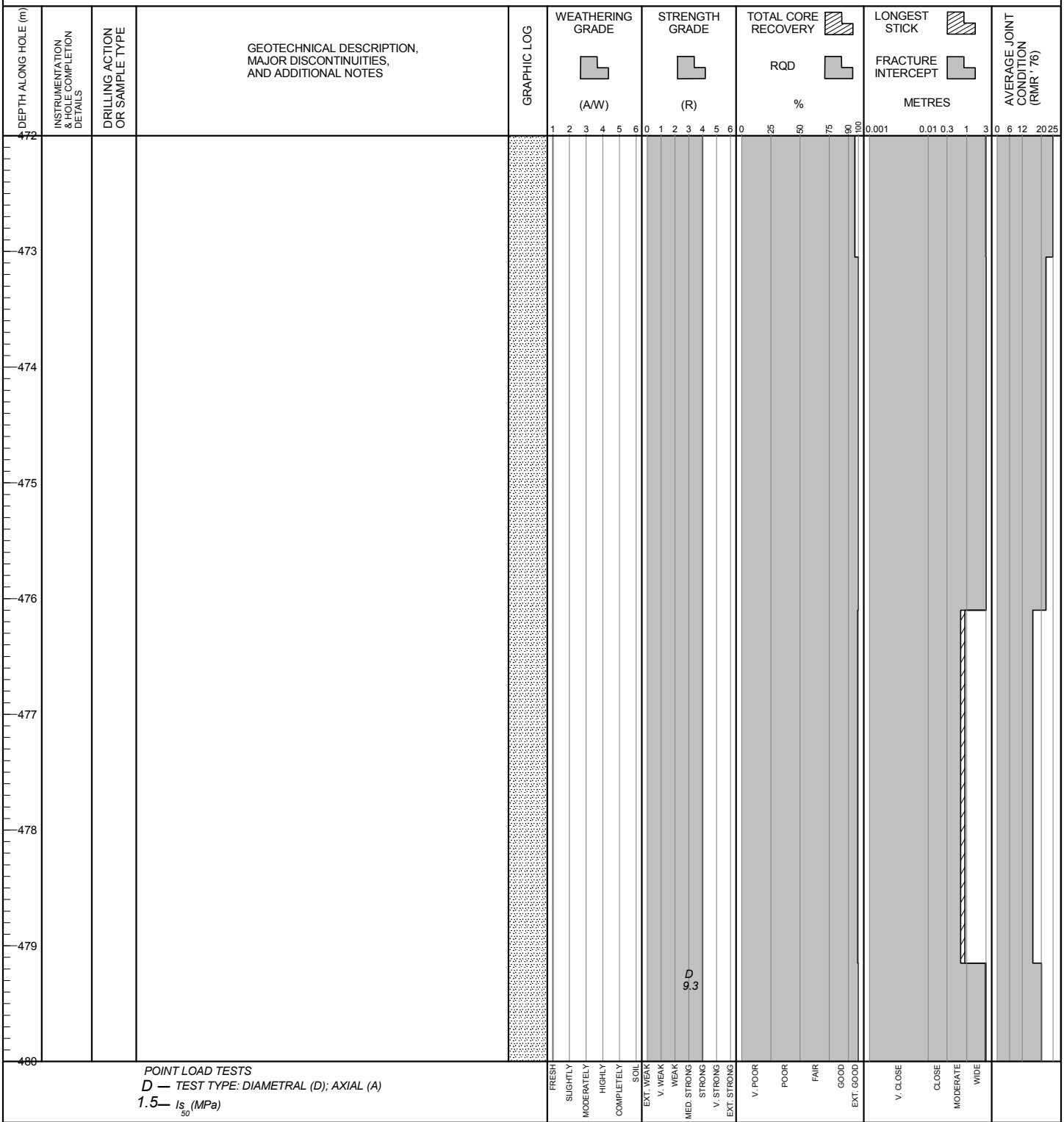

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
Finish Date: 25 Apr 12
Final Depth (m): 585.8
Depth To Top Of Rock (m): 2.3
Logged By: LL/LH
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

480
481
482
483
484
485
486
487
488

D 9.2

486.9 m: Fault, 20 mm FB infill, R4. JRC = 15. Dip/dip direction = 84/207.

487.2 m: Fault, 10 mm FB infill, R2. JRC = 13. Dip/dip direction = 9/055.

487.8 m: Fault.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
V. POOR, POOR, FAIR, GOOD, EXT. GOOD
V. CLOSE, CLOSE, MODERATE, WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

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Ground Elevation (m): 1,539.8
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Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
Finish Date: 25 Apr 12
Final Depth (m): 585.8
Depth To Top Of Rock (m): 2.3
Logged By: LL/LH
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
488			487.9 m: Fault, 2 mm BX infill, R4. JRC = . Dip/dip direction = 47/210. 488.1 m: Fault, 20 mm BX/CX infill. JRC = 13. 488.2 m: Fault, 10 mm FG/FB infill, R0. JRC = . Dip/dip direction = 41/188.		1 2 3 4 5 6	D 10.5	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
489									
490						D 5.5			
491									
492									
493			492.8 m: Fault, 1.5 mm BX/FG infill. JRC = 12. Dip/dip direction = 81/059.						
494						D 13.5			
495									
496					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
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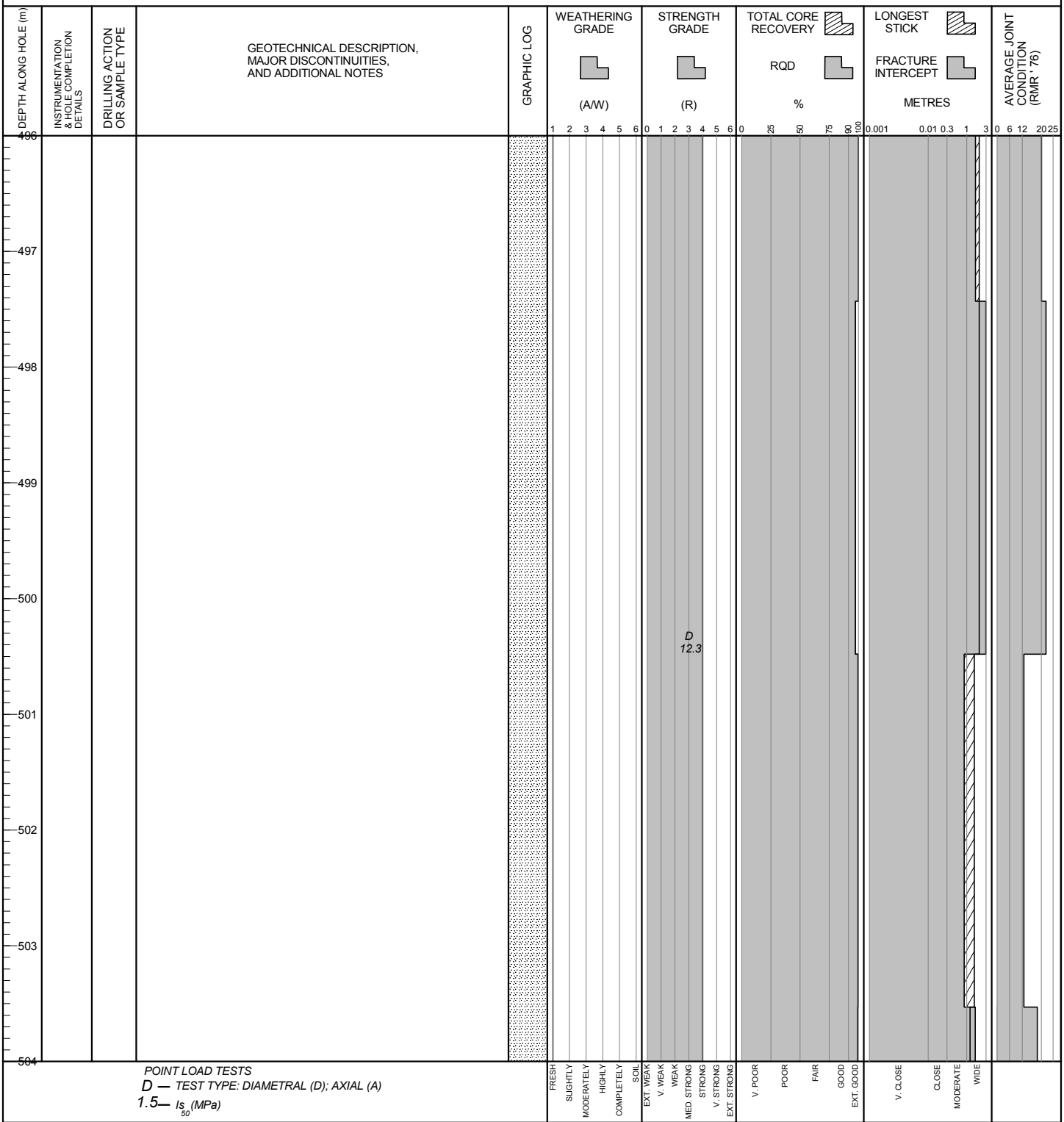

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

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DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

504
505
506
507
508
509
510
511
512

D
12.9

511.1 m: Fault, 40 mm FB infill, R2.

511.5 m: Fault, 50 mm FB infill, R2.

511.5 m: Fault, 80 mm FB infill, R4. JRC = 13. Dip/dip direction = 60/266.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
Finish Date: 25 Apr 12
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Depth To Top Of Rock (m): 2.3
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POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
Finish Date: 25 Apr 12
Final Depth (m): 585.8
Depth To Top Of Rock (m): 2.3
Logged By: LL/LH
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
520				
521				
522				
523				
524			CONGLOMERATE (S3) Grey-green, pebble rich conglomerate with altered clasts, surficial weathering in the form of anchorite. Pyrite-calcite replaced concretions present. Strong (R4). Fresh (A1).	
525				
526				
527				
528				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 7.9
D 5.6

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
528				
529				
530			ARENITE (S4) Grey-green, interbedded sericite altered sandstone with coarse conglomerate. Strong (R4). Fresh (A1).	
531				
532			532.5 m: Shear on vein, 1.5 mm CX infill, R. JRC = 12.	
533			533.4 m: Shear, 0.5 mm aperture. JRC = 15.	
534				
535				
536				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
D 4.3
D 9.9

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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AN APPLIED EARTH SCIENCES COMPANY

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
536					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
537									
538									
539						D 3.7			
540			540.1 m: Shear on contact. JRC = 13.						
541									
542									
543						D 10.2			
544					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
544					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
545									
546									
547									
548			548.3 - 553.8 m: Stockwork sections with vein breccia texture, mostly unmineralizled, but some pyrite.						
549						D 4.9			
550									
551						D 3.9			
552									

WEATHERING GRADE: FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE: EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD: V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT: V. CLOSE; CLOSE; MODERATE; WIDE

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

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Logged By: LL/LH
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
552				
553			553.8 m: Some calcite-pyrite concretions.	
554				
555				
556			556.6 m: Shear on vein, 1 mm CA infill, R3. JRC = 12.	
557				
558			CONGLOMERATE (S3) Grey-green, sericite-chlorite replacement clasts in matrix supported conglomerate. Strong (R4). Fresh (A1).	
559			558.9 m: Shear on vein, 1 mm BX infill, R4. JRC = 20. Dip/dip direction = 81/289.	
560				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Drill Method: Diamond
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Fluid: Polymer
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
560			560.2 m: Shear on vein, 0.5 mm aperture. JRC = 8.
561			
562			ARENITE (S4) Grey-green, fine grained sericite altered sandstone, grades into a coarse grained conglomerate. Strong (R4). Fresh (A1). 562.2 m: Shear on vein, 1 mm aperture. JRC = 13. Dip/dip direction = 67/288. 562.3 m: Shear on vein, 1 mm aperture. JRC = 20. 562.4 m: Shear, 0.5 mm aperture. JRC = 8.
563			563.3 m: Shear on vein, 2 mm CA infill, R4. JRC = 20.
564			
565			
566			CONGLOMERATE (S3) Grey-green, sericite altered conglomerate with sericite and chlorite replaced clasts, some clasts up to 2 cm diameter. Strong (R4). Fresh (A1).
567			ARENITE (S4) Grey-green, sericite altered sandstone, very sparse veining, chalcopyrite in quartz vein, pyrite-calcite replacement concretions. Strong (R3.35-R4). Fresh (A1). 566.9 m: Shear, 0.5 mm aperture. JRC = 12. 567 m: Shear, 0.5 mm aperture. JRC = 8.
568			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 5.1
D 2.3

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-22

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Datum: UTM NAD 83 Zone 9
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Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

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Logged By: LL/LH
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
568			568.4 m: Shear on vein, 0.5 mm QZ/CA infill, R4. JRC = 8.						
569									
570			570.2 m: Shear on vein, 0.5 mm CA infill, R4. JRC = 8.			D 9.3			
571									
572									
573									
574									
575			575.2 m: Shear on vein, 1 mm CA infill, R4.						
576									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

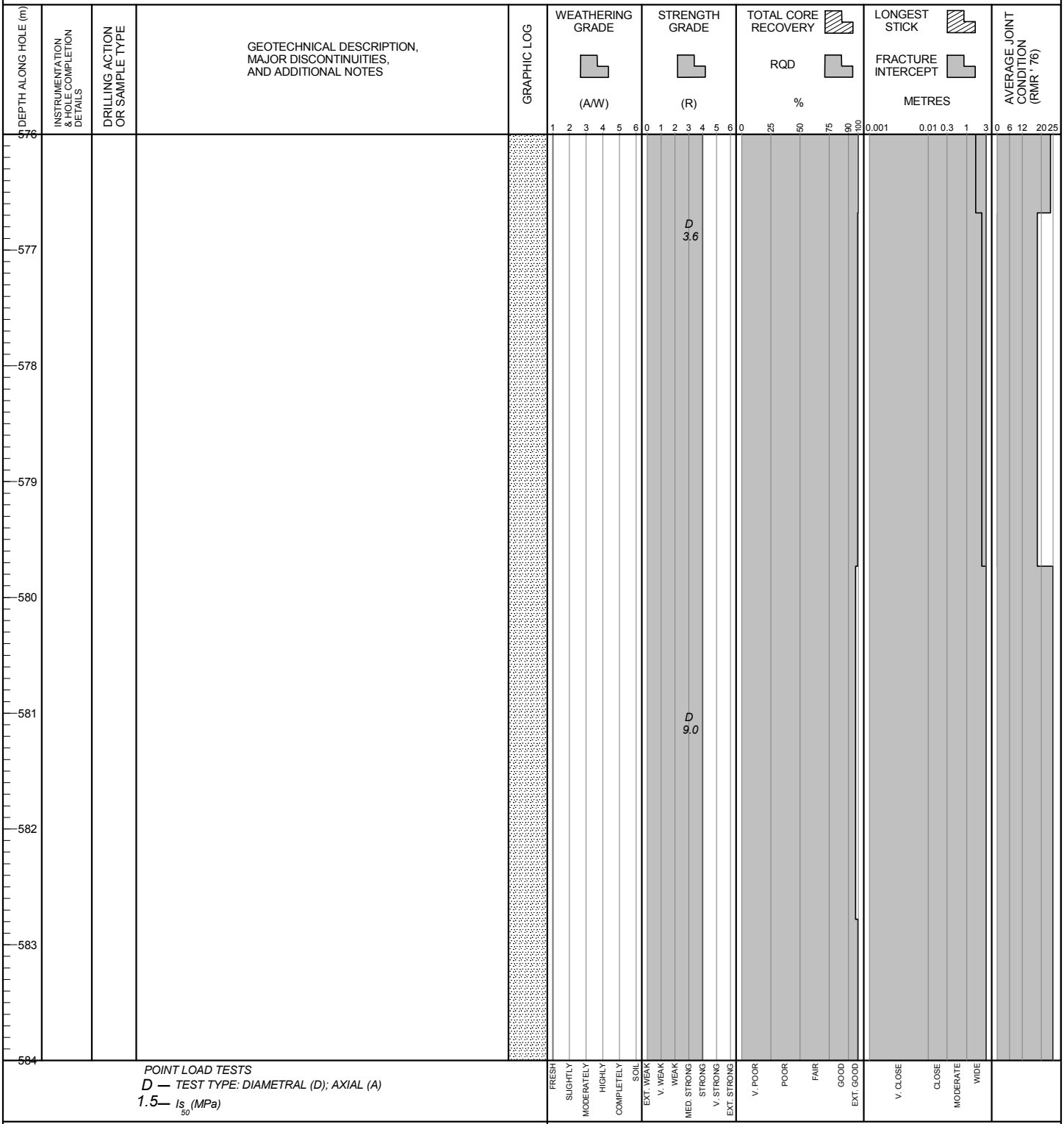
DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

Co-ordinates (m): 426,481E - 6,257,936N
Ground Elevation (m): 1,539.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 036

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.3

Start Date: 11 Apr 12
Finish Date: 25 Apr 12
Final Depth (m): 585.8
Depth To Top Of Rock (m): 2.3
Logged By: LL/LH
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-22

Location: Valley of Kings Zone

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Cased To (m) : 2.3

Start Date: 11 Apr 12
Finish Date: 25 Apr 12
Final Depth (m): 585.8
Depth To Top Of Rock (m): 2.3
Logged By: LL/LH
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
584					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
585									
586			END OF DRILLHOLE AT 585.8 m Notes: 1. Two vibrating wire piezometers installed at 95.7 m and 447.9 m.						
587									
588									
589									
590									
591									
592									

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL
EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG
V. POOR / POOR / FAIR / GOOD / EXT. GOOD
V. CLOSE / CLOSE / MODERATE / WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N	***Drill Designation:*** Heliportable	***Start Date:*** 14 Apr 12
Ground Elevation (m): 1,583.7	***Drilling Contractor:*** Radius	***Finish Date:*** 03 May 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 566.0
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 2.0
Plunge (°): -70	***Fluid:*** Polymer	***Logged By:*** HKM/JND
Trend (°): 271	***Cased To (m) :*** 2.0	***Reviewed By:*** JW

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						OVERBURDEN No Recovery.
2						Rock encountered at 2.0 m depth. Refer to DH-BGC12-23 rock log.

Su - kPa: 40, 80, 120, 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery: 20, 40, 60, 80
Moisture Content & SPT N: W_p% W% W_l%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
0				
1			Refer to DH-BGC12-23 Overburden Log	
2			PLAGIOCLASE-HORNBLENDE PORPHYRY (P1) Grey, homogeneous, crystals often sericite or chlorite altered and often pyrite replaced. Strong to very strong (R4-R5). Slight to faint weathering (W1-W1.5) on major discontinuities.	
3				
4				
5			4.7 m: Shear, 0.5 mm FE infill, R2. JRC = 12.	
6				
7				
8				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

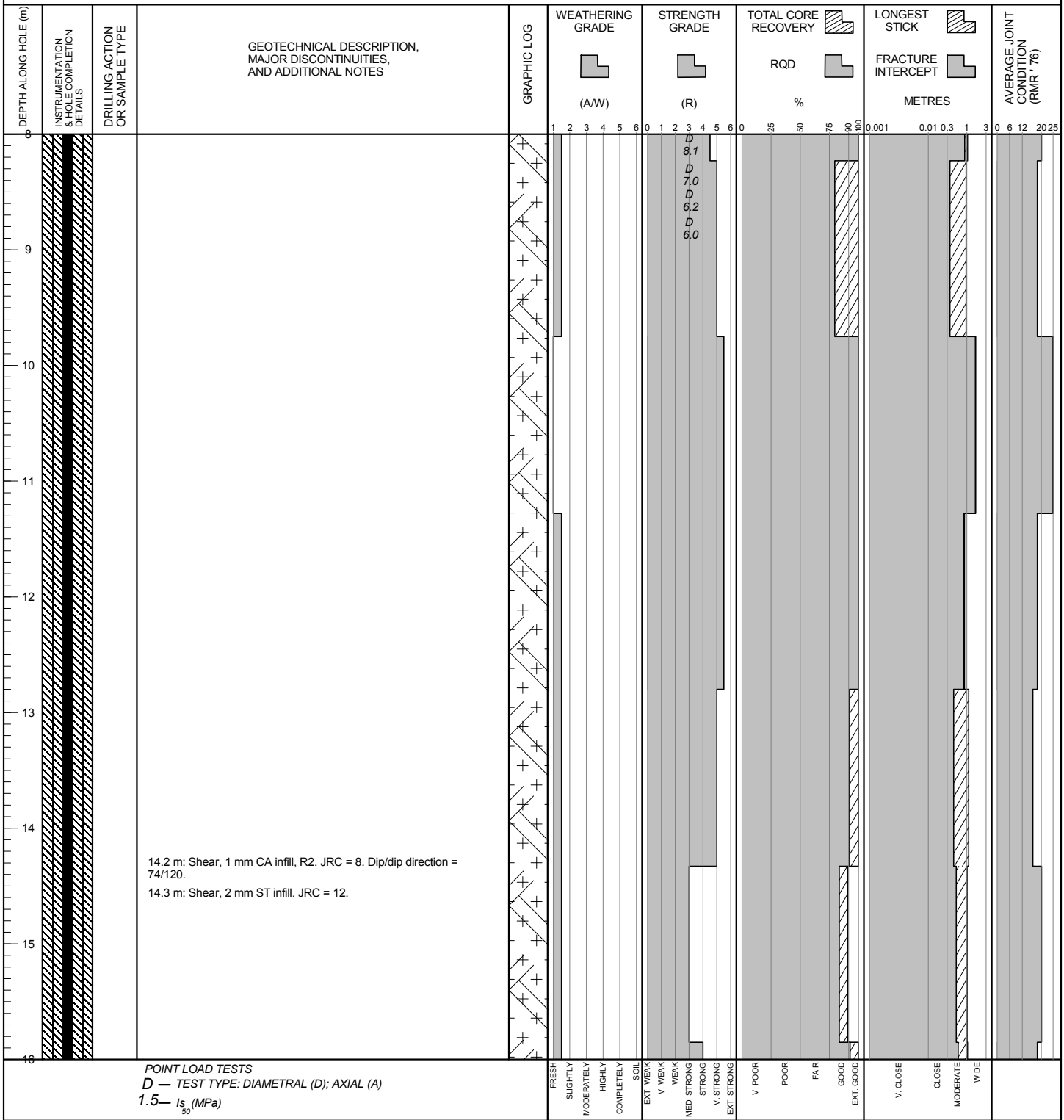
DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)

16
17
18
19
20
21
22
23
24

20 m: Fault, 0.5 mm aperture. JRC = 12.

D 4.3
D 5.7
D 5.8
D 7.0
D 6.5
D 9.1

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

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Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
24					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
25									
26			QUARTZ SULPHIDE VEIN (H4) White, contains abundant mm-scale fractures and vugs with abundant pyrite, sphalerite, galena, chalcopyrite and acanthite infill. Contains minor P1 wall rock fragments near contacts. Strong to very strong (R4-R4.5). Slight to faint weathering (W1-W1.5) on major discontinuities.			D 6.8			
27									
28									
29									
30						D 4.7			
31						D 7.3			
32									

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE: FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE: EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
RQD: V. POOR | POOR | FAIR | GOOD | EXT. GOOD
FRACTURE INTERCEPT: V. CLOSE | CLOSE | MODERATE | WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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Co-ordinates (m): 426,503E - 6,257,856N
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Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
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Logged By: HKM/JND
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

32
33
34
34.4 m: Fault, 1 mm FE infill, R4. JRC = 15. Dip/dip direction = 13/026.
35
36
36.6 m: Shear, 0.5 mm FE infill, R2. JRC = 13.
PLAGIOCLASE-HORNBLENDE PORPHYRY (P1)
Grey-green, relatively homogenous volcanics with phenocrysts often sericite or chlorite altered and pyrite replacement. Base metal sulphides and silver veins <1m continue until 61.90m. Strong to very strong (R4-R5). Slight to faint weathering (W1-W1.5) on major discontinuities above 47.9 m. Fresh (A1) below 47.9 m.
37
38
39
40

D 4.6

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

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Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

40.4 m: Shear, 1 mm aperture. JRC = 20.

45 m: Shear, 1 mm aperture. JRC = 12.

D 1.2
D 4.8
D 6.2
D 5.0
D 5.7

POINT LOAD TESTS
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

48.8 m: Shear on vein, 110 mm BX infill. JRC = 15.

49.6 m: Fault, 100 mm BX infill. JRC = 8. Dip/dip direction = 87/060.

D 7.1

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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Drilling Contractor: Radius
Drill Method: Diamond
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Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
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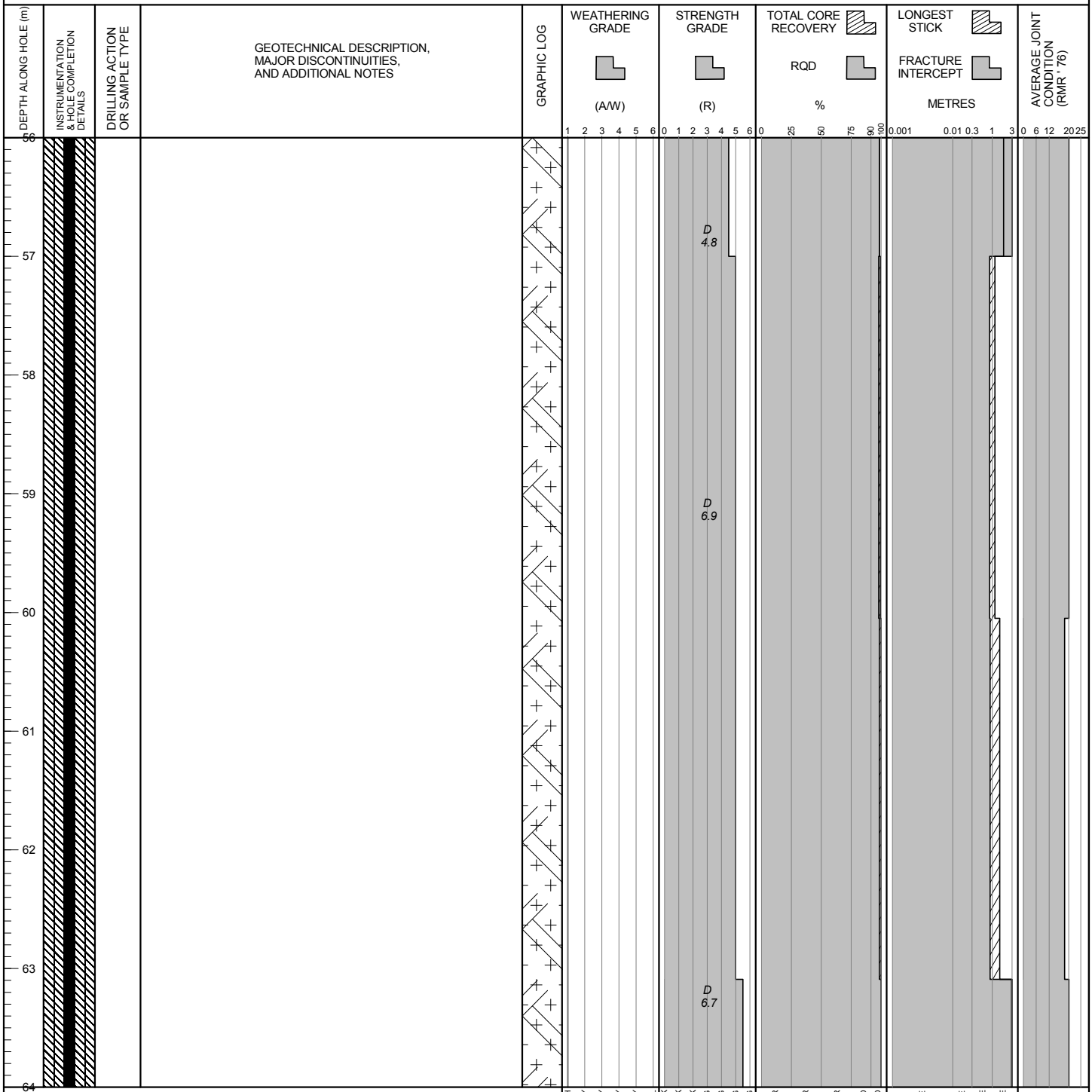
Logged By: HKM/JND
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
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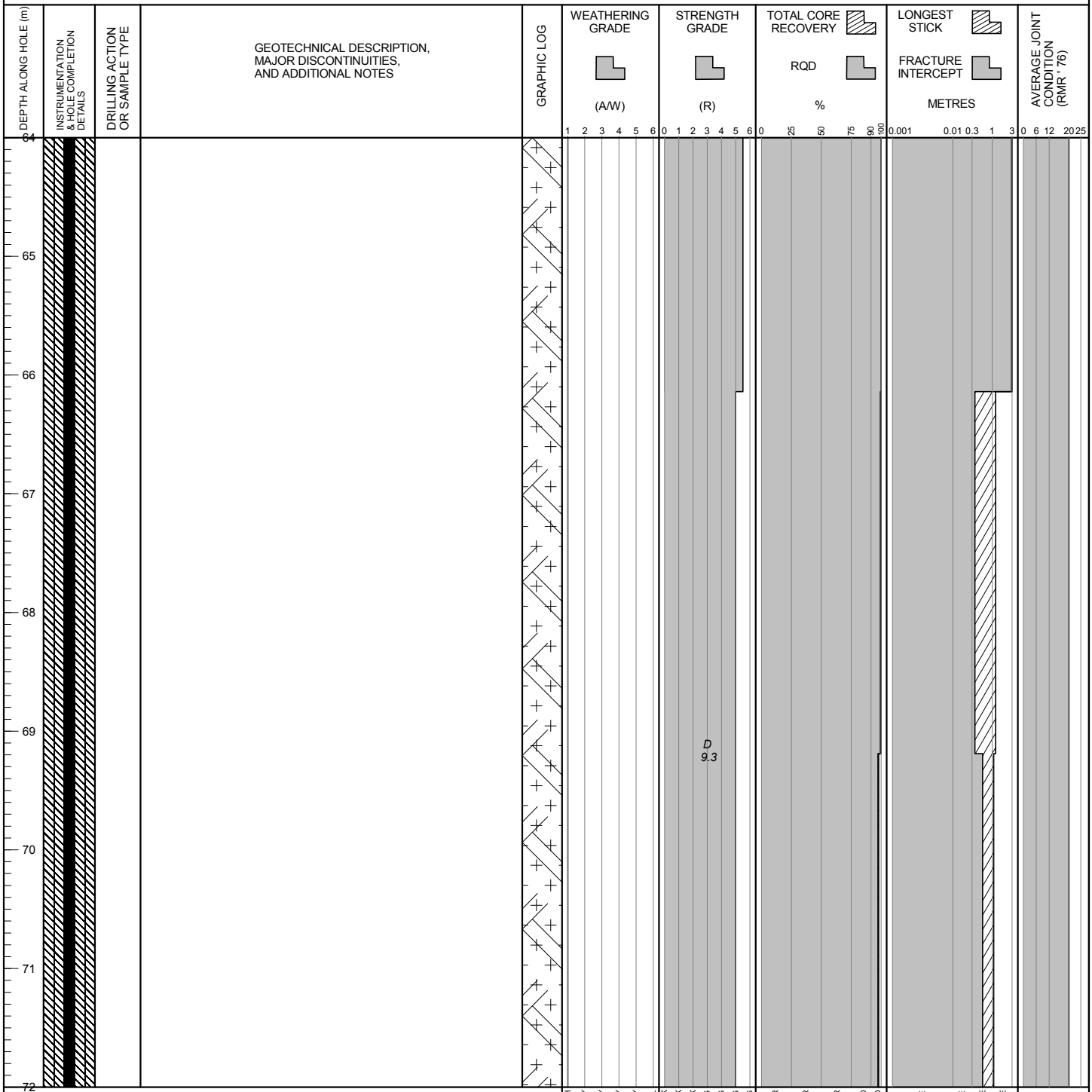
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
72					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
73									
74									
75									
76			76.2 m: Shear on vein, 0.5 mm CA infill, R4. JRC = 4.			D 6.7			
77									
78						D 9.3			
79									
80					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
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Plunge (°): -70
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Drill Designation: Heliportable
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Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

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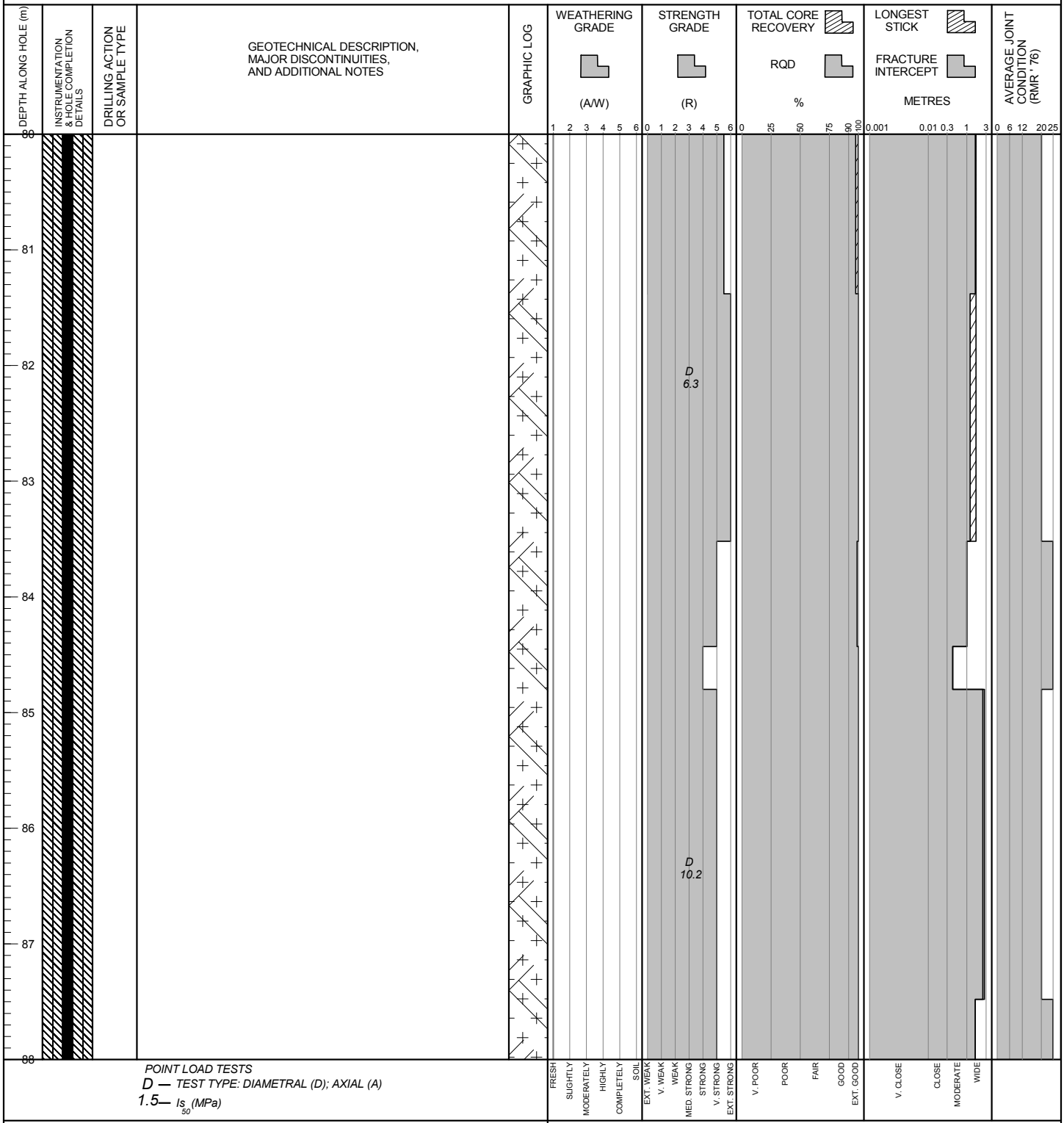
Logged By: HKM/JND
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

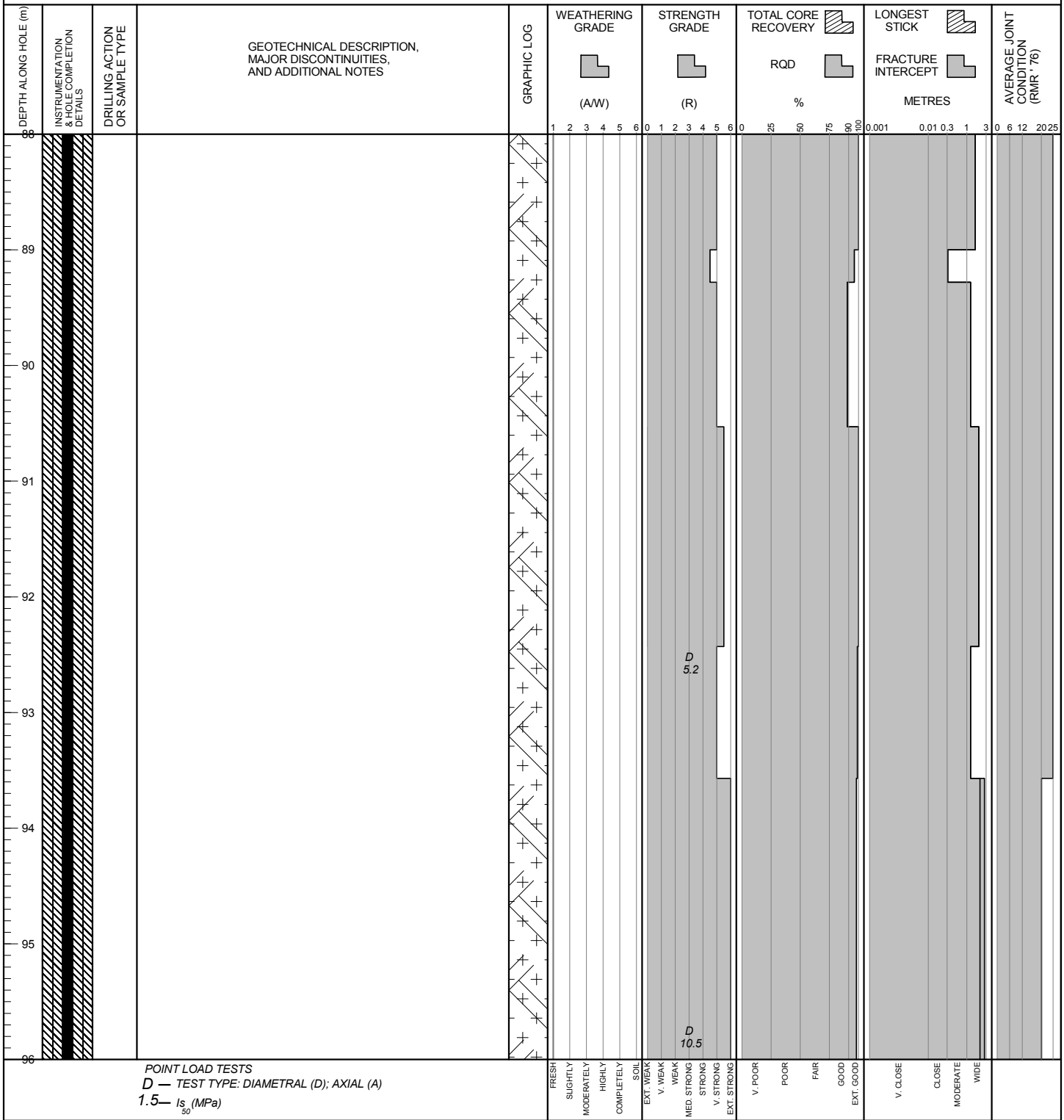
DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW



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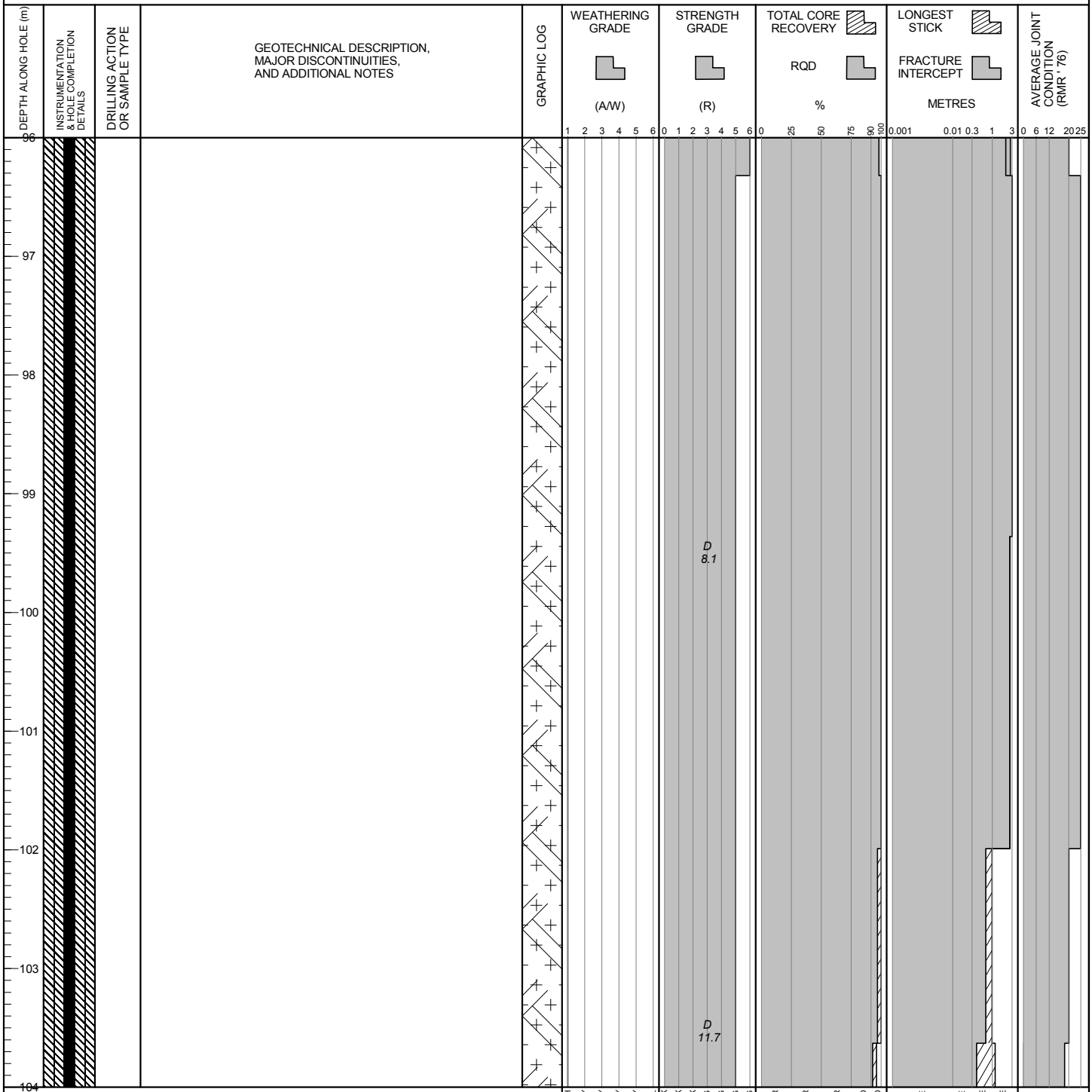

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Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
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Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

104.5 m: Shear, 1 mm aperture. JRC = 8.

108 m: Shear, 1 mm SE infill, R2. JRC = 13.

D 7.3

POINT LOAD TESTS
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Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
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Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

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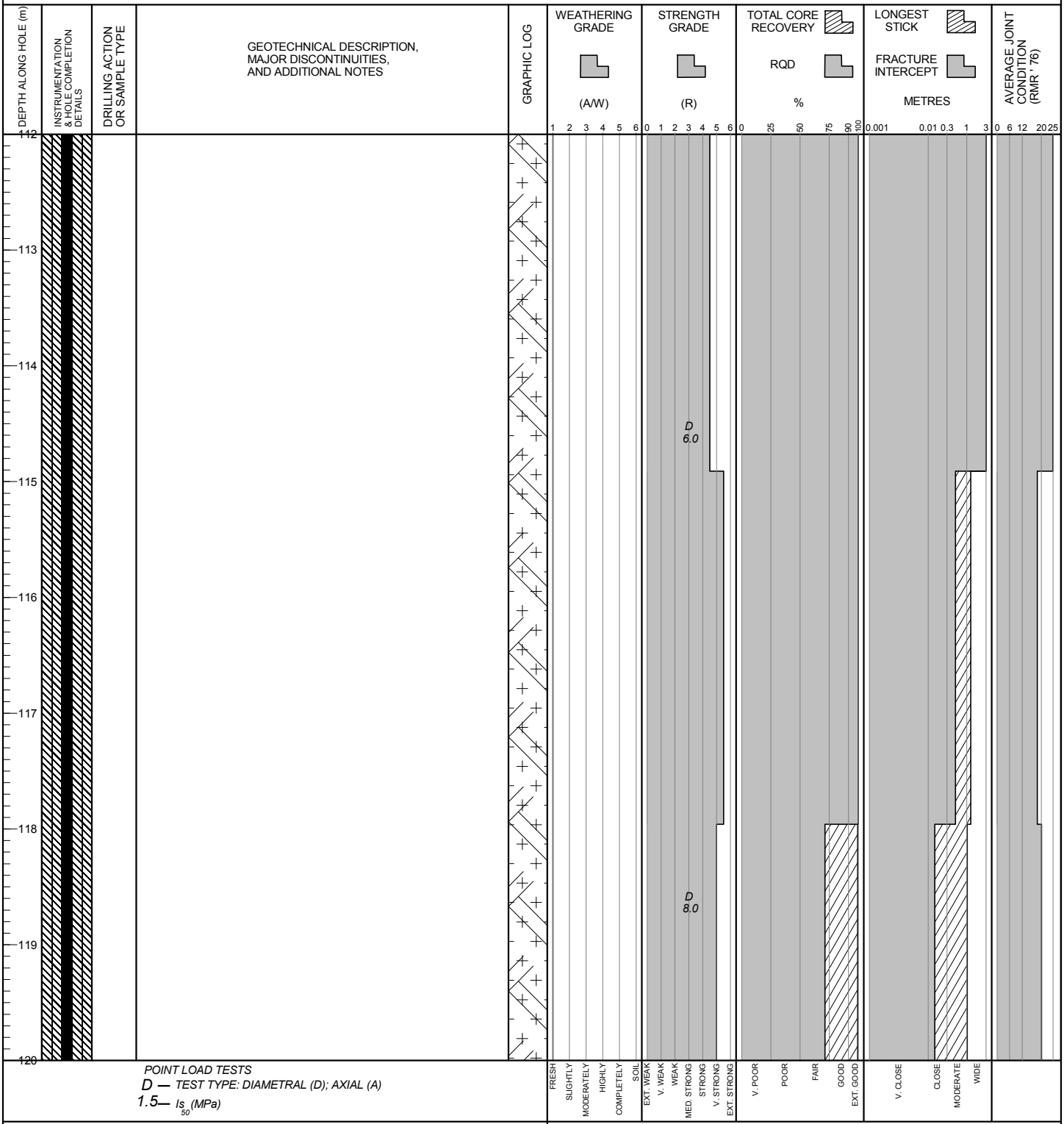

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Client: Pretium Resources Inc.

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

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Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
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Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

120 m: Shear on vein, 0.5 mm CA infill. JRC = 13.

123.7 m: Shear, 250 mm BX infill. JRC = 4. Dip/dip direction = 70/194.

127.5 m: Shear, 60 mm BX infill. JRC = 12. Dip/dip direction = 79/193.

D 6.5

D 6.3

POINT LOAD TESTS
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
128				
129			128.9 m: Fault, 180 mm FG infill, S4. JRC = 12. Dip/dip direction = 55/212. 129.4 m: Shear, 0.5 mm aperture. JRC = 13. 129.7 m: Shear, 0.5 mm aperture. JRC = 8.	
130				
131			130.9 - 133.6 m: Stockwork quartz-calcite veining runs sub-parallel TCA. Stockwork contains minor sphalerite, galena, chalcopyrite and silver sulphides.	
132				
133				
134				
135				
136				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 6.7

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

136
137
138
139
140
141
142
143
144

137.2 - 142.4 m: Stockwork veining, 30-40%. Runs sub-parallel TCA. Minor base metal sulphides throughout.

D 5.7
D 12.0
D 10.0

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Trend (°): 271

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Drilling Contractor: Radius
Drill Method: Diamond
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Fluid: Polymer
Cased To (m) : 2.0

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

144.4 m: Shear, 0.5 mm aperture. JRC = 8.

146.4 - 149.1 m: Stockwork veining, 25-30%. Mostly a single vein running along core axis.

150.7 m: Shear, 0.5 mm aperture. JRC = 8.

151.9 m: Shear, 4 mm BX infill. JRC = 4. Dip/dip direction = 75/081.

D 6.9
D 8.7
D 8.6
D 8.9
D 8.4

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
V. POOR | POOR | FAIR | GOOD | EXT. GOOD
V. CLOSE | CLOSE | MODERATE | WIDE

BGC ENGINEERING INC.
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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
152			152.4 - 156.6 m: Stockwork veining, 25-30%, generally sub-parallel TCA.		1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
153									
154									
155						D 8.7			
156									
157									
158									
159						D 10.1			
160									

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE (R): EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD %: V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: V. CLOSE; CLOSE; MODERATE; WIDE

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N	***Drill Designation:*** Heliportable	***Start Date:*** 14 Apr 12
Ground Elevation (m): 1,583.7	***Drilling Contractor:*** Radius	***Finish Date:*** 03 May 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 566.0
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 2.0
Plunge (°): -70	***Fluid:*** Polymer	***Logged By:*** HKM/JND
Trend (°): 271	***Cased To (m) :*** 2.0	***Reviewed By:*** JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

160.2 - 163.7 m: Stockwork veining, 25-30%, sub-parallel TCA.

CONGLOMERATE (S3)
Grey-green conglomerate with 10-15% stockwork veining. Contact is gradational or lost in stockwork. Intermediate volcanics clasts are far more dominant than highly siliceous clasts. Clasts often pyrite replaced. Strong to very strong (R4.5-R5). Fresh (A1).

D 10.7

D 7.1

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Project : Brucejack
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Drill Method: Diamond
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Fluid: Polymer
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168					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
169			168.9 m: Shear, 0.5 mm aperture. JRC = 8.						
170									
171									
172									
173									
174						D 9.9			
175									
176					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

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176					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
177						D 3.6			
178									
179									
180									
181			180.9 m: Shear, 0.5 mm aperture. JRC = 20.			D 9.0			
182									
183									
184					FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL	EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG	V. POOR / POOR / FAIR / GOOD / EXT. GOOD	V. CLOSE / CLOSE / MODERATE / WIDE	

POINT LOAD TESTS
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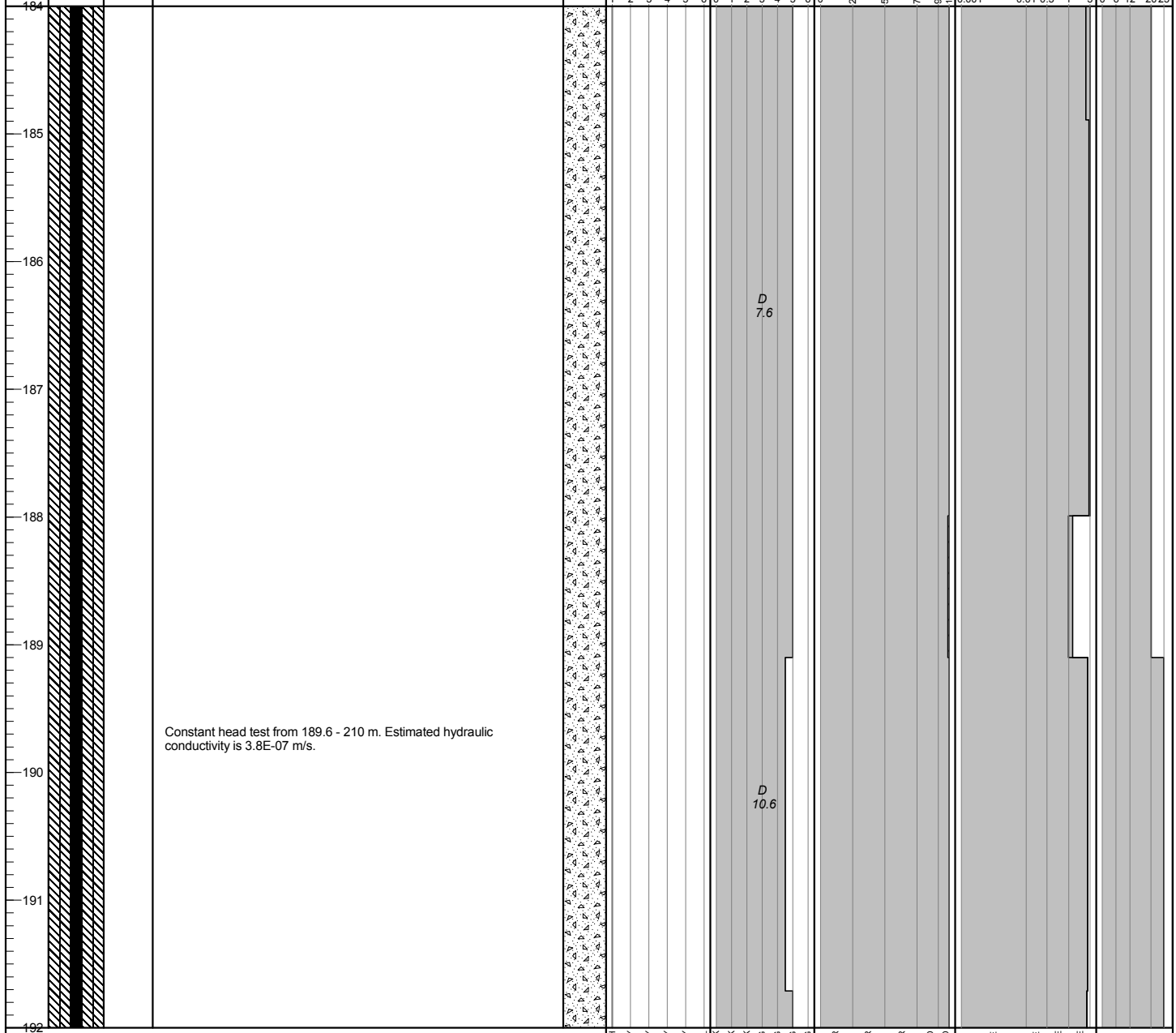

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
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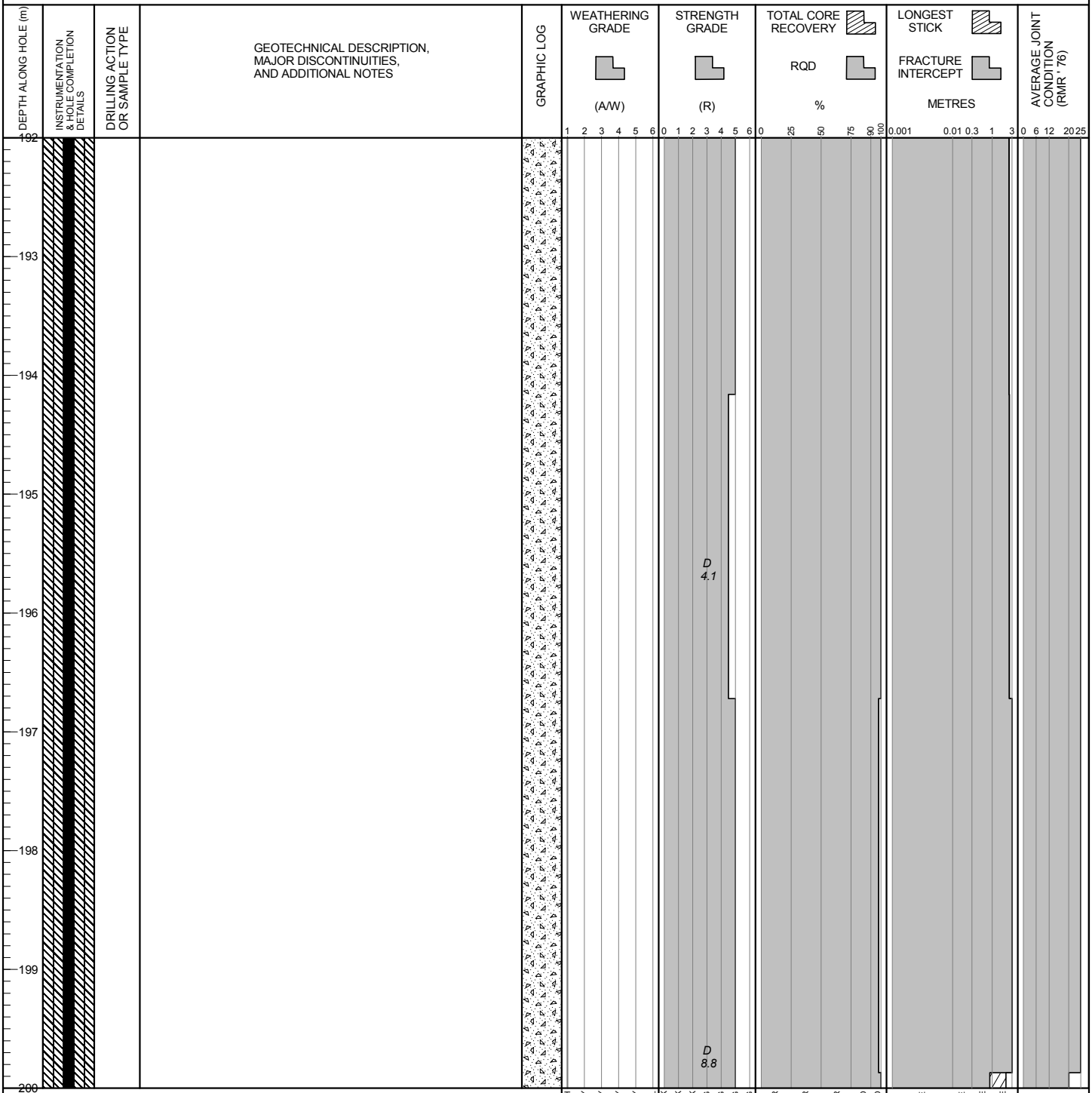
Logged By: HKM/JND
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

200
201
202
203
204
205
206
207
208

202.7 m: Fault, 1 mm aperture. JRC = 12.

ARENITE (S4)
Green, locally bedded at 60 degrees TCA. Contains sporadic pebble sized clasts. Veining mostly sub parallel TCA. Very strong (R5). Fresh (A1).

D 7.5
D 8.0
D 6.4

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

208
209
210
211
212
213
214
215
216

211.1 m: Shear, 0.5 mm aperture. JRC = 4. Dip/dip direction = 34/352.

211.1 m: Fault, 1 mm FG/CX infill, S4. JRC = 7.

211.1 m: Shear on vein, 1 mm BX infill. JRC = 4.

PLAGIOCLASE-HORNBLENDE PORPHYRY (P1)
Green, hornblende is chlorite altered, feldspar is sericite altered. Often pyrite replaced. Contains 10% quartz-calcite veining. Strong to extremely strong (R4-R6). Fresh (A1).

212.8 m: Shear on vein, 0.5 mm aperture. JRC = 8.

213 m: Fault on vein, 10 mm FG infill, S4. JRC = 8. Dip/dip direction = 31/215.

214 m: Shear, 0.5 mm aperture. JRC = 8.

214.7 m: Fault, 8 mm FB infill, R0. JRC = 8.

215.2 m: Water pumped down hole for 5-10 minutes to get tube to lock. High conductivity zone suspected.

D 10.0
D 6.4

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
216			
217			217.1 m: Shear, 0.5 mm aperture. JRC = 6.
218			218.3 m: Shear, 0.5 mm CA infill, R2. JRC = 12. 218.7 m: Shear, 0.5 mm CA infill, R2. JRC = 13.
219			219.1 m: Shear, 0.5 mm aperture. JRC = 4. 219.6 m: Shear, 0.5 mm aperture. JRC = 13. Dip/dip direction = 70/194.
220			220.5 m: Shear, 0.5 mm aperture. JRC = 8. 220.7 m: Fault, 19 mm FB infill, R0. JRC = 2.
221			221.2 m: Shear, 0.5 mm aperture. JRC = 8. Dip/dip direction = 70/057.
222			
223			222.9 m: Shear on vein, 0.5 mm aperture. JRC = 4. Dip/dip direction = 62/171.
224			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 7.4
D 9.2

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
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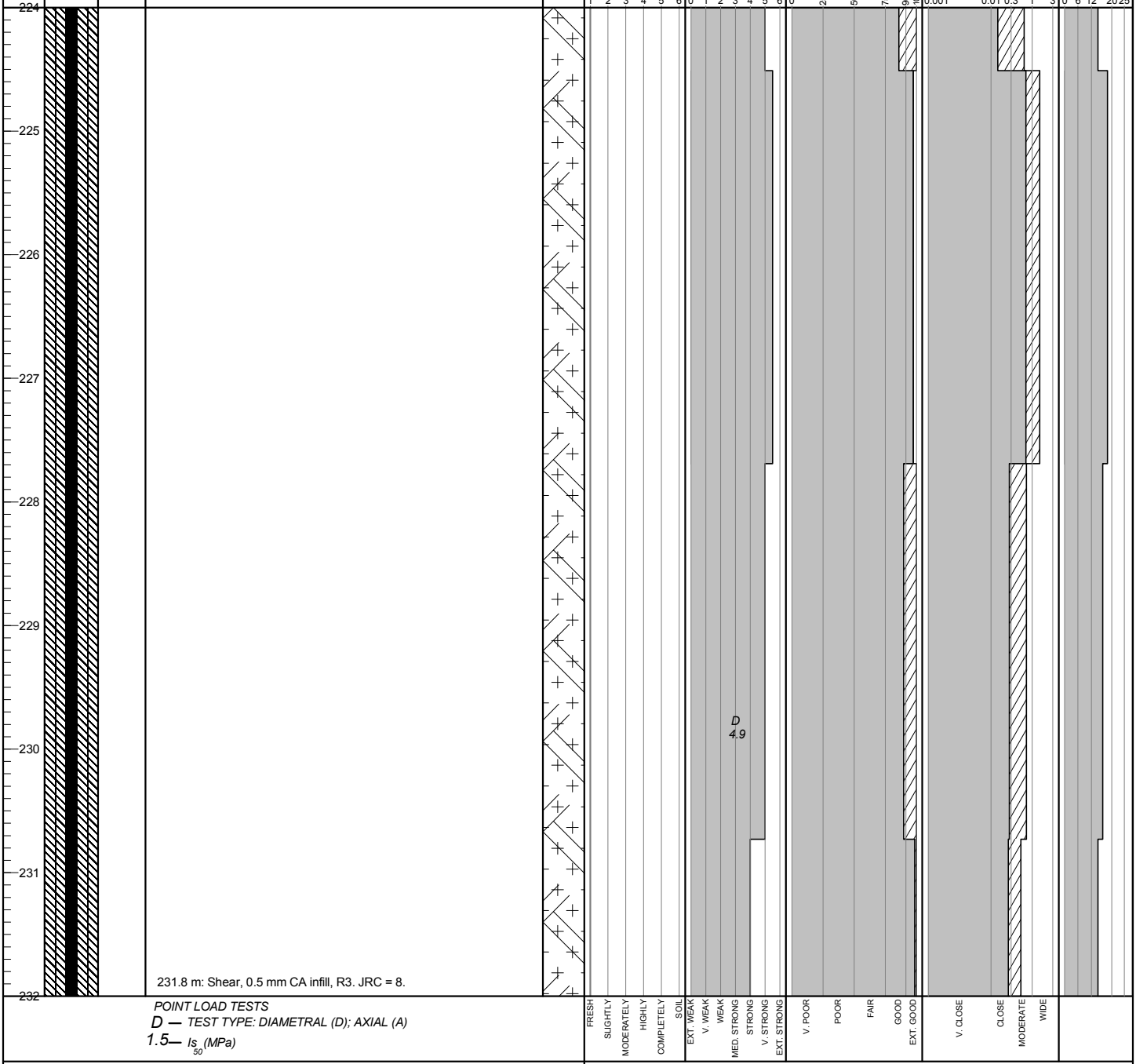
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW



POINT LOAD TESTS
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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

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Ground Elevation (m): 1,583.7
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Datum: UTM NAD 83 Zone 9
Plunge (°): -70
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
232			232.0 m: Shear on vein, 3 mm BX infill. JRC = 2.
			232.6 m: Shear on vein, 0.5 mm aperture. JRC = 8.
233			233.1 m: Shear, 0.5 mm aperture. JRC = 2.
			233.7 m: Shear, JRC = 1.
234			234.1 m: Shear, 0.5 mm aperture. JRC = 1. 234.1 m: Shear on vein, 0.5 mm aperture. JRC = 3. 234.2 m: Shear, 1 mm CA infill, R3. JRC = 20. 234.4 m: Shear, 3 mm BX infill. JRC = 4. 234.5 m: Shear, 1 mm aperture. JRC = 15.
235			
236			
237			
			237.6 m: Shear, 1 mm CA infill, R4. JRC = 8.
238			
			238.3 m: Shear, 0.5 mm aperture. JRC = 15. 238.5 m: Shear, 0.5 mm CA infill, R4. JRC = 2.
239			
			239.2 m: Shear, JRC = 1.
240			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 6.7

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
240			239.9 m: Shear, 0.5 mm aperture. JRC = 12.	
241			241.1 m: Shear, 0.5 mm aperture. JRC = 12. 241.4 m: Shear, 0.5 mm CA infill, R2. JRC = 2.	
242				
243			243.7 m: Shear. JRC = 4.	
244				
245			245 m: Shear on vein, 5 mm BX infill. JRC = 8. Dip/dip direction = 72/082.	
246				
247				
248				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 9.4
D 8.2

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Client: Pretium Resources Inc.

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
248			248 m: Shear, 0.5 mm CA infill, R3. JRC = 2.
			248.3 m: Shear, 0.5 mm CA infill, R4. JRC = 8. Dip/dip direction = 37/195.
			248.4 m: Shear, 0.5 mm CA infill, R3. JRC = 2. Dip/dip direction = 30/214.
249			
			249.7 m: Shear, 0.5 mm aperture. JRC = 1. Dip/dip direction = 26/199.
250			249.7 m: Shear, 0.5 mm CA infill, R3. JRC = 13.
			249.9 m: Shear, 0.5 mm aperture. JRC = 4.
			250.0 m: Shear, 0.5 mm CA infill. JRC = 8.
			250.8 m: Shear, 60 mm BX infill. JRC = 8.
251			250.8 m: Shear, 0.5 mm aperture. JRC = 13.
			250.8 m: Shear. JRC = 8.
			250.9 m: Shear, 100 mm BX infill. JRC = 8. Dip/dip direction = 37/227.
			251.1 m: Shear. JRC = 4.
			251.3 m: Fault, 5 mm FG infill, S5. JRC = 4.
			251.5 m: Shear, 14 mm BX infill. JRC = 8. Dip/dip direction = 48/194.
252			251.6 m: Shear. JRC = 12.
			251.8 m: Shear, 10 mm BX infill. JRC = 15.
			252.2 m: Shear, 1 mm CA infill, R3. JRC = 2.
			252.3 m: Shear, 1 mm CA infill, R3. JRC = 4.
253			
254			
			254.4 m: Shear on vein, 0.5 mm aperture. JRC = 12.
255			
			255.3 m: Shear, 0.5 mm aperture. JRC = 13.
			255.8 m: Shear on vein, 0.5 mm aperture. JRC = 14.
256			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

D 6.2

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
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Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
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Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

256 m

255.8 m: Shear, 0.5 mm aperture. JRC = 16. Dip/dip direction = 57/142.

256 m: Shear, 0.5 mm aperture. JRC = 12.

256.1 m: Shear, 0.5 mm aperture. JRC = 10.

D 4.0

D 7.3

D 4.4

D 6.2

D 8.0

264 m

POINT LOAD TESTS
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1.5— Is_{50} (MPa)

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Location: Valley of Kings Zone

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Drill Method: Diamond
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Fluid: Polymer
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

264.2 m: Shear on vein, 1 mm aperture. JRC = 13.

266.3 m: Shear, 0.5 mm aperture. JRC = 12.

267.5 m: Shear, 0.5 mm aperture. JRC = 15.

267.9 m: Shear on vein, 0.5 mm aperture. JRC = 8. Dip/dip direction = 31/170.

268.6 m: Shear, 0.5 mm aperture. JRC = 15.

270.8 m: Shear, 0.5 mm aperture. JRC = 12. Dip/dip direction = 78/167.

D 6.0

POINT LOAD TESTS
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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

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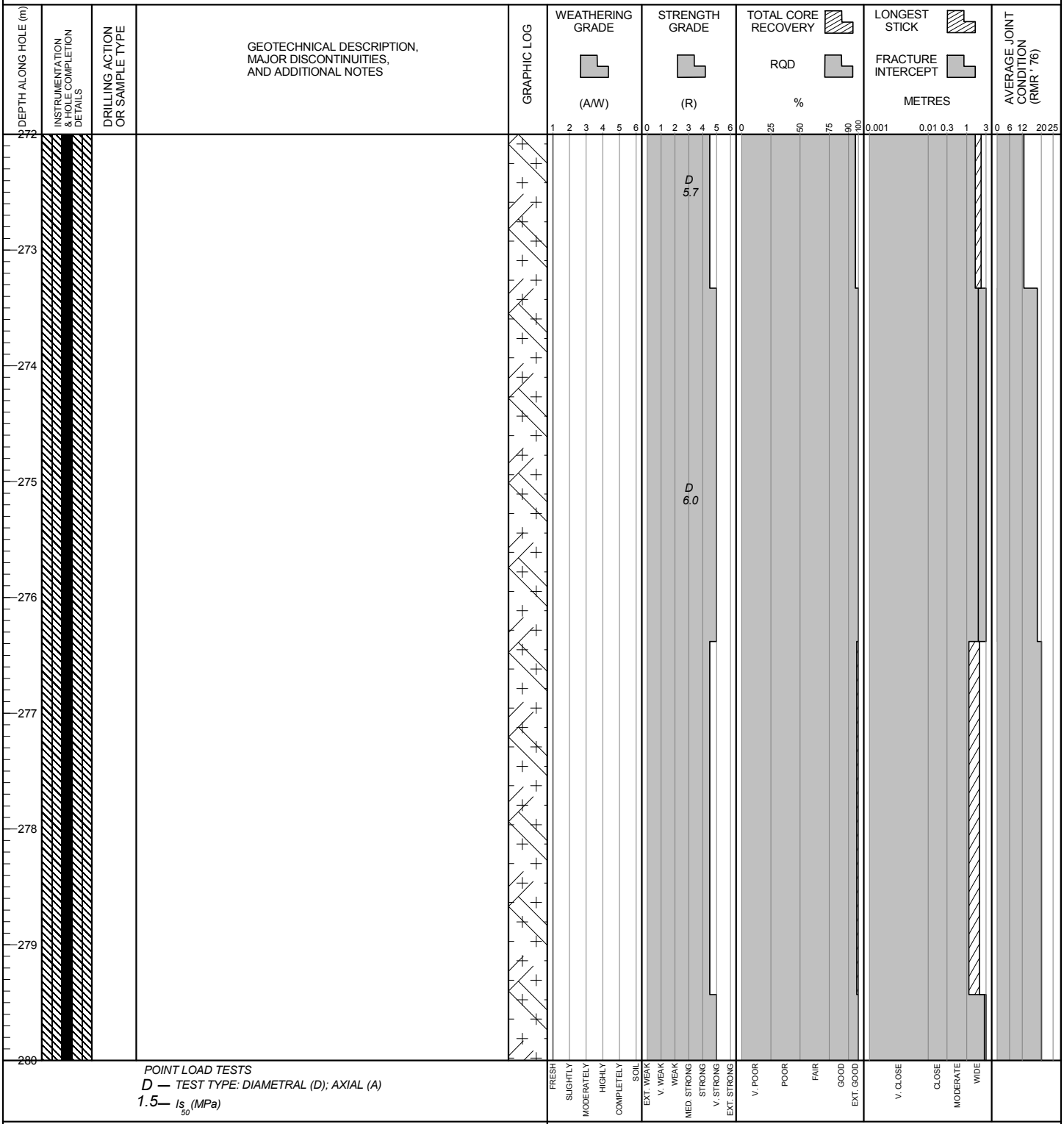

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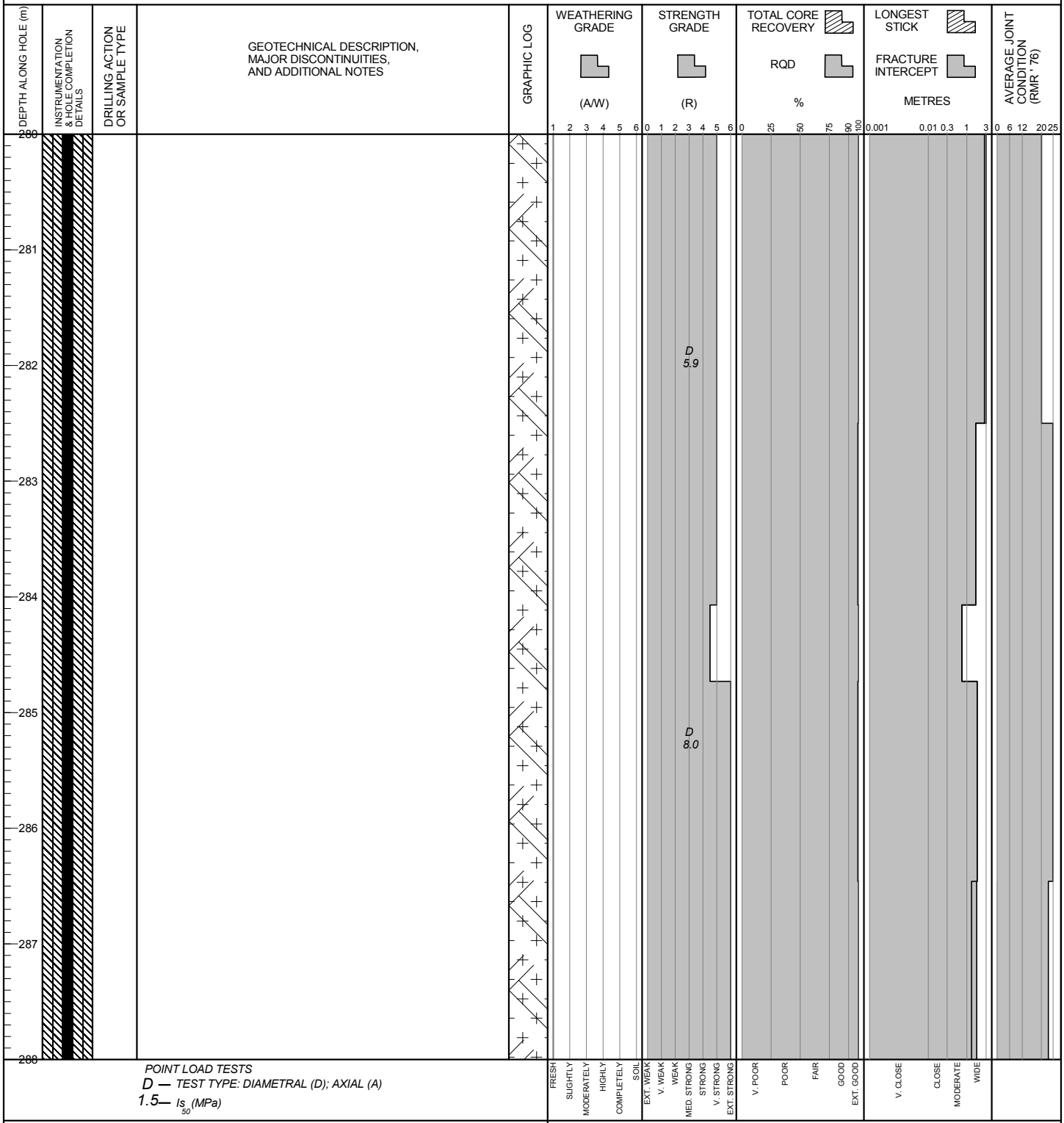

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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AN APPLIED EARTH SCIENCES COMPANY

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

288
289
290
291
292
293
294
295
296

D 6.4

289.3 m: Shear, 80 mm BX infill. JRC = 8.

289.6 m: Shear on vein. JRC = 12.

290.1 m: Shear on vein, 0.5 mm aperture. JRC = 8.

293.1 - 302.53 m: 60% quartz-calcite veining with minor pyrite.

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

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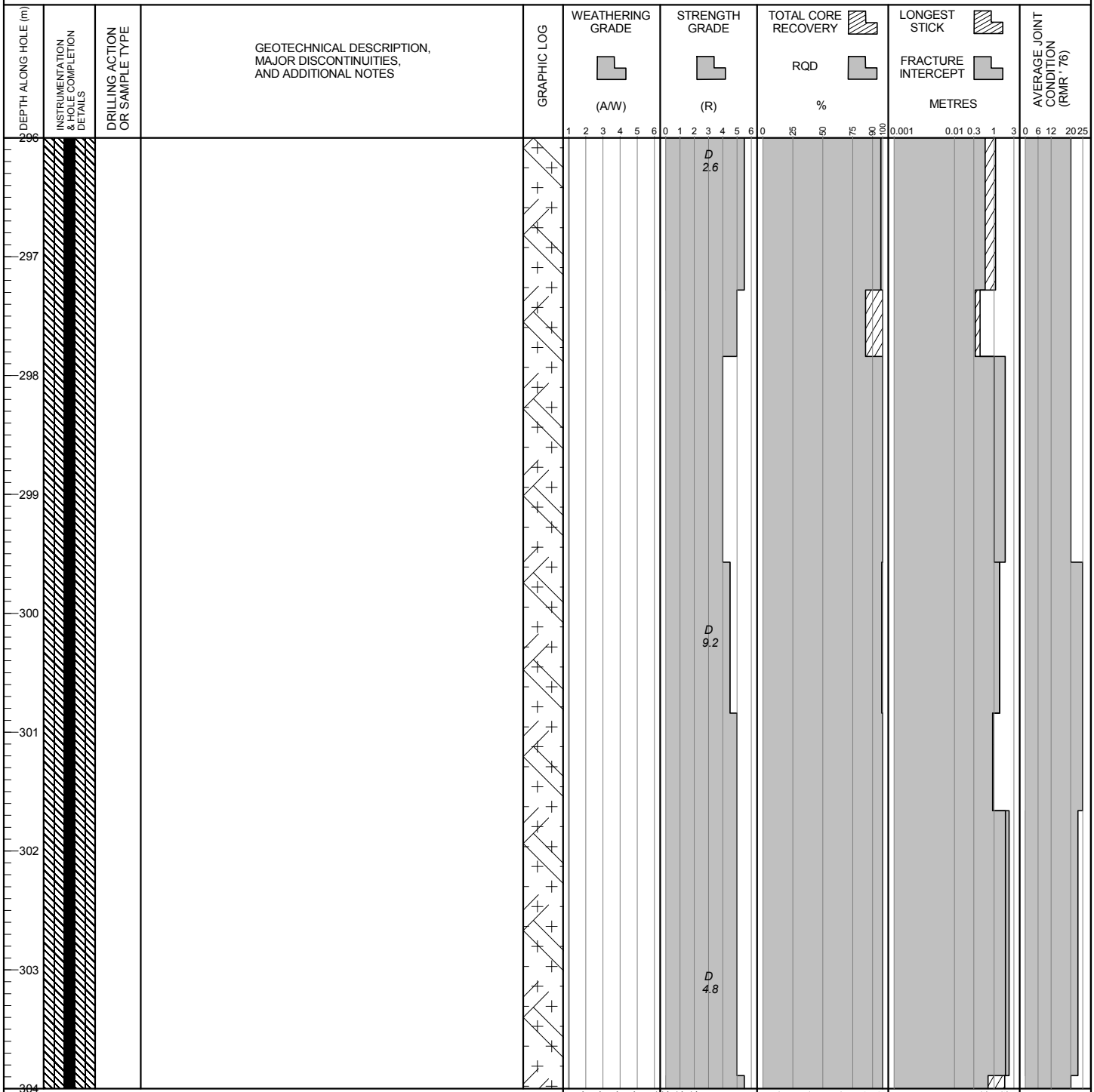

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

304
305
306
307
308
309
310
311
312

307.7 m: Shear, 0.5 mm aperture. JRC = 13.

Constant head test from 308.5 - 331.3 m. Estimated hydraulic conductivity is 8.6E-09 m/s.

D 5.5
D 5.9
D 7.9
D 6.1

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
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DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

312
313
314
315
316
317
318
319
320

313.4 m: Shear, 0.5 mm SE infill, R2. JRC = 15.

318.8 m: Shear on vein, 0.5 mm CA infill, R2. JRC = 8. Dip/dip direction = 90/083.

319.1 m: Shear on vein, 0.5 mm CA infill, R2. JRC = 4.

D 4.0

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
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Project : Brucejack
Project No.1008-007

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Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
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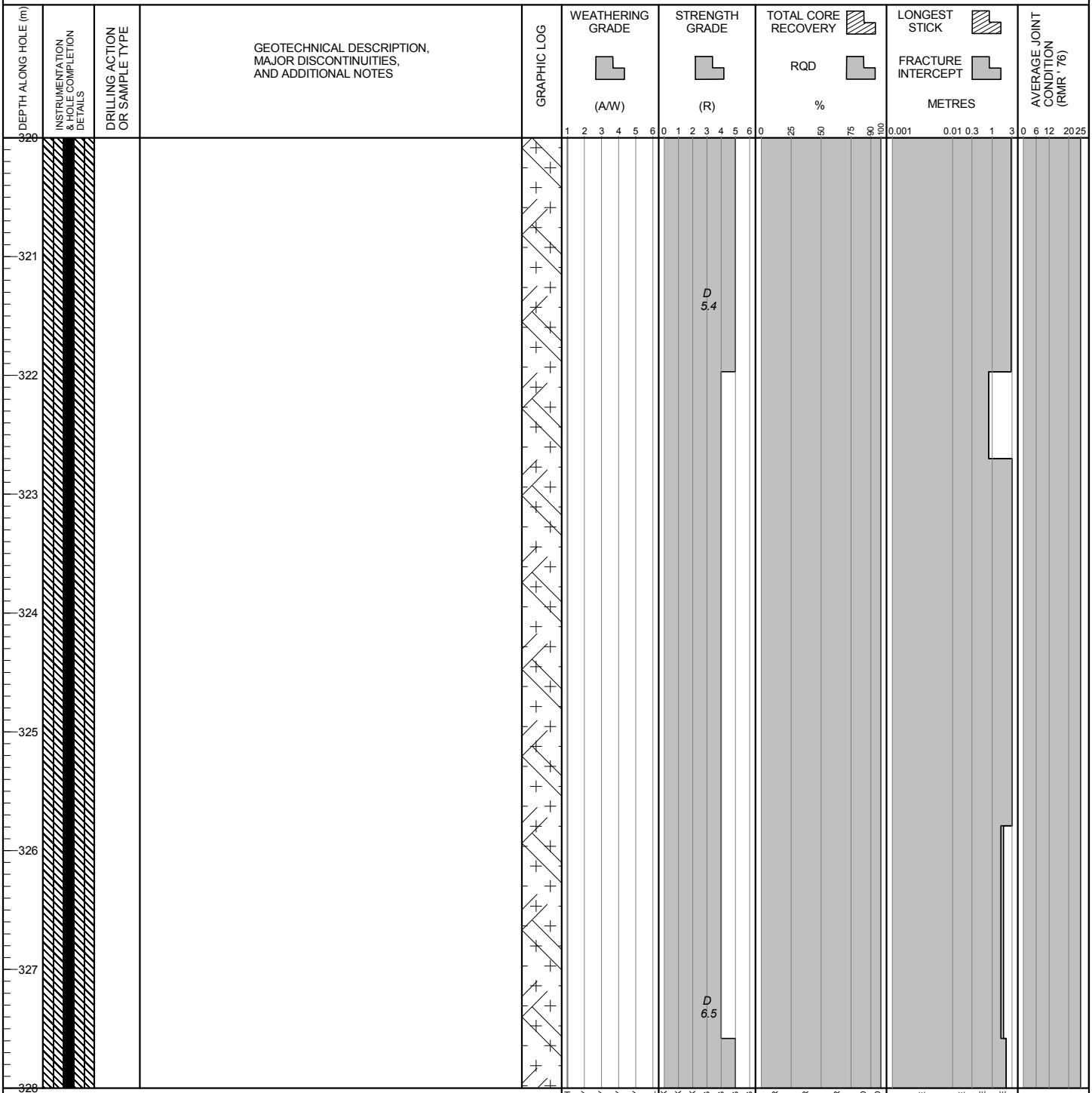

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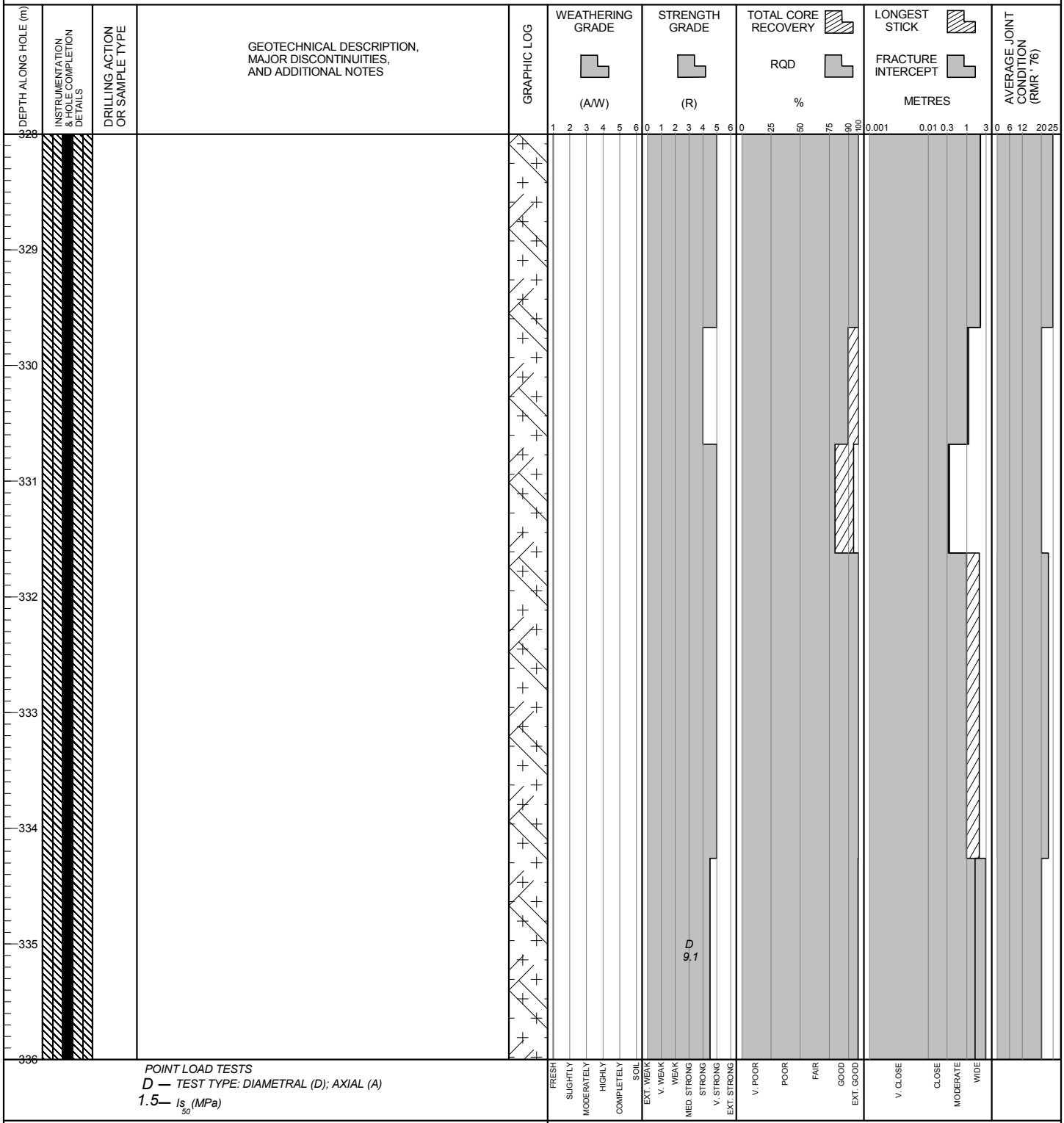

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336					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
337						D 7.3 D 7.2 D 8.9			
338									
339									
340						D 6.3			
341			340.9 m: Shear, 1 mm aperture. JRC = 12. Dip/dip direction = 35/166.						
342									
343									
344					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
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Drill Method: Diamond
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Fluid: Polymer
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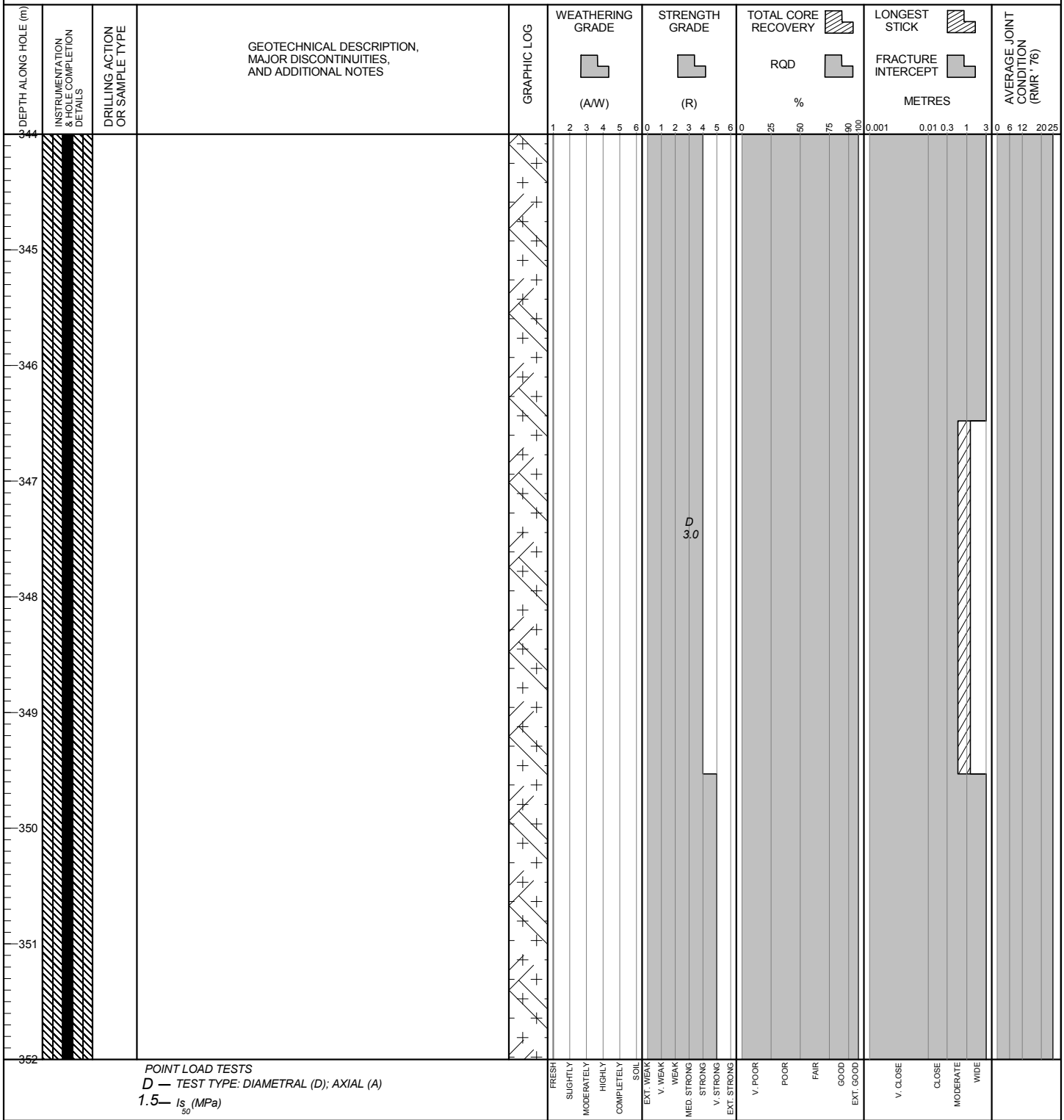

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Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

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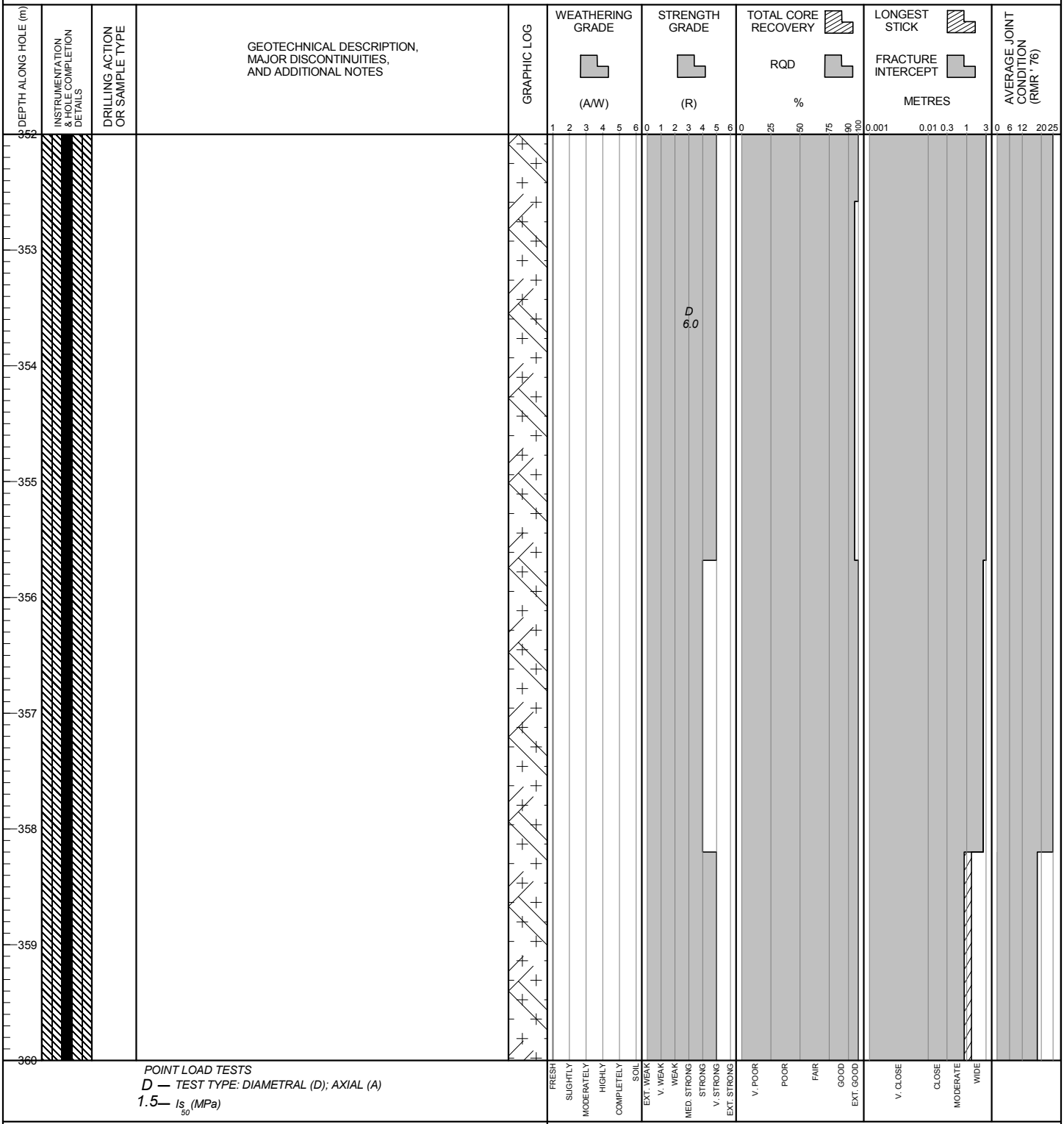

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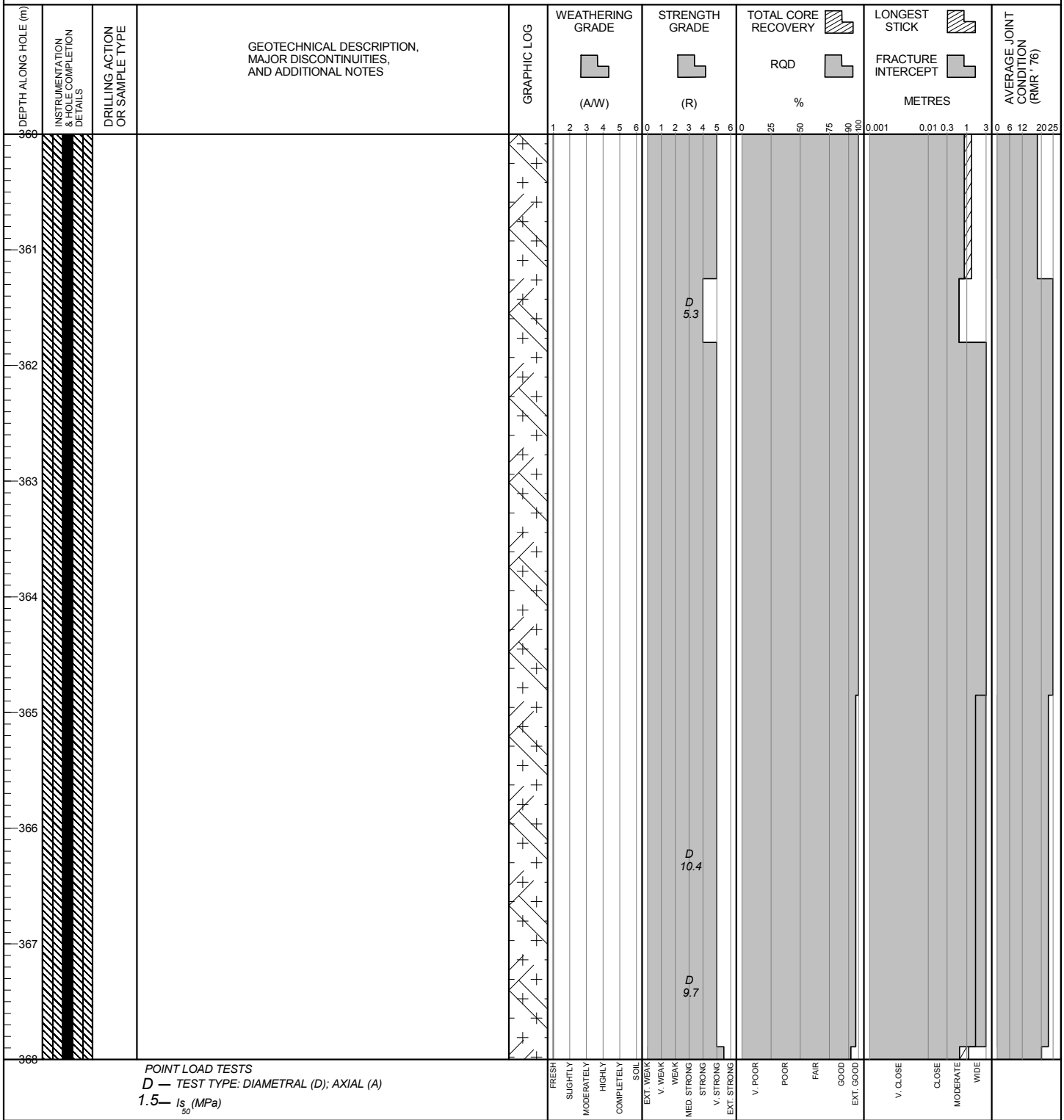

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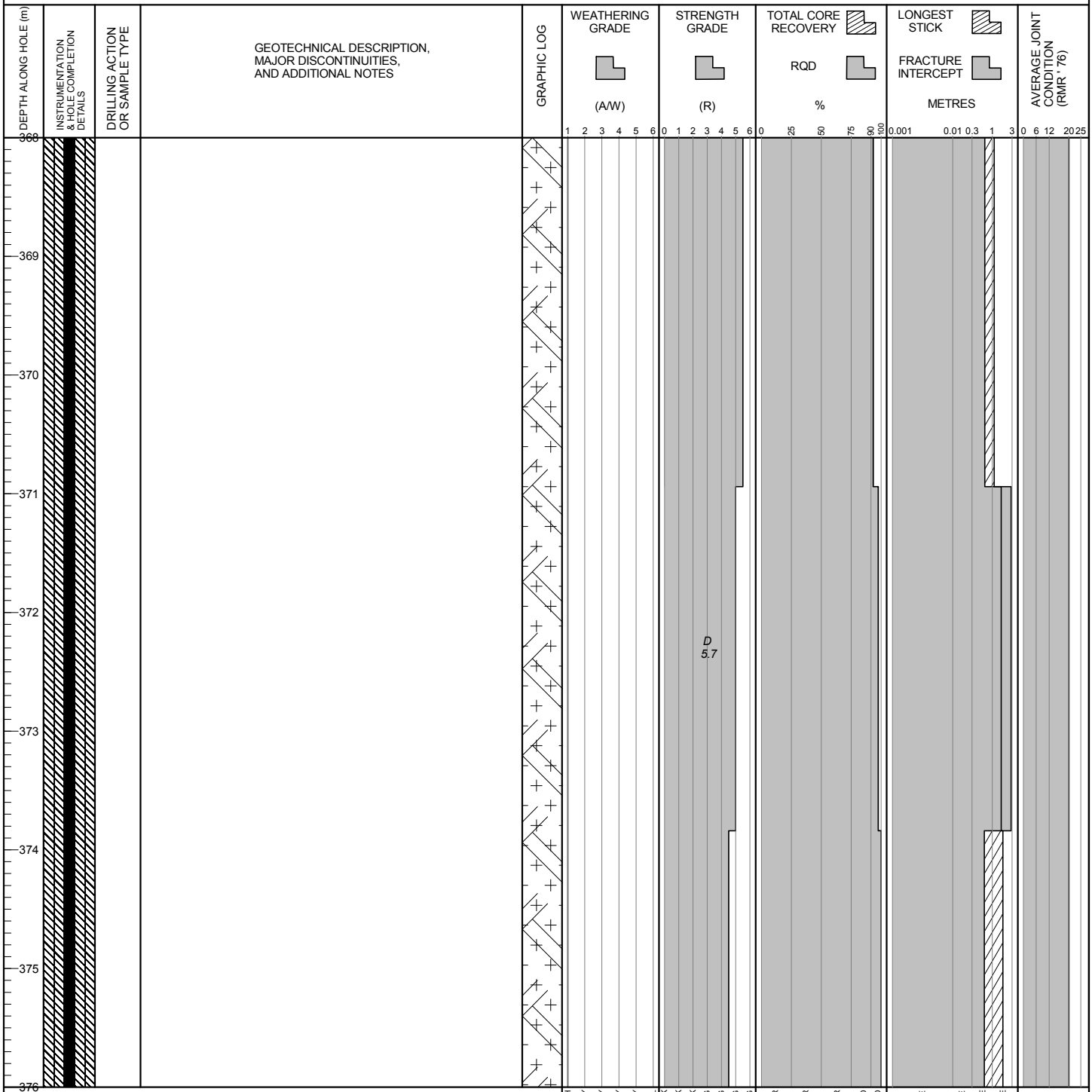

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376
376.7 m: Shear, 0.5 mm CA infill, R2. JRC = 2.
377
378
378.1 m: Shear, 0.5 mm CA infill, R2. JRC = 15. Dip/dip direction = 64/228.
379
379 m: Shear, 1.5 mm aperture. JRC = 4.
380
D 11.6
381
381.3 m: Shear, 0.5 mm CA infill, R4. JRC = 4. Dip/dip direction = 58/267.
381.8 m: Shear, 0.5 mm aperture. JRC = 12. Dip/dip direction = 62/328.
382
382.6 m: Shear, 0.5 mm CA infill, R2. JRC = 2.
383
384

WEATHERING GRADE: FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE: EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
RQD: V. POOR | POOR | FAIR | GOOD | EXT. GOOD
FRACTURE INTERCEPT: V. CLOSE | CLOSE | MODERATE | WIDE

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
384			384.5 m: Shear, 0.5 mm aperture. JRC = 2.
385			385.4 m: Shear, 0.5 mm aperture. JRC = 8. 385.6 m: Shear on vein, 0.5 mm aperture. JRC = 16.
386			
387			387.6 m: Shear, 0.5 mm CA infill, R3. JRC = 12.
388			
389			
390			390.5 m: Shear, 0.5 mm CA infill, R3. JRC = 4.
391			390.9 m: Shear, mm CA infill, R2. JRC = 1. Dip/dip direction = 59/304. 391.3 m: Shear, mm CA infill, R2. JRC = 8.
392			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 10.9
D 11.5

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
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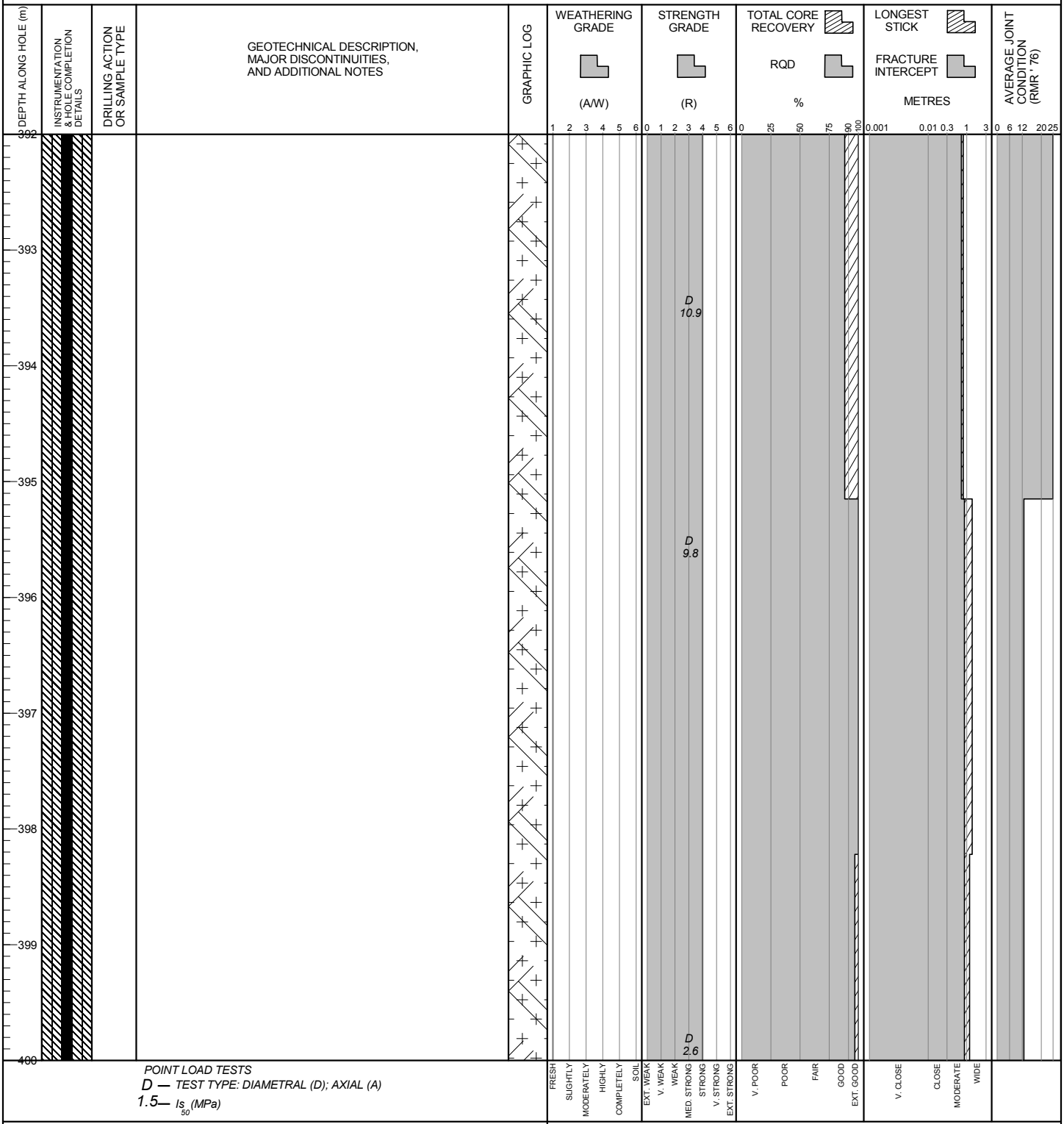


POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

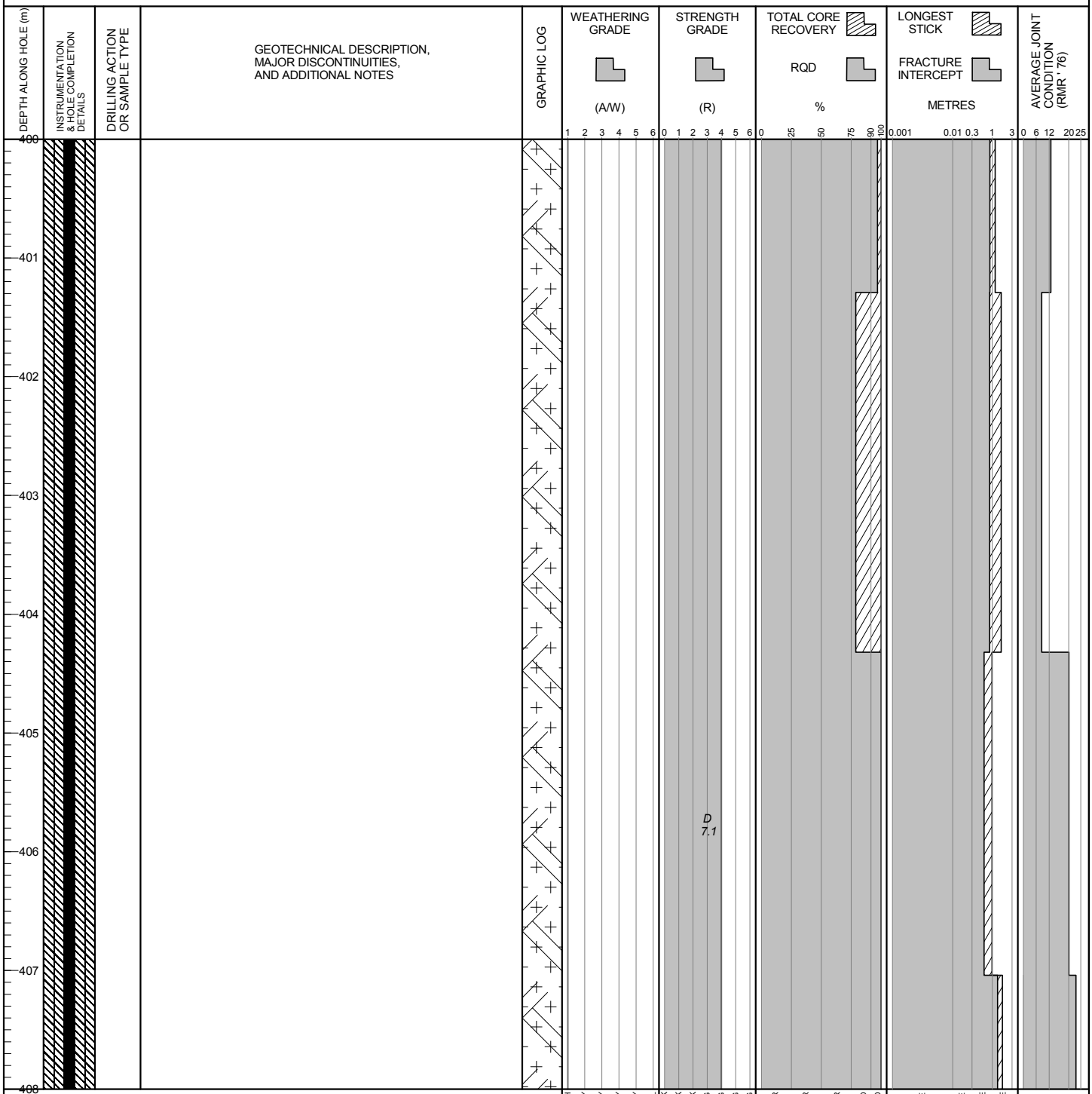
DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW



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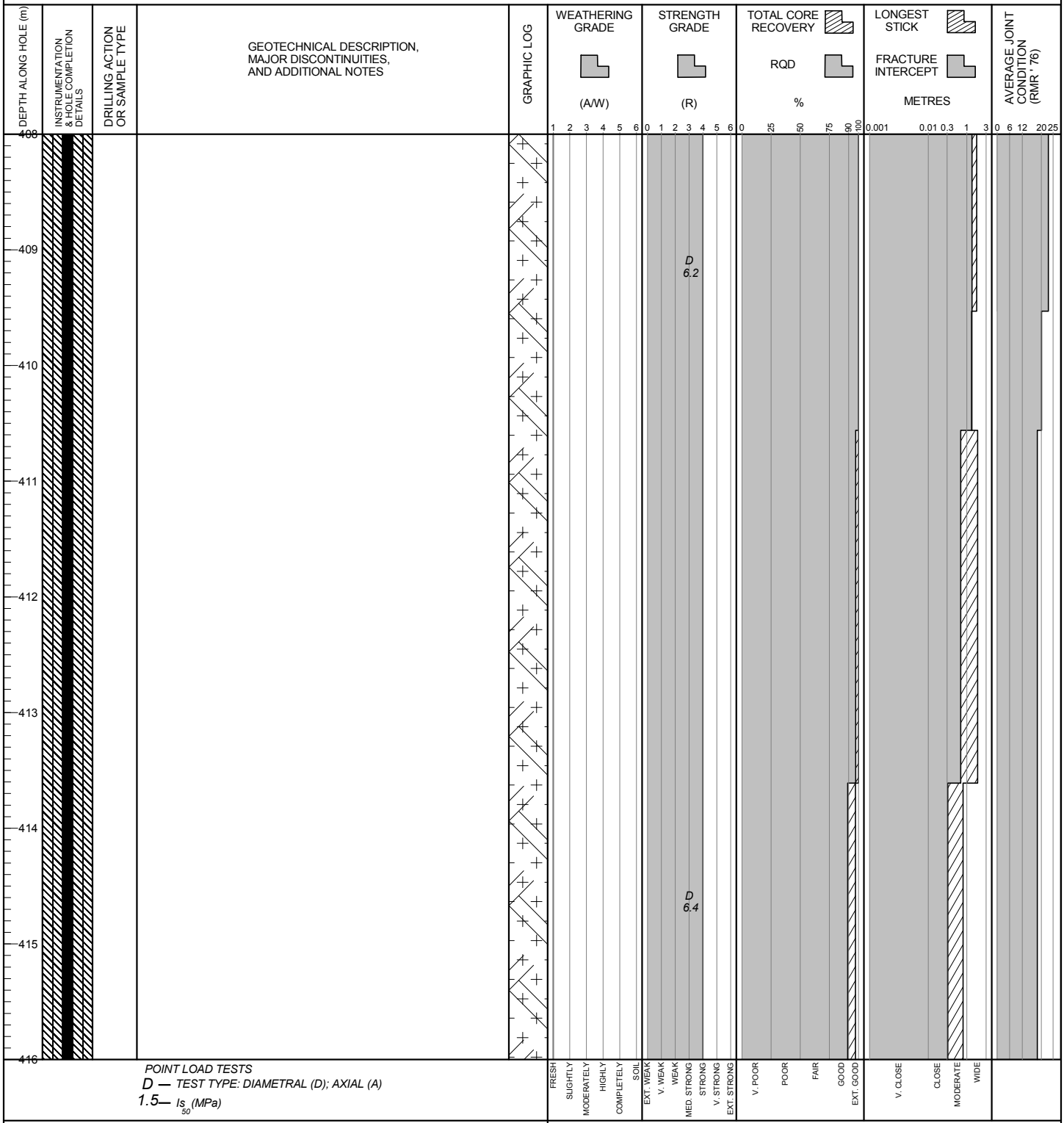

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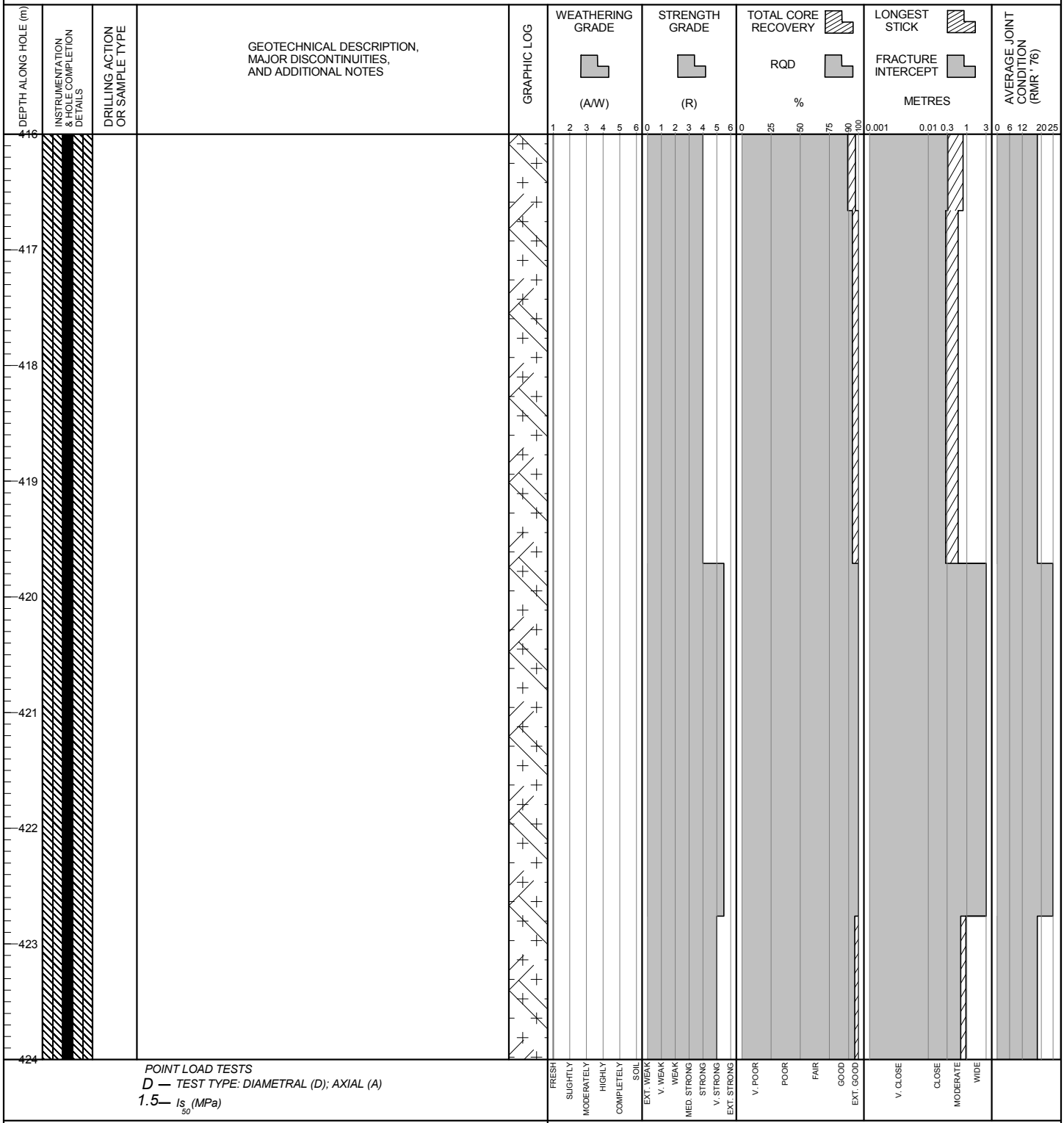

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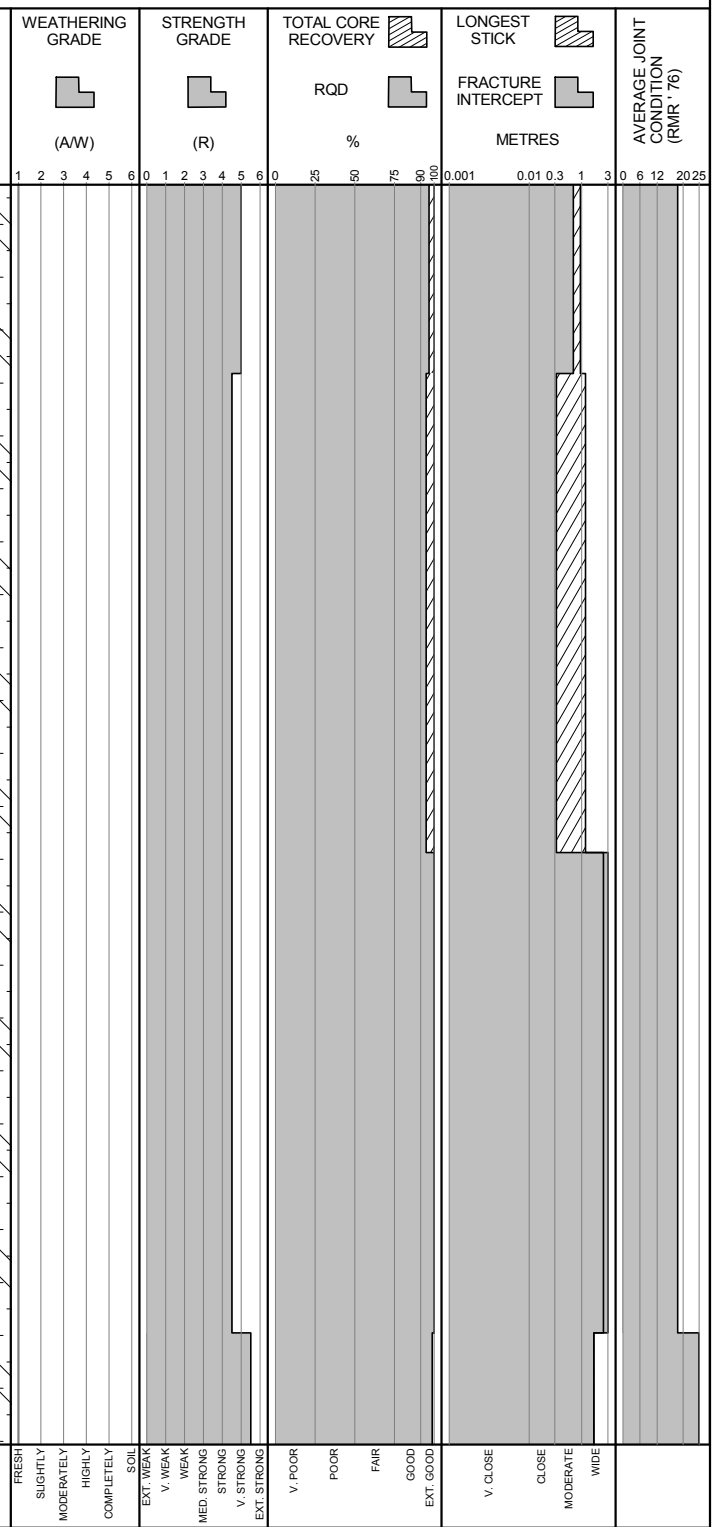
DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
424			424.1 m: Shear, 0.5 mm aperture. JRC = 4.
425			
426			425.9 m: Shear, 1 mm CA infill, R3. JRC = 15. Dip/dip direction = 56/232.
427			
428			
429			428.9 m: Fault, 3 mm FG infill, S3. JRC = 8. Dip/dip direction = 31/218.
430			
431			
432			



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Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

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Trend (°): 271

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Fluid: Polymer
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
432					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
433			ARENITE (S4) Light green, mm-scale laminations at 40 degrees TCA. Contact with P1 is 35 degrees TCA. cm-scale concretions throughout. Pyrite, calcite and chlorite replaced. Extremely strong (R6). Fresh (A1).						
434									
435						D 9.6			
436									
437									
438									
439						D 9.1			
440					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

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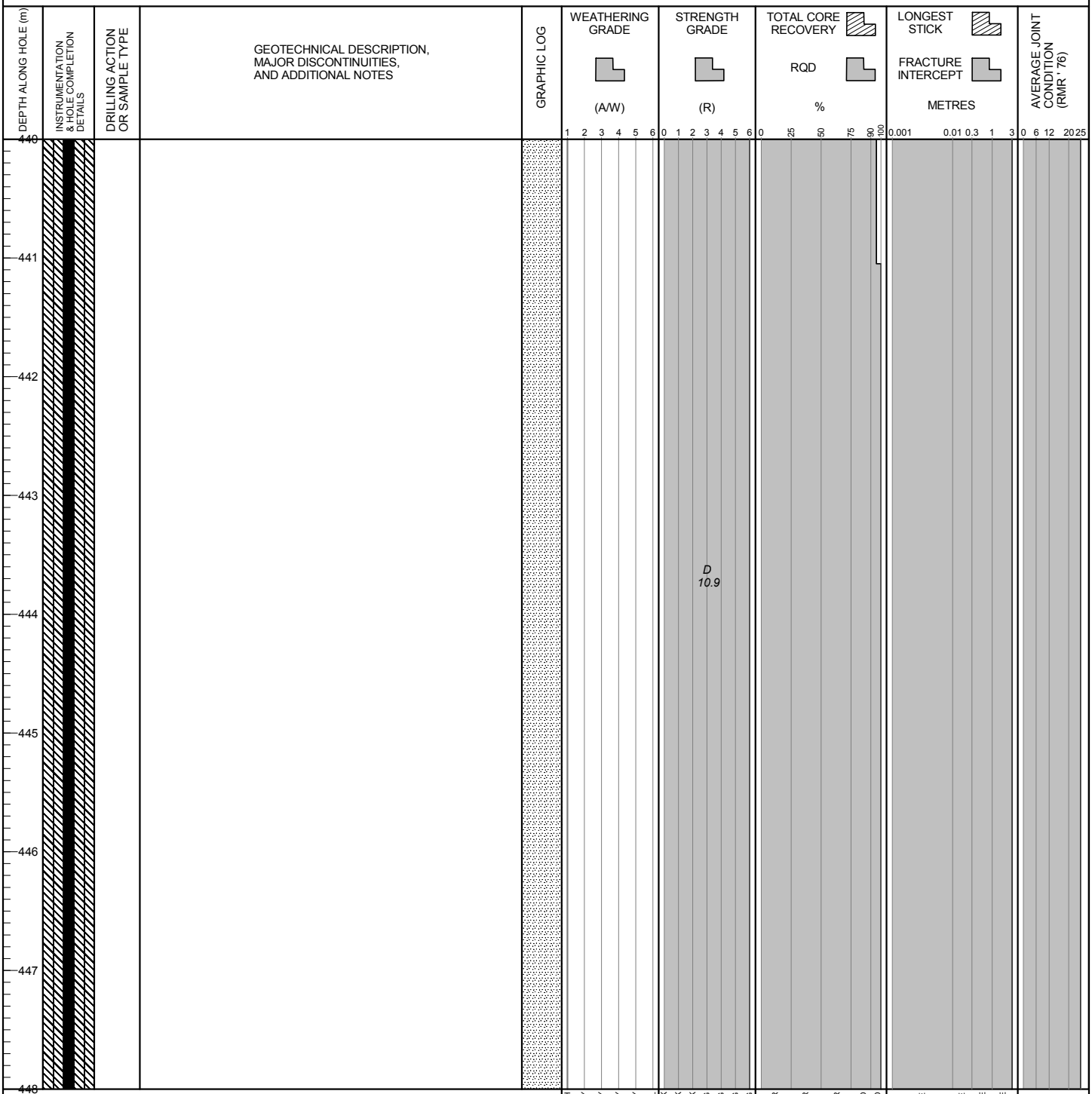

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Drilling Contractor: Radius
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Fluid: Polymer
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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
448				
449				
450				
451				
452				
453				
454			PELITE (S5) Light green, mudstone. Upper contact grades from poly-pebble conglomerate. Contains sandstone layers sub-parallel TCA. Abundant concretions near end of interval. Very strong to extermely strong (R5-R6). Fresh (A1).	
455				
456				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
D 6.2
D 8.0

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
456					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
457			ARENITE (S4) Light green, contains abundant mudstone interbeds often sub-parallel TCA. Clear bottom contact with P1 at 25-30 degrees TCA. Very strong to extermely strong (R5-R6). Fresh (A1).						
458									
459									
460									
461									
462						D 2.4			
463									
464					FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL	EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG	V. POOR / POOR / FAIR / GOOD / EXT. GOOD	V. CLOSE / CLOSE / MODERATE / WIDE	

POINT LOAD TESTS
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Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

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464					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
465			465.1 m: Fault, 5 mm CA/BX infill. JRC = 16. Dip/dip direction = 86/069.			D 5.8			
466									
467									
468						D 8.0			
469									
470									
471									
472						D 5.7			

POINT LOAD TESTS
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1.5— Is_{50} (MPa)

FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL
EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG
V. POOR / POOR / FAIR / GOOD / EXT. GOOD
V. CLOSE / CLOSE / MODERATE / WIDE

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472

PLAGIOCLASE-HORNBLENDE PORPHYRY (P1)
Green, relatively massive with 1-6 mm hornblende/feldspar phenocrysts. Veining increases significantly at 502.4 m. Last 7 m of interval blocky and becomes increasingly gougy near end of interval. Strong to very strong (R4-R5.5). Fresh (A1).

472.5 m: Fault, 5 mm CA/BX infill. JRC = 8. Dip/dip direction = 74/164.

473

474

475

476

477

D
6.4

478

479

479.8 m: Shear, 0.5 mm aperture. JRC = 8. Dip/dip direction = 38/184.

480

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1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

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480			479.8 m: Shear, 0.5 mm CA infill, R2. JRC = 8. Dip/dip direction = 29/182.		1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
481						D 9.5			
482									
483									
484									
485									
486			486.4 m: Shear, 400 mm BX infill. JRC = 12.						
487						D 8.1			
488					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

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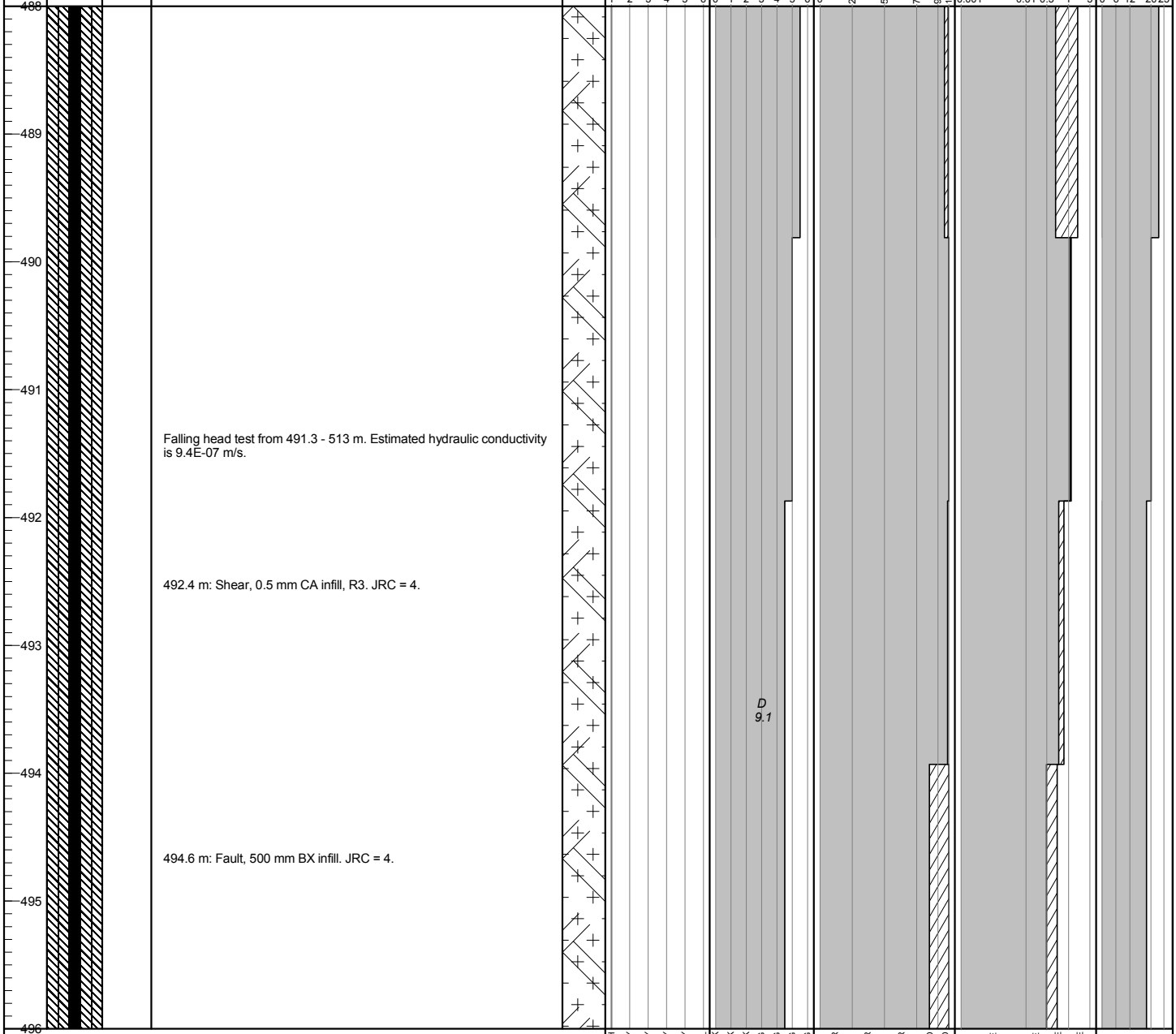

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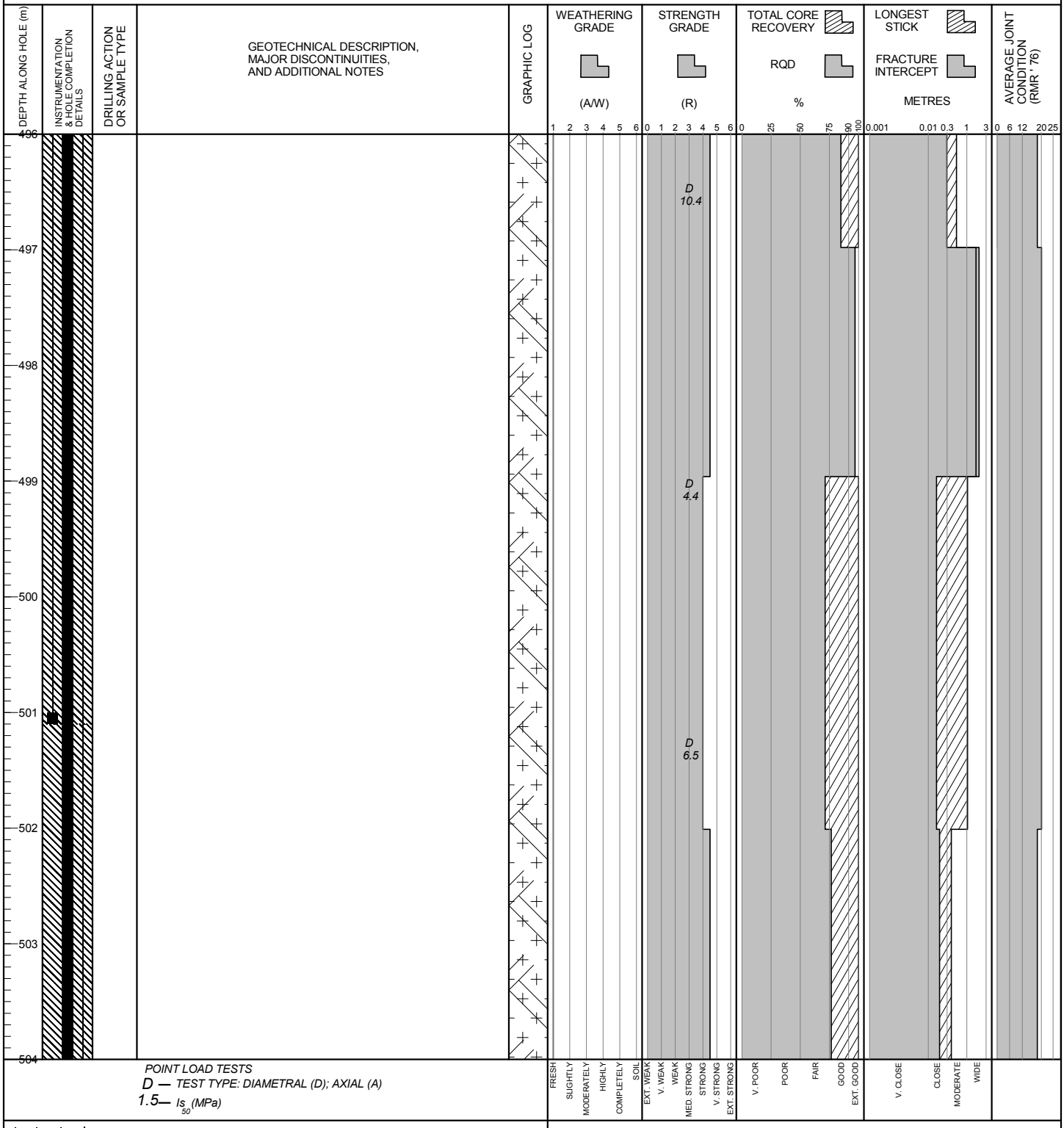

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

504
505
506
507
508
509
510
511
512

506.8 m: Last 7 m of the unit are blocky with increasing gouge to the end of the unit.

510 m: Fault, FG infill.

D 9.2

D 4.4

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

512
513
514
515
516
517
518
519
520

MAFIC DYKE (V6)
Dark green, chlorite and sericite altered amygdaloidal dyke with calcite infill. Breccia veinlets throughout. Medium strong (R3). Fresh (A1).

PLAGIOCLASE-HORNBLENDE PORPHYRY (P1)
Grey-green, relatively massive with 1-6 mm hornblende/feldspar phenocrysts. Rubble and gouge zones present. Weak to strong (R2.5-R4). Fresh to slight alteration (A1-A2).

519.3 m: Fault, 20 mm DX infill.
519.4 m: Shear, 1 mm CA infill, R2. JRC = 8.

D 0.1
D 8.1
D 5.8

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
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Datum: UTM NAD 83 Zone 9
Plunge (°): -70
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
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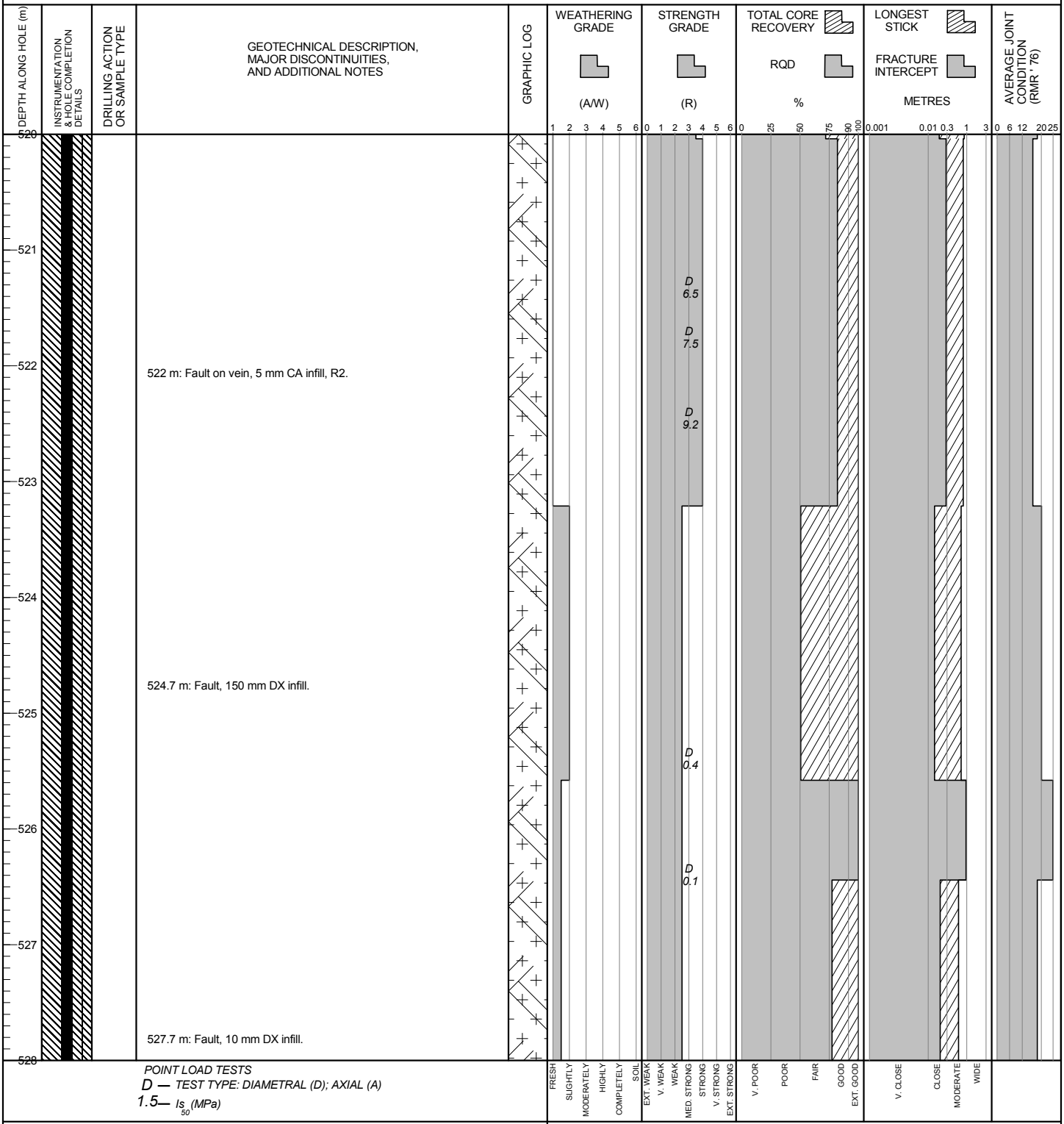
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

528.7 m: Fault, 7.5 mm DX infill.

Constant head test from 531 - 550.3 m. Estimated hydraulic conductivity is 2.0E-08 m/s.

533.3 m: Fault, 3 mm DX infill. JRC = 22.

534.2 m: Fault, 5 mm DX infill. JRC = 20.

D 0.2

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

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LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

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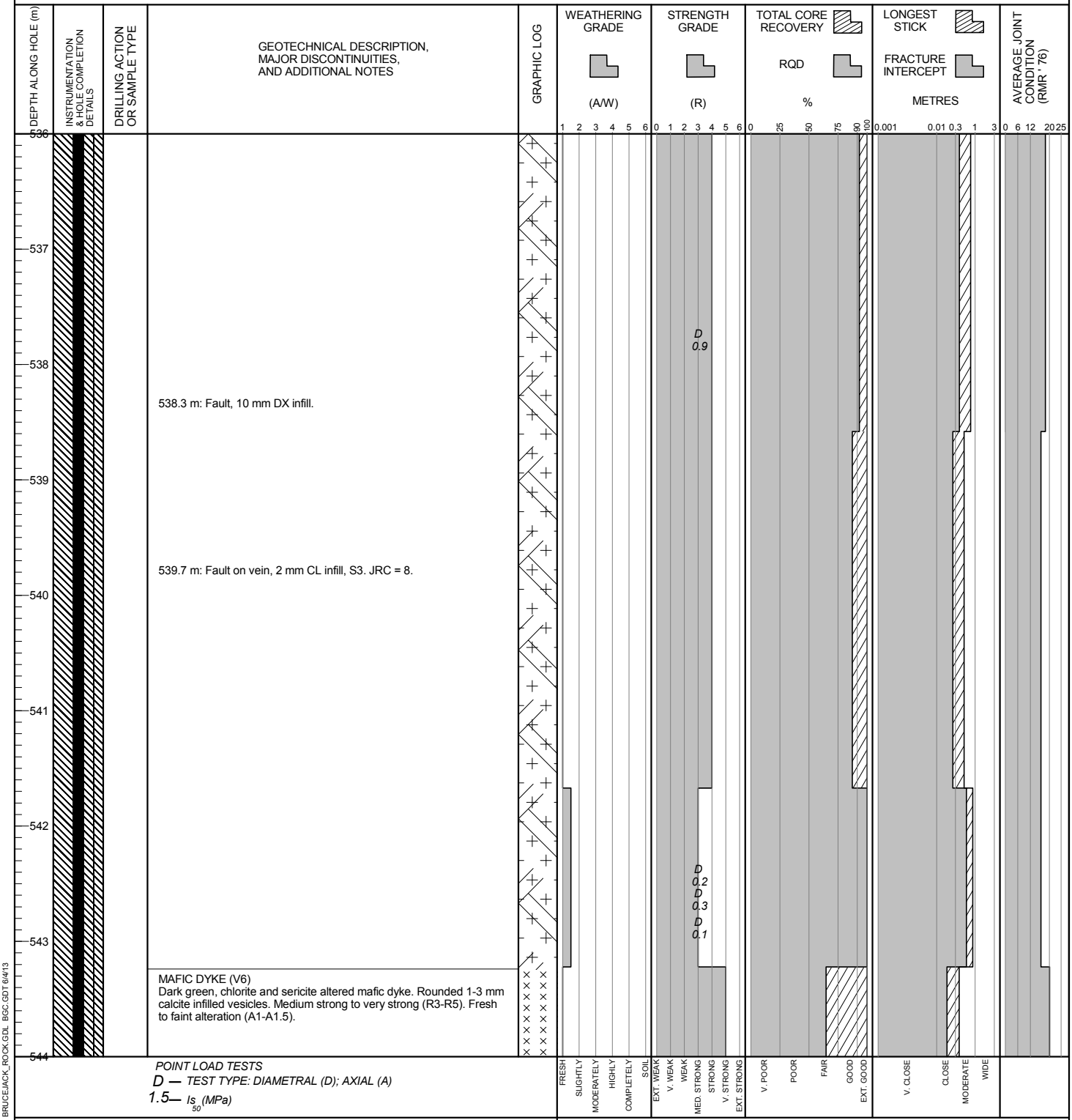
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
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Final Depth (m): 566.0
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

544
545
546
547
548
549
550
551
552

PLAGIOCLASE-HORNBLENDE PORPHYRY (P1)
Grey-green, relatively massive with 1-6 mm hornblende/feldspar phenocrysts. Rubble and gouge zones present. Weak to medium strong (R2-R3.5). Slight to faint alteration (A1-A2.5).

548.6 m: Fault. JRC = 13. Dip/dip direction = 14/282.

549.3 m: Shear, 0.5 mm aperture. JRC = 20.

550.1 m: Shear, 0.5 mm aperture. JRC = 4.

551.7 m: Fault, 10 mm FG infill. JRC = 20. Dip/dip direction = 90/091.

D 0.0

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

552.2 m: Fault, 10 mm FG infill. JRC = 20. Dip/dip direction = 44/015.

554.5 m: Shear, 0.5 mm aperture. JRC = 12. Dip/dip direction = 55/017.

D 5.9

D 3.5

D 2.7

MAFIC DYKE (V6)
Dark green, chlorite and sericite altered mafic dyke. Rounded 1-3 mm calcite infilled vesicles. Medium strong (R3). Fresh (A1).

PLAGIOCLASE-HORNBLENDE PORPHYRY (P1)
Grey-green, relatively massive with 1-6 mm hornblende/feldspar phenocrysts. Medium strong to strong (R3-R3.5). Fresh (A1).

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-23

Location: Valley of Kings Zone

Co-ordinates (m): 426,503E - 6,257,856N
Ground Elevation (m): 1,583.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -70
Trend (°): 271

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 2.0

Start Date: 14 Apr 12
Finish Date: 03 May 12
Final Depth (m): 566.0
Depth To Top Of Rock (m): 2.0
Logged By: HKM/JND
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

560
561
562
563
564
565
566
567
568

END OF DRILLHOLE AT 566.0 m

Notes:
1. Two vibrating wire piezometers installed at 501.1 m and 564.6 m.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
V. POOR, POOR, FAIR, GOOD, EXT. GOOD
V. CLOSE, CLOSE, MODERATE, WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N	***Drill Designation:*** Heliportable	***Start Date:*** 25 Apr 12
Ground Elevation (m): 1,547.6	***Drilling Contractor:*** Radius	***Finish Date:*** 04 May 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 501.4
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 2.7
Plunge (°): -68	***Fluid:*** Polymer	***Logged By:*** LH/SW/LM
Trend (°): 002	***Cased To (m) :*** 3.7	***Reviewed By:*** JW

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						OVERBURDEN AND WEATHERED ROCK Very poor recovery.
1						
2						
3						Rock encountered at 2.7 m depth. Refer to DH-BGC12-24 rock log.
4						
5						
6						
7						
8						

Su - kPa: 40, 80, 120, 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery: 20, 40, 60, 80
Moisture Content & SPT N
W_p% W% W_l%: 20, 40, 60, 80

BRUCEJACK (SOIL) BRUCEJACK_SOIL.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
0			Refer to DH-BGC12-24 Overburden Log						
3			INTERMEDIATE VOLCANICS (V12) Grey-green, mostly medium to coarse lapilli tuff with sericite altered fragments, matrix supported with sporadic areas fragment supported. Strong to very strong (R4-R5). Slight to faint weathering and alteration (W1.5-A1.5) from top of bedrock to 16.8 m. Fresh (A1) below 16.8 m.			D 1.2			

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): 1 FRESH; 2 SLIGHTLY; 3 MODERATELY; 4 HIGHLY; 5 COMPLETELY; 6 SOIL
STRENGTH GRADE (R): 0 EXT. WEAK; 1 V. WEAK; 2 WEAK; 3 MED. STRONG; 4 STRONG; 5 V. STRONG; 6 EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0–25 V. POOR; 25–50 POOR; 50–75 FAIR; 75–90 GOOD; 90–100 EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001–0.01 V. CLOSE; 0.01–0.3 CLOSE; 0.3–1 MODERATE; 1–3 WIDE
AVERAGE JOINT CONDITION (RMR '76): 0–6 V. POOR; 6–12 POOR; 12–20 FAIR; 20–25 GOOD

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
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Trend (°): 002

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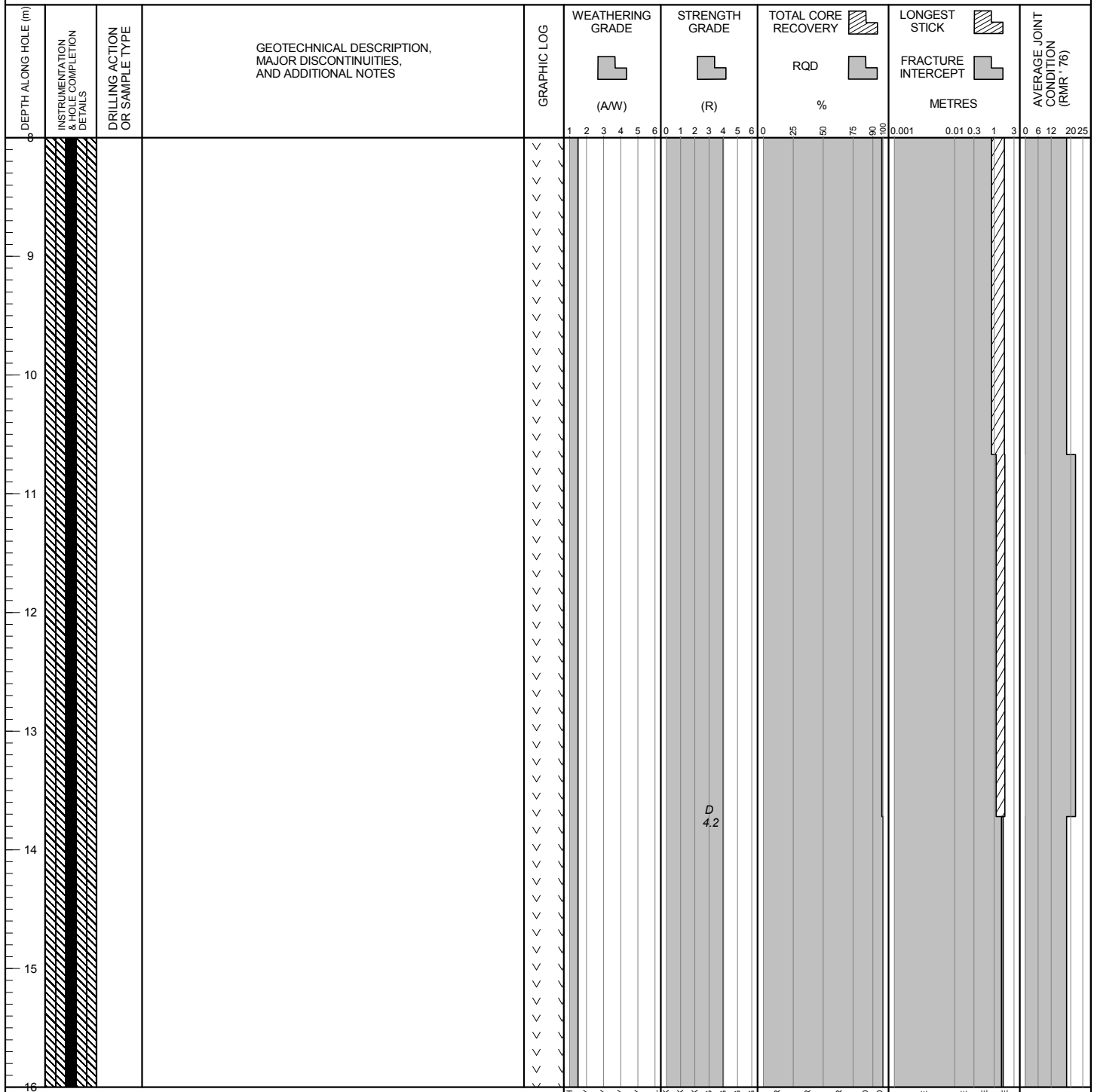
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

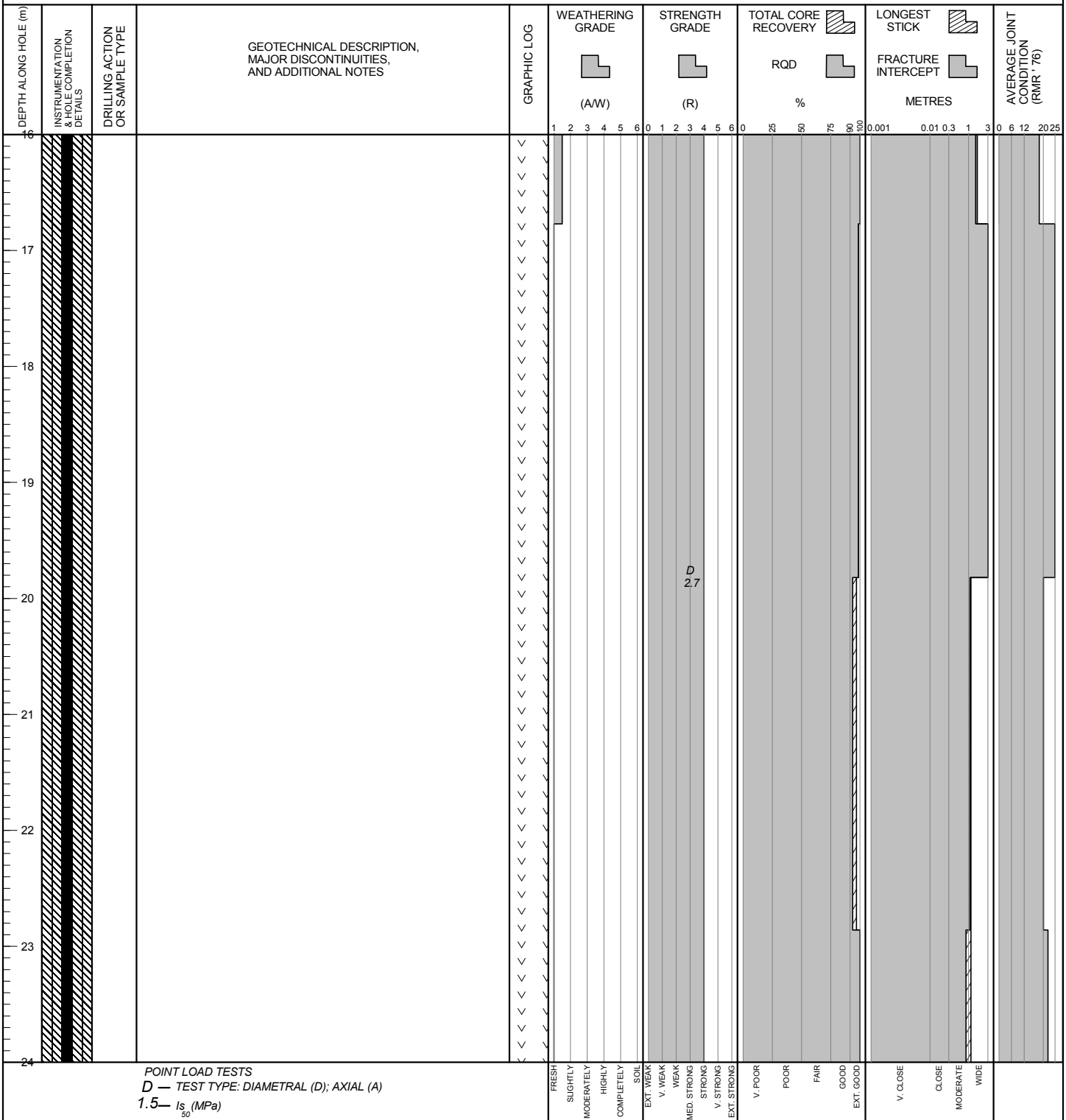
DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



BGC ENGINEERING INC.
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Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

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Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

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Depth To Top Of Rock (m): 2.7
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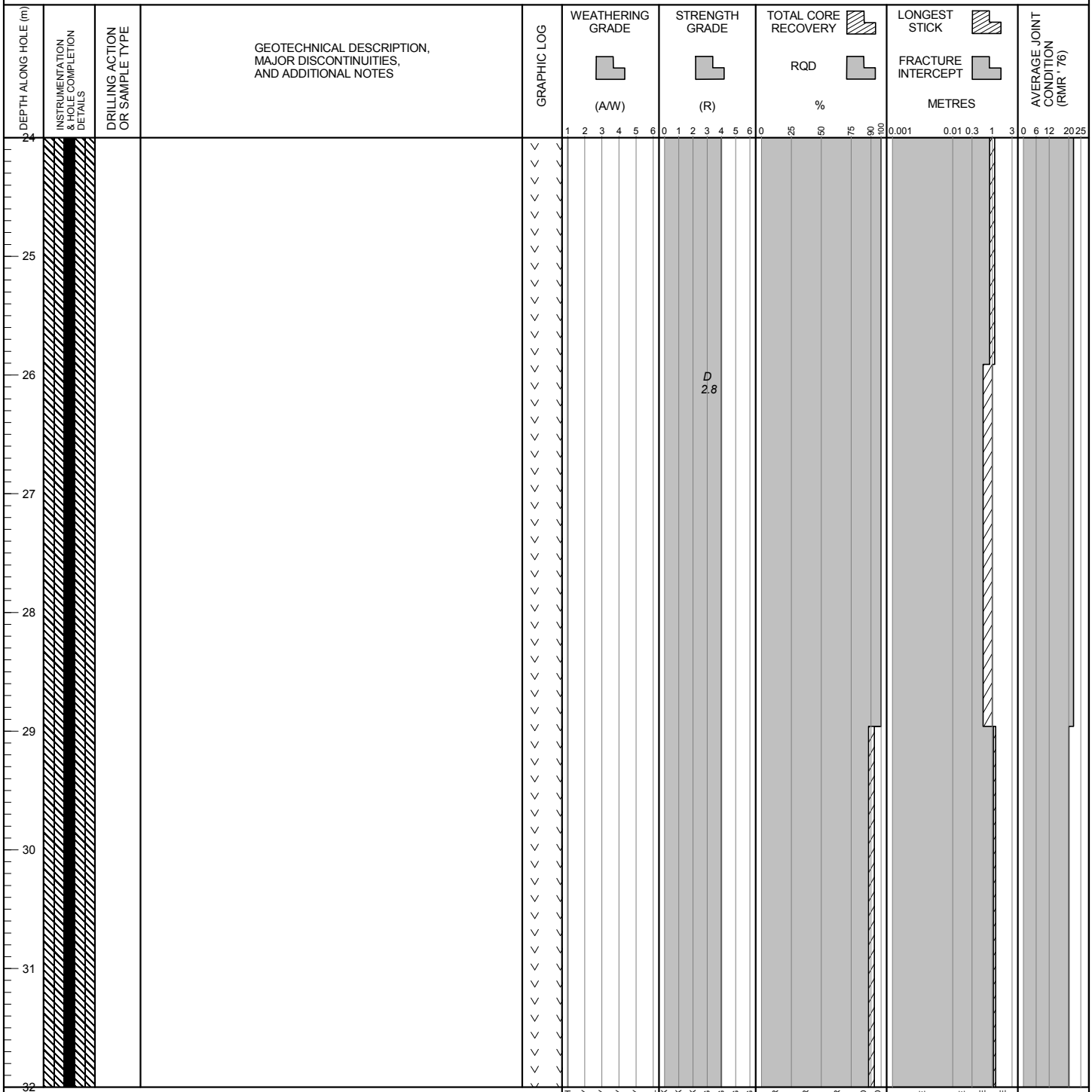
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

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LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

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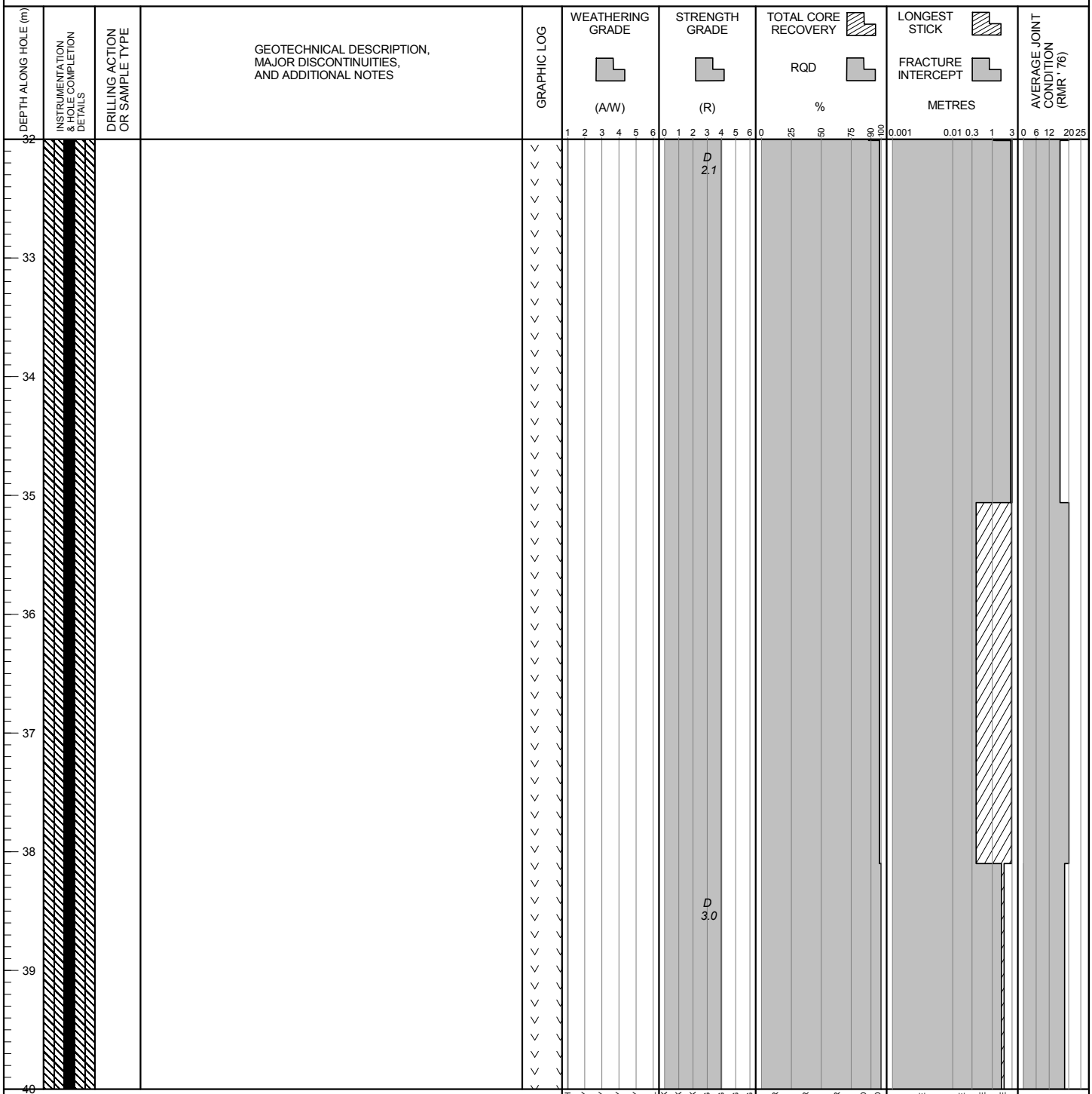
Logged By: LH/SW/LM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

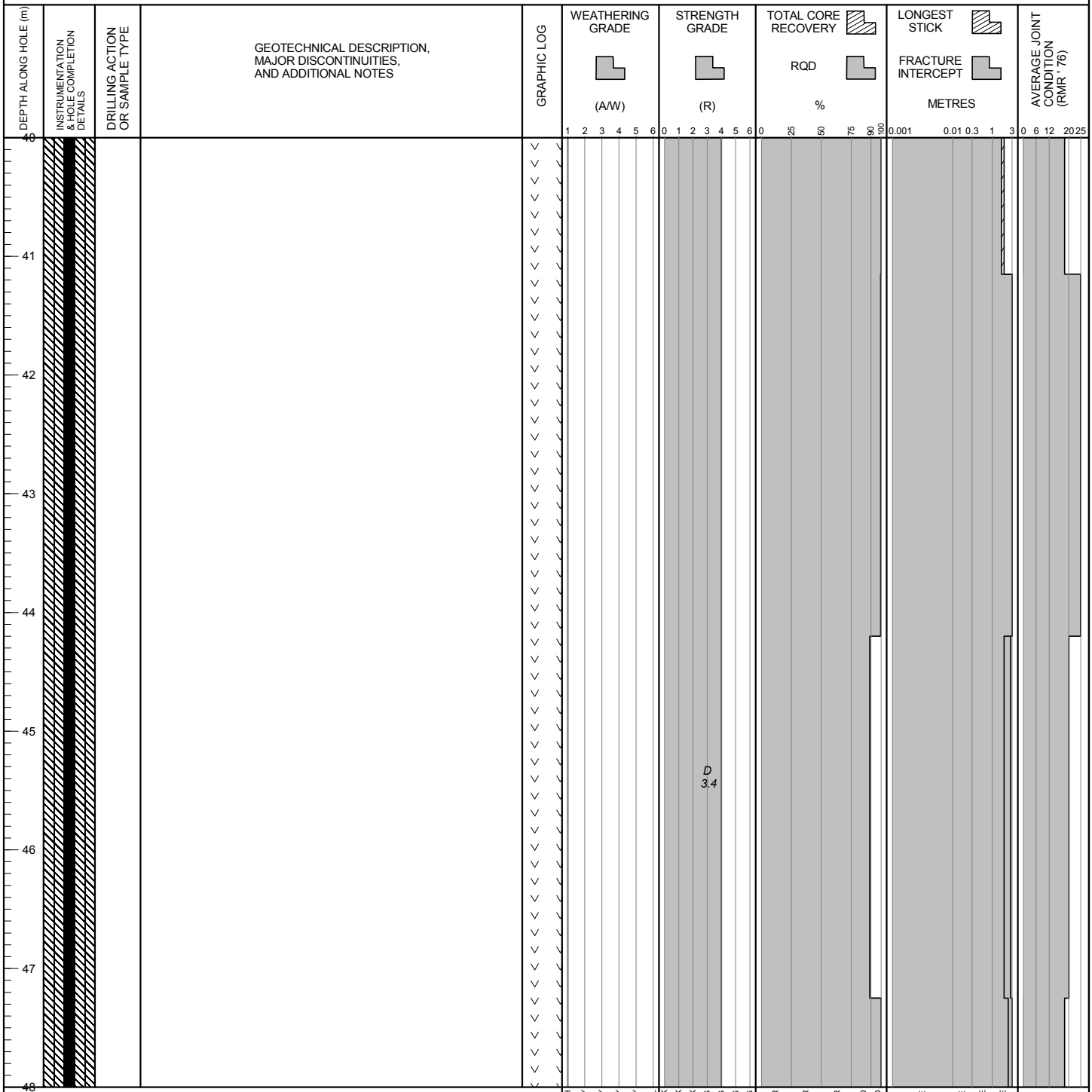
DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
48					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
49									
50						D 6.2			
51									
52									
53			53.3 - 56.6 m: Unmineralized stockwork; 75% quartz-calcite veining.						
54									
55						D 3.4			
56									

WEATHERING GRADE (A/W): FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE (R): EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): V. CLOSE; CLOSE; MODERATE; WIDE

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

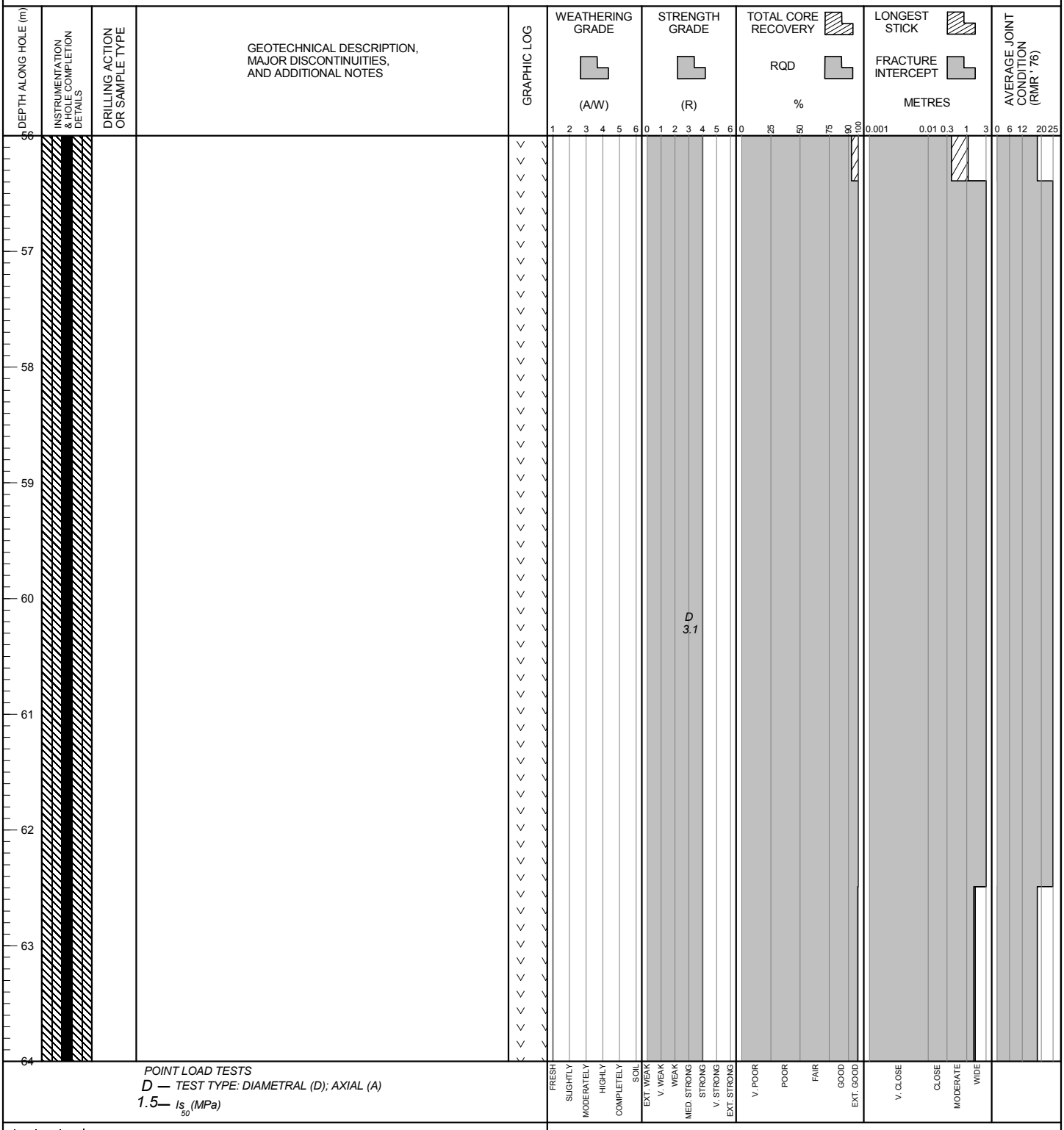
DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

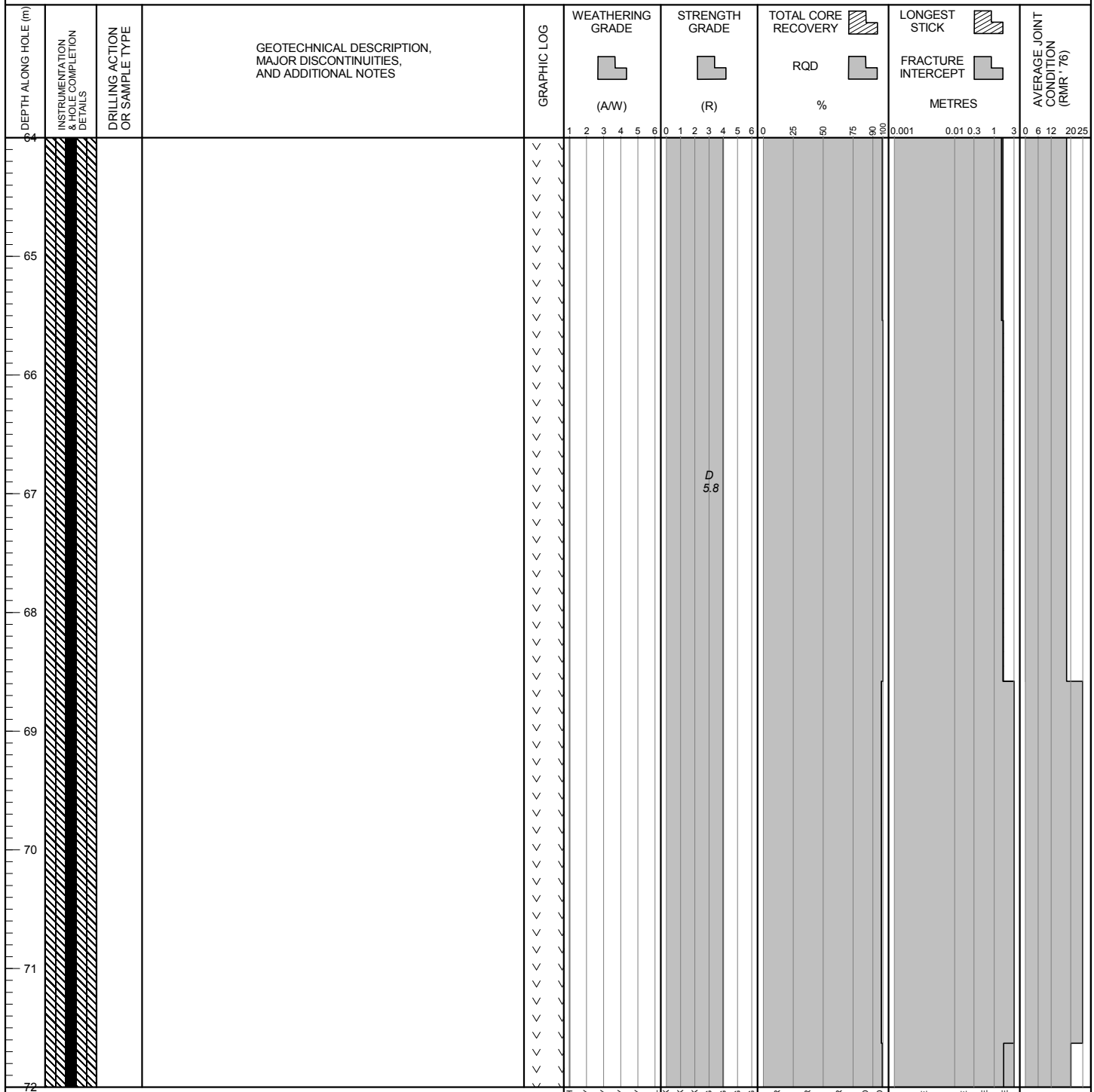
DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

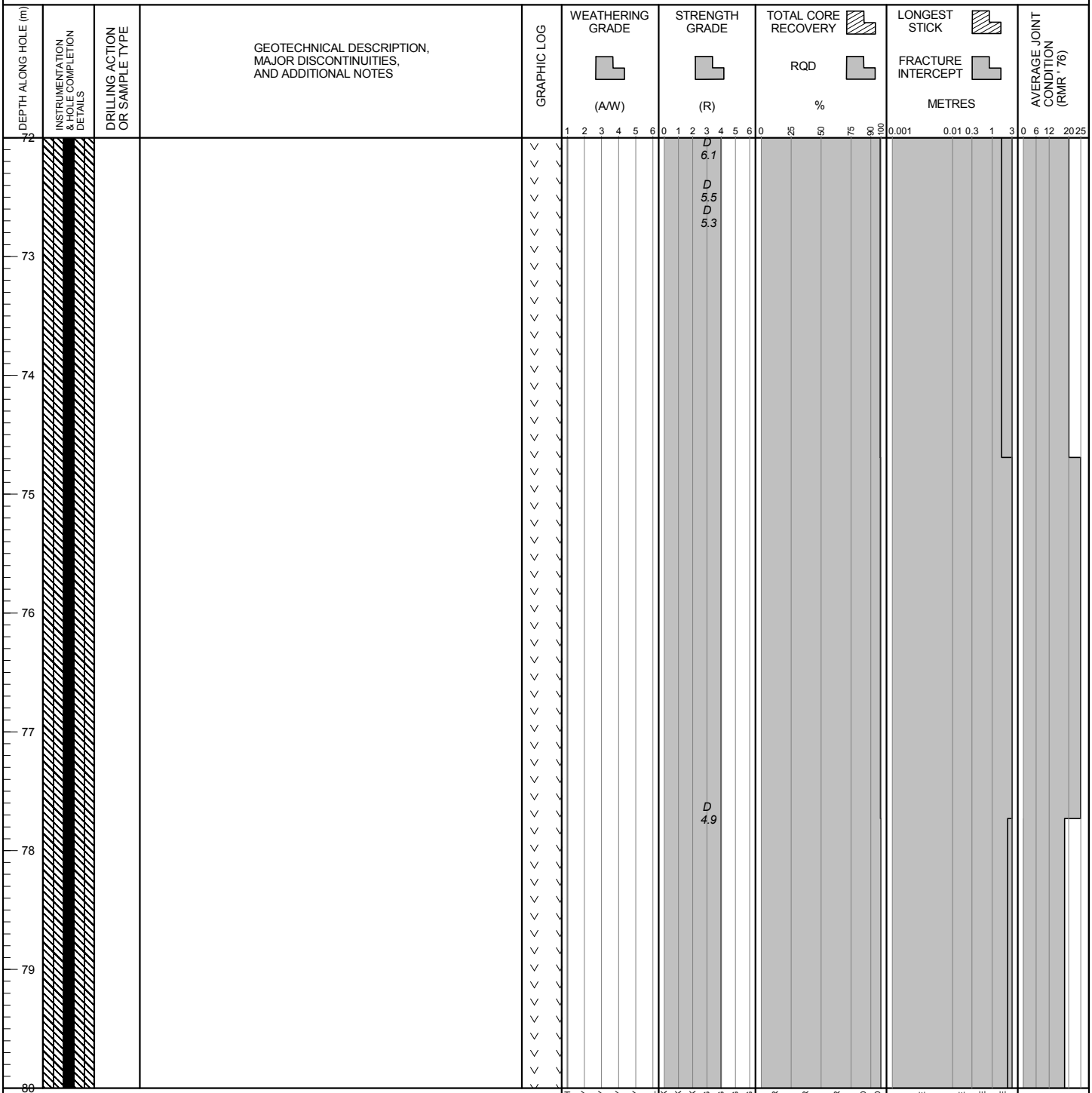
DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N	***Drill Designation:*** Heliportable	***Start Date:*** 25 Apr 12
Ground Elevation (m): 1,547.6	***Drilling Contractor:*** Radius	***Finish Date:*** 04 May 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 501.4
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 2.7
Plunge (°): -68	***Fluid:*** Polymer	***Logged By:*** LH/SW/LM
Trend (°): 002	***Cased To (m) :*** 3.7	***Reviewed By:*** JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

80
81
82
83
84
85
86
87
88

83.7 m: Fault, 30 mm FB infill, R3. Dip/dip direction = 65/200.

84.7 m: Fault, 20 mm FB infill, R4. Dip/dip direction = 73/211.

D 5.7

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

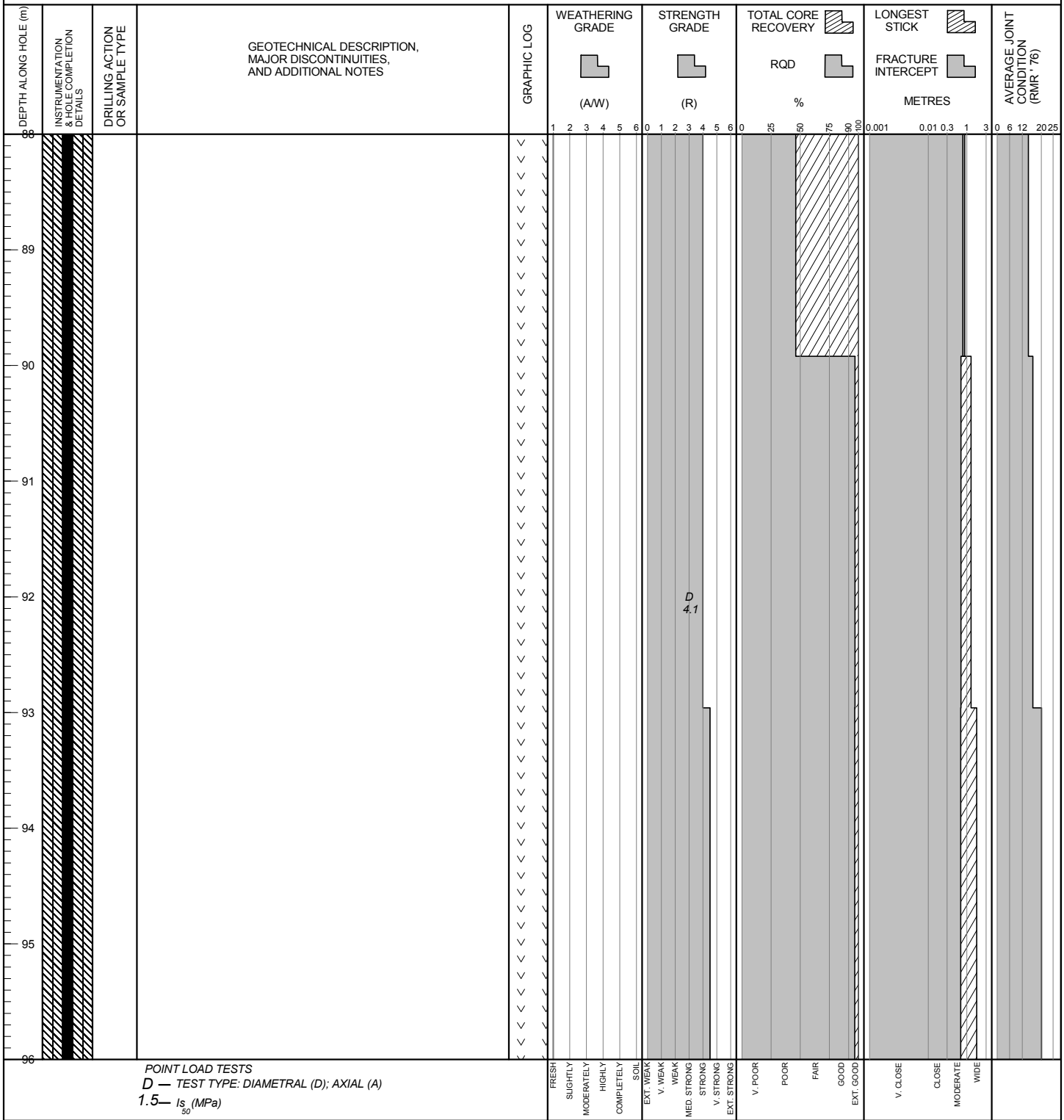
DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

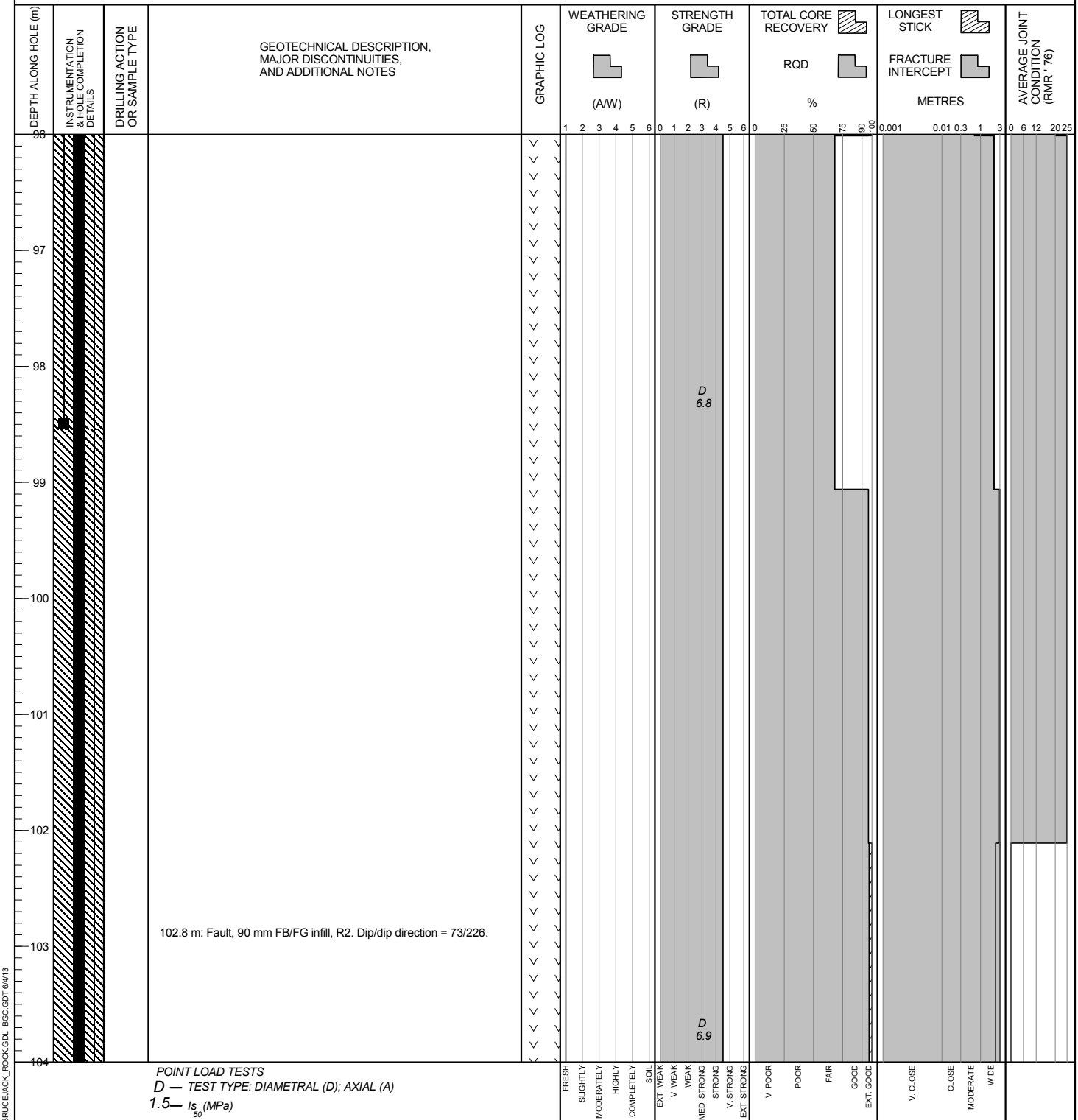
BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

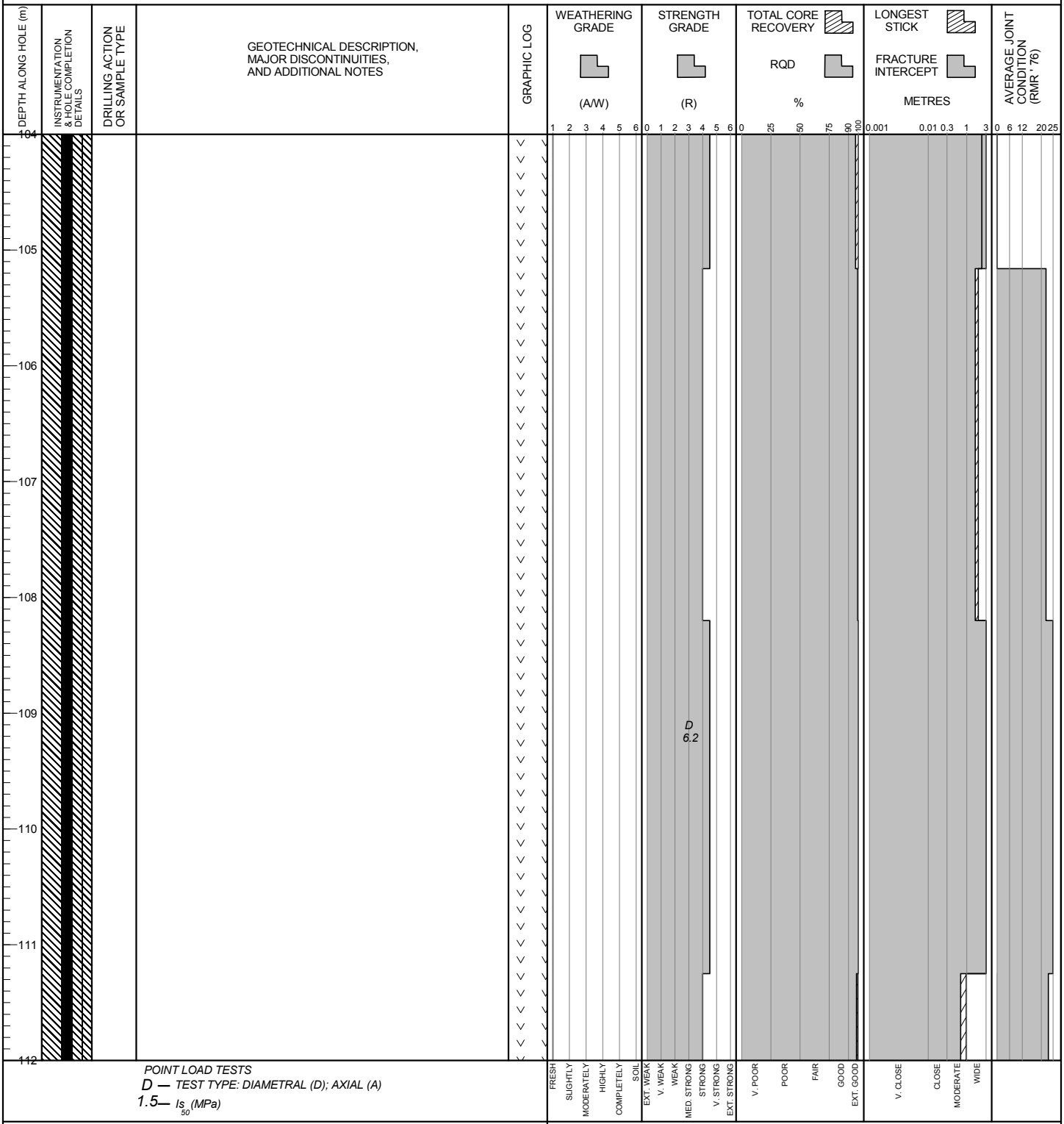
DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

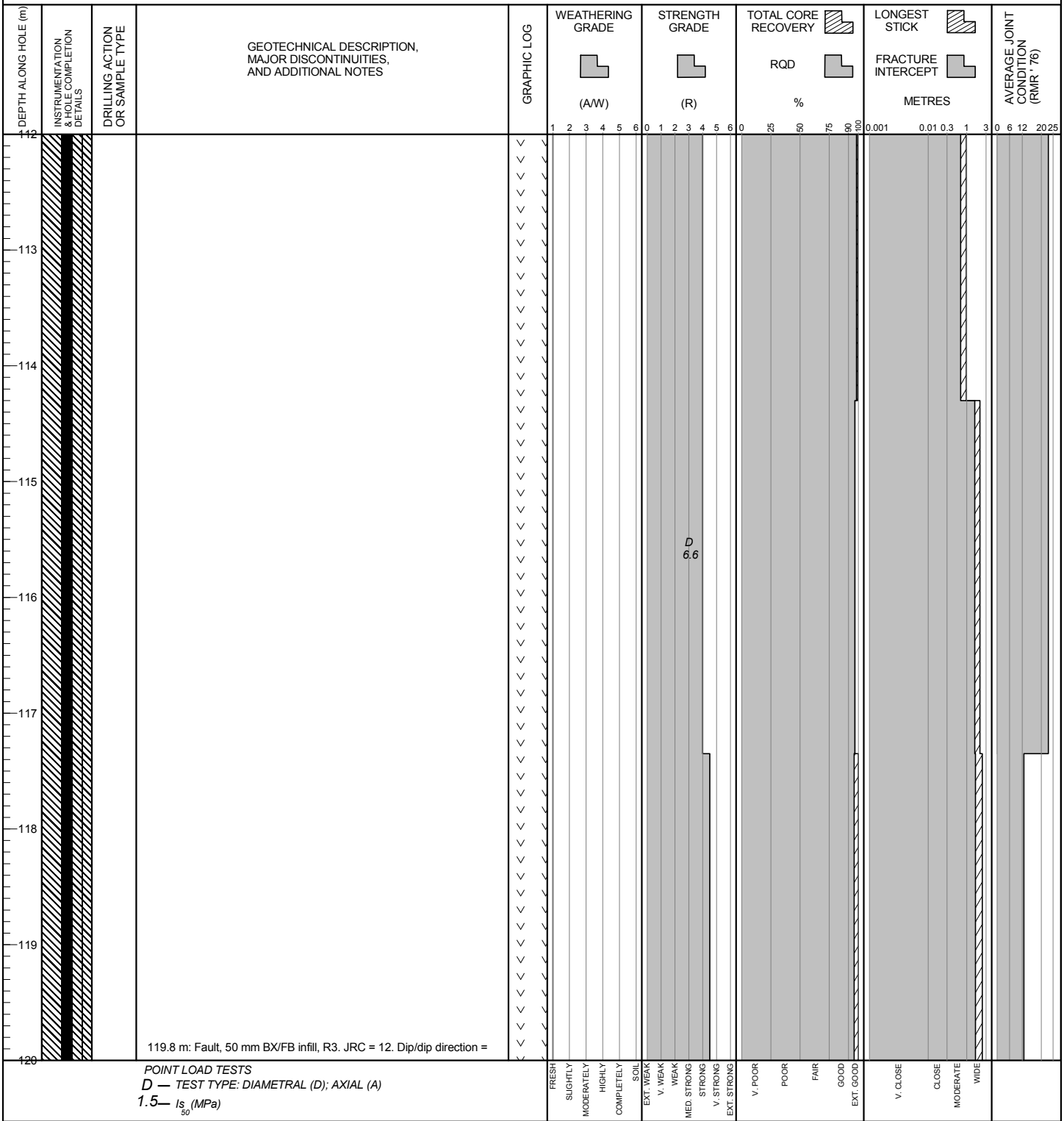
DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
120			64/190.	
121				
122				
123				
124				
125			124.8 m: Fault, 30 mm FB/FG infill, R0. JRC = 12. Dip/dip direction = 14/175. 124.8 m: Fault, 5 mm FB/FG infill, R0. JRC = 12. Dip/dip direction = 37/172. 124.9 m: Fault, 3 mm FB/FG infill, R0. JRC = 12. 125.1 m: Fault, 1 mm FG infill, R0. JRC = 13. Dip/dip direction = 81/209.	
126			126.2 m: Fault, 5 mm FG/FB infill, R1. JRC = 12. Dip/dip direction = 86/225.	
127				
128				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 6.8
D 4.3

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
128					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 100	0.001 0.01 0.3 1 3	0 6 12 20 25
129									
130									
131			130.6 m: Shear, 0.5 mm aperture. JRC = 8.						
132						D 6.3			
133						D 6.1			
134						D 5.0			
135									
136									

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE (R): EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD: V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT: V. CLOSE; CLOSE; MODERATE; WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

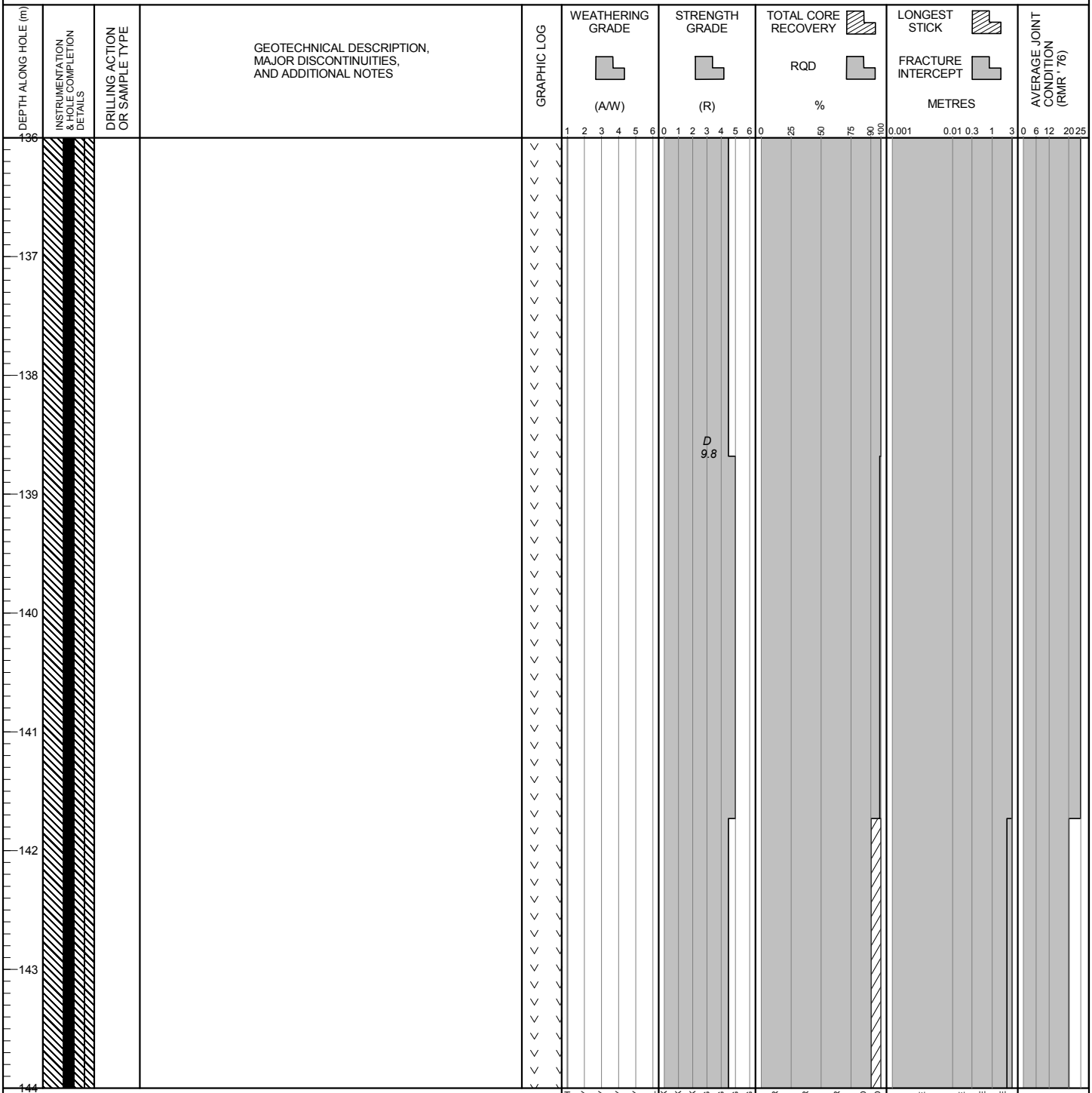
DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
144			144.2 m: Shear, 0.5 mm aperture. JRC = 12. Dip/dip direction = 48/034.
145			145 m: Fault, 30 mm FG infill, R0. JRC = 2. Dip/dip direction = 60/205. 145.1 m: Shear, 0.5 mm aperture. JRC = 4.
146			145.7 m: Shear, 1 mm QZ infill, R5. JRC = 4. Dip/dip direction = 50/205. 146 m: Shear, 0.5 mm aperture. JRC = 1.
147			
148			
149			
150			
151			
152			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
D 3.2
D 5.7

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR; POOR; FAIR; GOOD; EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE; CLOSE; MODERATE; WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
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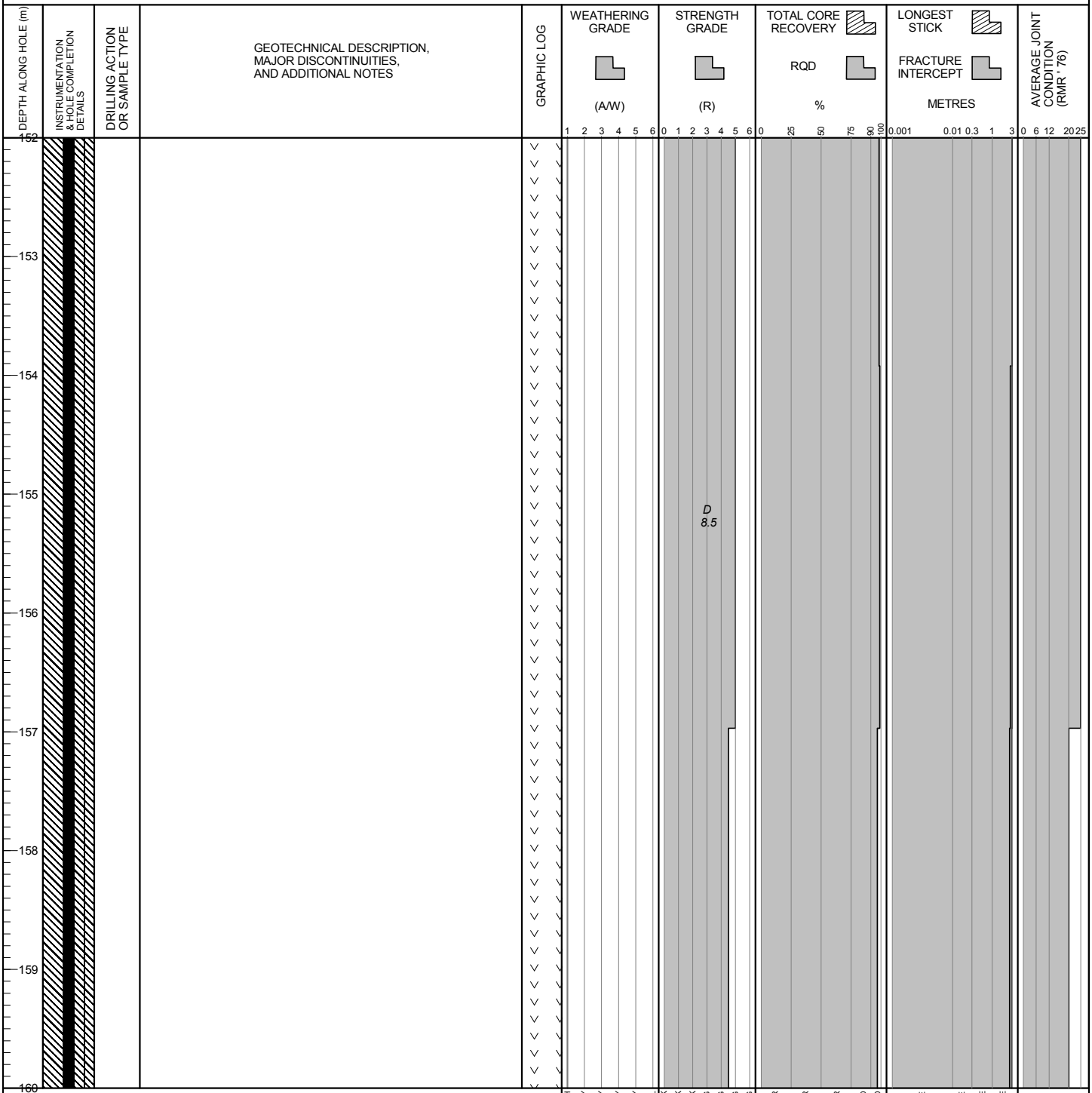
Logged By: LH/SW/LM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

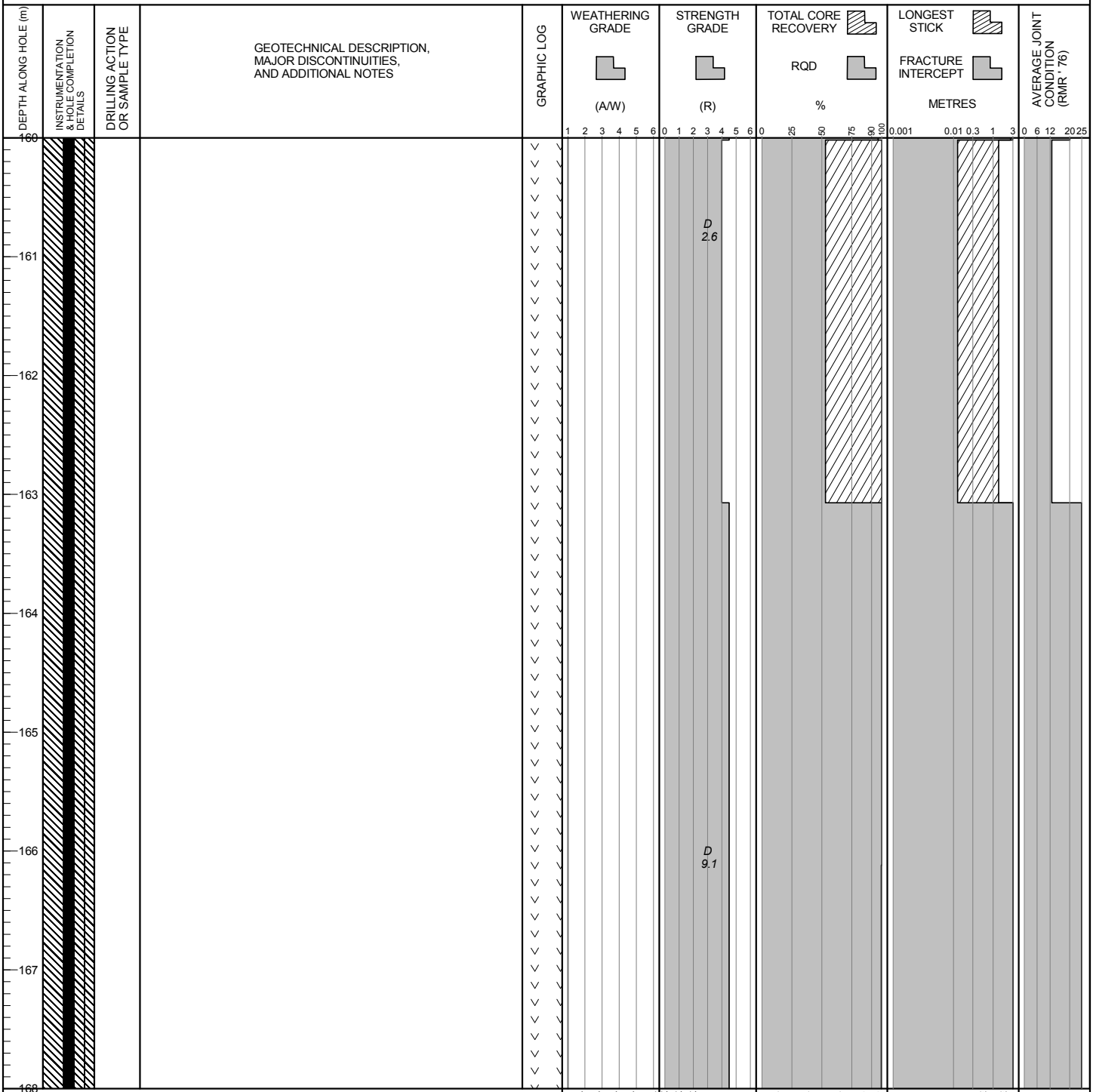
DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



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AN APPLIED EARTH SCIENCES COMPANY

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-24

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Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
168					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
169									
170									
171									
172						D 6.2			
173			173.2 - 174.0 m: Quartz-calcite vein with galena and pyrite, banding on lower contact at 30 degrees TCA.						
174									
175									
176					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

176.9 m: Shear, 0.5 mm aperture. JRC = 12.

D
6.7

183.5 m: Shear, 0.5 mm aperture. JRC = 4.

POINT LOAD TESTS
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1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

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Ground Elevation (m): 1,547.6
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Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
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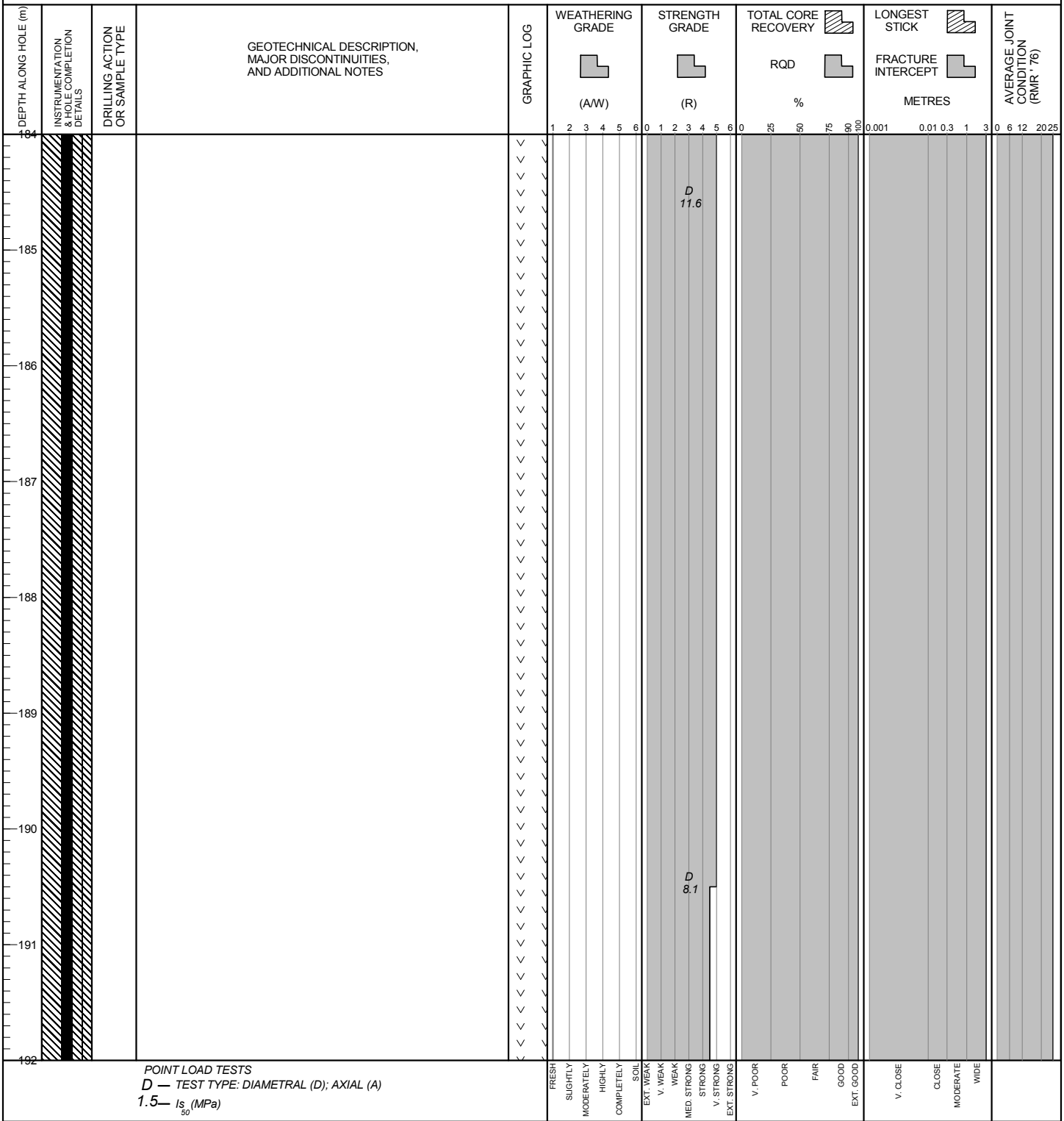
Reviewed By: JW



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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

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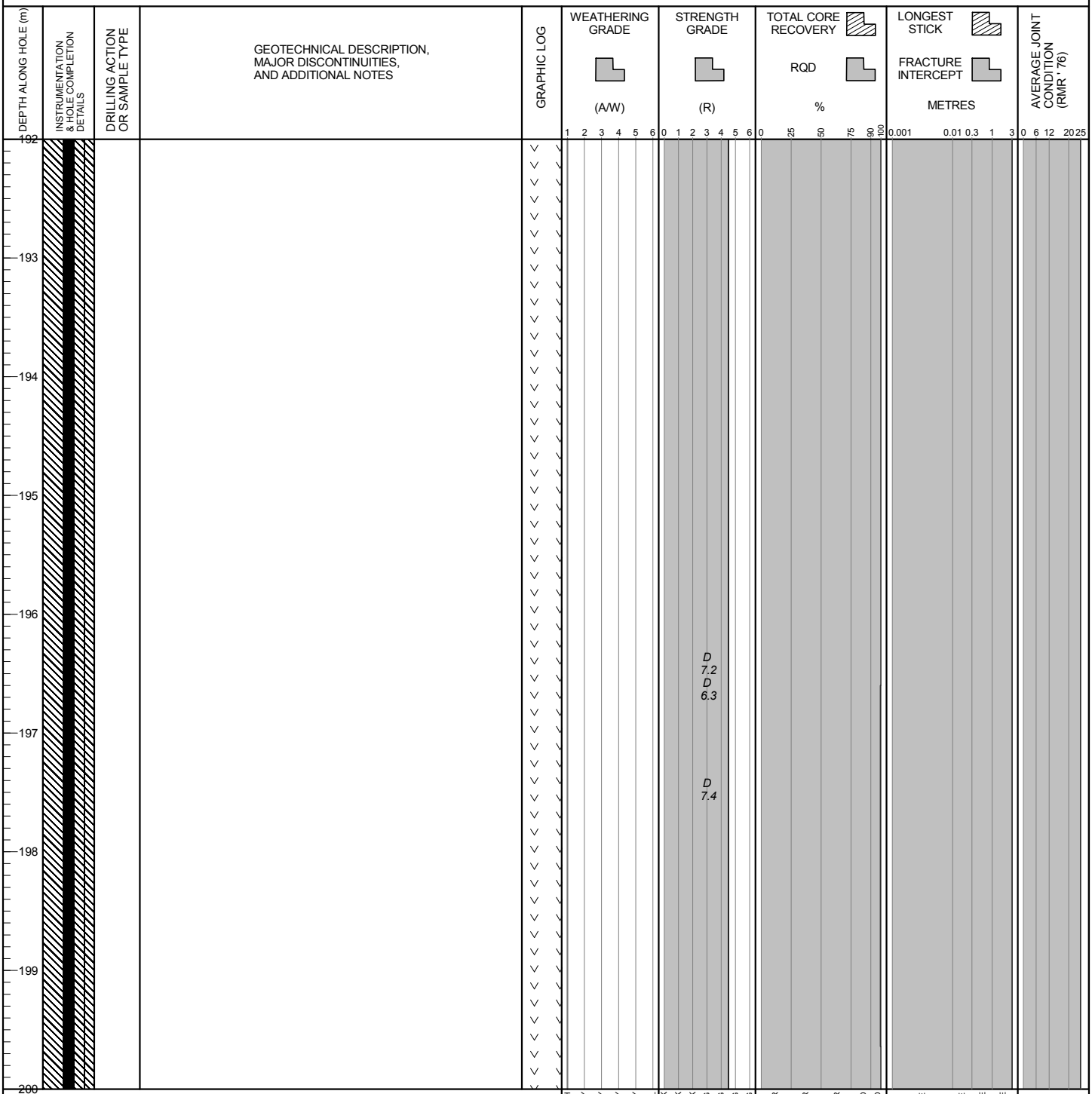

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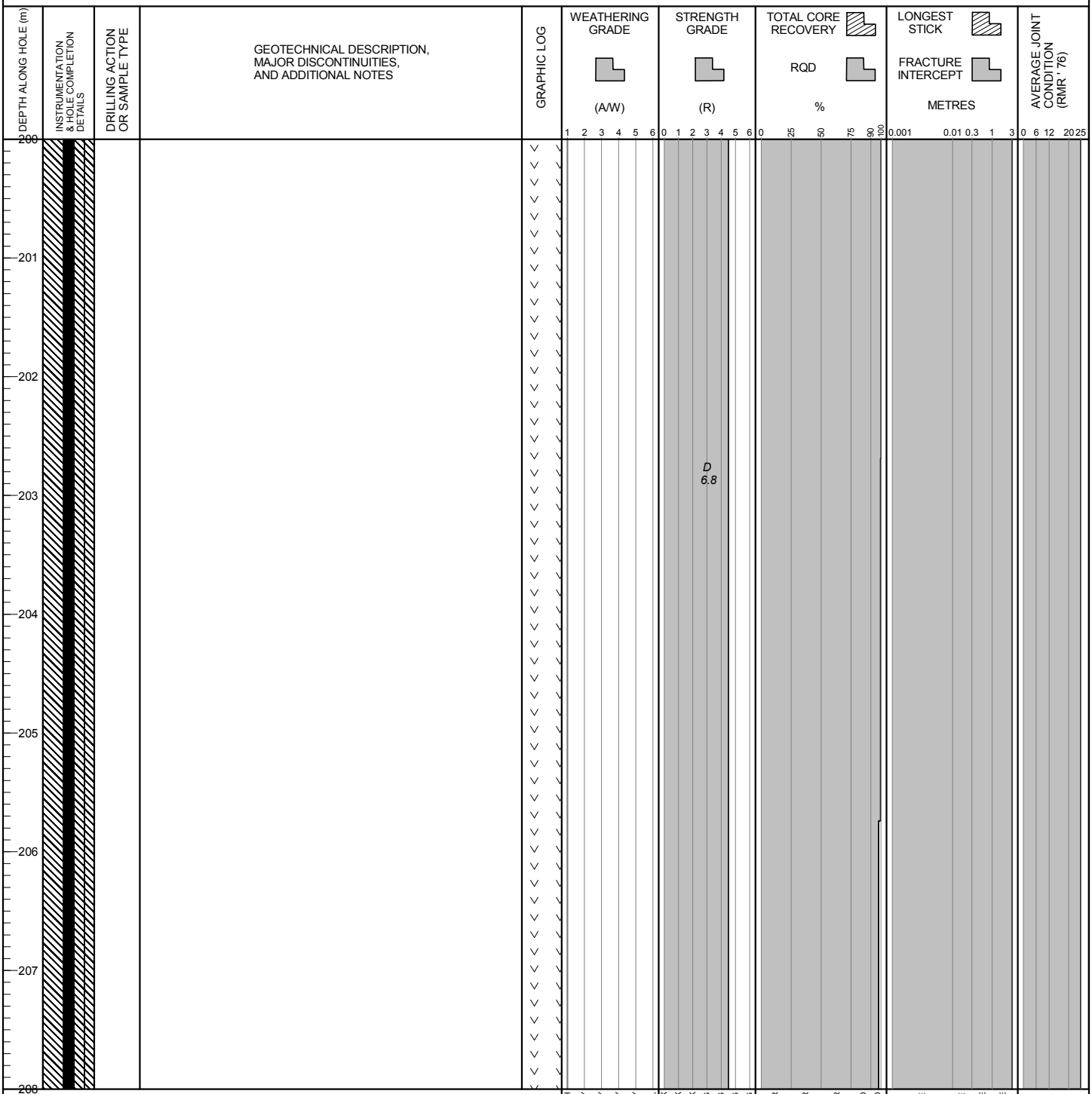

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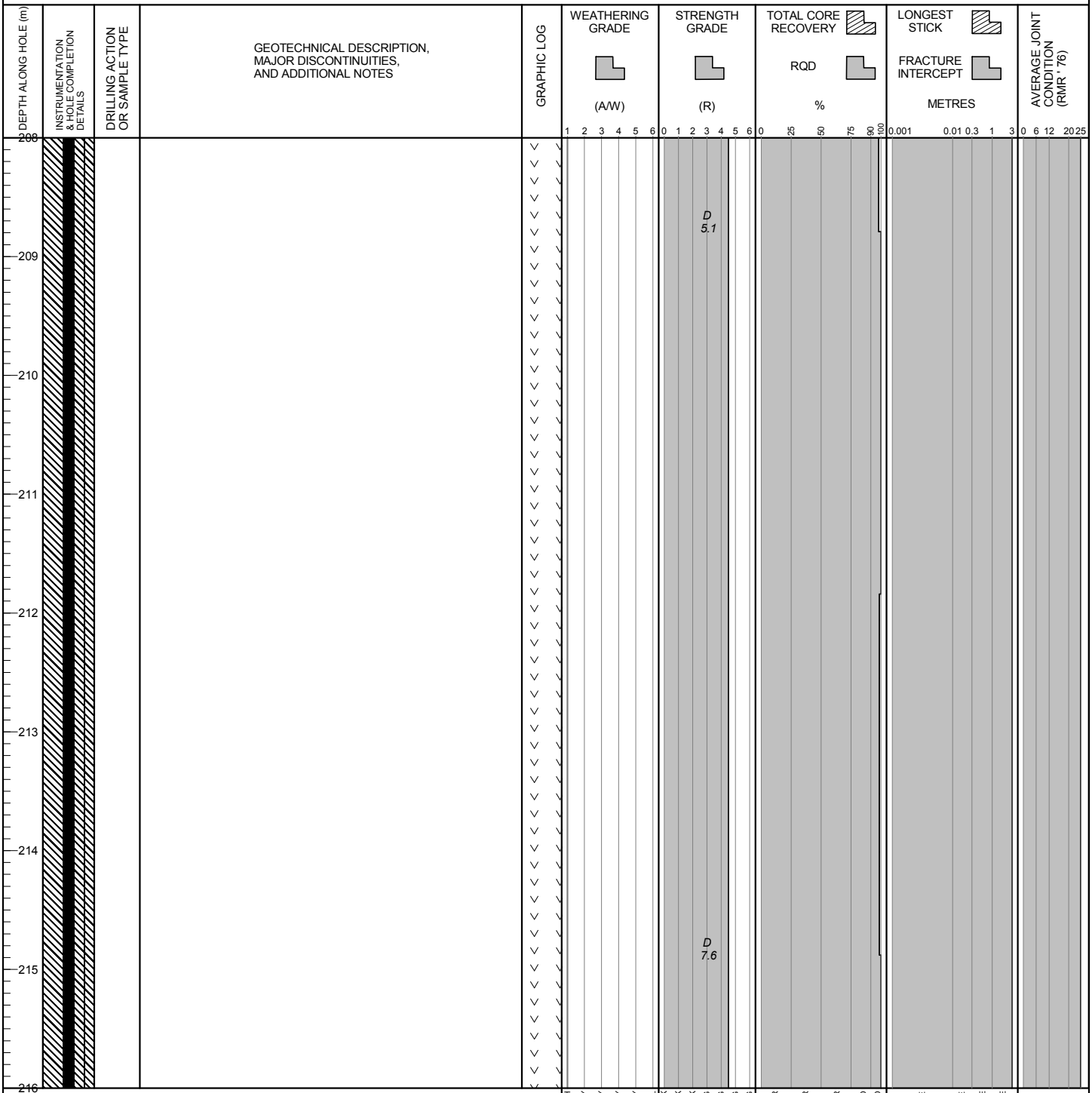

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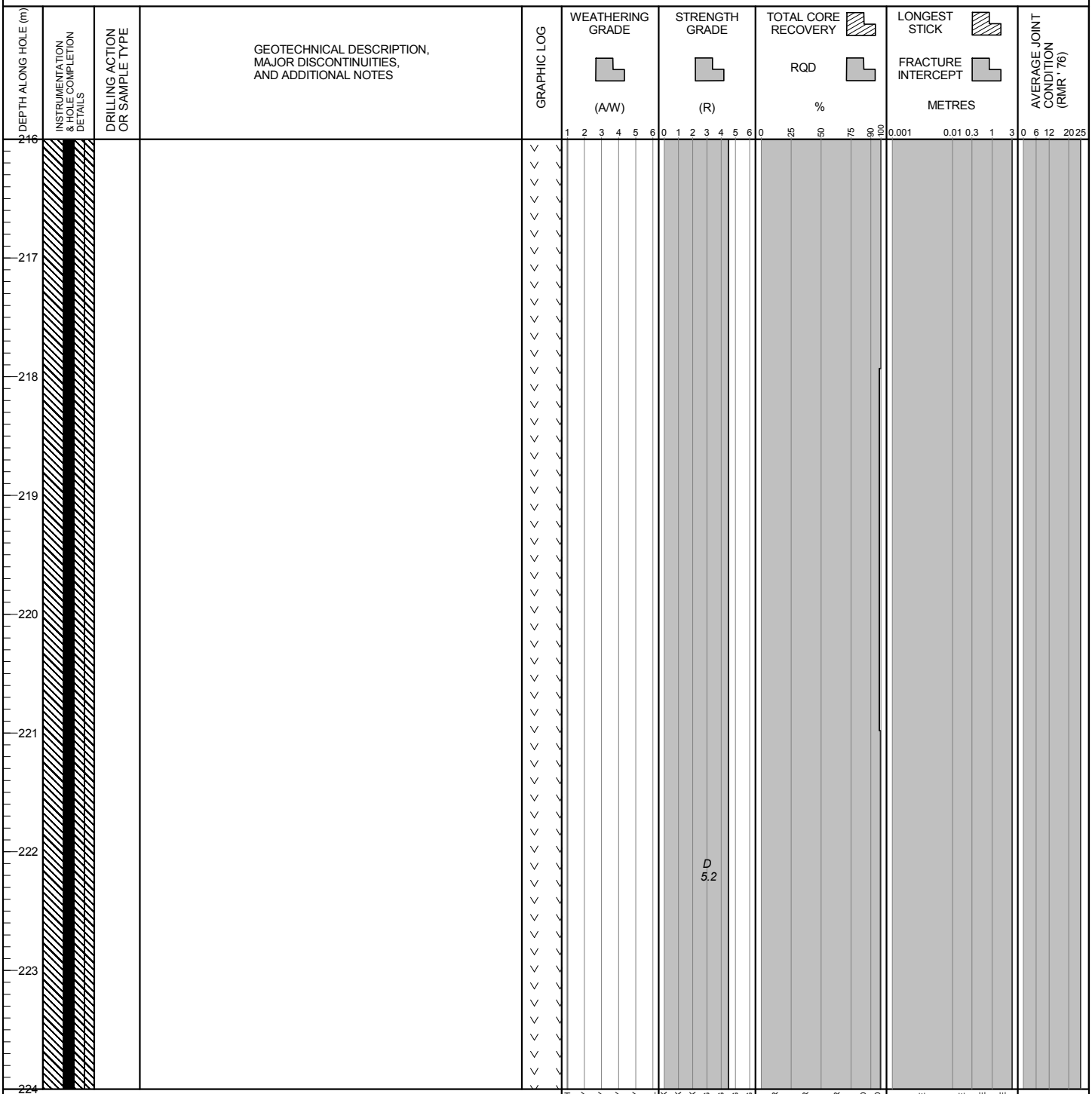

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
224			224.2 - 225.8 m: Mafic dyke with chilled margins.		1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
225			225.2 m: Shear, 0.5 mm SE infill, R3. JRC = 12.						
226			225.6 m: Shear on vein, 10 mm SE/QZ infill, R4. JRC = 20. Dip/dip direction = 42/267. 225.7 m: Shear on vein, 40 mm SE/QZ infill, R4. JRC = 20. Dip/dip direction = 38/307.						
227									
228						D 6.8			
229									
230									
231									
232									

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL
EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG
V. POOR / POOR / FAIR / GOOD / EXT. GOOD
V. CLOSE / CLOSE / MODERATE / WIDE

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Project No.1008-007

DRILL HOLE # DH-BGC12-24

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Datum: UTM NAD 83 Zone 9
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Fluid: Polymer
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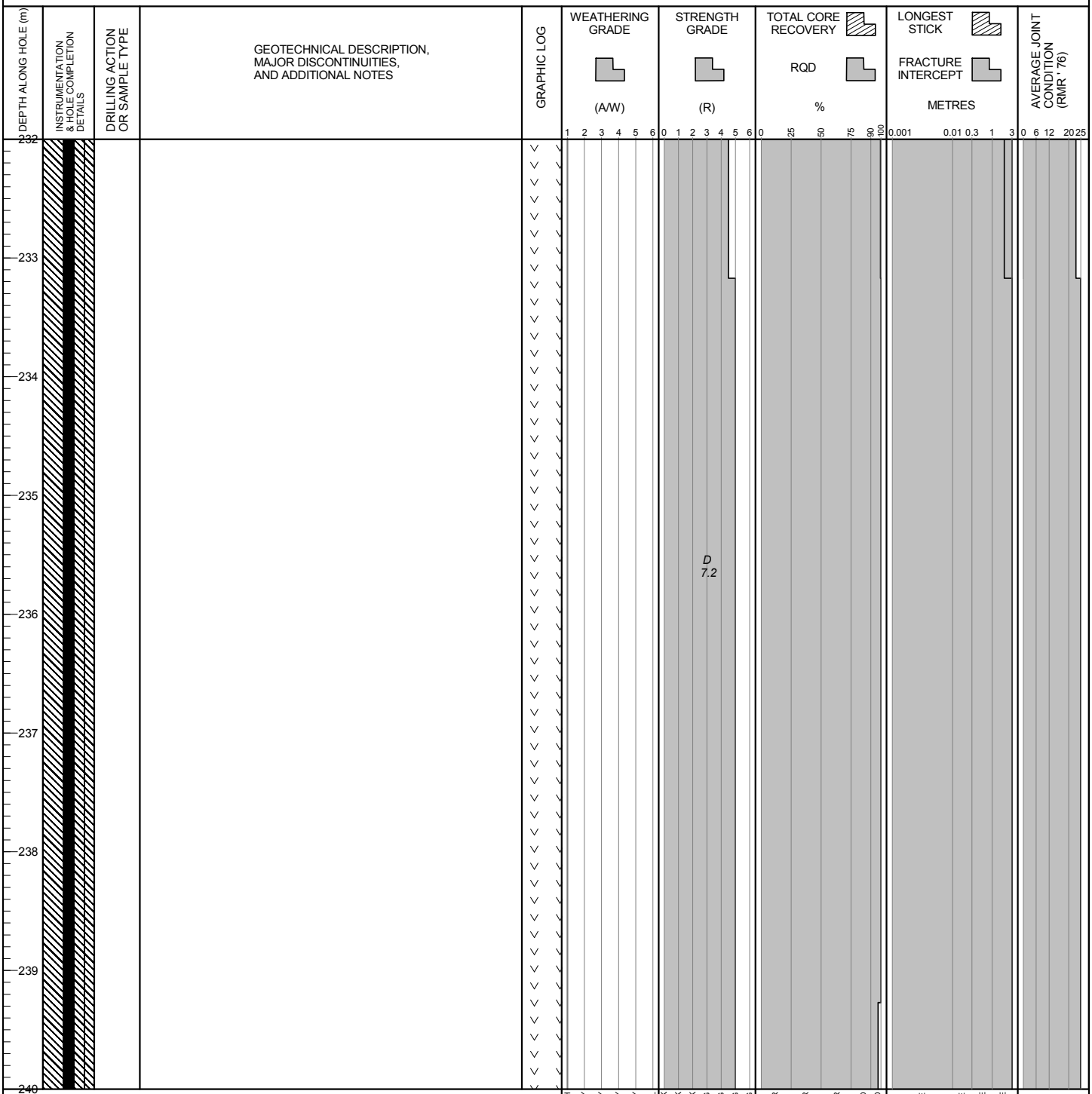

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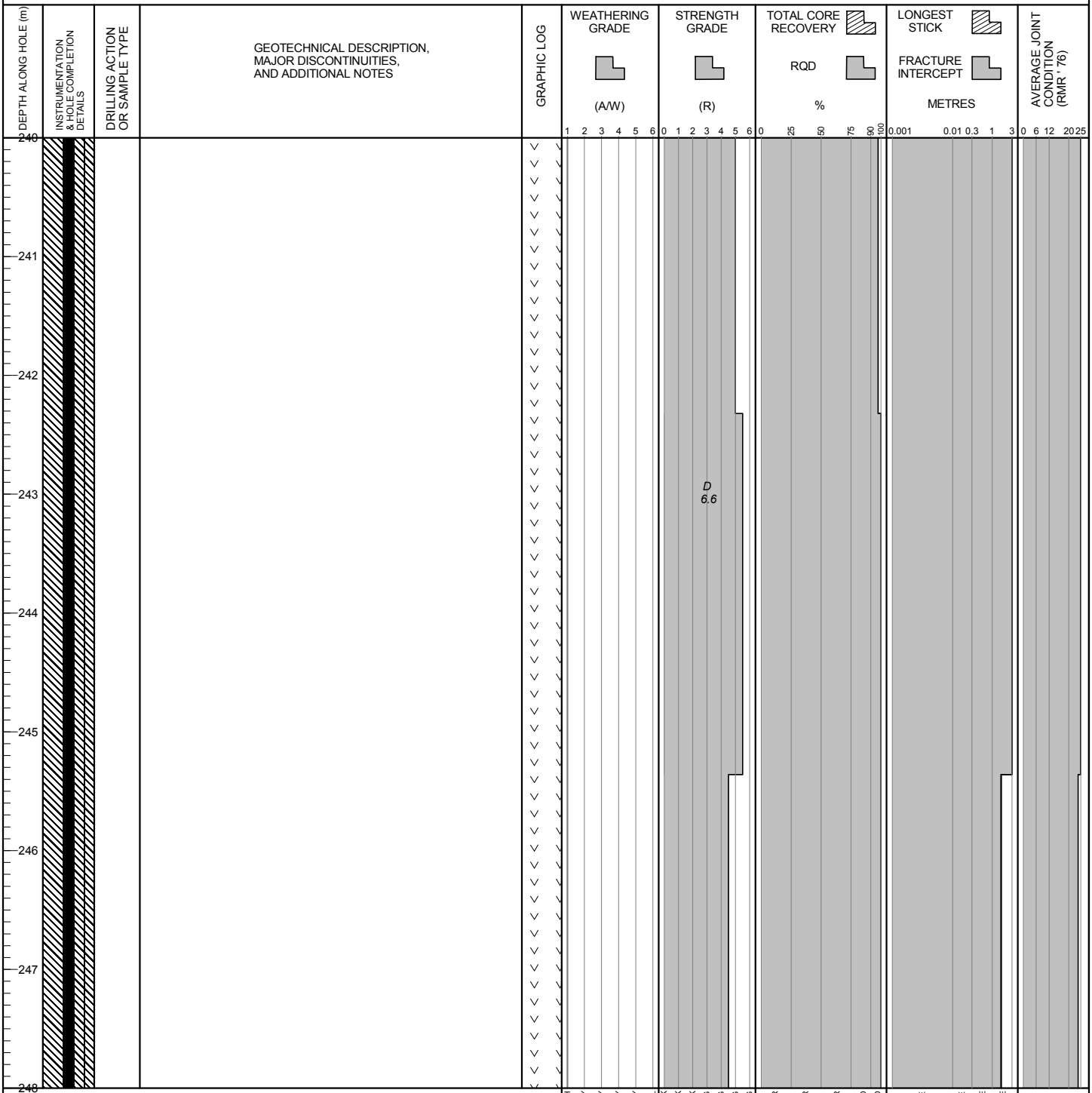

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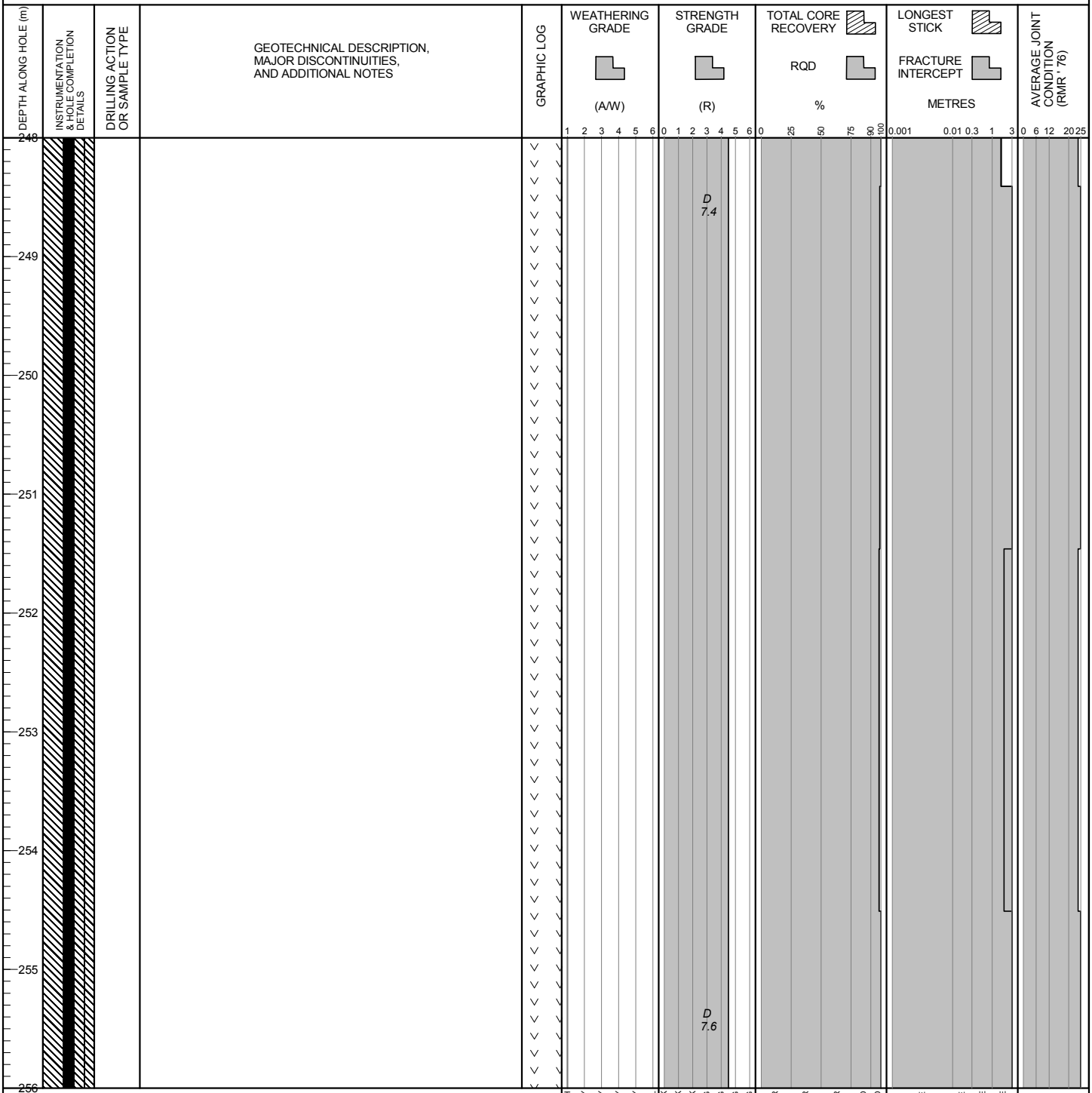

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
256					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
257			257.6 - 258.4 m: Mafic dyke with chilled margins.						
258									
259									
260									
261									
262									
263									
264					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
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264
265
266
267
268
269
270
271
272

D 9.6
D 7.3
D 7.9
D 7.4

268 m: Shear, 0.5 mm CL infill, R2. JRC = 4. Dip/dip direction = 78/269.

270.1 m: Shear, 0.5 mm aperture. JRC = 8. Dip/dip direction = 75/245.

271.5 m: Shear, 0.5 mm aperture. JRC = 12. Dip/dip direction = 74/247.

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

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Drill Method: Diamond
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Fluid: Polymer
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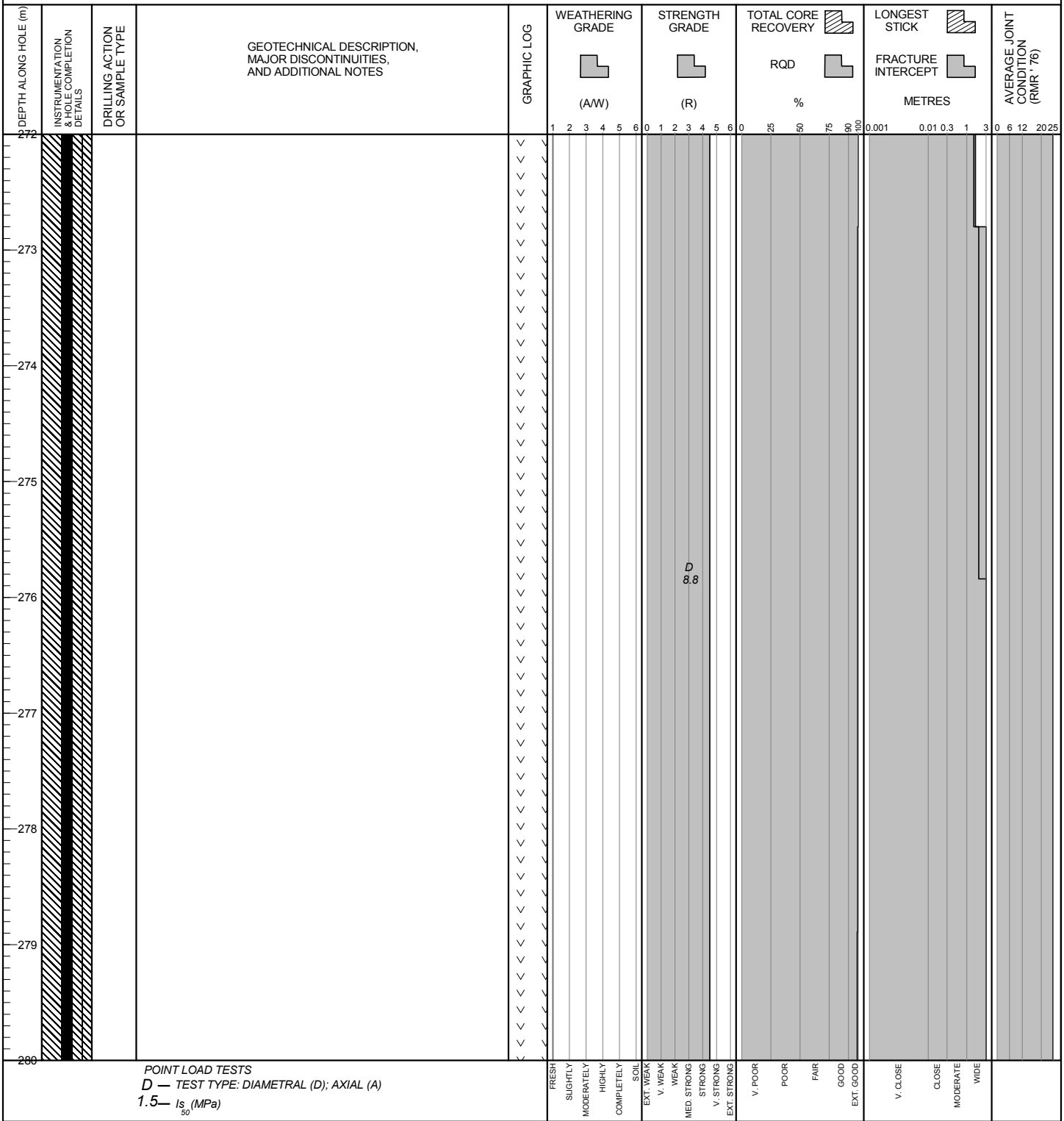

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Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)

280
281
282
283
284
285
286
287
288

D 7.4
D 3.8

286.5 m: Shear, 0.5 mm aperture. JRC = 4.

286.5 m: Shear, 1 mm CX infill, R2. JRC = 4. Dip/dip direction = 72/257.

287.5 m: Shear, 3 mm CX infill, R1. JRC = 8. Dip/dip direction = 82/333.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
V. POOR | POOR | FAIR | GOOD | EXT. GOOD
V. CLOSE | CLOSE | MODERATE | WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

288
289
290
291
292
293
294
295
296

Constant head test from 292.6 - 306.3 m. Estimated hydraulic conductivity is 3.1E-08 m/s.

293.6 m: Shear, 0.5 mm aperture. JRC = 2.

CONGLOMERATE (S3)
Grey-green, multi-cm clasts supported in a 0.5-1 cm sized matrix, polylithic. Strong foliation at 40 degrees TCA. Strong to very strong (R4-R4.5). Fresh (A1).

295 m: Shear, 1 mm CX infill, R2. JRC = 4.

295.4 m: Shear, 0.5 mm aperture. JRC = 8.

D 7.5

D 2.7

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

296.5 m: Shear, 1 mm CX infill, R2. JRC = 2. Dip/dip direction = 38/231.

D 6.5
D 8.8
D 6.7
D 5.7
D 7.4

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
304			304 m: Shear on vein, 3 mm QZ infill, R4. JRC = 20.						
305									
306						D 7.0			
307									
308									
309									
310									
311						D 4.7			
312									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE; CLOSE; MODERATE; WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

312

QUARTZ SULPHIDE VEIN (H4)
Solid white quartz vein with galena and sphalerite at 30 degrees TCA. Large 30 cm clast of rhyolite within the vein. Strong (R4). Fresh (A1).

313

314

ARENITE (S4)
Green, fine to coarse grained sandstone with some silt-sized beds, bedding fine upwards. Bedding is at 40 degrees TCA. Top of interval has intense seracite alteration and fragments of rhyolite. Strong to very strong (R4-R5). Medium strong rock (R3.5) from 355.0-358.2 m. Fresh (A1)

315

316

D
5.8

316.4 m: Shear, 2 mm QZ infill, R4. JRC = 4. Dip/dip direction = 58/347.

317

318

319

320

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
320					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
321			321.7 m: Shear, 0.5 mm aperture. JRC = 2. Dip/dip direction = 47/064.			D 4.5 D 4.1			
322									
323									
324									
325									
326									
327									
328					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

328
329
330
331
332
333
334
335
336

D
8.6

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

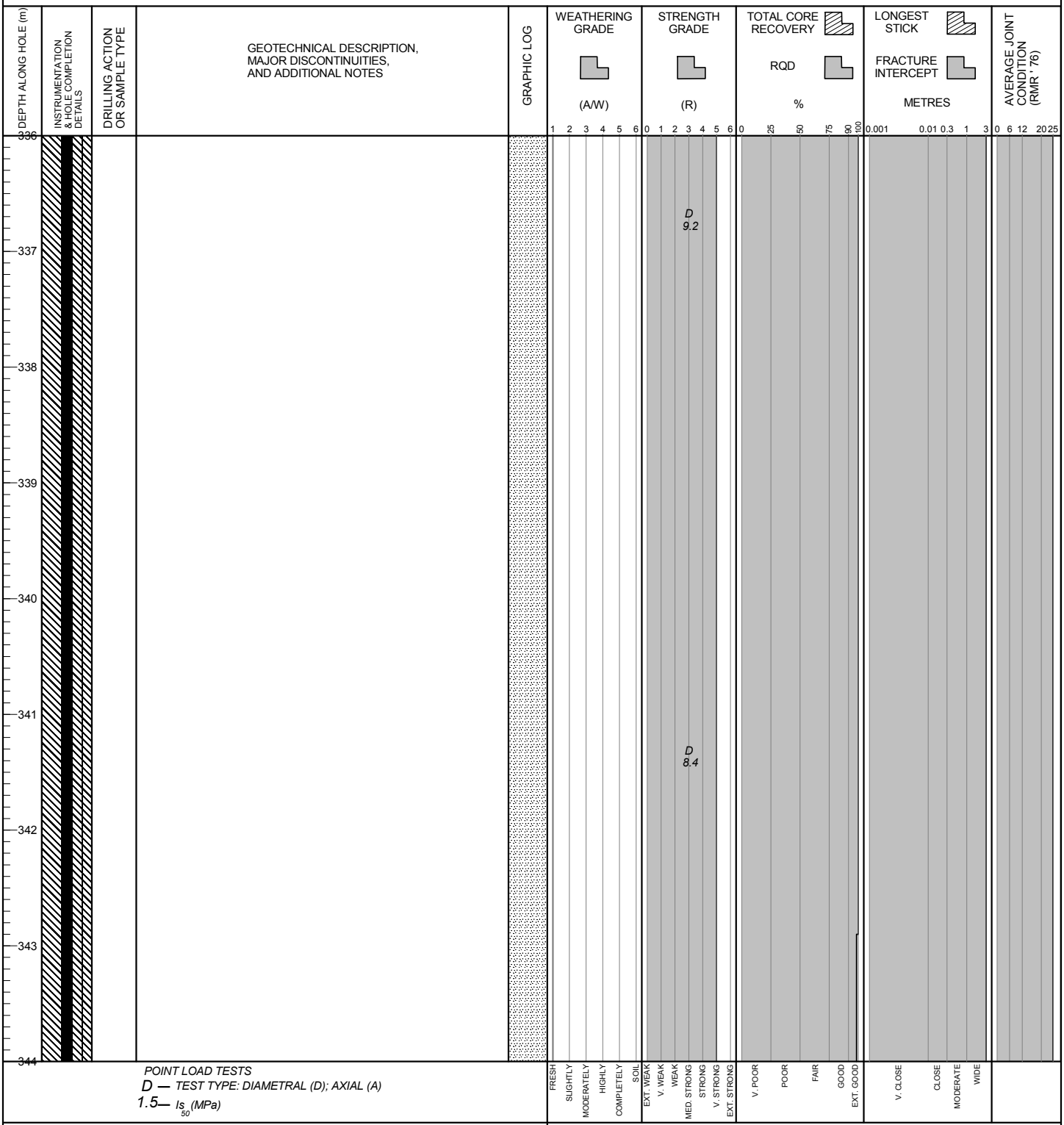
DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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DRILL HOLE # DH-BGC12-24

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Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
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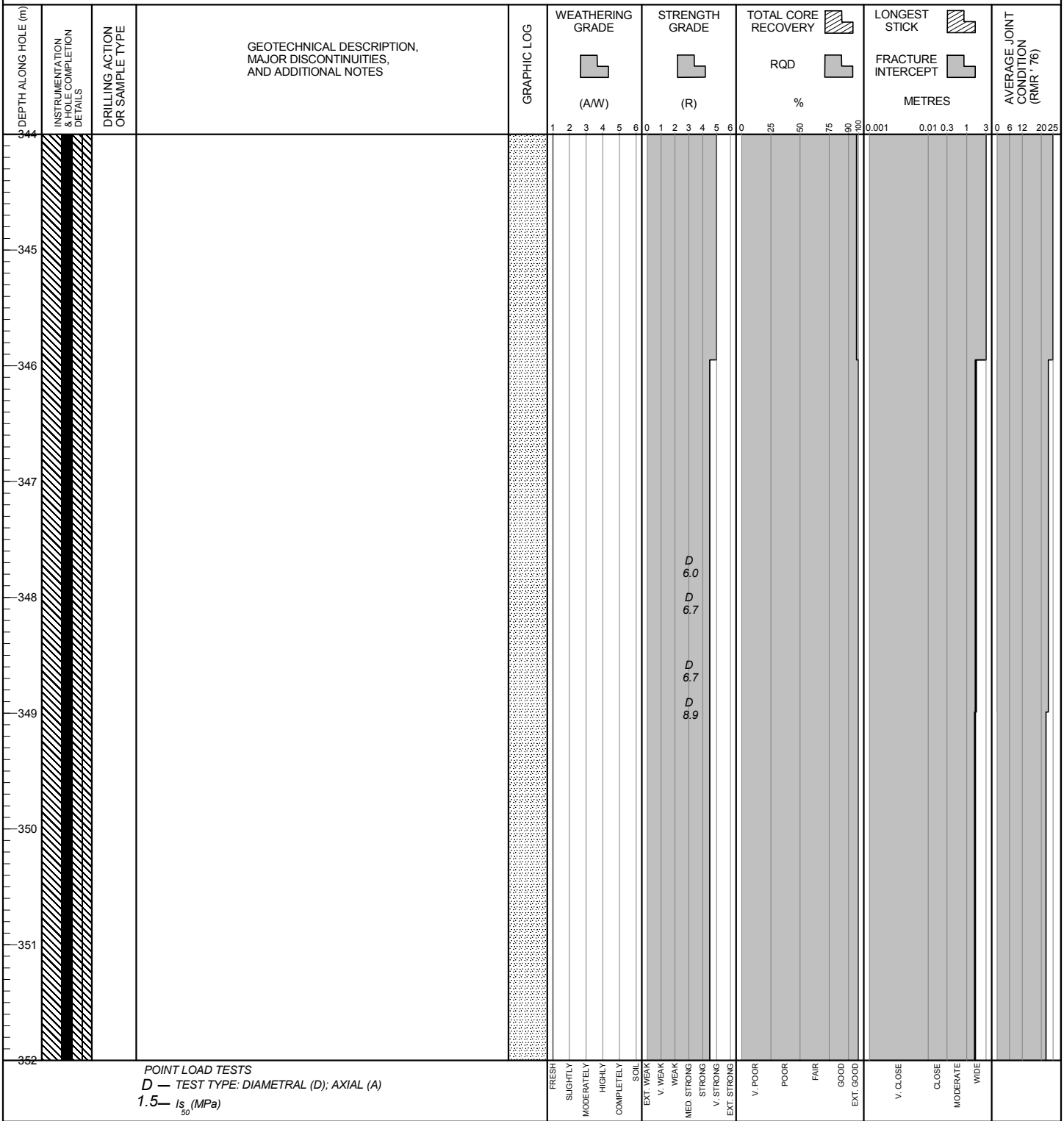

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

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Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

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Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

352
353
354
355
356
357
358
359
360

D
10.8

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
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Cased To (m) : 3.7

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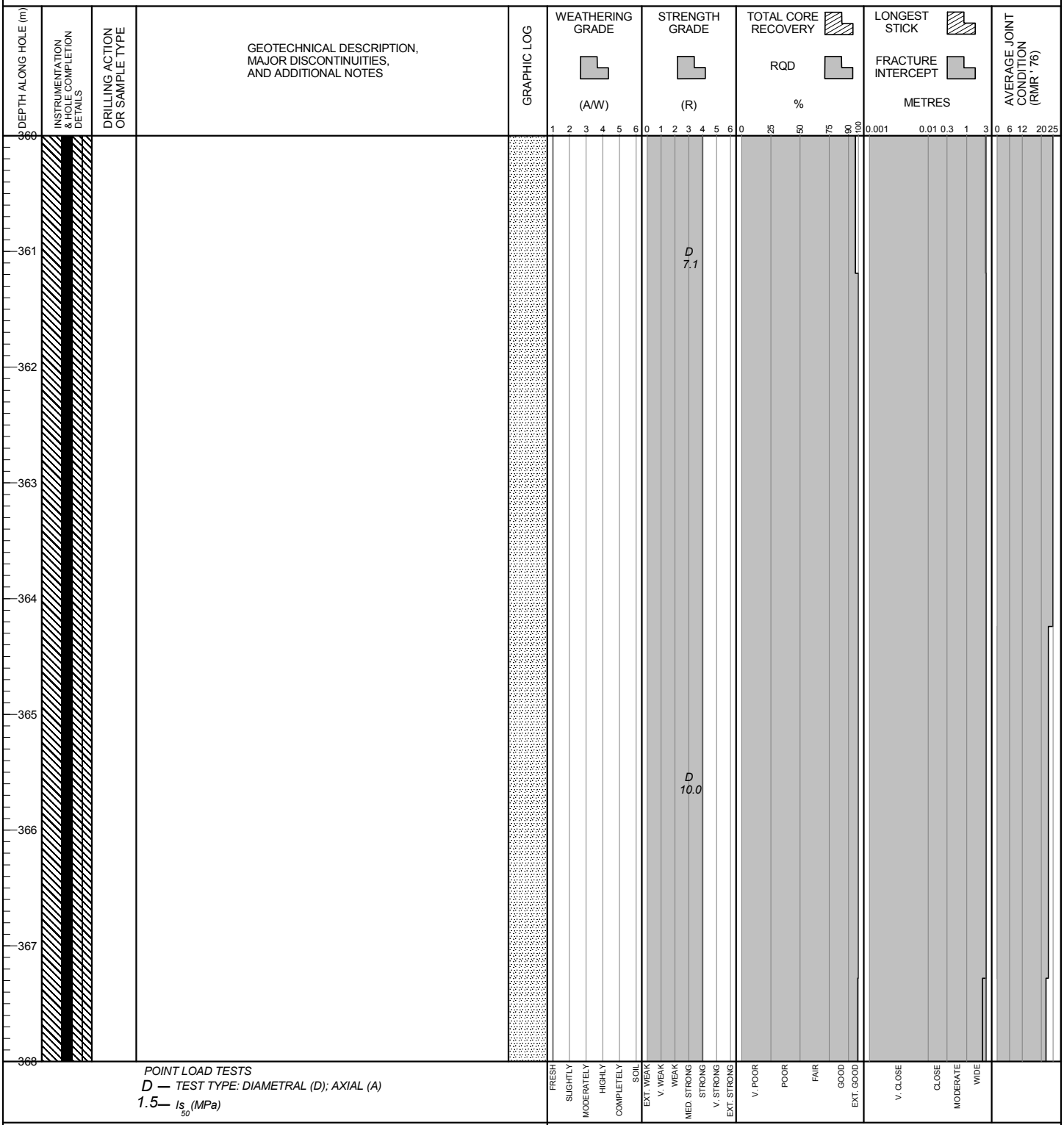

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Client: Pretium Resources Inc.

LOG SCALE: 1:50

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Start Date: 25 Apr 12
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Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
368					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
369			369.7 m: Fault, 1.5 mm SE/BX infill, R3. JRC = 12. Dip/dip direction = 72/235.						
370									
371									
372									
373						D 7.3			
374									
375									
376					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
376					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
377									
378						D 8.2			
379									
380									
381									
382			381.9 m: Shear, 0.5 mm aperture. JRC = 8. Dip/dip direction = 61/234.						
383									
384					FRESH / SLIGHTLY / MODERATELY / HIGHLY / COMPLETELY / SOIL	EXT. WEAK / V. WEAK / WEAK / MED. STRONG / STRONG / V. STRONG / EXT. STRONG	V. POOR / POOR / FAIR / GOOD / EXT. GOOD	V. CLOSE / CLOSE / MODERATE / WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
384			Constant head test from 384.1 - 406.9 m. Estimated hydraulic conductivity is 2.7E-08 m/s.
385			
386			
387			
388			388.1 m: Shear, 1 mm QZ infill. JRC = 8. Dip/dip direction = 75/226.
389			
390			
391			
392			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 9.4
D 8.0

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

392
393
394
395
396
397
398
399
400

D 8.8

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

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LOG SCALE: 1:50

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Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

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Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

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Finish Date: 04 May 12
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Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
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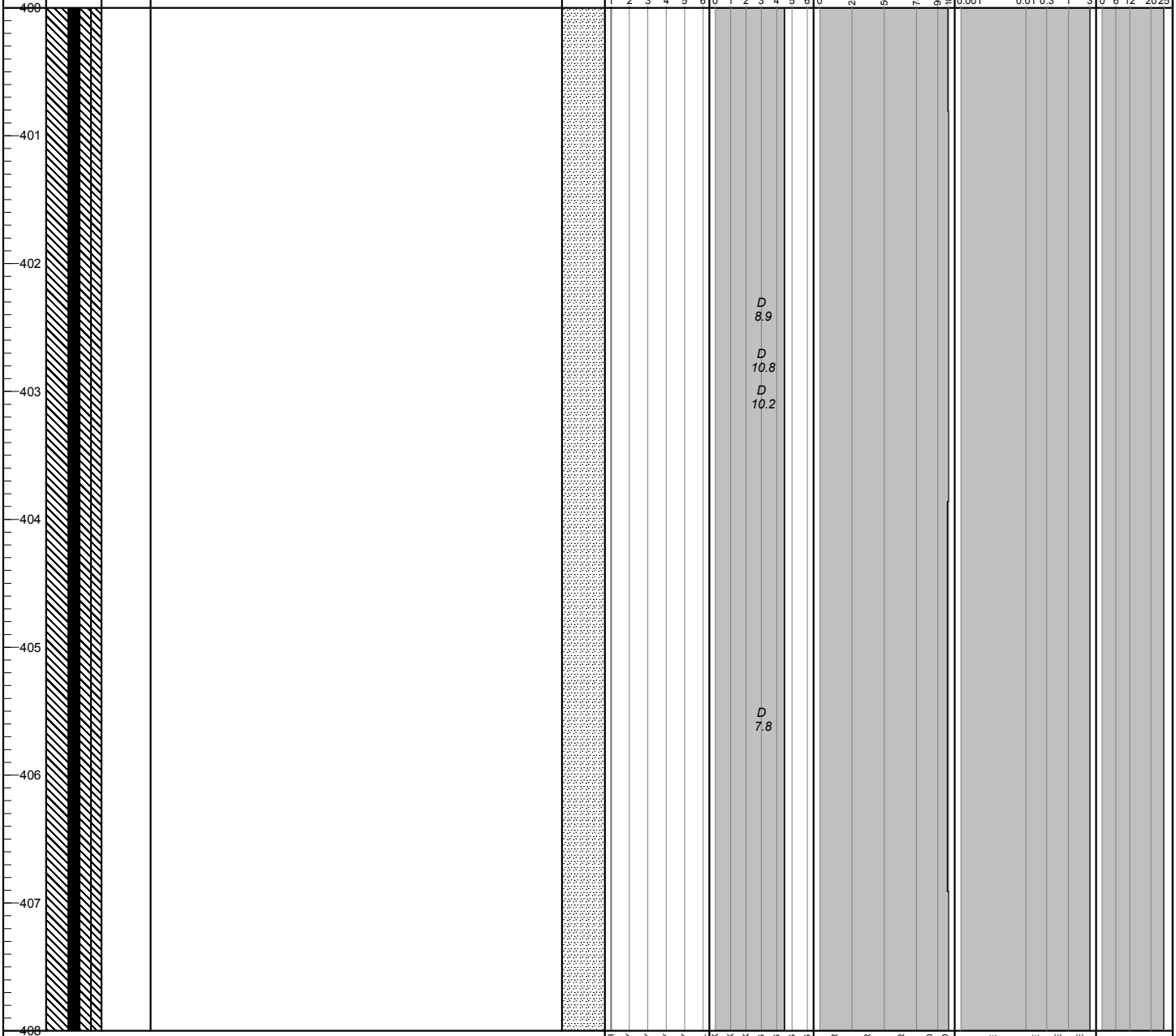
DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

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DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
408			
409			
410			
411			
412			
413			412.6 m: Shear, 1 mm aperture. JRC = 12. Dip/dip direction = 65/229.
414			413.7 m: Shear on vein, 2.5 mm QZ infill, R4. JRC = 16. Dip/dip direction = 73/278.
415			414.8 m: Fault, 1.5 mm FB/FG infill, R0. JRC = 12. Dip/dip direction = 59/224. 414.9 m: Shear, 0.5 mm aperture. JRC = 12. Dip/dip direction = 73/253. 414.9 m: Shear, 1 mm aperture. JRC = 12.
416			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
D 7.0

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR; POOR; FAIR; GOOD; EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE; CLOSE; MODERATE; WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
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Final Depth (m): 501.4
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Logged By: LH/SW/LM
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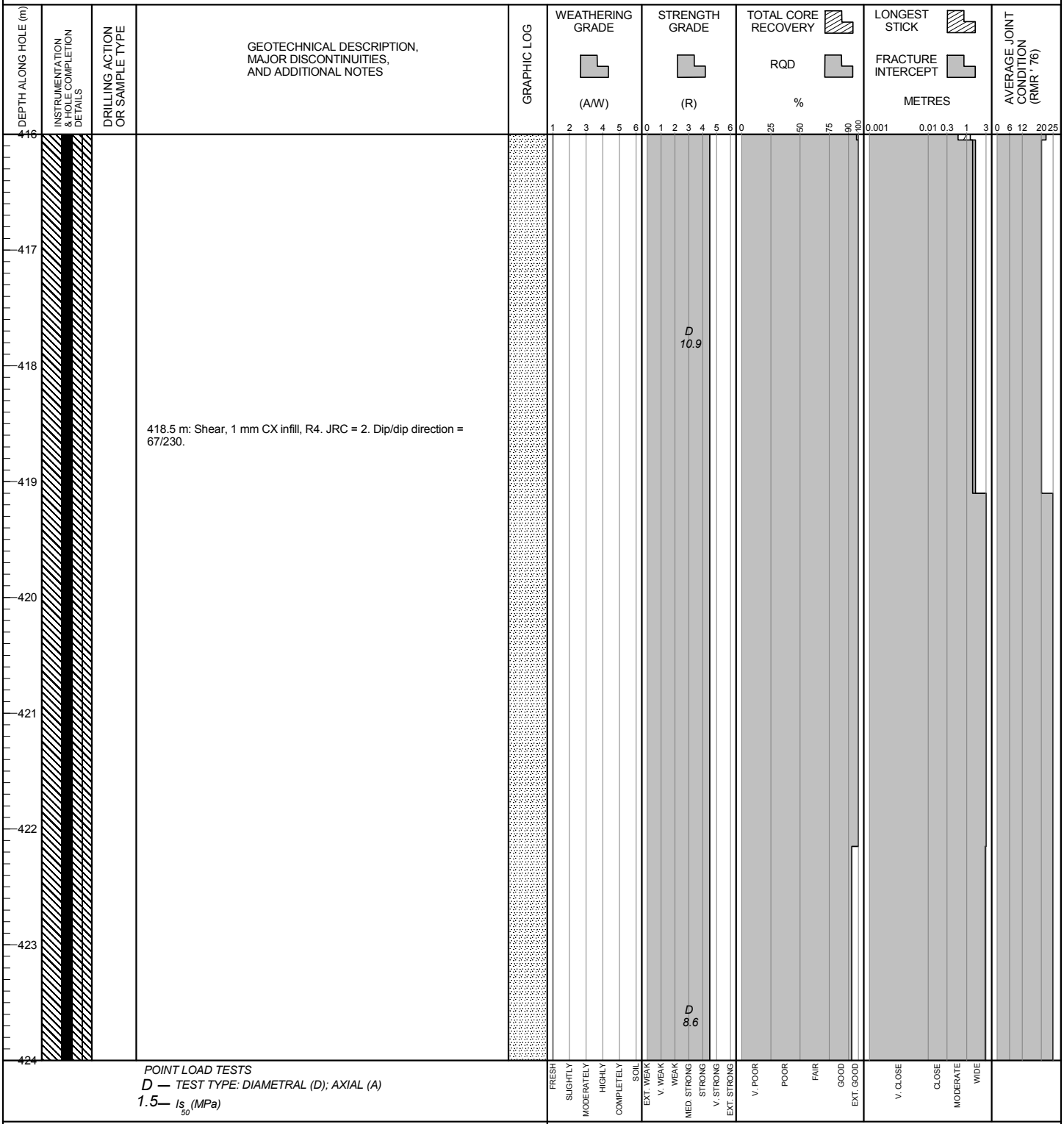

POINT LOAD TESTS
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Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

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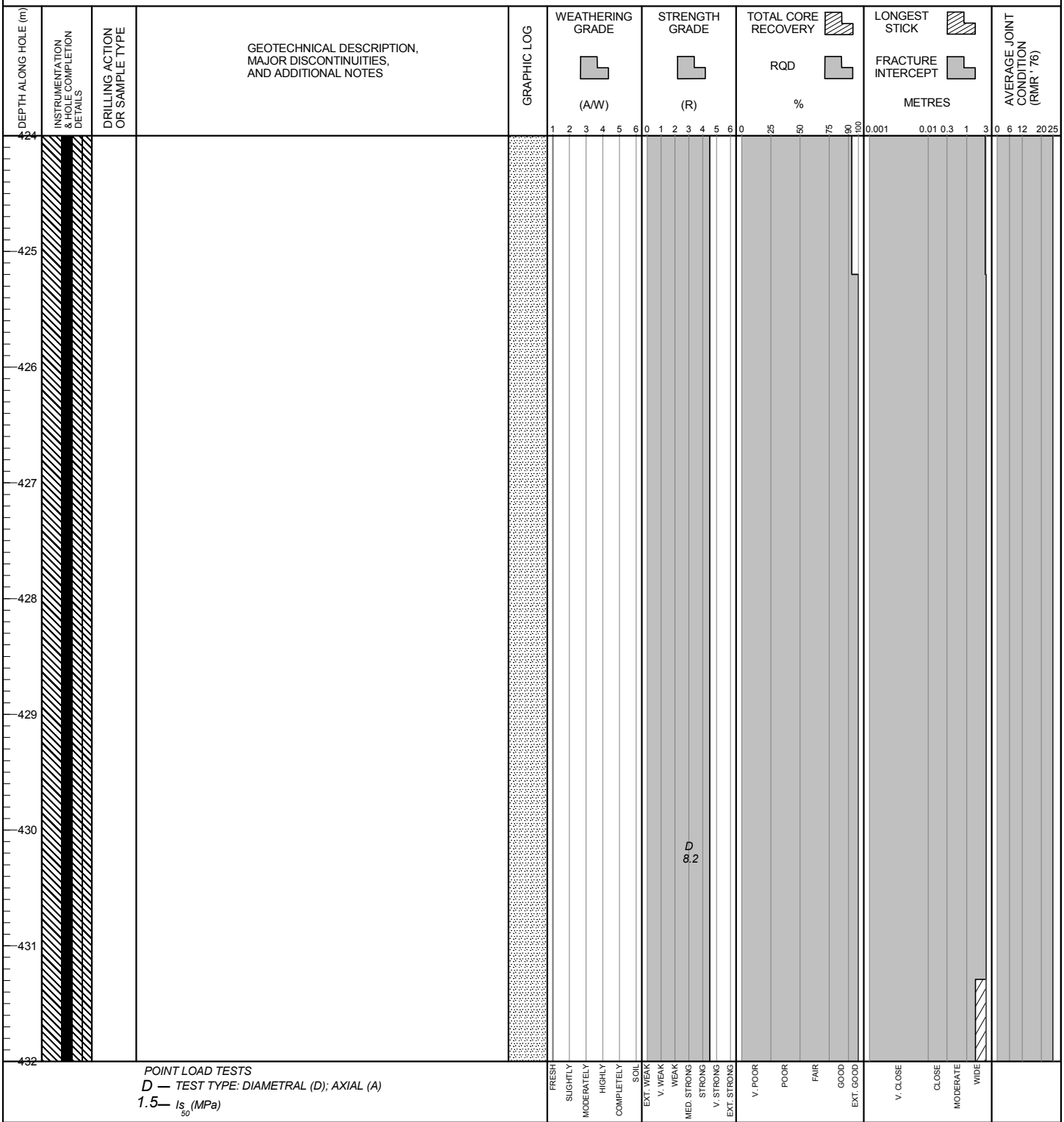

POINT LOAD TESTS
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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

Constant head test from 432.8 - 458.7 m. Estimated hydraulic conductivity is 1.9E-08 m/s.

D
4.5

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-24

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Datum: UTM NAD 83 Zone 9
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Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

440
441
442
443
444
445
446
447
448

D
7.2

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

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Ground Elevation (m): 1,547.6
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Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

448
449
450
451
452
453
454
455
456

D 8.9
D 10.0
D 7.8

453.2 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 16. Dip/dip direction = 34/013.

453.8 m: Shear on vein, 0.5 mm QZ infill, R4. JRC = 12.

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

456.3 m: Shear, 0.5 mm aperture. JRC = 8. Dip/dip direction = 41/258.

457 m: Shear, 0.5 mm aperture. JRC = 4. Dip/dip direction = 19/248.

460.2 m: Shear, 0.5 mm aperture. JRC = 16.

Constant head test from 460.3 - 470.9 m. Estimated hydraulic conductivity is 6.7E-08 m/s.

461.8 - 467.0 m: Small section of coarse sands, potentially polymictic with alteration. Contains cm-scale subrounded to rounded clasts, increasing downhole.

D 10.2

D 8.7

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Project : Brucejack
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DRILL HOLE # DH-BGC12-24

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Drill Method: Diamond
Core: HQ3
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Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
464			464.1 m: Shear, 0.5 mm aperture. JRC = 4.
			464.5 m: Fault, 50 mm CX infill, R3. JRC = 4. Dip/dip direction = 49/273.
			464.6 m: Shear, 0.5 mm aperture. JRC = 8.
465			464.7 m: Shear, 0.5 mm aperture. JRC = 4. Dip/dip direction = 24/264.
			465.3 m: Shear, 0.5 mm aperture. JRC = 2. Dip/dip direction = 53/095.
466			466 m: Shear, 0.5 mm aperture. JRC = 20.
467			467.0 - 480.0 m: Massive sandy section with fault zone, no clasts, but concretions of pyrite, chlorite and calcite.
			467.1 m: Shear, 0.5 mm aperture. JRC = 8.
			467.5 m: Fault, 190 mm FB infill, R3. JRC = 20. Dip/dip direction = 56/237.
468			468.3 m: Fault, 30 mm CX infill, R3. JRC = 16. Dip/dip direction = 55/289.
			468.8 m: Fault, 90 mm FB infill, R3. JRC = 16. Dip/dip direction = 45/249.
469			
470			
471			
472			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 4.5
D 1.5

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
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Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

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Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
472			
473			
474			
			474.6 m: Fault on vein, 1 mm QZ infill, R4. JRC = 12.
475			
			475.4 m: Fault on vein, 1 mm QZ/FG infill, R4. JRC = 12. Dip/dip direction = 28/310.
476			
477			
478			
			478.7 m: Fault, 50 mm BX infill, R3. JRC = 20.
			478.8 m: Fault, 40 mm BX infill, R3. JRC = 20.
479			478.9 m: Fault on vein, 0.5 mm aperture. JRC = 20.
			479.1 m: Fault on vein, 0.5 mm aperture. JRC = 20. Dip/dip direction = 52/239.
			479.4 m: Fault on vein, 20 mm CX infill, R3. JRC = 20. Dip/dip direction = 46/154.
			479.6 m: Fault on vein, 80 mm CX infill, R3. JRC = 16.
480			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

D 8.4

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5 — Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

480

QUARTZ CARBONATE VEIN (H2)
White, quartz-calcite-iron carbonate vein with wall rock clasts, no mineralization. Strong (R4). Fresh (A1).

480.6 m: Fault on vein, 5 mm CX infill, R3. JRC = 16.

480.8 m: Fault on vein, 2 mm CX infill, R3. JRC = 16. Dip/dip direction = 47/250.

481

ARENITE (S4)
Green, sandstone with some cm-sized clasts. Strong to very strong (R4-R4.5). Fresh (A1).

D 4.4

482

482.9 m: Shear, 0.5 mm aperture. JRC = 20. Dip/dip direction = 72/243.

483

484

485

486

D 2.1

487

488

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

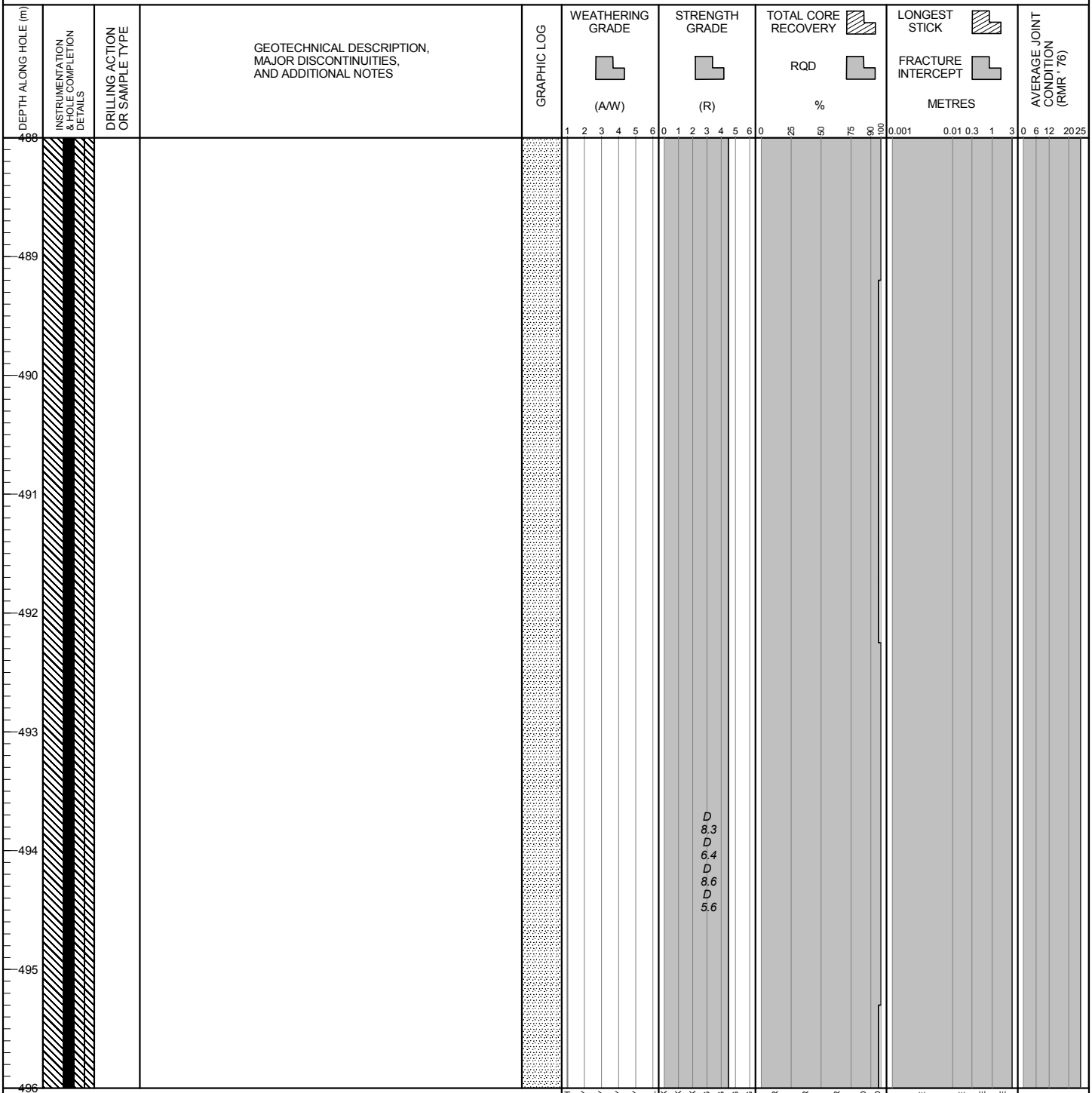
DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-24

Location: Valley of Kings Zone

Co-ordinates (m): 426,646E - 6,257,878N
Ground Elevation (m): 1,547.6
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -68
Trend (°): 002

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 3.7

Start Date: 25 Apr 12
Finish Date: 04 May 12
Final Depth (m): 501.4
Depth To Top Of Rock (m): 2.7
Logged By: LH/SW/LM
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
496					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
497			497.0 - 497.5 m: Dyke with contacts at 30 degrees TCA.						
498									
499			499.0 m: Shear, 0.5 mm aperture. JRC = 8.						
500									
501						D 6.4			
502			END OF DRILLHOLE AT 501.4 m Notes: 1. Two vibrating wire piezometers installed at 98.5 m and 499.9 m.						
503									
504									

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE: FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE: EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD: V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT: V. CLOSE; CLOSE; MODERATE; WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
0			PELITE (S5) Grey, interbedded sedimentary unit, slightly faulted. Bedding visible in some areas, but layers are convoluted and sub-parallel to core axis. Strong (R4). Slight weathering from top of bedrock to 2.2 m. Faint to no alteration (A1-A1.5) below 2.2 m.		1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
1						D 2.8			
2									
3									
4									
5									
6									
7									
8					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

8
9
10
11
12
13
14
15
16

9.8 m: Fault, 20 mm FG infill.

12.2 m: Shear, 0.5 mm aperture. JRC = 16.

15.4 m: Shear on vein, 0.5 mm aperture. JRC = 8.

D 2.9

D 5.0

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

16
17
18
19
20
21
22
23
24

19.6 m: Fault, 3 mm FG infill. JRC = 8.

21.1 m: Fault, 5 mm FG infill.

D
2.1

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
24			24.3 m: Fault, 5 mm FG infill.						
25						D 1.9			
26									
27									
28									
29									
30									
31						D 3.7			
32									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE; CLOSE; MODERATE; WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE

GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES

STOCKWORK (H7)
White and grey, varies from coarse sandstone to mudstone. Strong (R4). Fresh (A1).

ARENITE (S4)
Grey, original composition and texture are difficult to discern due to sericite alteration. Massive pyrite increases as replacement clast pyrite decreases. Medium strong to strong (R3-R4). Fresh (A1). Weaker rock (R2.5-R3) from 160.5-180.5 m.

GRAPHIC LOG
WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 2.9
D 4.9
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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Client: Pretium Resources Inc.

LOG SCALE: 1:50

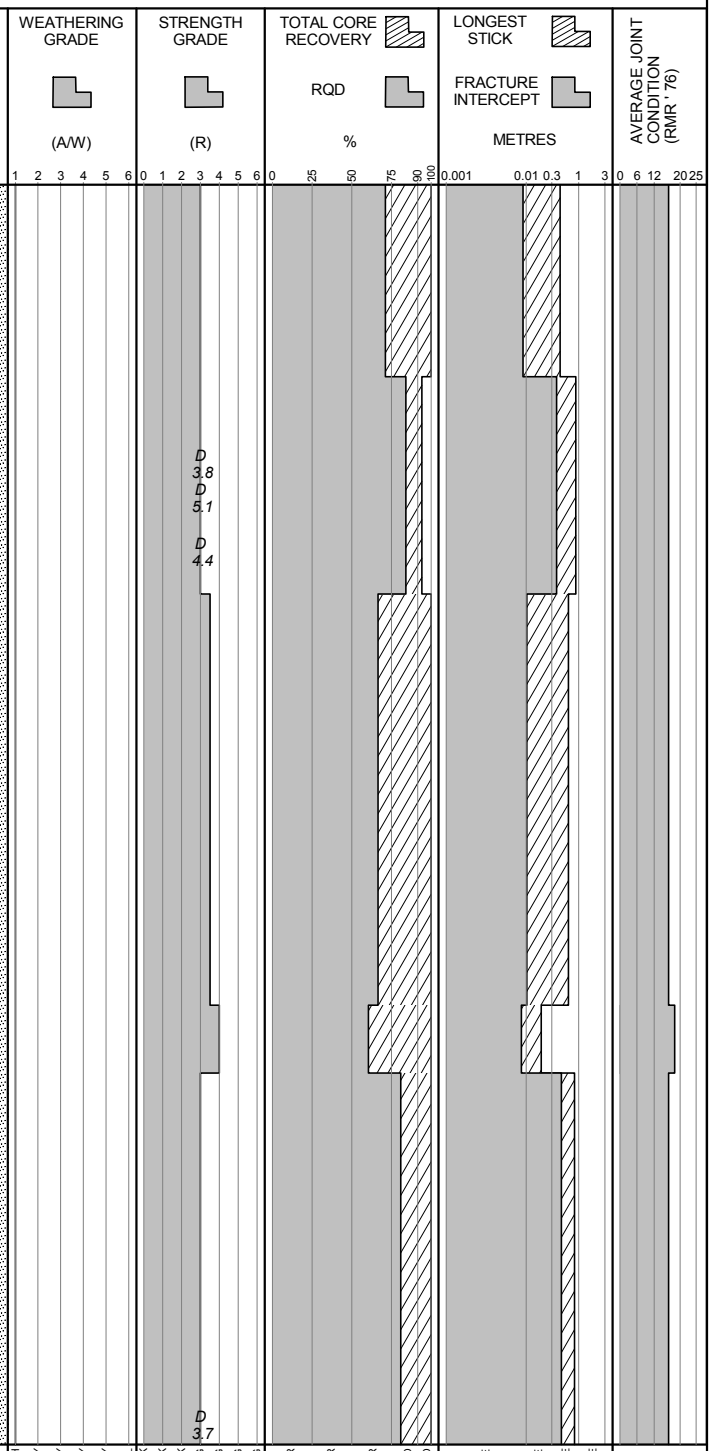
BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
48			48.2 m: Shear, 0.5 mm aperture. JRC = 20.	
			48.4 m: Shear, 0.5 mm CX infill. JRC = 8.	
			48.4 m: Shear, 50 mm BX infill. JRC = 8.	
			48.5 m: Shear, 0.5 mm aperture. JRC = 13.	
49			48.9 m: Fault, 0.5 mm aperture. JRC = 8.	
50			50.2 m: Shear, 51 mm BX infill. JRC = 20.	
			50.2 m: Shear. JRC = 12.	
51				
52			52.1 m: Fault, CX infill, R2. JRC = 8.	
53				
54				
55			54.9 m: Fault, 80 mm CX infill, R2. JRC = 16.	
			55.6 m: Fault, 110 mm BX infill, R2. JRC = 20.	
56				



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
56			56.1 m: Fault, 150 mm BX infill, R2. JRC = 16.
58			58 m: Fault on vein, 280 mm QZ/BX infill, R2. JRC = 12.
			58.5 m: Fault, 130 mm BX/QZ infill, R2. JRC = 13.
59			59 m: Fault, 2 mm FG infill, R0. JRC = 8.
			59.7 m: Fault, 35 mm BX infill, R2. JRC = 12.
61			61.4 m: Fault, 1 mm FG infill, R2. JRC = 12. 61.5 m: Shear, 0.5 mm aperture. JRC = 12. 61.6 m: Fault, 2 mm FG infill, R2. JRC = 20. 61.8 m: Fault, 2 mm FG infill, R2. JRC = 16.
64			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

D 1.9

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

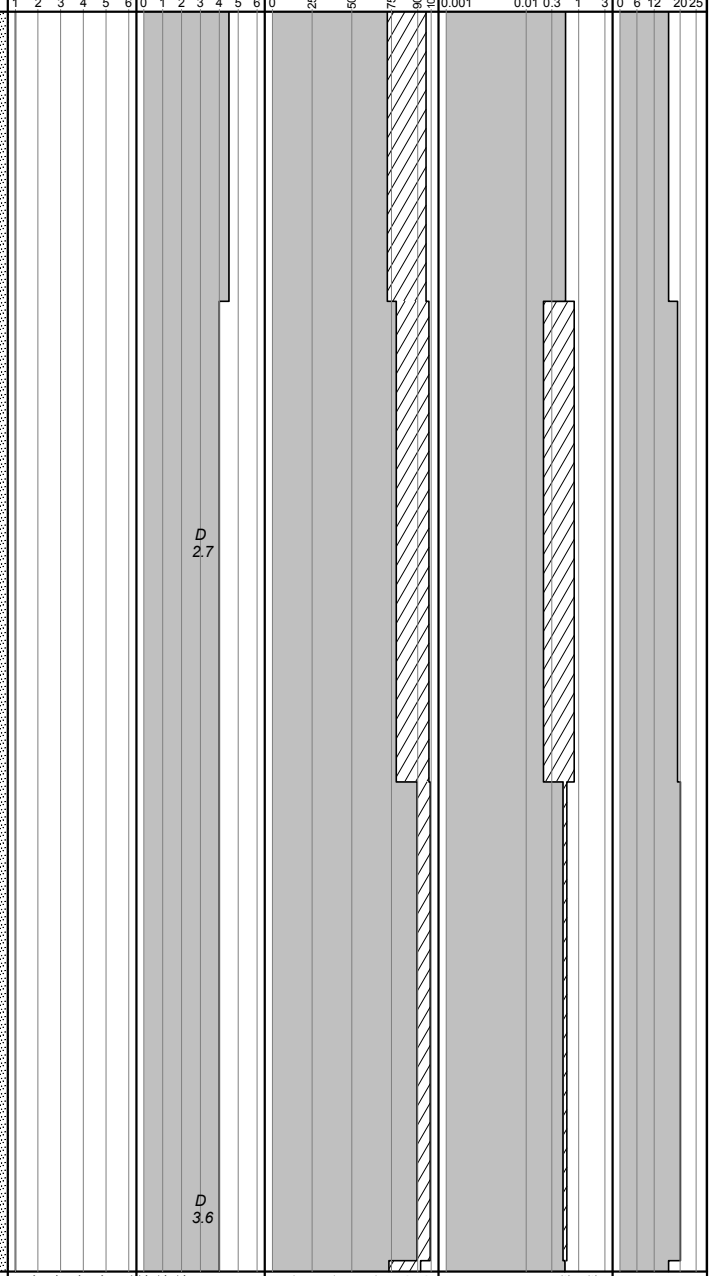
Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
64			64.3 m: Fault, 3 mm FG infill, R2. JRC = 16. 64.4 m: Fault, 40 mm BX infill, R2. JRC = 20.
65			65.1 m: Fault, 270 mm FG/BX infill, R2. JRC = 20.
			65.6 m: Fault, 30 mm FG/BX infill, R2. JRC = 16.
66			66.2 m: Fault, 600 mm FG/BX infill, R2. JRC = 20.
67			
68			
69			
70			70 m: Fault, 25 mm FG/BX infill, R2. JRC = 12.
			70.7 m: Fault, 2 mm FG infill, R2. JRC = 16.
71			70.9 m: Fault, 2 mm FG infill, R2. JRC = 20.
72			



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD %
LONGEST STICK / FRACTURE INTERCEPT METRES
AVERAGE JOINT CONDITION (RMR '76)

72
73
74
75
76
77
78
79
80

72.5 m: Fault, 2.1 mm BX infill, R2. JRC = 12.

74.3 m: Fault on foliaton, 4 mm FG/BX infill, R2. JRC = 16.

74.5 m: Fault, 4 mm FG/BX infill, R2. JRC = 12.

76.5 m: Fault, 20 mm FG/BX infill, R2. JRC = 12.
76.6 m: Fault, 10 mm FG/BX infill, R2. JRC = 8.
76.7 m: Fault, 20 mm FG/BX infill, R2. JRC = 13.

77.1 m: Fault, 5 mm FG infill, R0. JRC = 12.
77.3 m: Fault, 5 mm FG infill, R0. JRC = 12.

D
1.7

78.4 m: Fault, 20 mm FG/BX infill, R2. JRC = 20.

79.8 m: Fault, 40 mm BX infill, R2. JRC = 12.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

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BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

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Datum: UTM NAD 83 Zone 9
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

80

81.3 m: Fault, 20 mm CX/FG infill, R0. JRC = 20.

D 3.9

82

83

83.2 m: Fault, 1 mm FG infill, R0. JRC = 12.

83.8 m: Fault, 1 mm FG infill, R0. JRC = 20.

84

85

D 6.7
D 6.3

D 5.3
D 3.8

86

87

88

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

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BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
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Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

88
88.4 m: Fault on vein, 20 mm BX/QZ infill, R2. JRC = 20.
89
90
90.9 m: Fault, 13 mm BX infill, R2. JRC = 16.
91
91.5 m: Fault on vein, 10 mm QZ infill, R3. JRC = 16.
D
2.3
92
92.1 m: Fault, 70 mm BX infill, R2. JRC = 20.
93
94
95
96

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

96
97
98
99
100
101
102
103
104

98 m: Fault, 1 mm BX infill, R2. JRC = 20.

98.3 m: Fault, 80 mm BX infill, R2. JRC = 20.

101.2 m: Shear, 0.5 mm aperture. JRC = 4.

102.3 m: Fault, 2 mm FG infill, R1. JRC = 12.

102.7 m: Shear, 0.5 mm aperture. JRC = 8.

103.2 m: Shear, 0.5 mm aperture. JRC = 4.

D 6.0

D 4.6

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

104
105
106
107
108
109
110
111
112

D 5.0

D 5.3

110.2 m: Shear, 0.5 mm QZ infill, R4. JRC = 4.

110.5 m: Shear, 0.5 mm aperture. JRC = 2.

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

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Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

112
113 m: Shear, 0.5 mm aperture. JRC = 4.
114
D 7.1
D 7.9
114.5 m: Shear, 0.5 mm aperture. JRC = 1.
115
D 6.2
116
117
117.8 m: Shear, 0.5 mm aperture. JRC = 2.
118
D 5.5
119
120

WEATHERING GRADE: FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE: EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD: V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT: V. CLOSE; CLOSE; MODERATE; WIDE

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N	***Drill Designation:*** Heliportable	***Start Date:*** 03 May 12
Ground Elevation (m): 1,527.8	***Drilling Contractor:*** Radius	***Finish Date:*** 13 May 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 371.3
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 0.0
Plunge (°): -45	***Fluid:*** Polymer	***Logged By:*** LM/SW
Trend (°): 176	***Cased To (m) :*** 1.5	***Reviewed By:*** JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

120.6 m: Shear, 0.5 mm aperture. JRC = 8.

122.1 m: Shear, 1 mm CX infill, R2. JRC = 8.

122.8 m: Shear, 0.5 mm aperture. JRC = 4.

123.1 m: Shear, 0.5 mm aperture. JRC = 8.

126.6 m: Shear, 0.5 mm aperture. JRC = 20.

D 5.0

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

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Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N	***Drill Designation:*** Heliportable	***Start Date:*** 03 May 12
Ground Elevation (m): 1,527.8	***Drilling Contractor:*** Radius	***Finish Date:*** 13 May 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 371.3
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 0.0
Plunge (°): -45	***Fluid:*** Polymer	***Logged By:*** LM/SW
Trend (°): 176	***Cased To (m) :*** 1.5	***Reviewed By:*** JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

128
129
129.7 m: Shear, 1 mm QZ infill, R4. JRC = 2.
130
131
131 m: Shear, 0.5 mm aperture. JRC = 2.
131.8 m: Shear, 0.5 mm aperture. JRC = 4.
132
132.4 m: Shear, 0.5 mm aperture. JRC = 12.
133
134
135
135.2 m: Fault, 20 mm FG infill, R1. JRC = 20.
135.4 m: Fault, 30 mm FG infill, R0. JRC = 20.
135.6 m: Fault, 60 mm FG infill, R0. JRC = 20.
136

D 5.4

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

136
136.7 m: Shear on vein, 0.5 mm aperture. JRC = 12.
137
138
138.5 m: Fault on foliaton, 2 mm FG/SE infill, R0. JRC = 16.
139
140
141
141.2 m: Fault on vein, 3 mm QZ infill, R3. JRC = 20.
141.7 m: Shear on foliation, 0.5 mm aperture. JRC = 4.
142
141.9 m: Fault, 1 mm FG/CL infill, R0. JRC = 8.
142.1 m: Fault, 1 mm FG infill, R0. JRC = 8.
142.5 m: Fault, 15 mm FG/CX infill, R1. JRC = 20.
142.5 m: Fault, 15 mm FG/CX infill, R1. JRC = 20.
142.7 m: Fault, 30 mm FG/CX infill, R1. JRC = 20.
143
143.5 m: Shear on foliation, 0.5 mm aperture. JRC = 8.
143.7 m: Shear on foliation, 0.5 mm aperture. JRC = 12.
144

D 4.4
D 6.9

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
144			143.9 m: Fault, 50 mm BX infill, R3. JRC = 12.
			144.1 m: Fault, 4 mm BX infill, R3. JRC = 12.
			144.7 m: Fault, 1 mm FG/BX infill. JRC = 16.
145			145.0 m: Fault, 5 mm FG/QZ infill, R2. JRC = 12.
			145.7 m: Fault, 20 mm BX infill, R3. JRC = 20.
146			145.9 m: Fault, 1 mm FG/BX infill, R2. JRC = 16.
			146.0 m: Fault, 1 mm FG infill, R1. JRC = 20.
			146.4 m: Fault, 2 mm FG infill, R1. JRC = 16.
147			147.1 m: Fault, 50 mm BX infill. JRC = 20.
			147.7 m: Fault, 10 mm FG/BX infill. JRC = 20.
148			148.4 m: Fault, 2 mm FG infill. JRC = 20.
			148.5 m: Fault, 1 mm FG infill. JRC = 20.
149			148.9 m: Shear, 0.5 mm aperture. JRC = 4.
			149.7 m: Fault, 50 mm BX infill, R2. JRC = 20.
150			
151			
152			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 4.8
D 6.4

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)

152
153
154
155
156
157
158
159
160

157 m: Fault, 1 mm FG infill, R0. JRC = 12.
157.1 m: Fault, 15 mm FG/BX infill, R1. JRC = 20.
157.1 m: Fault, 1 mm FG infill, R0. JRC = 20.
157.2 m: Fault, 35 mm BX/FG infill, R1. JRC = 20.
157.4 m: Fault, 1 mm FG infill, R0. JRC = 12.
157.6 m: Fault, 0.5 mm aperture. JRC = 16.
157.8 m: Fault, 0.5 mm aperture. JRC = 16.
158.1 m: Fault, 2 mm QZ infill, R3. JRC = 12.
158.6 m: Fault, 1 mm FG infill, R0. JRC = 20.
158.7 m: Fault, 1 mm FG infill, R0. JRC = 16.
158.7 m: Shear, 0.5 mm aperture. JRC = 12.
159.3 m: Fault, 26 mm BX/FG infill, R2. JRC = 20.

D
1.9

(A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
(R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

160.3 m: Fault, 44 mm BX/FG infill, R2. JRC = 12.
160.4 m: Fault, 2 mm FG infill, R0. JRC = 12.

160.8 m: Fault, 17 mm FG infill, R2. JRC = 20.

163 m: Shear, 0.5 mm aperture. JRC = 2.

164.1 m: Shear, 1 mm CX infill, R2. JRC = 12.

164.8 m: Shear, 2 mm CX infill, R2. JRC = 12.

165.1 m: Shear, 0.5 mm aperture. JRC = 4.

D 2.5
D 0.4

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

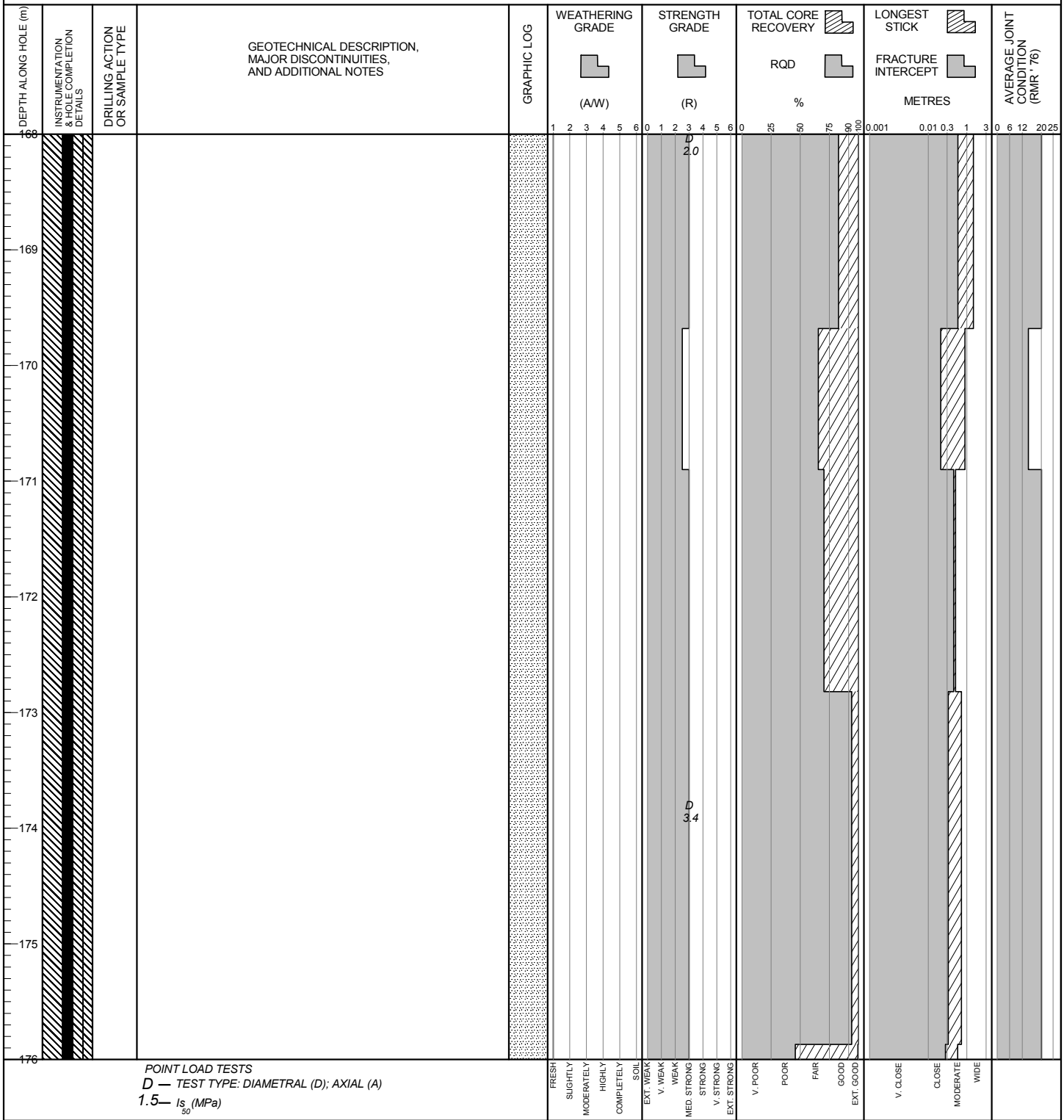
DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

176
177
178
179
180
181
182
183
184

179.1 m: Shear, 0.5 mm aperture. JRC = 4.

180.8 m: Shear, 0.5 mm aperture. JRC = 4.

181 m: Shear, 0.5 mm aperture. JRC = 4.

181.8 m: Shear, 0.5 mm aperture. JRC = 4.

D 3.5

D 4.6

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
184				
185			185.1 m: Shear, 0.5 mm aperture. JRC = 12.	
			185.6 m: Shear, 0.5 mm aperture. JRC = 8.	
			185.7 m: Shear, 0.5 mm aperture. JRC = 12.	
186				
187			187.5 m: Shear, 0.5 mm aperture. JRC = 4.	
188				
189				
190			CONGLOMERATE (S3) Green-grey, most of the larger clasts, up to 5cm long, are completely replaced with sericite. Pervasive alteration decreases with a constant level of pyrite. Strong (R4). Fresh (A1).	
191				
192				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 6.2

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
192					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 100	0.001 0.01 0.3 1 3	0 6 12 20 25
193									
194						D 7.0			
195			194.8 m: Shear, 0.5 mm aperture. JRC = 8.						
196									
197			197.6 m: Fault, 3 mm FG/BX infill, R2. JRC = 12.						
198			198.2 m: Fault, 1 mm FG infill, R0. JRC = 8. 198.4 m: Fault, 1 mm FG infill, R0. JRC = 12.						
199			199.3 m: Fault, 1 mm FG infill, R0. JRC = 4. 199.6 m: Fault, 10 mm BX infill, R2. JRC = 20.						
200					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

200

201 m: Fault, 1 mm FG infill, R0. JRC = 12.

201.3 m: Fault, 1 mm FG infill, R0. JRC = 16.

201.4 m: Fault, 1 mm FG infill, R0. JRC = 12.

ARENITE (S4)
Green-grey, sub-m scale interbedded sediments of mudstone to conglomerate with sericite alteration. Medium strong to strong (R3-R4). Fresh (A1)

201.6 m: Shear, 0.5 mm aperture. JRC = 8.

201.7 m: Shear, 0.5 mm aperture. JRC = 8.

201.8 m: Fault on vein, 1.5 mm FG/QZ infill, R0. JRC = 4.

202.3 m: Fault on vein, 1 mm FG infill, R0. JRC = 8.

202.4 m: Shear, 0.5 mm aperture. JRC = 4.

203.2 m: Fault on vein, 1 mm FG infill. JRC = 20.

203.9 m: Fault on vein, 1 mm FG infill. JRC = 4.

205.3 m: Fault, 1 mm FG infill, R0. JRC = 12.

205.4 m: Fault, 1 mm FG infill, R0. JRC = 12.

205.7 m: Fault, 16 mm FG/QZ infill, R2. JRC = 16.

206.5 m: Fault, 16 mm FG/QZ infill, R2. JRC = 16.

207 m: Fault, 3 mm DX infill, R2. JRC = 12.

D 5.7
D 5.4
D 5.0
D 4.7
D 1.6

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

208

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
208			208.1 m: Fault, 2 mm FG/BX infill, R0. JRC = 20. 208.2 m: Fault, 3 mm FG/DX infill, R2. JRC = 20.
			208.6 m: Fault, 40 mm CX/FG infill, R2. JRC = 20.
			208.8 m: Fault, 1 mm FG infill, R0. JRC = 20. 208.9 m: Fault, 1 mm FG infill, R0. JRC = 16.
209			
			209.7 m: Shear, 0.5 mm aperture. JRC = 8.
210			
			210.8 m: Fault on vein, 90 mm FG, QZ, BX infill, R2. JRC = 12. 210.8 m: Fault, 3 mm FG infill, R0. JRC = 20. 211.0 m: Fault, 1 mm FG infill. JRC = 12.
211			
			211.3 m: Fault, 10 mm FG infill, R1. JRC = 20. 211.5 m: Fault, 0.5 mm FG infill, R0. JRC = 12.
212			
213			
			213.2 m: Shear, 0.5 mm aperture. JRC = 4.
214			
			214.1 m: Fault, 12 mm FB infill, R2. JRC = 20.
215			
			215.8 m: Shear, 0.5 mm aperture. JRC = 2.
216			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

D 4.0

D 1.8

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
216			215.9 m: Shear, 0.5 mm aperture. JRC = 2.
			216.6 m: Shear, 0.5 mm aperture. JRC = 8.
			216.7 m: Shear, 0.5 mm aperture. JRC = 8.
217			216.8 m: Shear, 0.5 mm aperture. JRC = 4.
			216.9 m: Shear, 0.5 mm aperture. JRC = 2.
			217.0 m: Shear, 0.5 mm aperture. JRC = 8.
			217.2 m: Shear, 0.5 mm aperture. JRC = 4.
			217.5 m: Shear, 0.5 mm aperture. JRC = 2.
			217.7 m: Shear, 0.5 mm aperture. JRC = 8.
218			
219			
220			219.9 m: Fault, 1 mm FG infill, R0. JRC = 8.
			220.3 m: Fault, 1 mm FG infill, R0. JRC = 20.
221			
			221.1 m: Fault, 3 mm FG/CX infill, R1. JRC = 16.
			221.2 m: Fault, 1 mm FG infill, R0. JRC = 12.
222			
223			222.9 m: Shear, 0.5 mm aperture. JRC = 8.
224			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 3.8

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
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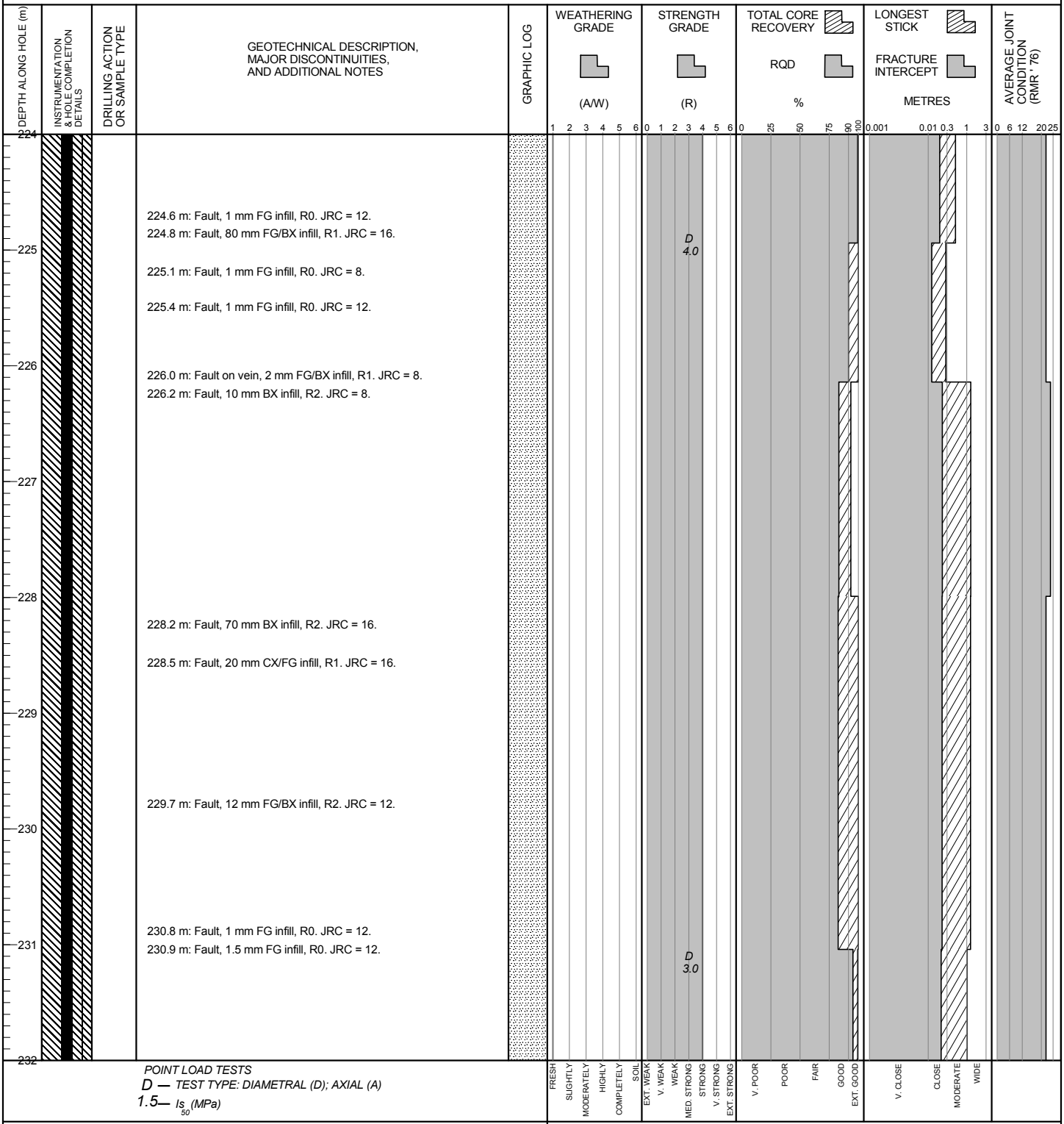
Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

232

233.0 m: Fault, 1.5 mm FG/CX infill, R1. JRC = 16.

233.7 m: Fault, 1 mm FG infill, R0. JRC = 8.

233.9 m: Fault, 12 mm FG/BX infill, R1. JRC = 12.

234.0 m: Fault, 4 mm FG infill, R0. JRC = 20.

236.1 m: Fault, 1.5 mm FG infill, R0. JRC = 8.

237.7 m: Fault, 1 mm FG infill, R0. JRC = 8.

238.3 m: Fault, 1.5 mm FG infill, R0. JRC = 12.

238.6 m: Fault on vein, 1 mm FG/QZ infill, R2. JRC = 8.

238.8 m: Fault, 90 mm BX infill, R3. JRC = 12.

239.0 m: Fault on vein, 1.5 mm QZ/FG infill, R2. JRC = 12.

239.4 m: Fault, 1 mm FG infill, R0. JRC = 8.

239.9 m: Fault, 1 mm FG infill, R0. JRC = 16.

240

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
240			239.9 m: Fault, 1 mm FG infill, R0. JRC = 12. 239.9 m: Fault, 1 mm FG infill, R0. JRC = 12. 240.0 m: Fault, 1 mm FG infill, R0. JRC = 12. 240.0 m: Fault, 2 mm FG/CX infill, R1. JRC = 16. 240.0 m: Fault, 2 mm FG/CX infill, R1. JRC = 12. 240.4 m: Fault, 2 mm FG/BX infill, R1. JRC = 8. 240.7 m: Fault, 20 mm FG/CX infill, R1. JRC = 16. 241.1 m: Fault, 1 mm FG infill, R0. JRC = 8. 241.2 m: Fault, 1 mm FG infill, R0. JRC = 16.	
241				
242				
243				
244				
245				
246				
247			MAFIC DYKE (V6) Green with small calcite amygdules. Medium strong to strong (R3.5). Fresh (A1).	
248				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 4.3
D 3.3

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
248			ARENITE (S4) Green-grey, sub-m scale interbedded sediments of mudstone to conglomerate with sericite alteration. Follows VSF pattern. Medium strong to strong (R3.5-R4). Fresh (A1).
249			249.4 m: Fault, 60 mm BX infill, R2. JRC = 20.
250			250.4 m: Fault, 1 mm FG infill, R0. JRC = 16.
251			250.8 m: Fault, 2 mm FG/CX infill, R1. JRC = 12. 250.9 m: Shear, 0.5 mm aperture. JRC = 8. 251.1 m: Fault, 1 mm FG infill, R0. JRC = 12. 251.2 m: Fault, 2 mm FG infill, R0. JRC = 12.
252			252.2 m: Fault, 1 mm FG infill, R0. JRC = 12. 252.2 m: Fault, 1 mm FG infill, R0. JRC = 12. 252.2 m: Fault, 2 mm FG/CX infill, R1. JRC = 12.
253			253.4 m: Fault, 1 mm FG infill, R0. JRC = 12. 253.5 m: Fault, 1 mm FG/CX infill, R0. JRC = 12. 253.5 m: Fault, 1.1 mm FG infill, R0. JRC = 12.
254			253.9 m: Fault, 1 mm FG infill, R0. JRC = 8. 254.1 m: Fault, 4 mm FG/BX infill, R1. JRC = 12.
255			255 m: Fault on vein, 50 mm QZ infill, R3. JRC = 20. 255.1 m: Fault, 120 mm FG/CX infill, R1. JRC = 20. 255.2 m: Fault, 1.5 mm FG infill, R0. JRC = 8. 255.3 m: Fault, 1 mm aperture, R1 infill. JRC = 8. 255.4 m: Fault, 3 mm FG infill, R0. JRC = 12. 255.8 m: Fault, mm FG/CX infill, R1. JRC = 12.
256			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 2.2
D 4.9
D 2.5

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5 — Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

256 m: Fault, 5 mm FG/CX infill, R1. JRC = 12.

D 2.5

261.2 m: Fault, 1 mm aperture. JRC = 8.

262.8 m: Fault, 1 mm FG infill, R0. JRC = 12.

263.2 m: Fault, 20 mm FG/BX infill, R1. JRC = 16.

D 4.4
D 3.7

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

264.7 m: Shear, 0.5 mm aperture. JRC = 4.

264.9 m: Shear, 0.5 mm aperture. JRC = 4.

266.2 m: Shear, 0.5 mm aperture. JRC = 4.

268 m: Shear, 0.5 mm aperture. JRC = 1.

268.9 m: Shear, 0.5 mm aperture. JRC = 1.

270.7 - 275.6 m: Two multiphase stockwork zones; very little mineralization; clear boundaries at 50-55 degrees TCA.

D 2.8

D 3.2

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
272			
			272.7 m: Fault, 3 mm FG infill, R0. JRC = 12.
273			
			273.3 m: Fault on vein, 2 mm FG infill, R0. JRC = 4.
274			
275			
			275.64 - 302.1 m: Laminations present locally at 25 degrees TCA.
276			
277			
			277.4 m: Fault, 30 mm FG/BX infill, R1. JRC = 12.
278			
279			279 m: Fault, 2 mm FG infill, R0. JRC = 8. 279 m: Fault, 2 mm FG infill, R0. JRC = 12. 279.3 m: Fault, 1 mm FG infill, R0. JRC = 12. 279.4 m: Fault, 1 mm FG infill, R0. JRC = 16. 279.4 m: Fault, 1 mm FG infill, R0. JRC = 12. 279.5 m: Fault, 1 mm FG infill, R0. JRC = 12.
280			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

D 4.9
D 3.6

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

280
279.5 m: Fault, 1 mm FG infill, R0. JRC = 12.
279.5 m: Fault, 1 mm FG infill, R0. JRC = 16.
279.7 m: Fault, 1 mm FG infill, R0. JRC = 8.
279.8 m: Fault, 50 mm FG/BX infill, R1. JRC = 16.

281
280.9 m: Shear, 0.5 mm aperture. JRC = 8.
281 m: Shear, 0.5 mm aperture. JRC = 2.

282
282.1 m: Shear, 0.5 mm aperture. JRC = 8.
282.3 m: Shear, 0.5 mm aperture. JRC = 16.

283
284
285
286
287
288

D 3.7
D 3.9

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

288.8 m: Shear, 0.5 mm aperture. JRC = 1.

290.6 m: Shear, 0.5 mm aperture. JRC = 4.

D 8.4

WEATHERING GRADE: FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE: EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
RQD: V. POOR | POOR | FAIR | GOOD | EXT. GOOD
FRACTURE INTERCEPT: V. CLOSE | CLOSE | MODERATE | WIDE

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

296

297.2 m: Fault, 1 mm FG infill, R0. JRC = 8.

D 0.2

297

297.9 m: Fault, 2 mm FG infill, R0. JRC = 12.

298

298.5 m: Fault, 2 mm FG infill, R0. JRC = 12.

298.9 m: Fault, 1 mm FG infill, R0. JRC = 8.

299

299.2 m: Fault, 1 mm FG infill, R0. JRC = 8.

299.6 m: Fault, 1 mm FG infill, R0. JRC = 8.

299.9 m: Fault, 1 mm FG infill, R0. JRC = 8.

300

300.2 m: Fault, 1 mm FG/BX infill, R1. JRC = 16.

300.3 m: Fault on vein, 3 mm FG/BX infill, R2. JRC = 16.

D 3.7

300.7 m: Fault, 1 mm FG infill, R0. JRC = 8.

300.7 m: Fault, 1 mm FG infill, R0. JRC = 16.

301

301.1 m: Fault, 5 mm FG/CX infill, R1. JRC = 16.

302

PLAGIOCLASE-HORNBLENDE PORPHYRY (P1)
Green, medium grained crystals, sericite replaced, areas of hydrothermal brecciation, some chlorite alteration and an increase in cubic pyrite crystals within rock matrix, some cases of mineralization. Strong to medium strong (R3.5-R4). Fresh (A1).

D 3.5

303

304

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
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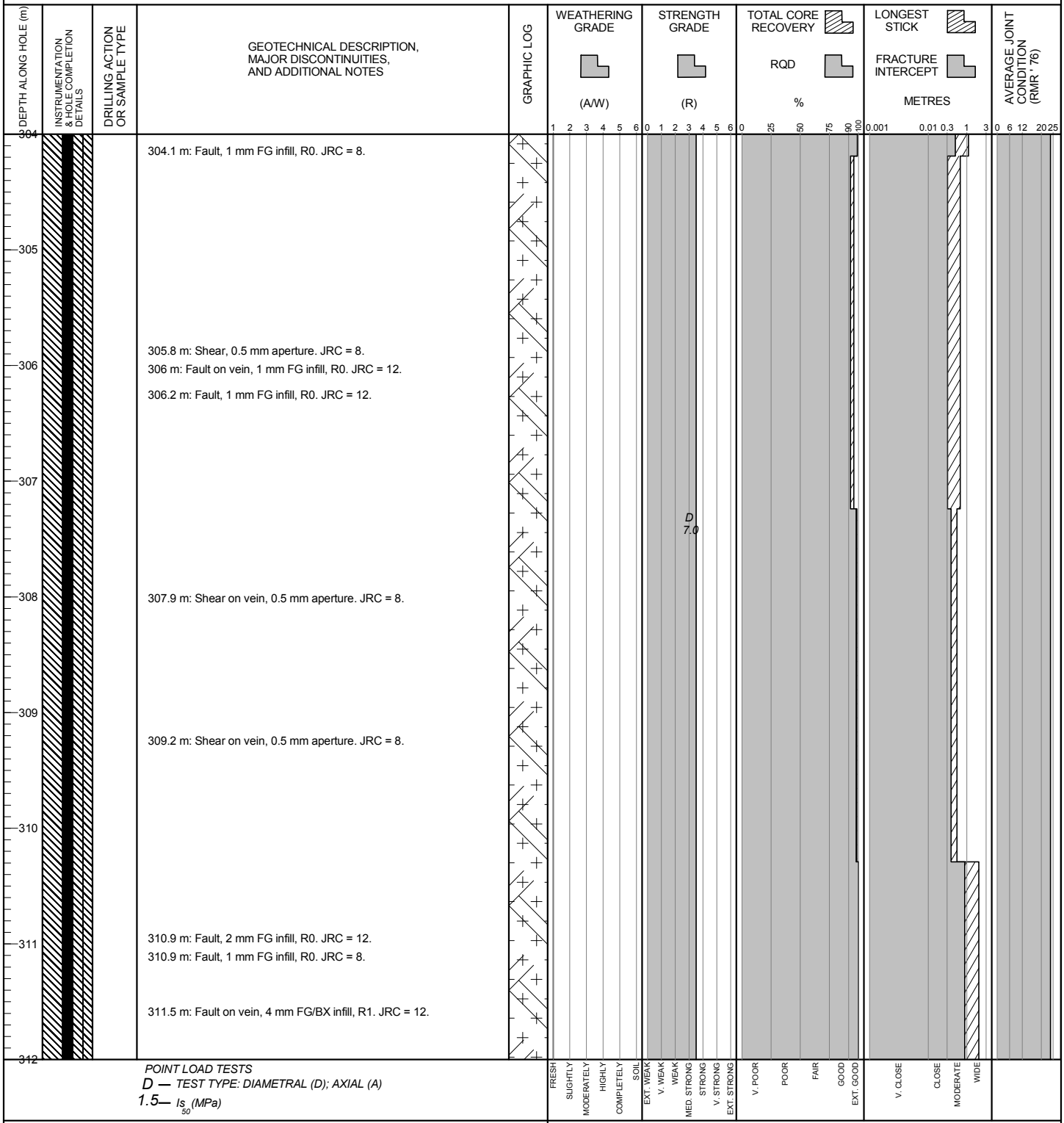
Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
312					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 100	0.001 0.01 0.3 1 3	0 6 12 20 25
313						D 6.3			
314			313.9 m: Fault, 1 mm FG infill, R0. JRC = 8. 314.2 m: Fault, 1 mm FG infill, R0. JRC = 8.						
315									
316									
317									
318						D 6.0			
319									
320					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

320
321
322
323
324
325
326
327
328

D 5.7
D 6.4
D 7.2
D 5.9
D 5.7
D 5.3

325.2 m: Shear on vein, 0.5 mm aperture. JRC = 1.

326.5 m: Shear on vein, 0.5 mm aperture. JRC = 1.

326.8 m: Shear on vein, 0.5 mm aperture. JRC = 1.

327.1 m: Shear on vein, 0.5 mm aperture. JRC = 1.

327.7 - 329.5 m: Hydrothermal/autobrecciated porphyry; hydrothermal veinlets surrounding above and below this zone.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N	***Drill Designation:*** Heliportable	***Start Date:*** 03 May 12
Ground Elevation (m): 1,527.8	***Drilling Contractor:*** Radius	***Finish Date:*** 13 May 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 371.3
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 0.0
Plunge (°): -45	***Fluid:*** Polymer	***Logged By:*** LM/SW
Trend (°): 176	***Cased To (m) :*** 1.5	***Reviewed By:*** JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

328

327.8 m: Shear on vein, 0.5 mm aperture. JRC = 4.

328.8 m: Shear on vein, 0.5 mm aperture. JRC = 4.

329

330

331

332

332.5 - 333.4 m: Stockwork zone (brief) following autobrecciated porphyry; no significant base metal mineralization.

D
7.2

333

334

335

336

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
336					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 100	0.001 0.01 0.3 1 3	0 6 12 20 25
337						D 4.7			
338			337.9 m: Shear on vein, 0.5 mm aperture. JRC = 1.						
339									
340									
341									
342									
343						D 5.4			
344					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

344
345 — 345 m: Shear on vein, 0.5 mm aperture. JRC = 1.
346
347
348 — 348.3 m: Shear on vein, 0.5 mm aperture. JRC = 1.
349 — D 4.7 — 349.6 m: Shear on vein, 0.5 mm aperture. JRC = 1. — 349.7 m: Shear on vein, 0.5 mm aperture. JRC = 1.
350
351
352

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

352

352.1 m: Shear on vein, 0.5 mm aperture. JRC = 4.
352.2 m: Shear on vein, 0.5 mm aperture. JRC = 2.

353

354

355

D
5.7

356

356.2 m: Shear on vein, 0.5 mm aperture. JRC = 4.

357

358

359

360

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
360					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
361			360.9 m: Fault on vein, 1 mm FG infill, R0. JRC = 4.			D 7.7			
362									
363									
364									
365									
366									
367									
368					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-25

Location: Valley of Kings Zone

Co-ordinates (m): 426,350E - 6,258,086N
Ground Elevation (m): 1,527.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -45
Trend (°): 176

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 03 May 12
Finish Date: 13 May 12
Final Depth (m): 371.3
Depth To Top Of Rock (m): 0.0
Logged By: LM/SW
Reviewed By: JW

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
368					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
369			369 m: Shear on vein, 0.5 mm aperture. JRC = 8.			D 4.3			
370			370.6 m: Fault, 1 mm FG infill, R0. JRC = 8.						
371			END OF DRILLHOLE AT 371.3 m Notes: 1. Two vibrating wire piezometers installed at 30.6 m and 369.8 m.						
372									
373									
374									
375									
376									

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE: FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE: EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
TOTAL CORE RECOVERY / RQD: V. POOR; POOR; FAIR; GOOD; EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT: V. CLOSE; CLOSE; MODERATE; WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-26

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,756E - 6,258,749N	***Drill Designation:*** Heliportable	***Start Date:*** 07 Jun 12
Ground Elevation (m): 1,406.1	***Drilling Contractor:*** Radius	***Finish Date:*** 08 Jun 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 30.5
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 0.3
Plunge (°): -75	***Fluid:*** Water	***Logged By:*** RH/LM
Trend (°): 180	***Cased To (m) :*** 1.0	***Reviewed By:*** BMM

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						OVERBURDEN No Recovery.
						Rock encountered at 0.3 m depth. Refer to DH-BGC12-26 rock log.
1						
2						
3						
4						
5						
6						
7						
8						

Su - kPa
40 80 120 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery
20 40 60 80
Moisture Content & SPT N
W_p% W% W_l%
20 40 60 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (SOIL) BRUCEJACK_SOIL.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-26

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,756E - 6,258,749N	***Drill Designation:*** Heliportable	***Start Date:*** 07 Jun 12
Ground Elevation (m): 1,406.1	***Drilling Contractor:*** Radius	***Finish Date:*** 08 Jun 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 30.5
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 0.3
Plunge (°): -75	***Fluid:*** Water	***Logged By:*** RH/LM
Trend (°): 180	***Cased To (m) :*** 1.0	***Reviewed By:*** BMM

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
0			Refer to DH-BGC12-26 Overburden Log
1			POTASSIUM FELDSPAR-HORNBLENDE-PLAGIOCLASE PORPHYRY (P2) Green, medium grained, massive groundmass consisting of fragmented blocks with potassium feldspar phenocrysts 2 to 5 mm and sporadic megacrysts 6 to 10 mm. Medium strong (R3-R3.5), faintly to slightly weathered (W1.5-W2), discontinuity surfaces are typically rough with separations <1 mm (JRC = 16 to 23). 0 - 3.05 m: Drilled with a starting barrel resulting in poor recovery. 5.07 m: Fault, 90 mm FB infill, R3.5, JRC = 8.
2			
3			
4			
5			
6			
7			
8			

GRAPHIC LOG

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

D 2.2
D 3.5
D 1.8
D 1.9

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

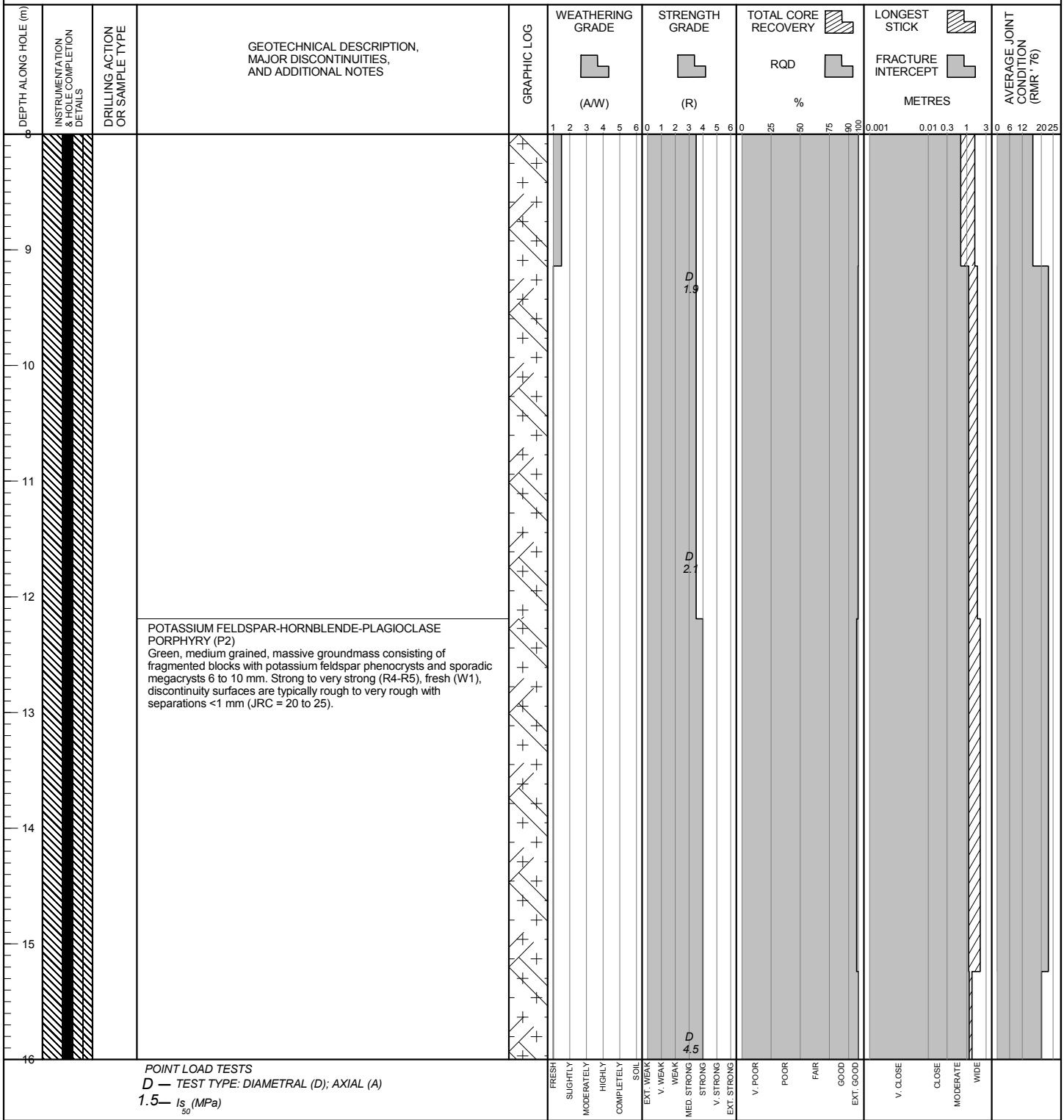
DRILL HOLE # DH-BGC12-26

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,756E - 6,258,749N
Ground Elevation (m): 1,406.1
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 180

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Water
Cased To (m) : 1.0

Start Date: 07 Jun 12
Finish Date: 08 Jun 12
Final Depth (m): 30.5
Depth To Top Of Rock (m): 0.3
Logged By: RH/LM
Reviewed By: BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

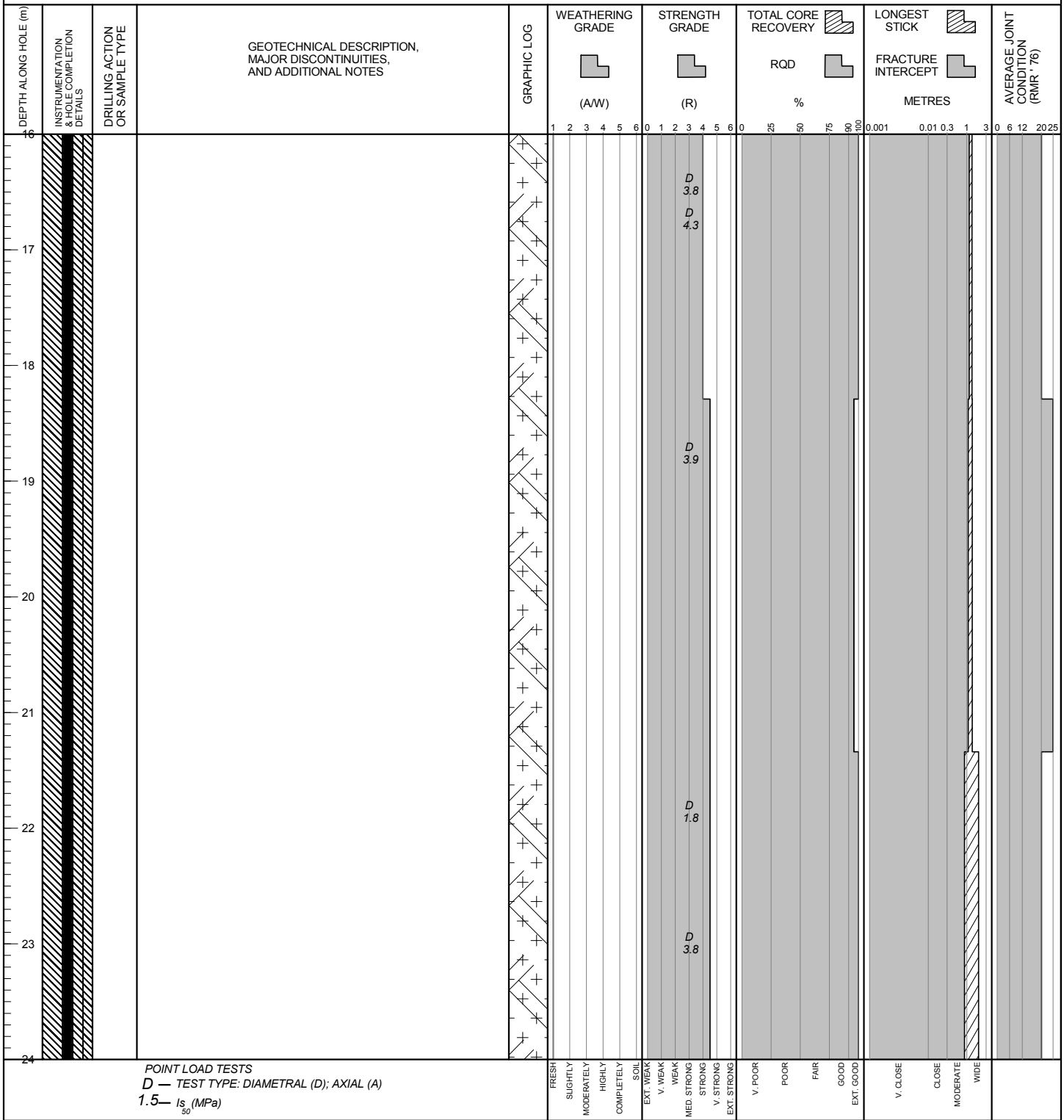
DRILL HOLE # DH-BGC12-26

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,756E - 6,258,749N
Ground Elevation (m): 1,406.1
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 180

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Water
Cased To (m) : 1.0

Start Date: 07 Jun 12
Finish Date: 08 Jun 12
Final Depth (m): 30.5
Depth To Top Of Rock (m): 0.3
Logged By: RH/LM
Reviewed By: BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

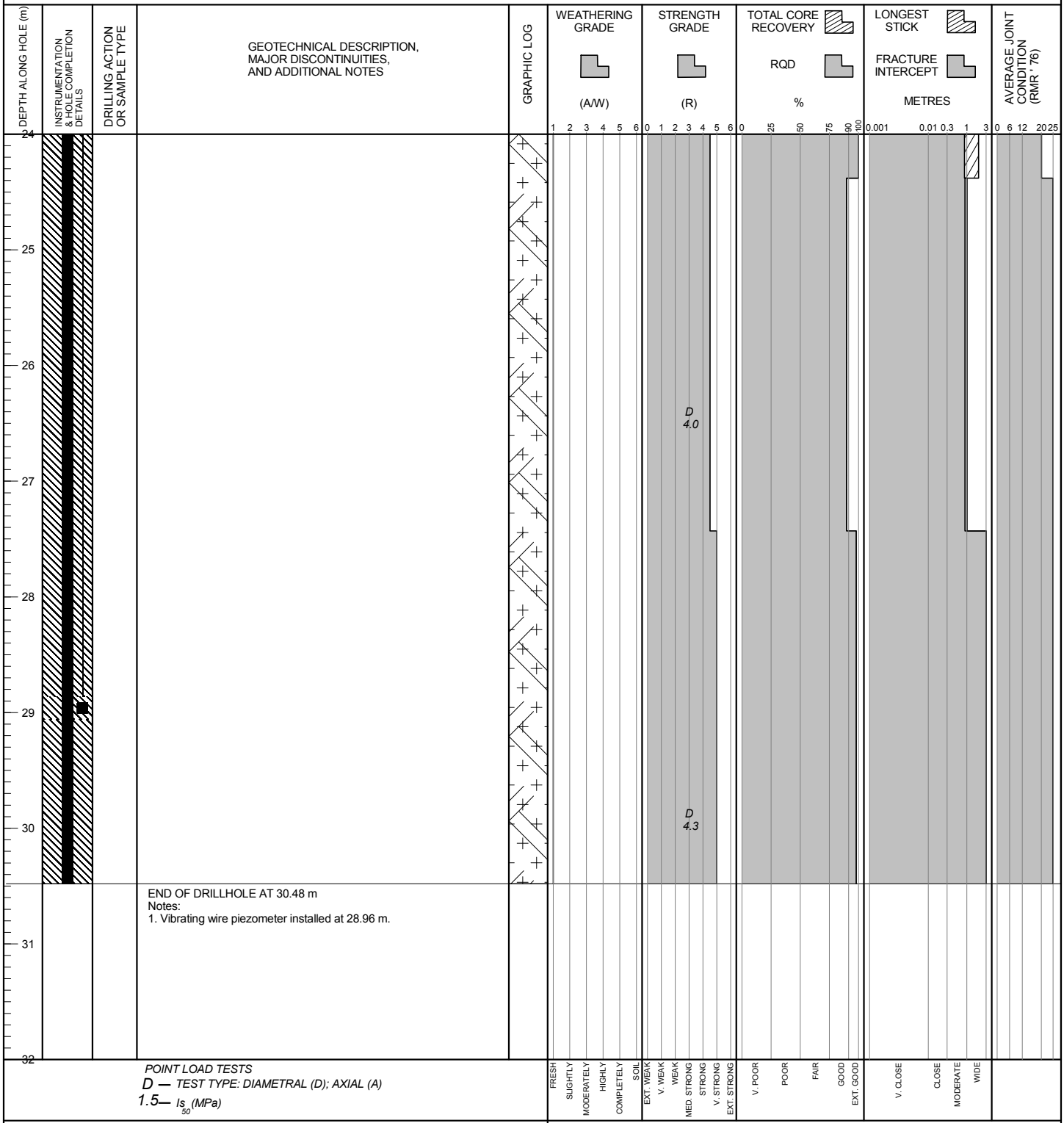
DRILL HOLE # DH-BGC12-26

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,756E - 6,258,749N
Ground Elevation (m): 1,406.1
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 180

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Water
Cased To (m) : 1.0

Start Date: 07 Jun 12
Finish Date: 08 Jun 12
Final Depth (m): 30.5
Depth To Top Of Rock (m): 0.3
Logged By: RH/LM
Reviewed By: BMM



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-27

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,846E - 6,258,671N	***Drill Designation:*** Heliportable	***Start Date:*** 08 Jun 12
Ground Elevation (m): 1,414.1	***Drilling Contractor:*** Radius	***Finish Date:*** 08 Jun 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 30.2
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 0.0
Plunge (°): -75	***Fluid:*** Water	***Logged By:*** RH/LM
Trend (°): 315	***Cased To (m) :*** 1.2	***Reviewed By:*** BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

POTASSIUM FELDSPAR-HORNBLENDE-PLAGIOCLASE PORPHYRY (P2)
Green, medium grained, massive groundmass with potassium feldspar phenocrysts 2 to 5 mm. Phenocrysts are sericite replaced and groundmass is sericite-chlorite replaced. Medium to very strong (R3.5-R5), slightly weathered (W1-W2), discontinuity surfaces are typically rough to very rough with separations <1 mm (JRC = 12 to 23).

Below 2.74 m: Strength grade increases from R3.5 to R4-R5.

D 7.1
D 6.2
D 8.2
D 7.4

7.59 m: Fault, 1.5 mm FG infill, R0, JRC = 8.

7.80 m: Fault, 2 mm FG infill, R0, JRC = 12.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

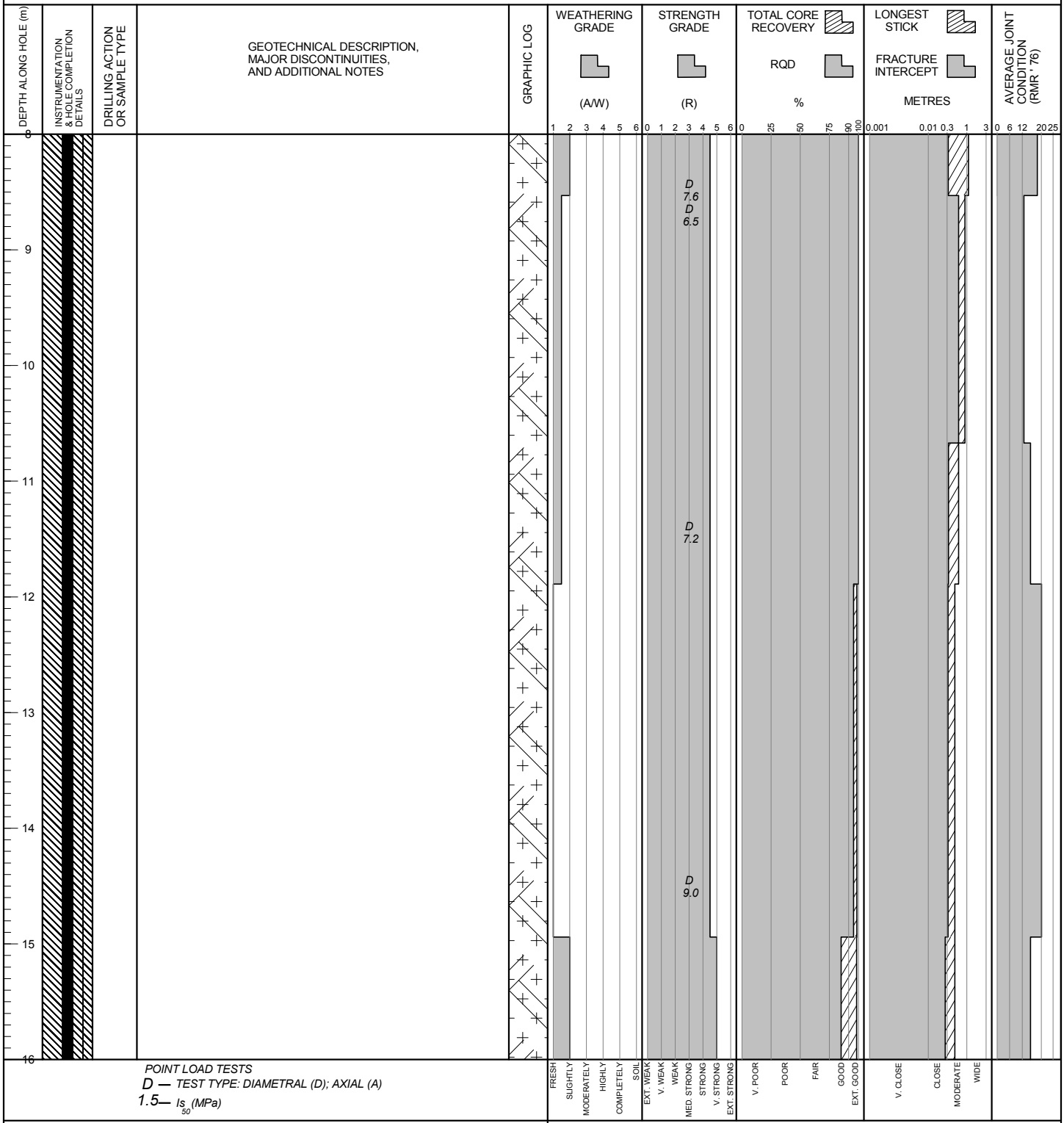
BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-27

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,846E - 6,258,671N	***Drill Designation:*** Heliportable	***Start Date:*** 08 Jun 12
Ground Elevation (m): 1,414.1	***Drilling Contractor:*** Radius	***Finish Date:*** 08 Jun 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 30.2
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 0.0
Plunge (°): -75	***Fluid:*** Water	***Logged By:*** RH/LM
Trend (°): 315	***Cased To (m) :*** 1.2	***Reviewed By:*** BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-27

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,846E - 6,258,671N	***Drill Designation:*** Heliportable	***Start Date:*** 08 Jun 12
Ground Elevation (m): 1,414.1	***Drilling Contractor:*** Radius	***Finish Date:*** 08 Jun 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 30.2
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 0.0
Plunge (°): -75	***Fluid:*** Water	***Logged By:*** RH/LM
Trend (°): 315	***Cased To (m) :*** 1.2	***Reviewed By:*** BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

16
17
18
19
20
21
22
23
24

17.11 m: Broken rock, 90 mm BX and CX, R2.5.

23.83 m: Fault, 3 mm FG and CA infill, S1, JRC = 8.

D 9.1

D 7.4

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-27

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,846E - 6,258,671N	***Drill Designation:*** Heliportable	***Start Date:*** 08 Jun 12
Ground Elevation (m): 1,414.1	***Drilling Contractor:*** Radius	***Finish Date:*** 08 Jun 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 30.2
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 0.0
Plunge (°): -75	***Fluid:*** Water	***Logged By:*** RH/LM
Trend (°): 315	***Cased To (m) :*** 1.2	***Reviewed By:*** BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

24.30 m: Fault, 5 mm CX infill, R2.5, JRC = 8.

D 0.6

D 5.3

D 8.0

END OF DRILLHOLE AT 30.18 m
Notes:
1. Vibrating wire piezometer installed at 29.27 m.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
V. POOR | POOR | FAIR | GOOD | EXT. GOOD
V. CLOSE | CLOSE | MODERATE | WIDE

BGC ENGINEERING INC.
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Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-28

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,910E - 6,258,774N	***Drill Designation:*** Heliportable	***Start Date:*** 09 Jun 12
Ground Elevation (m): 1,421.0	***Drilling Contractor:*** Radius	***Finish Date:*** 09 Jun 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 30.5
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 0.5
Plunge (°): -80	***Fluid:*** Water	***Logged By:*** RH/LM
Trend (°): 360	***Cased To (m) :*** 1.4	***Reviewed By:*** BMM

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						OVERBURDEN No Recovery.
						Rock encountered at 0.5 m depth. Refer to DH-BGC12-28 rock log.
1						
2						
3						
4						
5						
6						
7						
8						

Su - kPa: 40, 80, 120, 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery: 20, 40, 60, 80
Moisture Content & SPT N
W_p% W% W_l%: 20, 40, 60, 80

BRUCEJACK (SOIL) BRUCEJACK_SOIL.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

DRILL HOLE # DH-BGC12-28

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,910E - 6,258,774N
Ground Elevation (m): 1,421.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -80
Trend (°): 360

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Water
Cased To (m) : 1.4

Start Date: 09 Jun 12
Finish Date: 09 Jun 12
Final Depth (m): 30.5
Depth To Top Of Rock (m): 0.5
Logged By: RH/LM
Reviewed By: BMM

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
0			Refer to DH-BGC12-28 Overburden Log	
1			POTASSIUM FELDSPAR-HORNBLENDE-PLAGIOCLASE PORPHYRY (P2) Green, medium grained, massive groundmass with potassium feldspar phenocrysts 2 to 5 mm and locally present megacrysts up to 10 mm. Groundmass is sericite replaced. Strong (R4-R4.5), faintly weathered (W1-W1.5), discontinuity surfaces are typically rough to very rough with separations <1 mm (JRC = 18 to 23). 0 - 4.87 m: Drilled with a starting barrel resulting in poor recovery.	
2				
3				
4				
5				
6				
7				
8				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
D 6.4
D 8.5

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-28

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,910E - 6,258,774N	***Drill Designation:*** Heliportable	***Start Date:*** 09 Jun 12
Ground Elevation (m): 1,421.0	***Drilling Contractor:*** Radius	***Finish Date:*** 09 Jun 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 30.5
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 0.5
Plunge (°): -80	***Fluid:*** Water	***Logged By:*** RH/LM
Trend (°): 360	***Cased To (m) :*** 1.4	***Reviewed By:*** BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

8 9 10 11 12 13 14 15 16

9.48 m: Shear, no infill, JRC = 8.

D 6.3
D 6.8
D 5.8
D 4.9

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

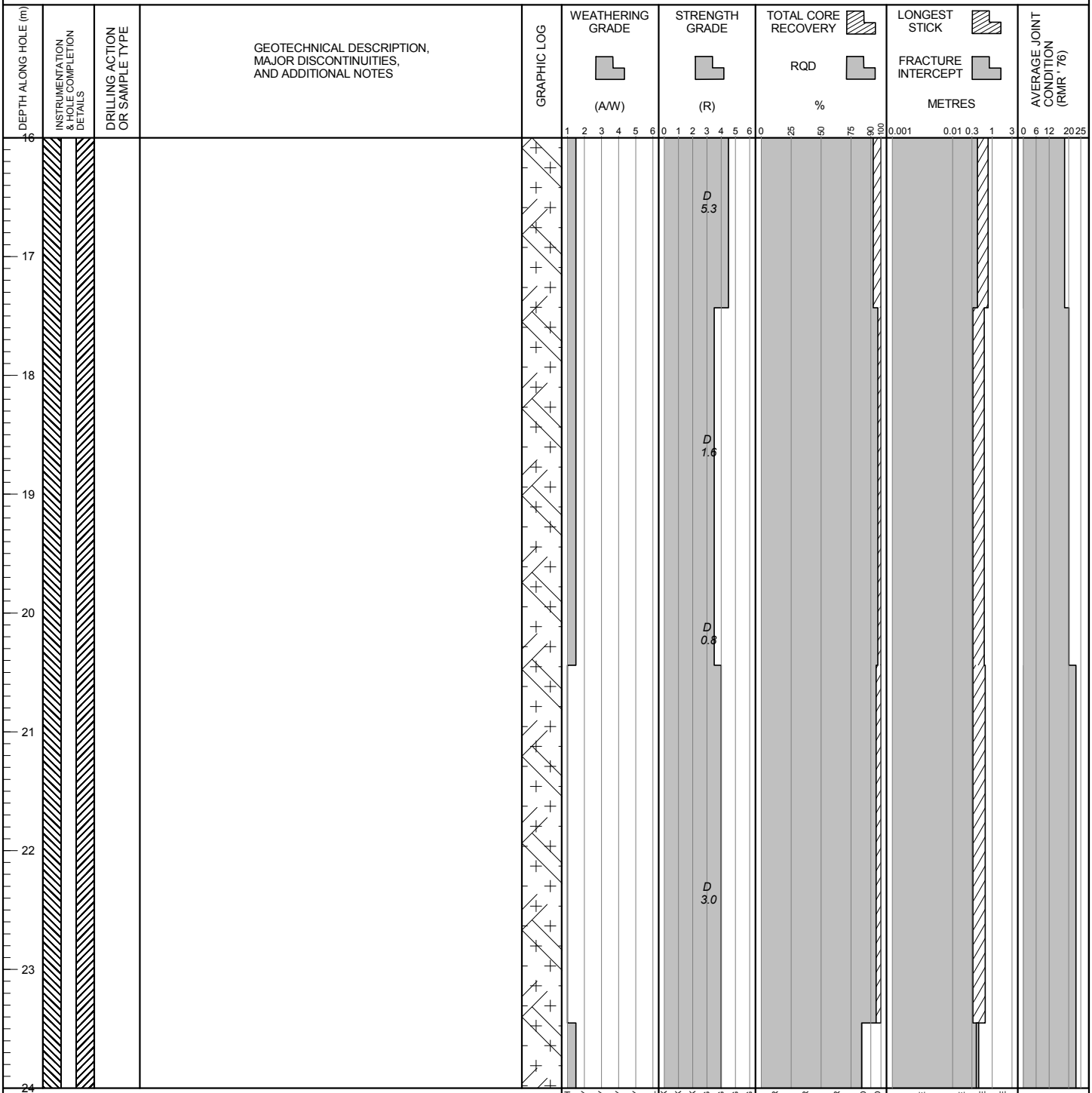
DRILL HOLE # DH-BGC12-28

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,910E - 6,258,774N
Ground Elevation (m): 1,421.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -80
Trend (°): 360

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Water
Cased To (m) : 1.4

Start Date: 09 Jun 12
Finish Date: 09 Jun 12
Final Depth (m): 30.5
Depth To Top Of Rock (m): 0.5
Logged By: RH/LM
Reviewed By: BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-28

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,910E - 6,258,774N
Ground Elevation (m): 1,421.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -80
Trend (°): 360

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Water
Cased To (m) : 1.4

Start Date: 09 Jun 12
Finish Date: 09 Jun 12
Final Depth (m): 30.5
Depth To Top Of Rock (m): 0.5
Logged By: RH/LM
Reviewed By: BMM

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
24				
25				
26				
27				
28			28.21 m: Fault, 30 mm FB and CX infill, R3, JRC = 8.	
29				
30			29.56 m: Fault, 10 mm FG infill, S1.	
31			END OF DRILLHOLE AT 30.48 m Notes: 1. Standpipe piezometer installed with completion zone from 26.20 m to 30.48 m. 2. The standpipe piezometer was installed in a inclined drillhole so there is some uncertainty in the quality of the bentonite seal and sand pack.	
32				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
D 2.7
D 8.4
D 4.2

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-29

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,904E - 6,258,737N
Ground Elevation (m): 1,415.2
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -80
Trend (°): 270

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Water
Cased To (m) : 2.8

Start Date: 10 Jun 12
Finish Date: 11 Jun 12
Final Depth (m): 30.5
Depth To Top Of Rock (m): 0.0
Logged By: RH/LM
Reviewed By: BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

POTASSIUM FELDSPAR-HORNBLENDE-PLAGIOCLASE PORPHYRY (P2)
Green, medium grained, massive groundmass with potassium feldspar phenocrysts 2 to 6 mm and locally present megacrysts greater than 10 mm. Strong to very strong (R4-R5), faintly weathered (W1-W1.5), discontinuity surfaces are typically rough to very rough with separations <1 mm (JRC = 16 to 25).

D 9.2
D 7.7
D 8.5
D 8.7
D 9.0
D 8.5

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

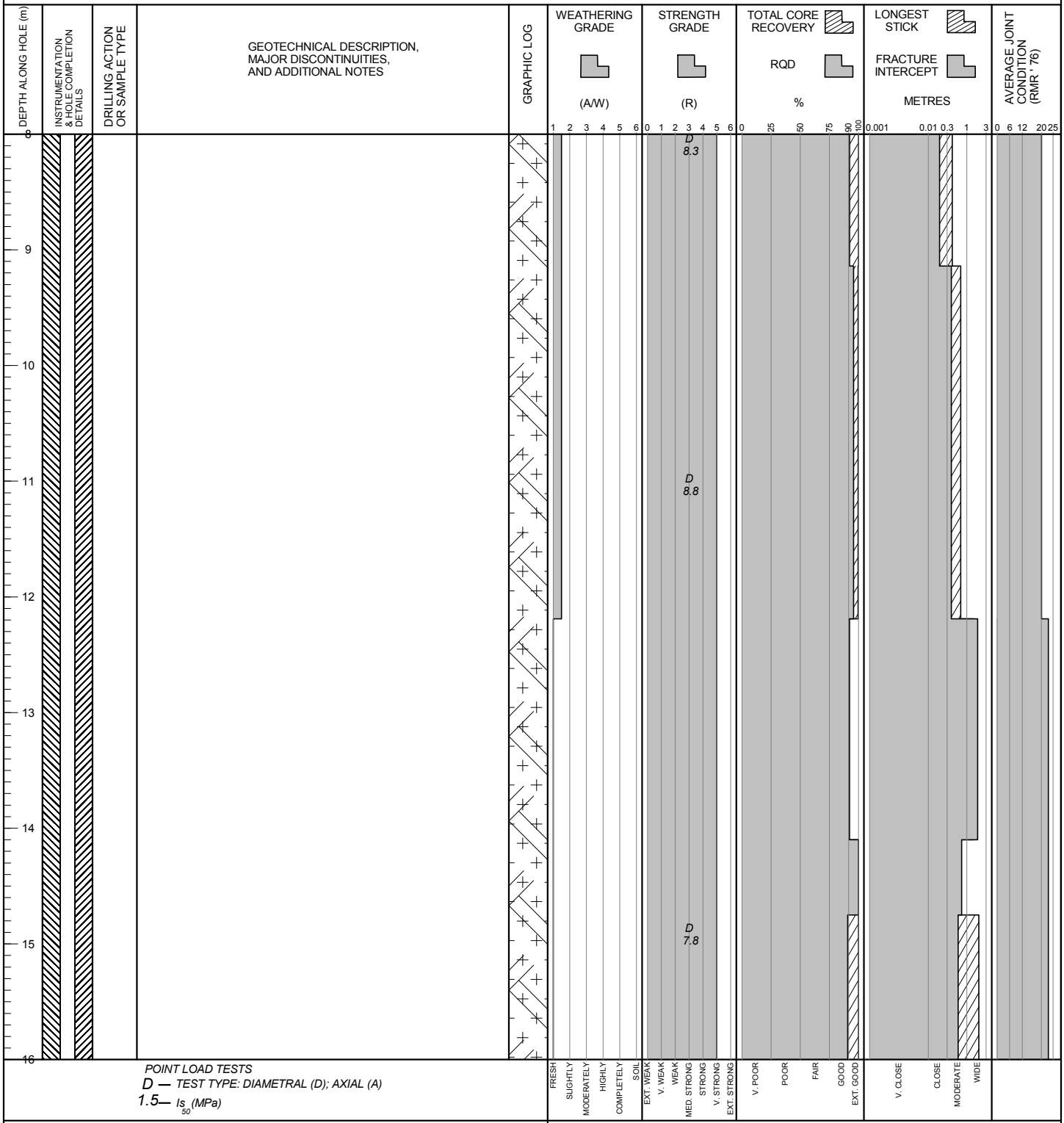
BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-29

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,904E - 6,258,737N	***Drill Designation:*** Heliportable	***Start Date:*** 10 Jun 12
Ground Elevation (m): 1,415.2	***Drilling Contractor:*** Radius	***Finish Date:*** 11 Jun 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 30.5
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 0.0
Plunge (°): -80	***Fluid:*** Water	***Logged By:*** RH/LM
Trend (°): 270	***Cased To (m) :*** 2.8	***Reviewed By:*** BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

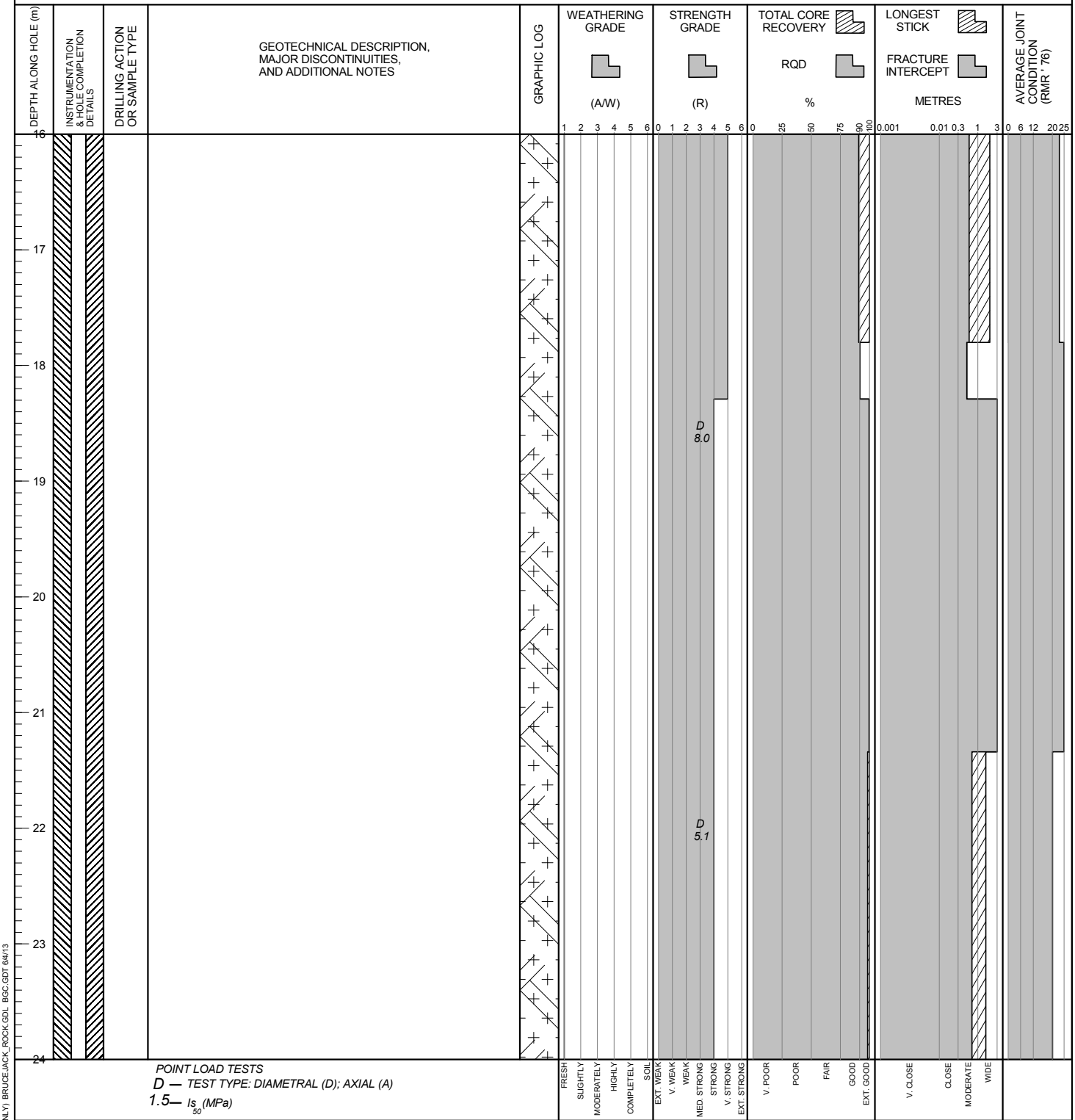
DRILL HOLE # DH-BGC12-29

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,904E - 6,258,737N
Ground Elevation (m): 1,415.2
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -80
Trend (°): 270

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Water
Cased To (m) : 2.8

Start Date: 10 Jun 12
Finish Date: 11 Jun 12
Final Depth (m): 30.5
Depth To Top Of Rock (m): 0.0
Logged By: RH/LM
Reviewed By: BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

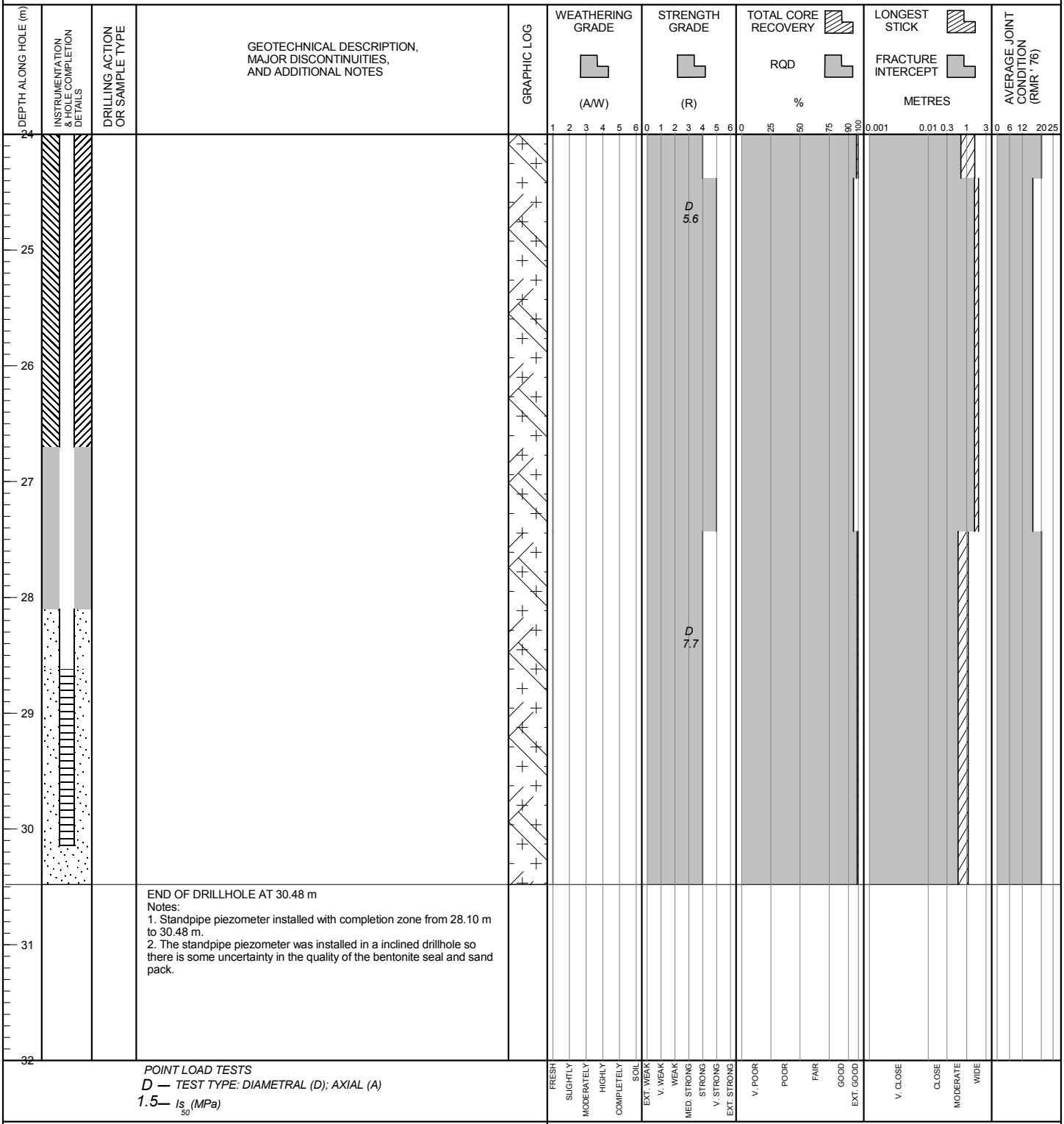
BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-29

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,904E - 6,258,737N	***Drill Designation:*** Heliportable	***Start Date:*** 10 Jun 12
Ground Elevation (m): 1,415.2	***Drilling Contractor:*** Radius	***Finish Date:*** 11 Jun 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 30.5
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 0.0
Plunge (°): -80	***Fluid:*** Water	***Logged By:*** RH/LM
Trend (°): 270	***Cased To (m) :*** 2.8	***Reviewed By:*** BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK ONLY) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-30

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,977E - 6,258,758N
Ground Elevation (m): 1,388.3
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -80
Trend (°): 225

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Water
Cased To (m) : 2.7

Start Date: 11 Jun 12
Finish Date: 11 Jun 12
Final Depth (m): 32.3
Depth To Top Of Rock (m): 2.4
Logged By: LM
Reviewed By: BMM

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						GRAVEL (GP) Medium to coarse, some cobbles, poorly graded, maximum particle size > 50 mm, subrounded to angular, greyish brown with iron staining, odourless.
1						
2						
						Rock encountered at 2.4 m depth. Refer to DH-BGC12-30 rock log.
3						
4						
5						
6						
7						
8						

Su - kPa
40 80 120 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery
20 40 60 80
Moisture Content & SPT N
W_p% W% W_l%
20 40 60 80

BRUCEJACK (SOIL) BRUCEJACK_SOIL.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-30

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,977E - 6,258,758N	***Drill Designation:*** Heliportable	***Start Date:*** 11 Jun 12
Ground Elevation (m): 1,388.3	***Drilling Contractor:*** Radius	***Finish Date:*** 11 Jun 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 32.3
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 2.4
Plunge (°): -80	***Fluid:*** Water	***Logged By:*** LM
Trend (°): 225	***Cased To (m) :*** 2.7	***Reviewed By:*** BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

0 – 2

Refer to DH-BGC12-30 Overburden Log

2 – 5

ARENITE (S4)
Grey, medium to coarse grained, massive sandstone. Medium strong (R3-R3.5), slightly weathered (W1.5-W2), discontinuity surfaces are typically rough to very rough with separations <1 mm (JRC = 16 to 20).

D 4.2

5 – 8

ARENITE (S4)
Grey, medium to coarse grained, massive sandstone. Strong (R4), fresh (A1), discontinuity surfaces are typically rough to very rough with separations <1 mm (JRC = 20 to 23).

D 8.2
D 5.8
D 7.3
D 5.2

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5 — Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-30

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,977E - 6,258,758N
Ground Elevation (m): 1,388.3
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -80
Trend (°): 225

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Water
Cased To (m) : 2.7

Start Date: 11 Jun 12
Finish Date: 11 Jun 12
Final Depth (m): 32.3
Depth To Top Of Rock (m): 2.4
Logged By: LM
Reviewed By: BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

8
9
10
11
12
13
14
15
16

POLYLITHIC CONGLOMERATE (S3)
Grey, poorly sorted, 3 to 30 mm clasts, medium to coarse sandy matrix, moderate pyrite replacement in the matrix. Strong (R4), fresh (A1), discontinuity surfaces are typically very rough with separations <1 mm (JRC = 23).

ARENITE (S4)
Grey, medium to coarse grained, massive sandstone interbedded with mudstones. Sandier intervals contain pebble sized mudstone clasts. Local concretions are present in the finer grained sediments. Medium strong to strong (R3 to R4), fresh (A1), discontinuity surfaces are typically rough to very rough with separations <1 mm (JRC = 18 to 23).

D 5.1
D 5.4
D 6.0
D 6.5
D 5.8
D 5.6
D 5.0
D 3.7
D 3.7

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

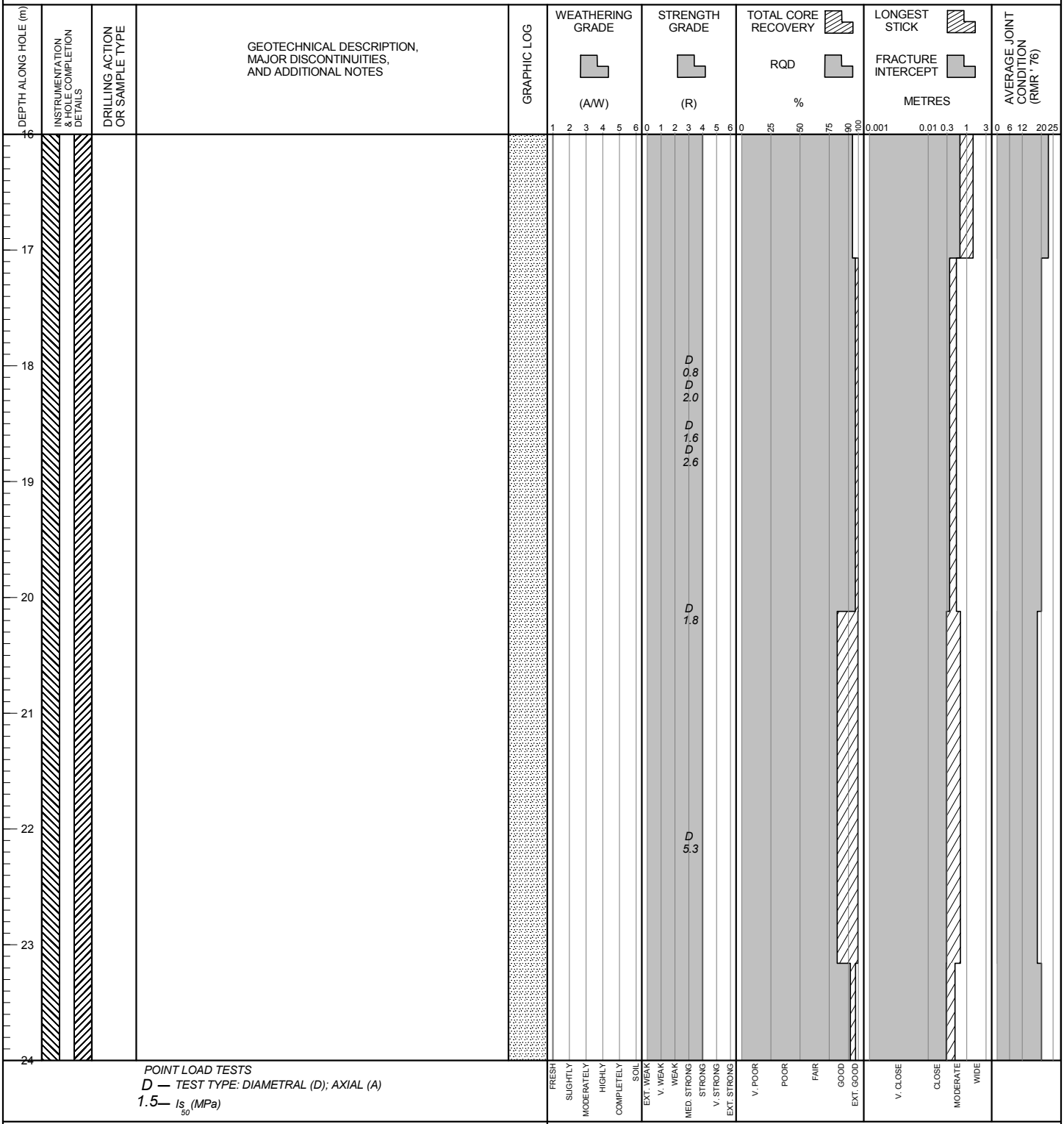
DRILL HOLE # DH-BGC12-30

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,977E - 6,258,758N
Ground Elevation (m): 1,388.3
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -80
Trend (°): 225

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Water
Cased To (m) : 2.7

Start Date: 11 Jun 12
Finish Date: 11 Jun 12
Final Depth (m): 32.3
Depth To Top Of Rock (m): 2.4
Logged By: LM
Reviewed By: BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

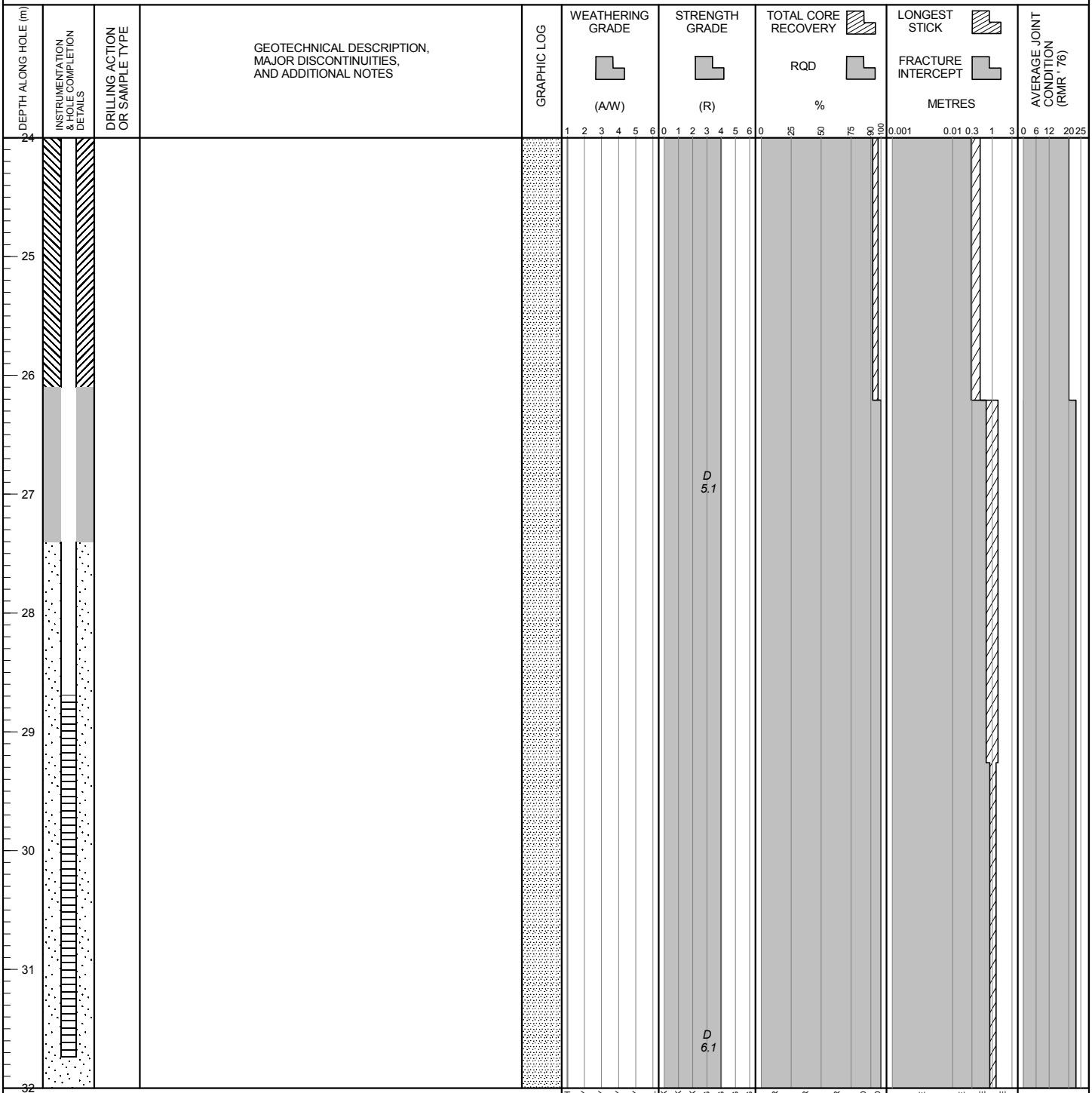
DRILL HOLE # DH-BGC12-30

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,977E - 6,258,758N
Ground Elevation (m): 1,388.3
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -80
Trend (°): 225

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Water
Cased To (m) : 2.7

Start Date: 11 Jun 12
Finish Date: 11 Jun 12
Final Depth (m): 32.3
Depth To Top Of Rock (m): 2.4
Logged By: LM
Reviewed By: BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-30

Location: Brucejack (Plant Site)

Co-ordinates (m): 426,977E - 6,258,758N
Ground Elevation (m): 1,388.3
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -80
Trend (°): 225

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Water
Cased To (m) : 2.7

Start Date: 11 Jun 12
Finish Date: 11 Jun 12
Final Depth (m): 32.3
Depth To Top Of Rock (m): 2.4
Logged By: LM
Reviewed By: BMM

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
32					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
			END OF DRILLHOLE AT 32.31 m Notes: 1. Standpipe piezometer installed with completion zone from 27.40 m to 32.31 m. 2. The standpipe piezometer was installed in a inclined drillhole so there is some uncertainty in the quality of the bentonite seal and sand pack.						
33									
34									
35									
36									
37									
38									
39									
40									
			POINT LOAD TESTS *D — TEST TYPE: DIAMETRAL (D); AXIAL (A)* *1.5— Is_{50} (MPa)*		FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-31

Location: Brucejack (North Portal)

Co-ordinates (m): 426,960E - 6,258,615N	***Drill Designation:*** Heliportable	***Start Date:*** 28 Sep 12
Ground Elevation (m): 1,410.3	***Drilling Contractor:*** Radius	***Finish Date:*** 29 Sep 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 50.0
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 4.3
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 256	***Cased To (m) :*** 1.8	***Reviewed By:*** BMM

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						SAND (SC) Medium to coarse, gravelly, some clay, some boulders, trace cobbles, well graded, compact, maximum particle size = 340 mm, subrounded, brown, no odour, moist, homogeneous, no cementation. Some recovery during drilling. [Glacial Till]
4.3						Rock encountered at 4.3 m depth. Refer to DH-BGC12-31 rock log.

Su - kPa: 40, 80, 120, 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery: 20, 40, 60, 80
Moisture Content & SPT N: W_p% W% W_l% — 20, 40, 60, 80

BRUCEJACK (SOIL) BRUCEJACK_SOIL.GDL BGC.GDT 6/4/13

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-31

Location: Brucejack (North Portal)

Co-ordinates (m): 426,960E - 6,258,615N
Ground Elevation (m): 1,410.3
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 256

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Sep 12
Finish Date: 29 Sep 12
Final Depth (m): 50.0
Depth To Top Of Rock (m): 4.3
Logged By: JW/SLP
Reviewed By: BMM

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
0			Refer to DH-BGC12-31 Overburden Log						
4.3			INTERMEDIATE VOLCANICS (V12) Dark grey tuff breccia. Medium-grained tuff and some pebble-sized porphyry fragments in a dark matrix with fine grained pyrite. Medium strong to strong (R3.5-R4), faintly to slightly weathered (W1.5-W2), discontinuity surfaces are slightly rough to slickensided with separations < 5 mm (JRC = 6 to 16). 7.19 m: Fault, 50 mm FG/SM infill, S5, JRC = 8.			D 2.3 D 4.8			
8									

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-31

Location: Brucejack (North Portal)

Co-ordinates (m): 426,960E - 6,258,615N
Ground Elevation (m): 1,410.3
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 256

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Sep 12
Finish Date: 29 Sep 12
Final Depth (m): 50.0
Depth To Top Of Rock (m): 4.3
Logged By: JW/SLP
Reviewed By: BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

INTERMEDIATE VOLCANICS (V12)
Dark grey tuff breccia. Medium-grained tuff and some pebble-sized porphyry fragments in a dark matrix with fine grained pyrite. Strong (R4), fresh rock (W1), discontinuity surfaces are typically rough with separations < 1 mm (JRC = 16 to 25).

Water table at approximately 15 m during drilling.

D 6.1
D 5.4
D 3.7
D 7.5

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-31

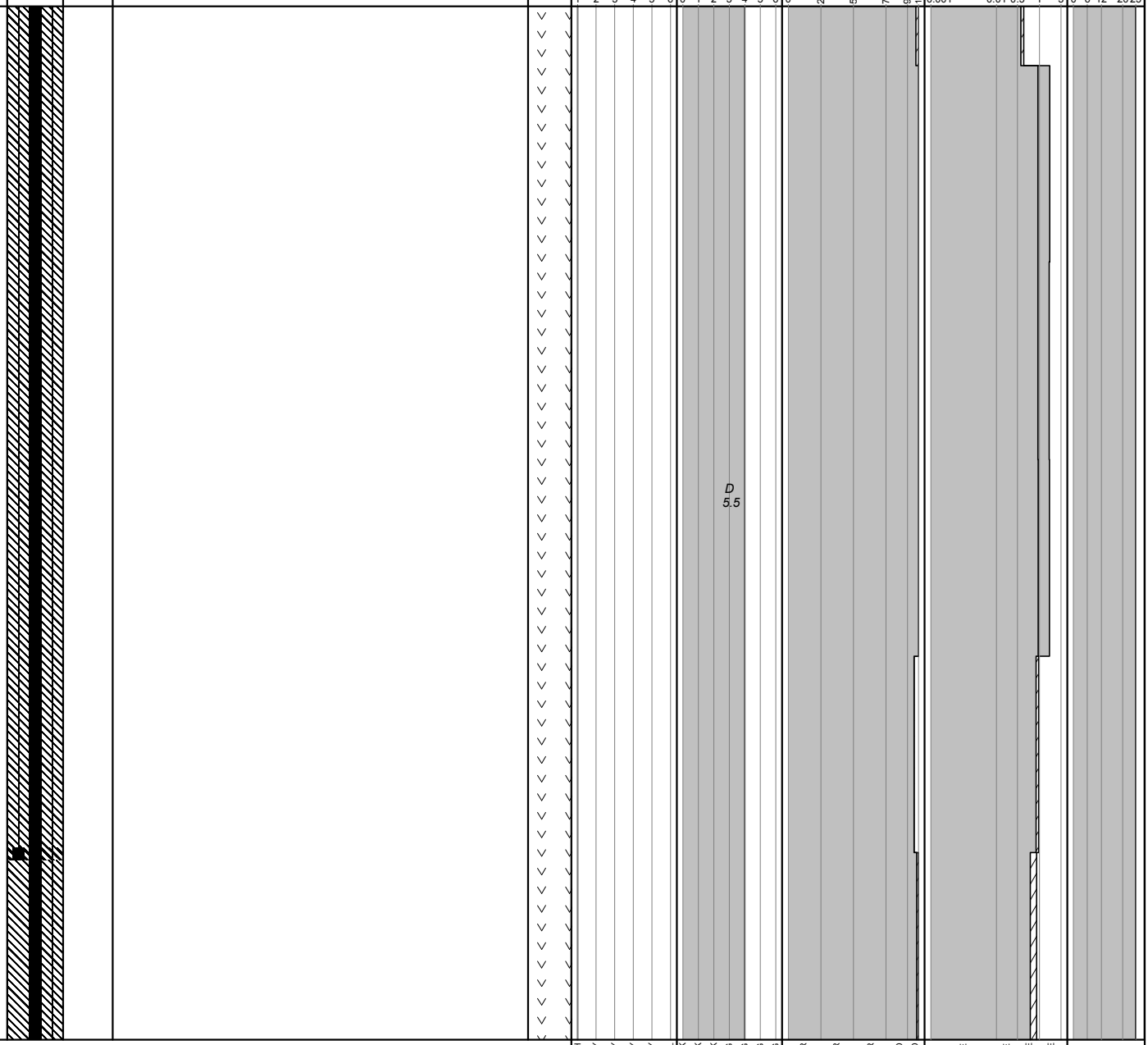
Location: Brucejack (North Portal)

Co-ordinates (m): 426,960E - 6,258,615N
Ground Elevation (m): 1,410.3
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 256

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Sep 12
Finish Date: 29 Sep 12
Final Depth (m): 50.0
Depth To Top Of Rock (m): 4.3
Logged By: JW/SLP
Reviewed By: BMM

DEPTH ALONG HOLE (m)
INSTRUMENTATION & HOLE COMPLETION DETAILS
DRILLING ACTION OR SAMPLE TYPE
GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES
GRAPHIC LOG
WEATHERING GRADE (A/W)
STRENGTH GRADE (R)
TOTAL CORE RECOVERY / RQD (%)
LONGEST STICK / FRACTURE INTERCEPT (METRES)
AVERAGE JOINT CONDITION (RMR '76)



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

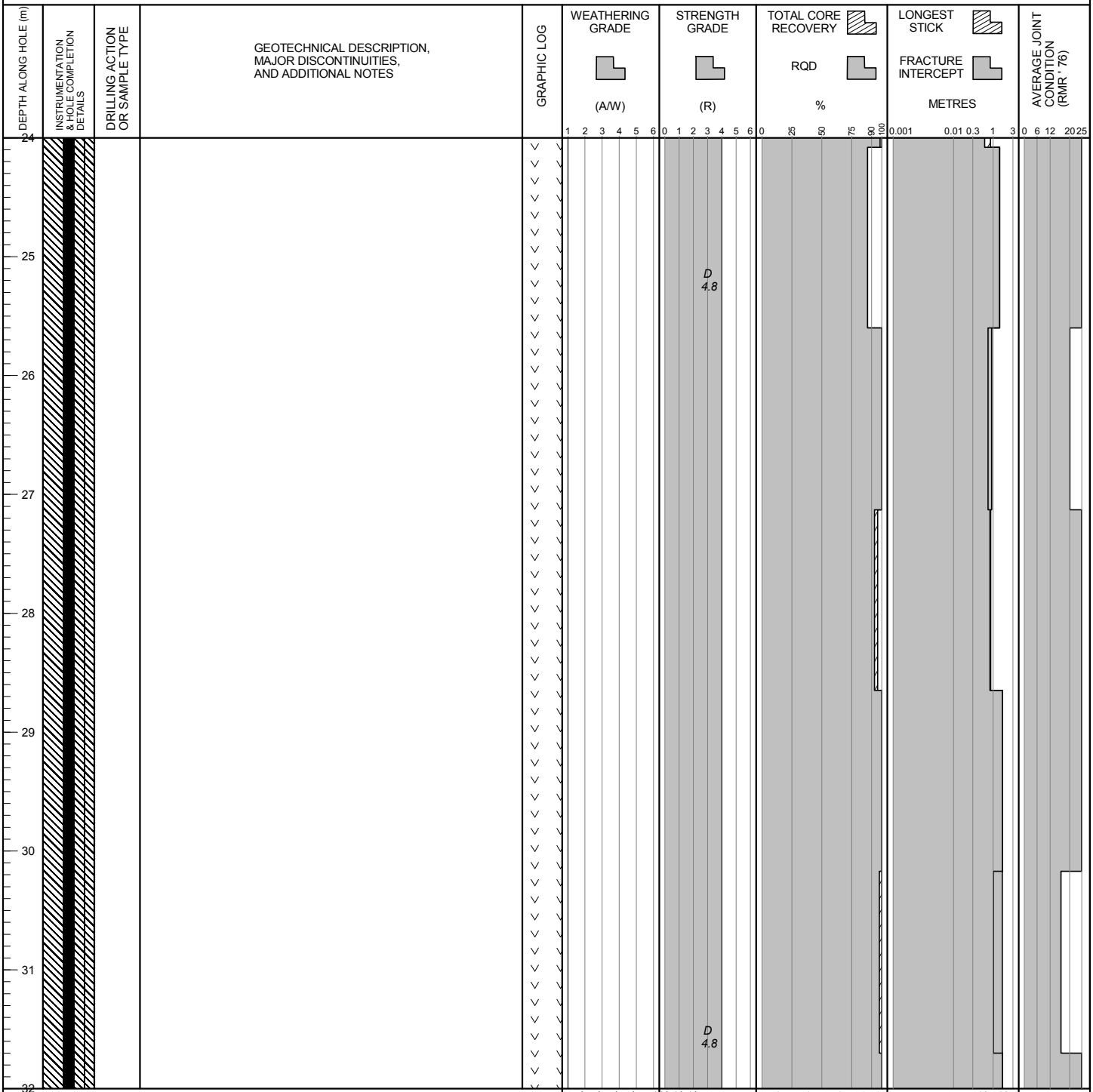
DRILL HOLE # DH-BGC12-31

Location: Brucejack (North Portal)

Co-ordinates (m): 426,960E - 6,258,615N
Ground Elevation (m): 1,410.3
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 256

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Sep 12
Finish Date: 29 Sep 12
Final Depth (m): 50.0
Depth To Top Of Rock (m): 4.3
Logged By: JW/SLP
Reviewed By: BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-31

Location: Brucejack (North Portal)

Co-ordinates (m): 426,960E - 6,258,615N
Ground Elevation (m): 1,410.3
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 256

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Sep 12
Finish Date: 29 Sep 12
Final Depth (m): 50.0
Depth To Top Of Rock (m): 4.3
Logged By: JW/SLP
Reviewed By: BMM

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
32				
33				
34				
35				
36				
37				
38				
39			MAFIC DYKE (V6) Fine grained mafic dyke with slightly chilled margins and a few later phase veins. Last approximately 1 m of the interval is quartz-carbonate vein breccia. Very strong (R5), fresh rock (W1), discontinuities slightly to very rough with separations < 1 mm (JRC = 20 to 25).	
40				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
D 6.0
D 4.8
D 5.6
D 4.8

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-31

Location: Brucejack (North Portal)

Co-ordinates (m): 426,960E - 6,258,615N
Ground Elevation (m): 1,410.3
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 256

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Sep 12
Finish Date: 29 Sep 12
Final Depth (m): 50.0
Depth To Top Of Rock (m): 4.3
Logged By: JW/SLP
Reviewed By: BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

40
41
42
43
44
45
46
47
48

D 5.9

D 7.7

45.06 m: Shear, 0.2 mm CA infill, R2, JRC = 1.

46.09 - 46.66 m: Brown and orange staining on discontinuities.

INTERMEDIATE VOLCANICS (V12)
Dark grey tuff breccia. Medium-grained tuff and some pebble-sized porphyry fragments in a dark matrix with fine grained pyrite. Strong (R4), fresh rock (W1), discontinuities slightly rough with separations < 1 mm (JRC = 16 to 20).

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-31

Location: Brucejack (North Portal)

Co-ordinates (m): 426,960E - 6,258,615N
Ground Elevation (m): 1,410.3
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 256

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.8

Start Date: 28 Sep 12
Finish Date: 29 Sep 12
Final Depth (m): 50.0
Depth To Top Of Rock (m): 4.3
Logged By: JW/SLP
Reviewed By: BMM

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD %	LONGEST STICK / FRACTURE INTERCEPT METRES	AVERAGE JOINT CONDITION (RMR '76)
48					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
49						D 4.0			
50			END OF DRILLHOLE AT 50.00 m Notes: 1. Vibrating wire piezometers installed at 22.56 m and 43.90 m.						
51									
52									
53									
54									
55									
56									
					FRESH SLIGHTLY MODERATELY HIGHLY COMPLETELY SOIL	EXT. WEAK V. WEAK WEAK MED. STRONG STRONG V. STRONG EXT. STRONG	V. POOR POOR FAIR GOOD EXT. GOOD	V. CLOSE CLOSE MODERATE WIDE	

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-32

Location: Brucejack (South Portal)

Co-ordinates (m): 426,981E - 6,258,578N
Ground Elevation (m): 1,410.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 240

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 29 Sep 12
Finish Date: 30 Sep 12
Final Depth (m): 50.0
Depth To Top Of Rock (m): 2.1
Logged By: JW/SLP
Reviewed By: BMM

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						SAND (SC) Coarse grained, clayey, some gravel, trace cobbles, gap graded, compact, maximum particle size = 280 mm, subangular, brown, no odour, moist, homogeneous, no cementation. Some washed gravel recovered during drilling. [Glacial Till]
1						
2						Rock encountered at 2.1 m depth. Refer to DH-BGC12-32 rock log.
3						
4						
5						
6						
7						
8						

Su - kPa
40 80 120 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery
20 40 60 80
Moisture Content & SPT N
W_p% W% W_l%
20 40 60 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (SOIL) BRUCEJACK_SOIL.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-32

Location: Brucejack (South Portal)

Co-ordinates (m): 426,981E - 6,258,578N
Ground Elevation (m): 1,410.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 240

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 29 Sep 12
Finish Date: 30 Sep 12
Final Depth (m): 50.0
Depth To Top Of Rock (m): 2.1
Logged By: JW/SLP
Reviewed By: BMM

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG
0				
1			Refer to DH-BGC12-32 Overburden Log	
2				
3			CONGLOMERATE (S3) Dark with interbedded mudstone/siltstone. Clasts are dominantly subangular to subrounded, with some more angular. Some segments appear brecciated. Slightly weathered (W1.5-W2), medium strong to strong (R3.5-R4), discontinuities slightly rough with soft walls and separation < 1 mm (JRC = 12). Water table at approximately 3 m during drilling	
4				
5				
6			CONGLOMERATE (S3) Dark with interbedded mudstone/siltstone. Clasts are dominantly subangular to subrounded, with some more angular. Some segments appear brecciated. Strong to very strong (R4-R5), fresh rock (W1), discontinuities typically slightly rough with separation < 1 mm (JRC = 16 to 25).	
7				
8				

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

D 4.5

D 4.3

TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

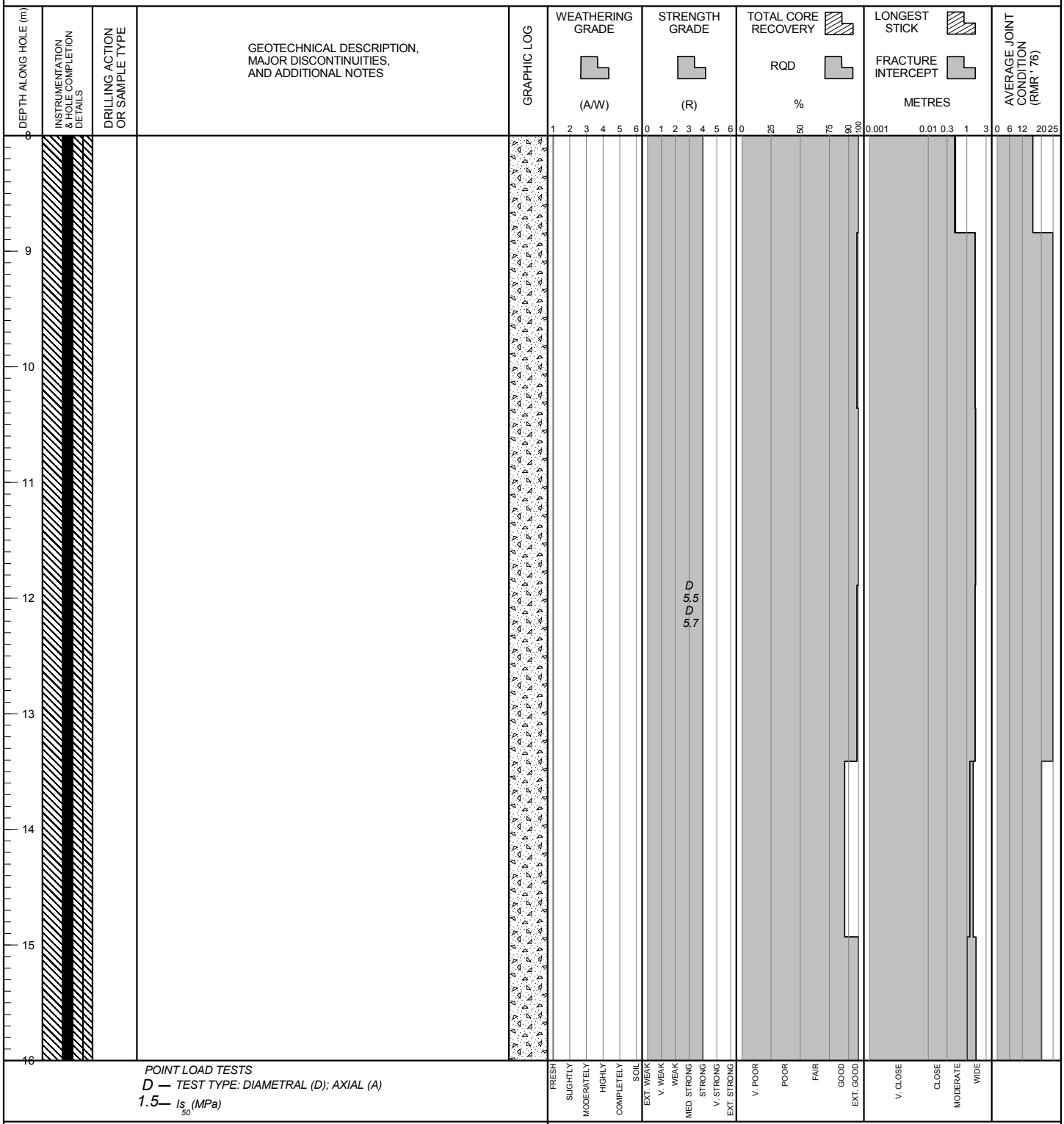
BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-32

Location: Brucejack (South Portal)

Co-ordinates (m): 426,981E - 6,258,578N	***Drill Designation:*** Heliportable	***Start Date:*** 29 Sep 12
Ground Elevation (m): 1,410.8	***Drilling Contractor:*** Radius	***Finish Date:*** 30 Sep 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 50.0
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 2.1
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 240	***Cased To (m) :*** 1.5	***Reviewed By:*** BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-32

Location: Brucejack (South Portal)

Co-ordinates (m): 426,981E - 6,258,578N	***Drill Designation:*** Heliportable	***Start Date:*** 29 Sep 12
Ground Elevation (m): 1,410.8	***Drilling Contractor:*** Radius	***Finish Date:*** 30 Sep 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 50.0
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 2.1
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 240	***Cased To (m) :*** 1.5	***Reviewed By:*** BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

20.3 m: Joint with trace white clay infill, JRC = 6, 38 degrees TCA, JWCS = R4, Infill = R1.

20.3 m: Joint with 1 mm white clay infill, JRC = 6, 30 degrees TCA, JWCS = R4, Infill = R1.

D
3.3

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

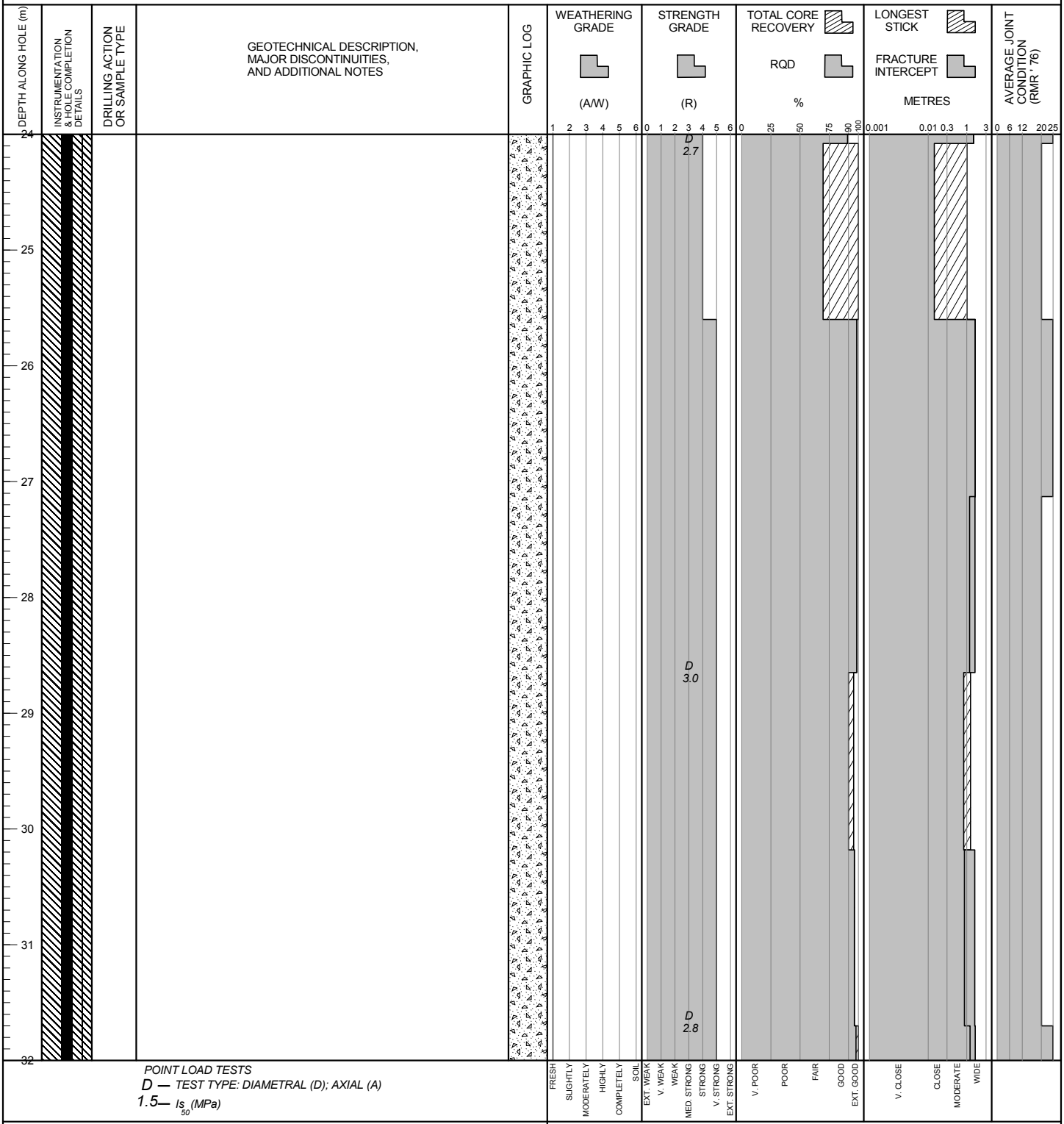
BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-32

Location: Brucejack (South Portal)

Co-ordinates (m): 426,981E - 6,258,578N	***Drill Designation:*** Heliportable	***Start Date:*** 29 Sep 12
Ground Elevation (m): 1,410.8	***Drilling Contractor:*** Radius	***Finish Date:*** 30 Sep 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 50.0
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 2.1
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 240	***Cased To (m) :*** 1.5	***Reviewed By:*** BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

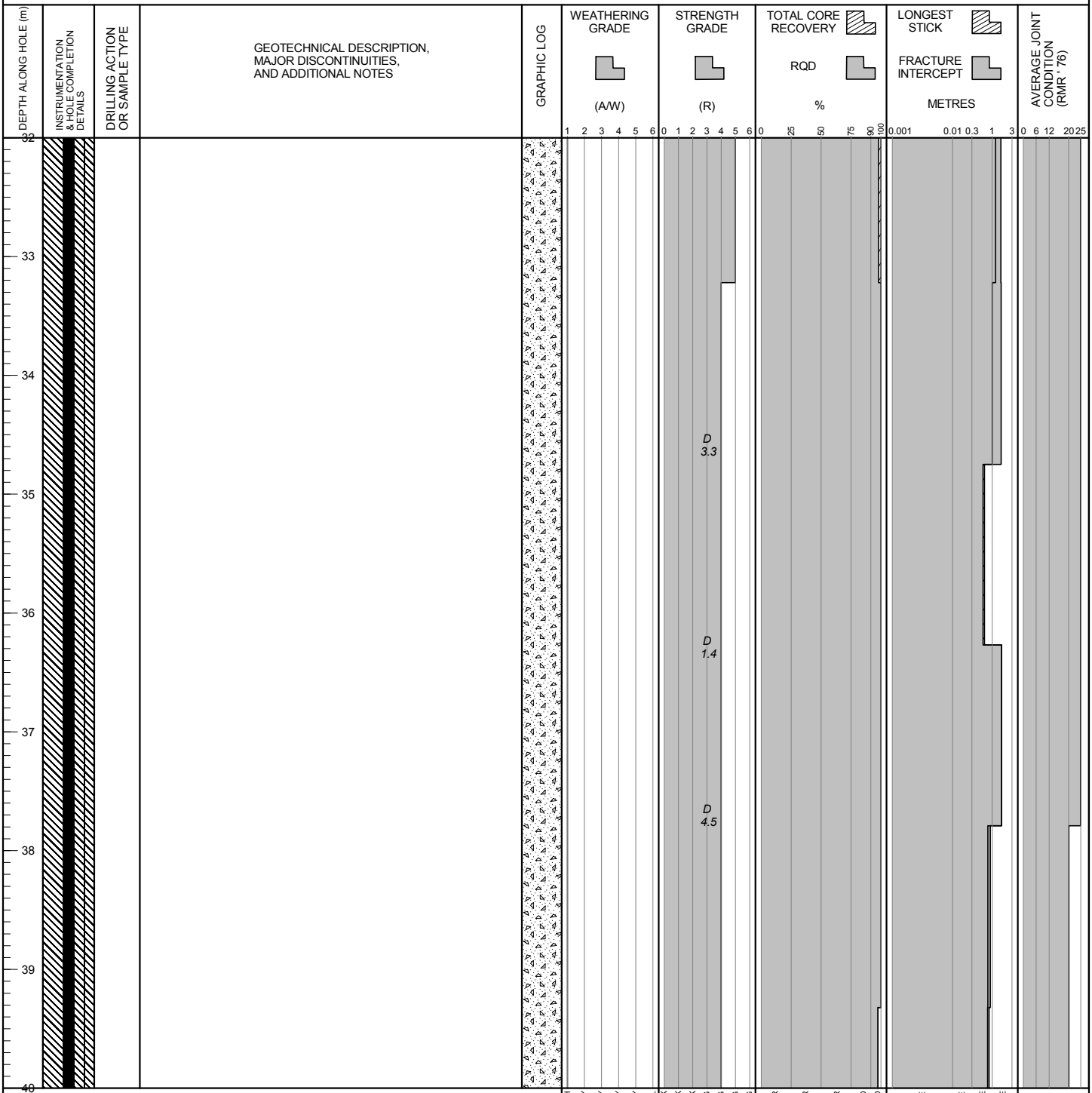
BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-32

Location: Brucejack (South Portal)

Co-ordinates (m): 426,981E - 6,258,578N	***Drill Designation:*** Heliportable	***Start Date:*** 29 Sep 12
Ground Elevation (m): 1,410.8	***Drilling Contractor:*** Radius	***Finish Date:*** 30 Sep 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 50.0
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 2.1
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 240	***Cased To (m) :*** 1.5	***Reviewed By:*** BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

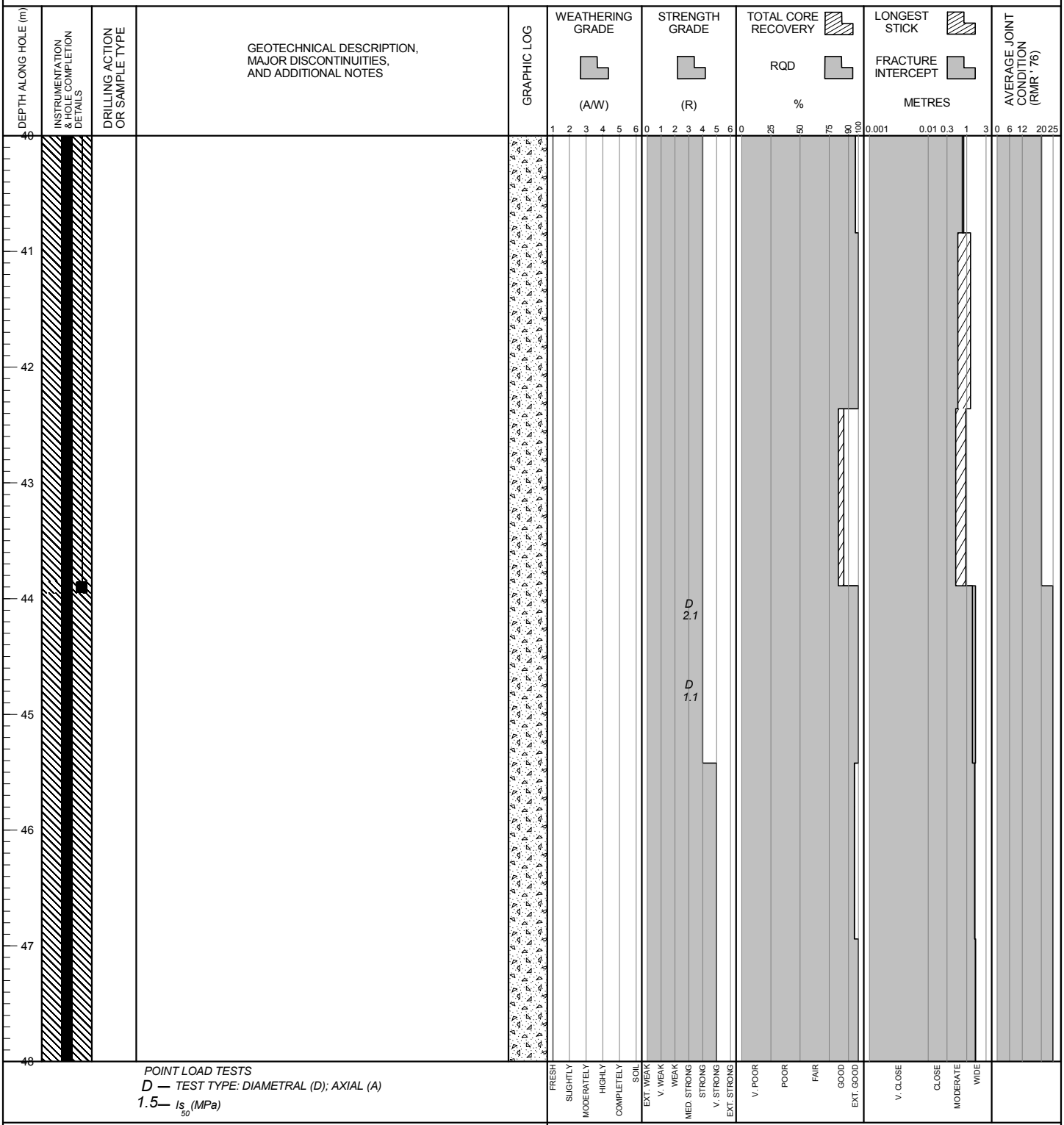
BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-32

Location: Brucejack (South Portal)

Co-ordinates (m): 426,981E - 6,258,578N	***Drill Designation:*** Heliportable	***Start Date:*** 29 Sep 12
Ground Elevation (m): 1,410.8	***Drilling Contractor:*** Radius	***Finish Date:*** 30 Sep 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 50.0
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 2.1
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 240	***Cased To (m) :*** 1.5	***Reviewed By:*** BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-32

Location: Brucejack (South Portal)

Co-ordinates (m): 426,981E - 6,258,578N
Ground Elevation (m): 1,410.8
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 240

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 1.5

Start Date: 29 Sep 12
Finish Date: 30 Sep 12
Final Depth (m): 50.0
Depth To Top Of Rock (m): 2.1
Logged By: JW/SLP
Reviewed By: BMM

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
48					1 2 3 4 5 6	0 1 2 3 4 5 6	0 25 50 75 90 100	0.001 0.01 0.3 1 3	0 6 12 20 25
49									
50			END OF DRILLHOLE AT 49.99 m Notes: 1. Vibrating wire piezometer installed at 43.90 m.						
51									
52									
53									
54									
55									
56									

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE (A/W): FRESH; SLIGHTLY; MODERATELY; HIGHLY; COMPLETELY; SOIL
STRENGTH GRADE (R): EXT. WEAK; V. WEAK; WEAK; MED. STRONG; STRONG; V. STRONG; EXT. STRONG
RQD (%): V. POOR; POOR; FAIR; GOOD; EXT. GOOD
FRACTURE INTERCEPT (METRES): V. CLOSE; CLOSE; MODERATE; WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-33

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,073E - 6,258,623N	***Drill Designation:*** Heliportable	***Start Date:*** 30 Sep 12
Ground Elevation (m): 1,392.7	***Drilling Contractor:*** Radius	***Finish Date:*** 01 Oct 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 29.3
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 7.2
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** SLP
Trend (°): 095	***Cased To (m) :*** 6.7	***Reviewed By:*** BMM

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						SAND (SC) Medium, clayey, gravelly, some cobbles, well-graded, compact, maximum particle size = 390 mm, subrounded, brown, no odour, moist, no cementation, trace organics/rootlets, clay is low plasticity. Some washed well graded gravel recovered during drilling. [Fill]
7						Rock encountered at 7.2 m depth. Refer to DH-BGC12-33 rock log.
8						

Su - kPa: 40, 80, 120, 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery: 20, 40, 60, 80
Moisture Content & SPT N: W_p% W% W_l%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (SOIL) BRUCEJACK_SOIL.GDL BGC.GDT 6/4/13

DRILL HOLE # DH-BGC12-33

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,073E - 6,258,623N
Ground Elevation (m): 1,392.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 095

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 6.7

Start Date: 30 Sep 12
Finish Date: 01 Oct 12
Final Depth (m): 29.3
Depth To Top Of Rock (m): 7.2
Logged By: SLP
Reviewed By: BMM

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
0			Refer to DH-BGC12-33 Overburden Log						
7			INTERMEDIATE VOLCANICS (V12) Well sorted crystal tuff (or sandstone) with sporadic cm-sized sericite altered clasts. Disseminated pyrite throughout. Medium strong (R3), faintly to moderately weathered (W1-W2.5), discontinuities typically slightly rough with separations < 1 mm (JRC = 12 to 20). 7.57 m: Shear, 1 mm ST infill, JRC = 2.						
8			*POINT LOAD TESTS* *D — TEST TYPE: DIAMETRAL (D); AXIAL (A)* *1.5— Is_{50} (MPa)*						

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

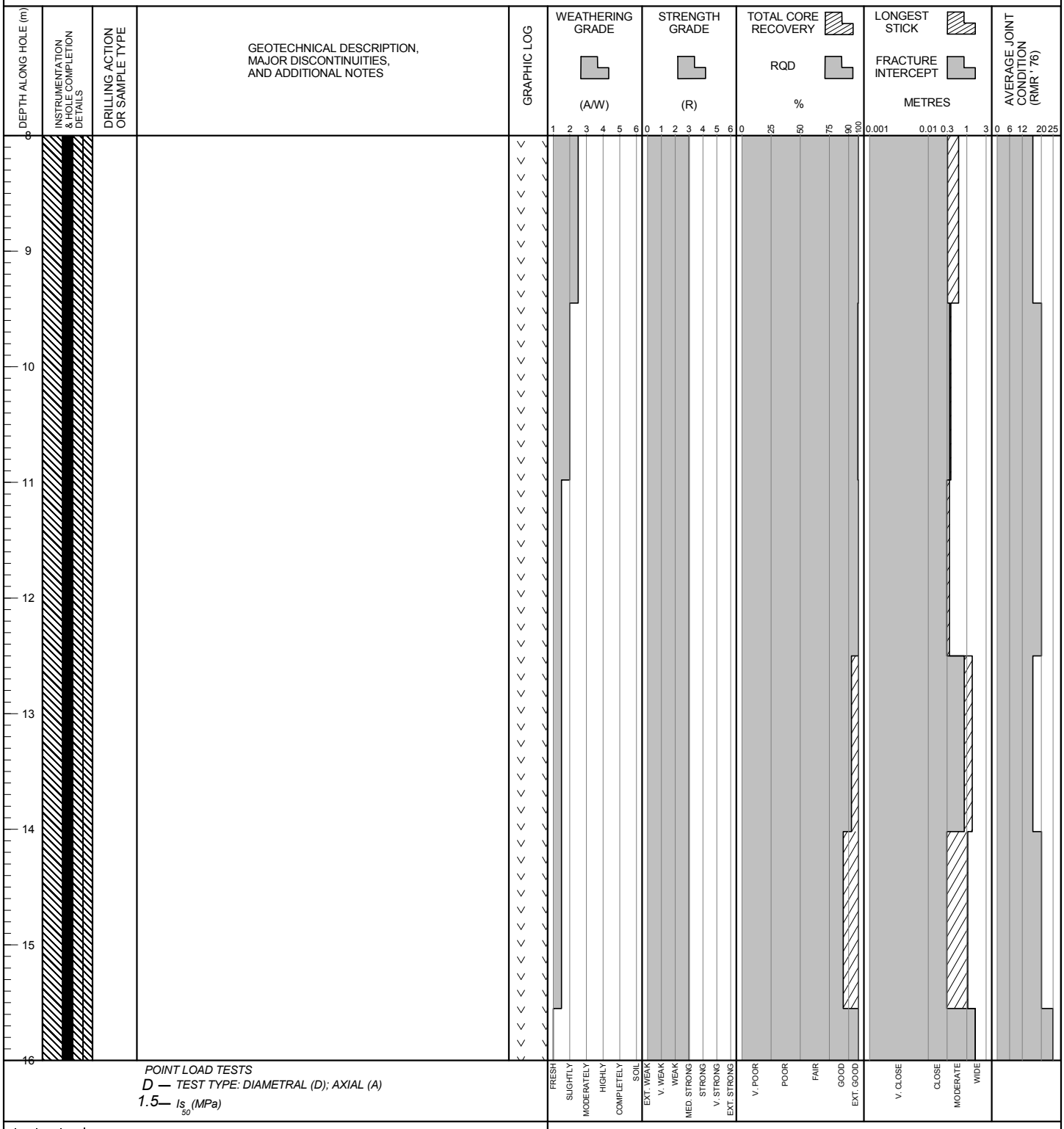
LOG SCALE: 1:50

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-33

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,073E - 6,258,623N	***Drill Designation:*** Heliportable	***Start Date:*** 30 Sep 12
Ground Elevation (m): 1,392.7	***Drilling Contractor:*** Radius	***Finish Date:*** 01 Oct 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 29.3
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 7.2
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** SLP
Trend (°): 095	***Cased To (m) :*** 6.7	***Reviewed By:*** BMM



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

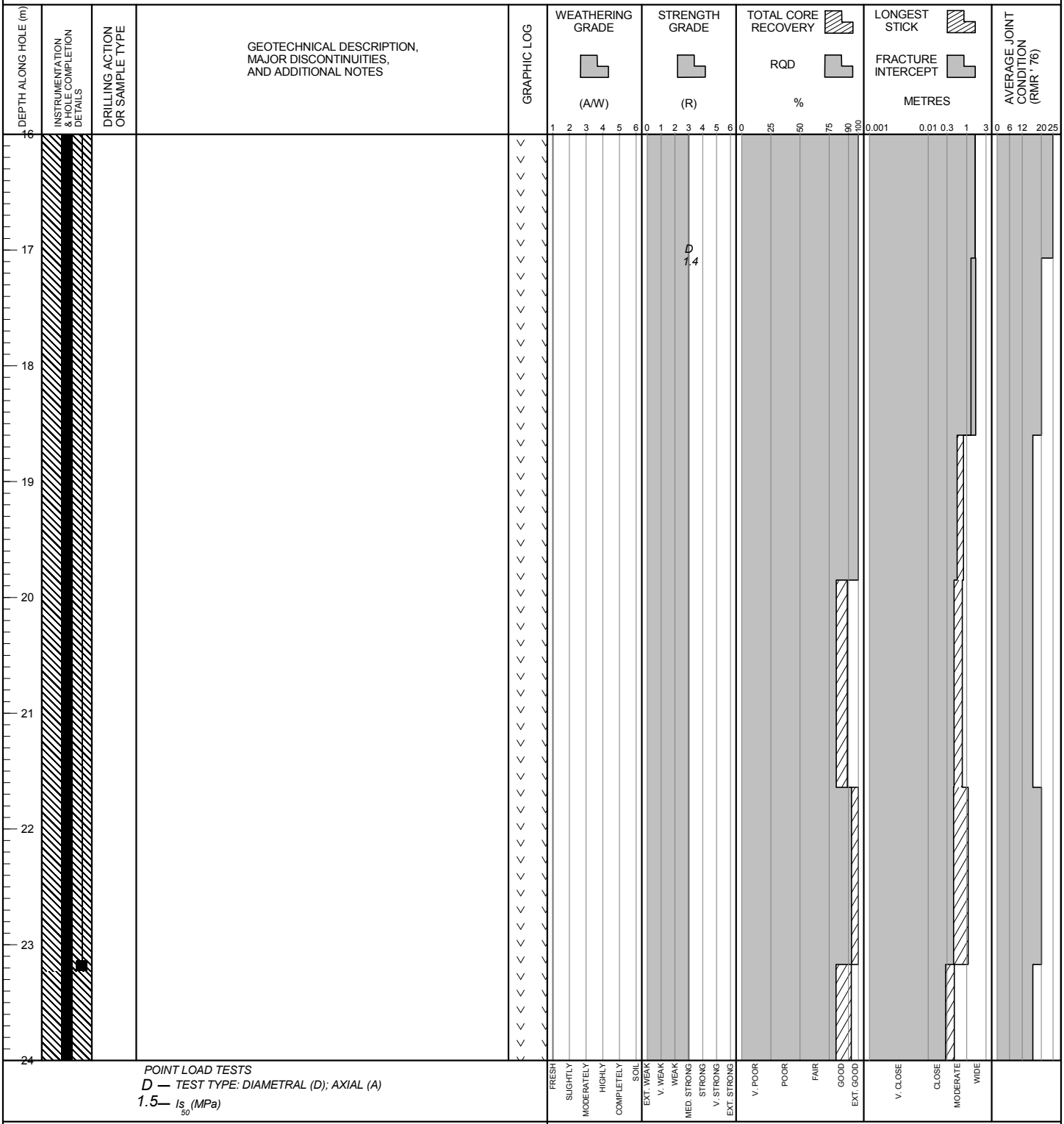
DRILL HOLE # DH-BGC12-33

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,073E - 6,258,623N
Ground Elevation (m): 1,392.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 095

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 6.7

Start Date: 30 Sep 12
Finish Date: 01 Oct 12
Final Depth (m): 29.3
Depth To Top Of Rock (m): 7.2
Logged By: SLP
Reviewed By: BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-33

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,073E - 6,258,623N
Ground Elevation (m): 1,392.7
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 095

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 6.7

Start Date: 30 Sep 12
Finish Date: 01 Oct 12
Final Depth (m): 29.3
Depth To Top Of Rock (m): 7.2
Logged By: SLP
Reviewed By: BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

24
25
25.58 m: Fault, 140 mm FB infill, R2, JRC = 10.
25.72 m: 1 mm CL infill, R1, JRC = 2.
26
26.41 m: Fault, 10 mm CL infill, R1, JRC = 4.
27
28
D 2.1
29
D 3.5
END OF DRILLHOLE AT 29.26 m
Notes:
1. Vibrating wire piezometer installed at 23.18 m.
30
31
32

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-34

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,046E - 6,258,650N	***Drill Designation:*** Heliportable	***Start Date:*** 01 Oct 12
Ground Elevation (m): 1,396.0	***Drilling Contractor:*** Radius	***Finish Date:*** 01 Oct 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 31.4
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 5.8
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 244	***Cased To (m) :*** 6.1	***Reviewed By:*** BMM

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						SAND (SC) Medium, clayey, gravelly,some cobbles, well-graded, compact, maximum particle size = 390 mm, subrounded, brown, no odour, moist, no cementation, trace organics/rootlets, clay is low plasticity. [Fill]
1						
2						
3						
4						
5						
6						Rock encountered at 5.8 m depth. Refer to DH-BGC12-34 rock log.
7						
8						

Su - kPa: 40, 80, 120, 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery: 20, 40, 60, 80
Moisture Content & SPT N
W_p% W% W_l%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (SOIL) BRUCEJACK_SOIL.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-34

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,046E - 6,258,650N	***Drill Designation:*** Heliportable	***Start Date:*** 01 Oct 12
Ground Elevation (m): 1,396.0	***Drilling Contractor:*** Radius	***Finish Date:*** 01 Oct 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 31.4
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 5.8
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 244	***Cased To (m) :*** 6.1	***Reviewed By:*** BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

Refer to DH-BGC12-34 Overburden Log

INTERMEDIATE VOLCANICS (V12)
Sericite-altered and minor chlorite-altered tuff with occasional brecciation/clasts. Very uniform. Strong (R4), faintly to slightly weathered (W1.5-W2), discontunities typically slightly rough with separation < 1 mm (JRC = 12 to 25).

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
V. POOR | POOR | FAIR | GOOD | EXT. GOOD
V. CLOSE | CLOSE | MODERATE | WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

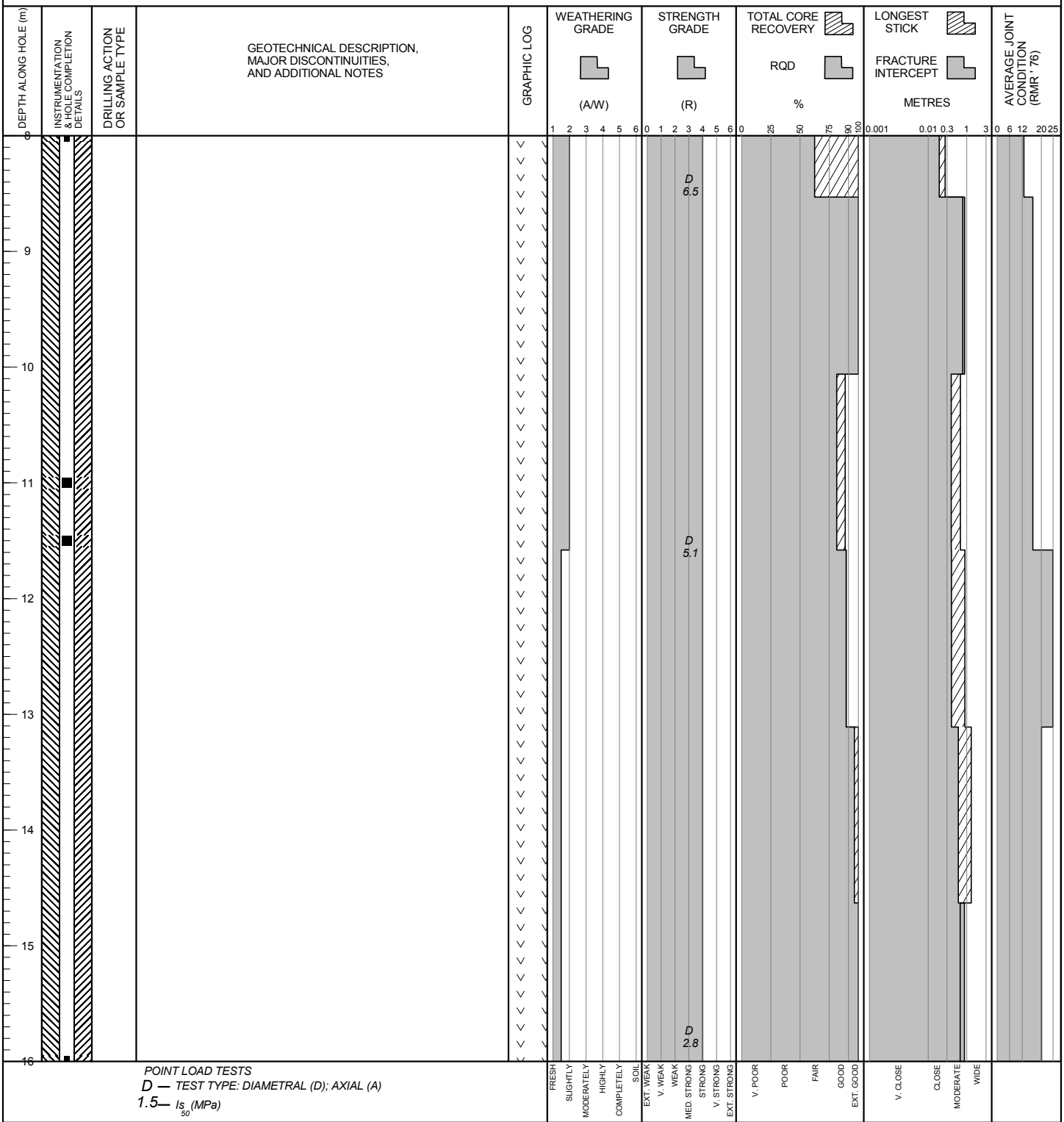
DRILL HOLE # DH-BGC12-34

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,046E - 6,258,650N
Ground Elevation (m): 1,396.0
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 244

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 6.1

Start Date: 01 Oct 12
Finish Date: 01 Oct 12
Final Depth (m): 31.4
Depth To Top Of Rock (m): 5.8
Logged By: JW/SLP
Reviewed By: BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

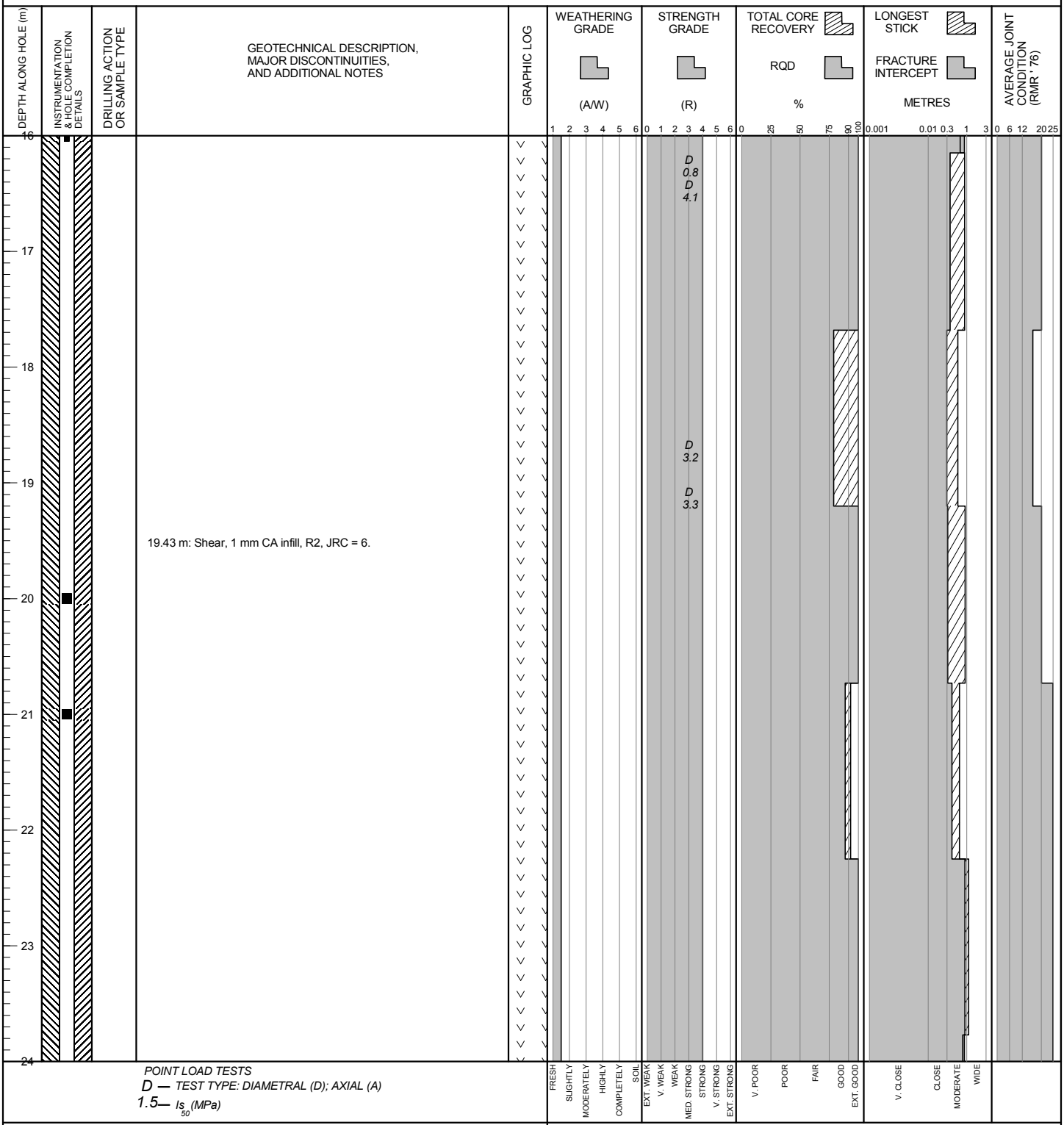
BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-34

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,046E - 6,258,650N	***Drill Designation:*** Heliportable	***Start Date:*** 01 Oct 12
Ground Elevation (m): 1,396.0	***Drilling Contractor:*** Radius	***Finish Date:*** 01 Oct 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 31.4
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 5.8
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 244	***Cased To (m) :*** 6.1	***Reviewed By:*** BMM



POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-34

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,046E - 6,258,650N	***Drill Designation:*** Heliportable	***Start Date:*** 01 Oct 12
Ground Elevation (m): 1,396.0	***Drilling Contractor:*** Radius	***Finish Date:*** 01 Oct 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 31.4
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 5.8
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 244	***Cased To (m) :*** 6.1	***Reviewed By:*** BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

24
25
26
27
28
29
30
31
32

D 2.4
D 5.6
D 5.0
D 2.8

END OF DRILLHOLE AT 31.39 m
Notes:
1. Thermistor installed with 16 nodes at depths 1.0 m, 1.5 m, 2.0 m, 2.5 m, 3.0 m, 4.0 m, 6.0 m, 8.0 m, 11.0 m, 11.5 m, 16.0 m, 20.0 m, 21.0 m, 26.0 m, 30.0 m, and 30.5 m.

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

WEATHERING GRADE: FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL
STRENGTH GRADE: EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG
RQD: V. POOR | POOR | FAIR | GOOD | EXT. GOOD
FRACTURE INTERCEPT: V. CLOSE | CLOSE | MODERATE | WIDE

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project: Brucejack
Project No.: 1008-007

DRILL HOLE # DH-BGC12-35

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,021E - 6,258,692N	***Drill Designation:*** Heliportable	***Start Date:*** 02 Oct 12
Ground Elevation (m): 1,389.4	***Drilling Contractor:*** Radius	***Finish Date:*** 02 Oct 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 32.9
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 1.7
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 154	***Cased To (m) :*** 4.6	***Reviewed By:*** BMM

Depth (m)	Sample Type	Sample No.	Symbol	Instrument Details	SPT Blows Per 150mm	Lithologic Description
0						SAND (SC) Medium, clayey, gravelly, some cobbles, well-graded, compact, maximum particle size = 390 mm, subrounded, brown, no odour, moist, no cementation, trace organics/rootlets, clay is low plasticity. [Fill]
1						
2						Rock encountered at 1.7 m depth. Refer to DH-BGC12-35 rock log.
3						
4						
5						
6						
7						
8						

Su - kPa: 40, 80, 120, 160
★ % Fines
▲ UC/2
△ Pocket Pen /2
● SPT (blows/300mm)
Core Recovery: 20, 40, 60, 80
Moisture Content & SPT N: W_p% W% W_l%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (SOIL) BRUCEJACK_SOIL.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-35

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,021E - 6,258,692N	***Drill Designation:*** Heliportable	***Start Date:*** 02 Oct 12
Ground Elevation (m): 1,389.4	***Drilling Contractor:*** Radius	***Finish Date:*** 02 Oct 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 32.9
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 1.7
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 154	***Cased To (m) :*** 4.6	***Reviewed By:*** BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

Refer to DH-BGC12-35 Overburden Log

ARENITE (S4)
Highly altered/disrupted interbedded sedimentary units. Mostly fine grained sand, with some coarser sand. Medium strong to strong (R3-R4), faintly weathered to 7.01 m and fresh rock below 7.01 m, discontinuities typically sligtly rough to very rough with separation < 1 mm (JRC = 16 to 25).

3.35 m: Poor rock quality due to drilling process.

D 2.5
D 3.3
D 2.8
D 3.4

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-35

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,021E - 6,258,692N
Ground Elevation (m): 1,389.4
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 154

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 4.6

Start Date: 02 Oct 12
Finish Date: 02 Oct 12
Final Depth (m): 32.9
Depth To Top Of Rock (m): 1.7
Logged By: JW/SLP
Reviewed By: BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD (%) | LONGEST STICK / FRACTURE INTERCEPT (METRES) | AVERAGE JOINT CONDITION (RMR '76)

8 9 10 11 12 13 14 15 16

14.89 m: Shear, 0.5 mm CA infill, R2, JRC = 2.

D
1.4

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-35

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,021E - 6,258,692N	***Drill Designation:*** Heliportable	***Start Date:*** 02 Oct 12
Ground Elevation (m): 1,389.4	***Drilling Contractor:*** Radius	***Finish Date:*** 02 Oct 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 32.9
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 1.7
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 154	***Cased To (m) :*** 4.6	***Reviewed By:*** BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

16 — 15.89 m: Shear, 1 mm CA infill, R2, JRC = 2.

17

18

19

20 — 20.23 m: Fault, 90 mm FB infill, R1, JRC = 6.

21

22

23

24

D 1.6

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH | SLIGHTLY | MODERATELY | HIGHLY | COMPLETELY | SOIL

STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK | V. WEAK | WEAK | MED. STRONG | STRONG | V. STRONG | EXT. STRONG

TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR | POOR | FAIR | GOOD | EXT. GOOD

LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE | CLOSE | MODERATE | WIDE

AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-35

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,021E - 6,258,692N	***Drill Designation:*** Heliportable	***Start Date:*** 02 Oct 12
Ground Elevation (m): 1,389.4	***Drilling Contractor:*** Radius	***Finish Date:*** 02 Oct 12
Survey Method: Surveyed	***Drill Method:*** Diamond	***Final Depth (m):*** 32.9
Datum: UTM NAD 83 Zone 9	***Core:*** HQ3	***Depth To Top Of Rock (m):*** 1.7
Plunge (°): -75	***Fluid:*** Polymer	***Logged By:*** JW/SLP
Trend (°): 154	***Cased To (m) :*** 4.6	***Reviewed By:*** BMM

DEPTH ALONG HOLE (m) | INSTRUMENTATION & HOLE COMPLETION DETAILS | DRILLING ACTION OR SAMPLE TYPE | GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES | GRAPHIC LOG | WEATHERING GRADE (A/W) | STRENGTH GRADE (R) | TOTAL CORE RECOVERY / RQD % | LONGEST STICK / FRACTURE INTERCEPT METRES | AVERAGE JOINT CONDITION (RMR '76)

30.27 m: Fault, 10 mm CL infill, R1, JRC = 6.

D 5.2
D 0.7
D 2.2

WEATHERING GRADE: 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE: 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD %: 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT METRES: 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

Project : Brucejack
Project No.1008-007

DRILL HOLE # DH-BGC12-35

Location: Brucejack (Plant Site)

Co-ordinates (m): 427,021E - 6,258,692N
Ground Elevation (m): 1,389.4
Survey Method: Surveyed
Datum: UTM NAD 83 Zone 9
Plunge (°): -75
Trend (°): 154

Drill Designation: Heliportable
Drilling Contractor: Radius
Drill Method: Diamond
Core: HQ3
Fluid: Polymer
Cased To (m) : 4.6

Start Date: 02 Oct 12
Finish Date: 02 Oct 12
Final Depth (m): 32.9
Depth To Top Of Rock (m): 1.7
Logged By: JW/SLP
Reviewed By: BMM

DEPTH ALONG HOLE (m)	INSTRUMENTATION & HOLE COMPLETION DETAILS	DRILLING ACTION OR SAMPLE TYPE	GEOTECHNICAL DESCRIPTION, MAJOR DISCONTINUITIES, AND ADDITIONAL NOTES	GRAPHIC LOG	WEATHERING GRADE (A/W)	STRENGTH GRADE (R)	TOTAL CORE RECOVERY / RQD (%)	LONGEST STICK / FRACTURE INTERCEPT (METRES)	AVERAGE JOINT CONDITION (RMR '76)
32									
33			END OF DRILLHOLE AT 32.91 m Notes: 1. Vibrating wire piezometer installed at 23.77 m.						
34									
35									
36									
37									
38									
39									
40									

WEATHERING GRADE (A/W): 1 2 3 4 5 6 — FRESH, SLIGHTLY, MODERATELY, HIGHLY, COMPLETELY, SOIL
STRENGTH GRADE (R): 0 1 2 3 4 5 6 — EXT. WEAK, V. WEAK, WEAK, MED. STRONG, STRONG, V. STRONG, EXT. STRONG
TOTAL CORE RECOVERY / RQD (%): 0 25 50 75 90 100 — V. POOR, POOR, FAIR, GOOD, EXT. GOOD
LONGEST STICK / FRACTURE INTERCEPT (METRES): 0.001 0.01 0.3 1 3 — V. CLOSE, CLOSE, MODERATE, WIDE
AVERAGE JOINT CONDITION (RMR '76): 0 6 12 20 25

POINT LOAD TESTS
D — TEST TYPE: DIAMETRAL (D); AXIAL (A)
1.5— Is_{50} (MPa)

BGC ENGINEERING INC.
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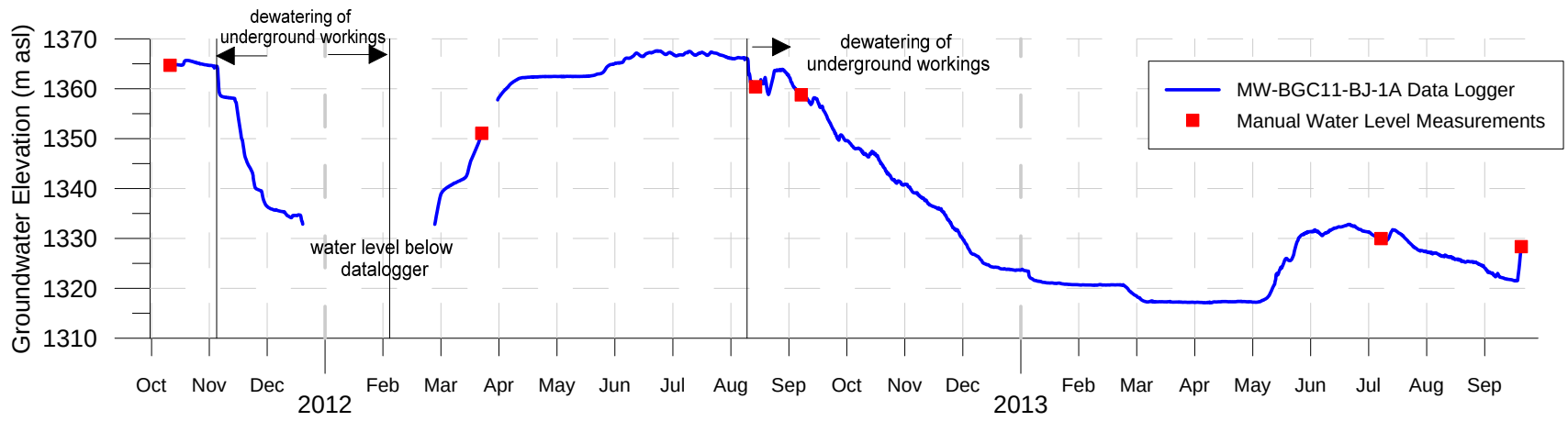
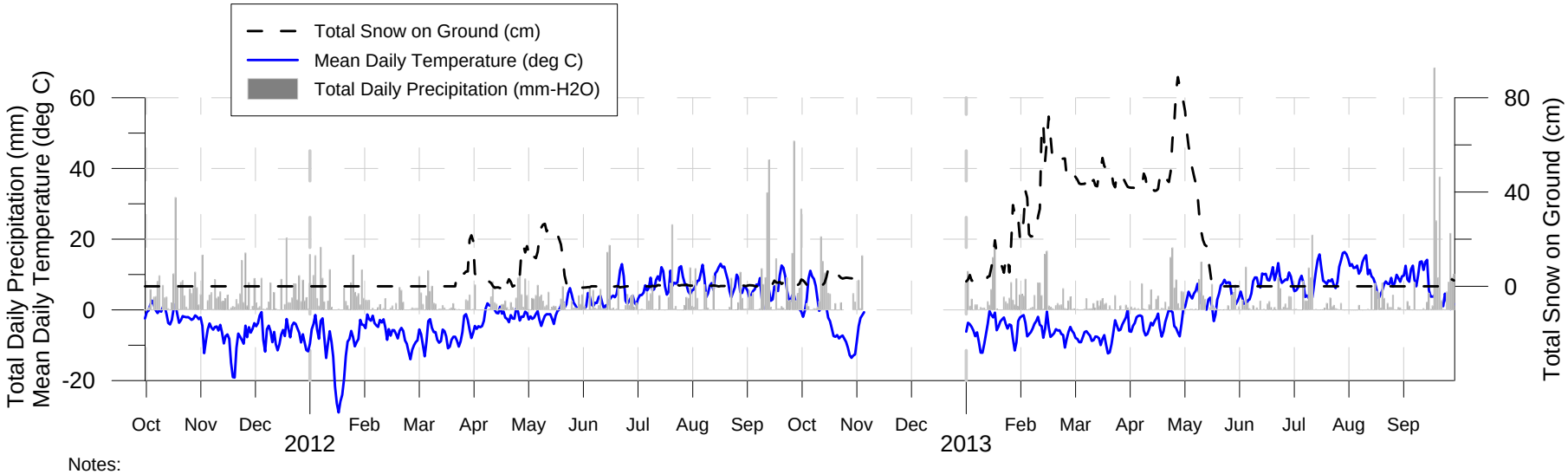
Client: Pretium Resources Inc.

LOG SCALE: 1:50

BRUCEJACK (ROCK) BRUCEJACK_ROCK.GDL BGC.GDT 6/4/13

APPENDIX D
GROUNDWATER HYDROGRAPHS





Notes:
1) Well screened from 1300.92 to 1307.12 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET, BS	APPROVED: VC

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC, AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT. AUTHORIZATION FOR ANY USE AND/OR PUBLICATION OF THIS REPORT OR ANY DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS, THROUGH ANY FORM OF PRINT OR ELECTRONIC MEDIA, INCLUDING WITHOUT LIMITATION, POSTING OR REPRODUCTION OF SAME ON ANY WEBSITE, IS RESERVED PENDING BGC'S WRITTEN APPROVAL. IF THIS REPORT IS ISSUED IN AN ELECTRONIC FORMAT, AN ORIGINAL PAPER COPY IS ON FILE AT BGC ENGINEERING INC. AND THAT COPY IS THE PRIMARY REFERENCE WITH PRECEDENCE OVER ANY ELECTRONIC COPY OF THE DOCUMENT, OR ANY EXTRACTS FROM OUR DOCUMENTS PUBLISHED BY OTHERS.

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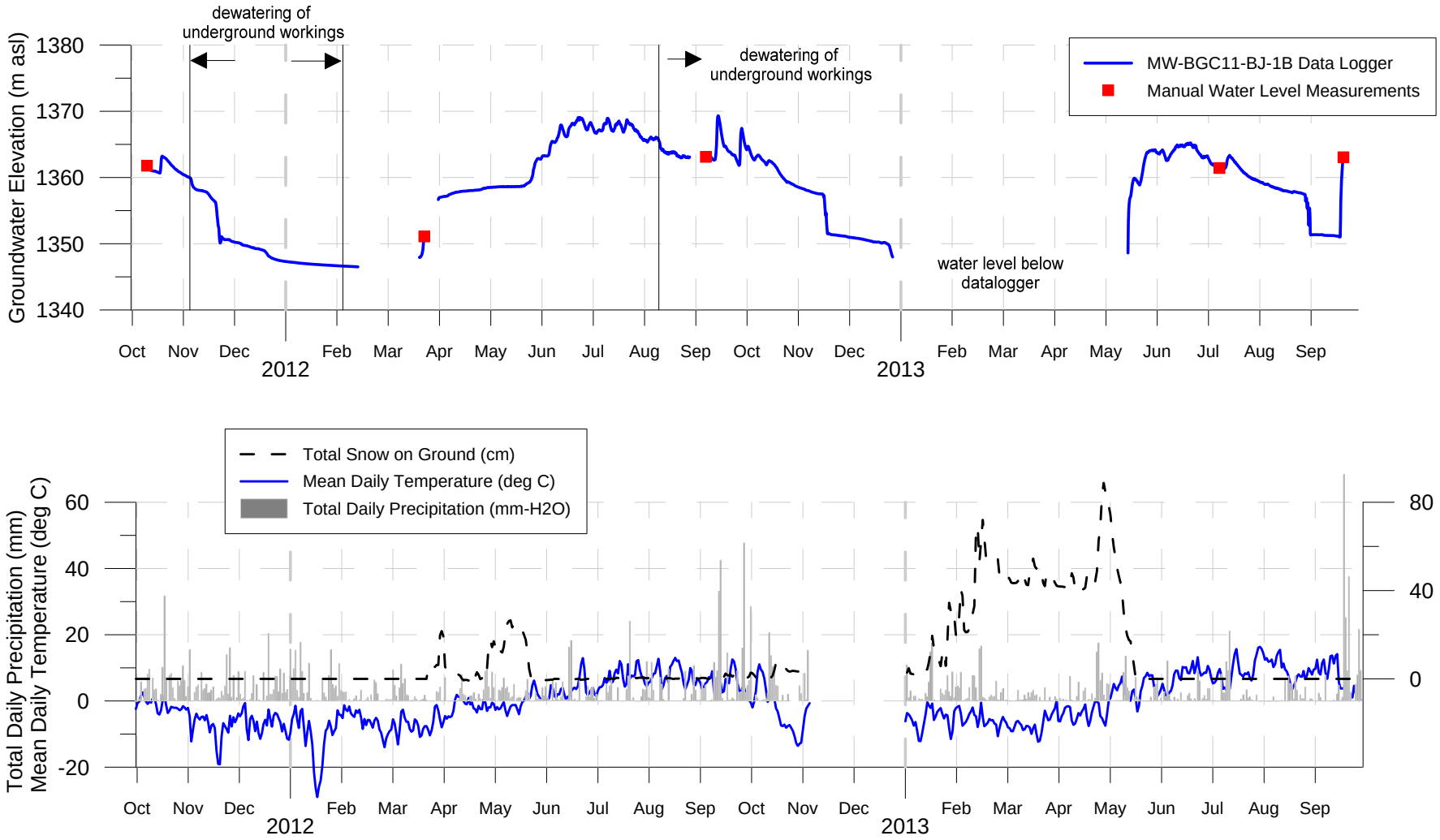
CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC11-BJ-1A GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D01	1

N:\BGC\Projects\1008 Pretium\007 Feasibility\004 Hydrogeo - Office\01 Brucejack\02 Water Levels & Hydrographs\Dataloggers and Hydrographs\MW-BGC12-BJ-1A\Hydrograph_MW-BGC12-BJ-1A.grf



Notes:

1) Well screened from 1347.32 to 1350.42 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET, BS	APPROVED: VC

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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

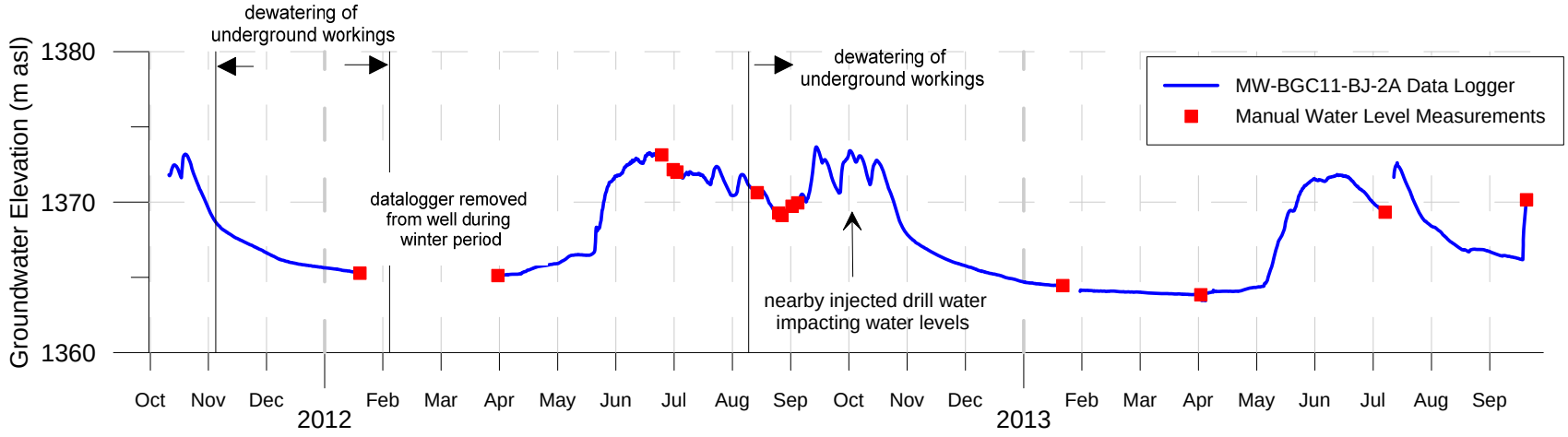
CLIENT: PRETIUM RESOURCES INC.

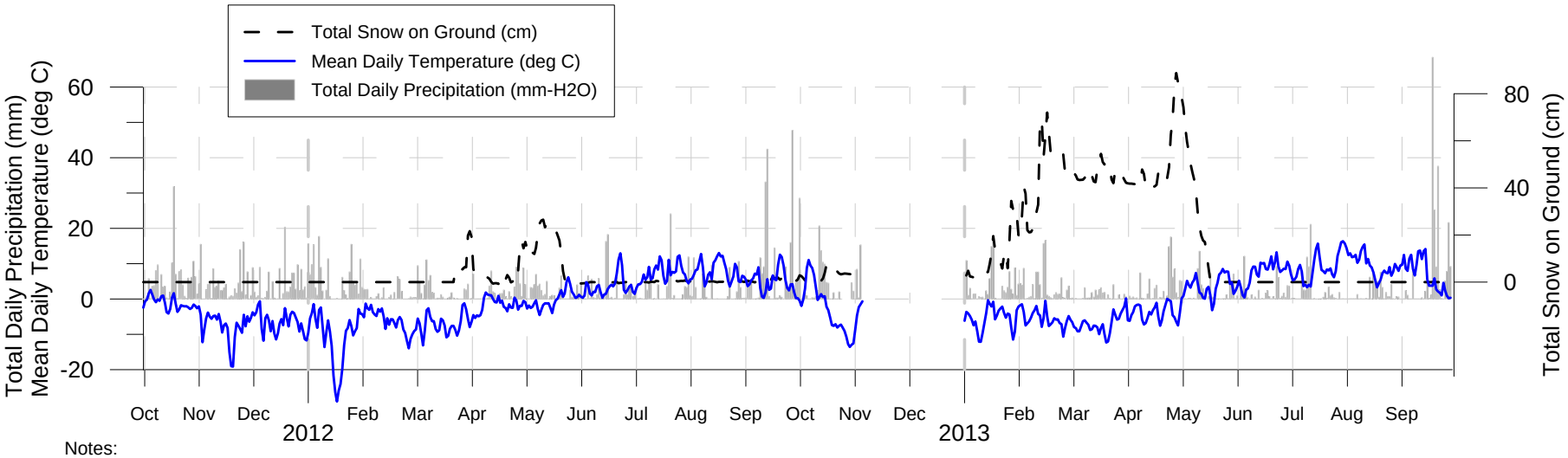
PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC11-BJ-1B GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D02	1

N:\BGC\Projects\1008 Pretium\007 Feasibility\004 Hydrogeo - Office\01 Brucejack\02 Water Levels & Hydrographs\Dataloggers and Hydrographs\MW-BGC12-BJ-1B\Hydrograph_MW-BGC12-BJ-1B.grf





Notes:
1) Well screened from 1346.37 to 1352.47 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET, BS	APPROVED: VC

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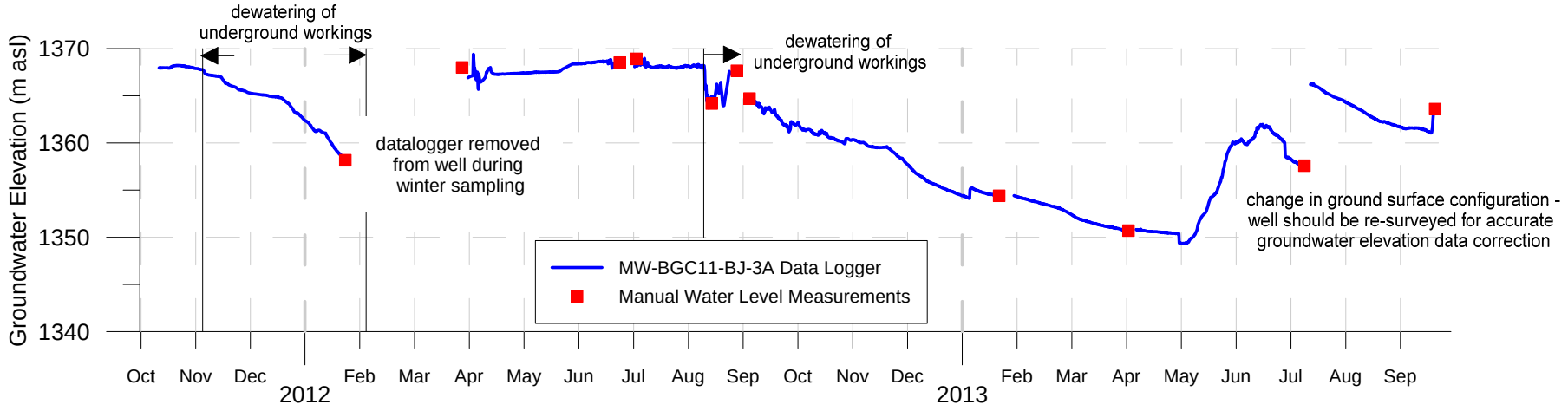
CLIENT: PRETIUM RESOURCES INC.

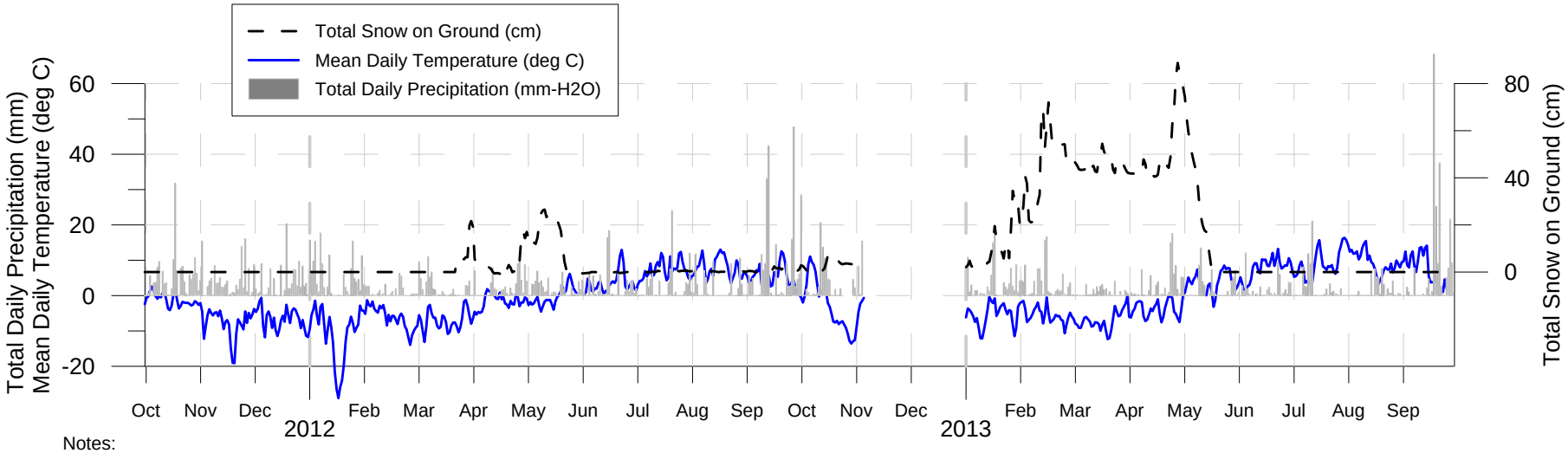
PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC11-BJ-2A GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D03	1

N:\BGC\Projects\1008 Pretium\007 Feasibility\004 Hydrogeo - Office\01 Brucejack\02 Water Levels & Hydrographs\Dataloggers and Hydrographs\MW-BGC12-BJ-2A\Hydrograph_MW-BGC12-BJ-2A.grf





Notes:
1) Well screened from 1279.33 to 1284.63 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

SCALE:	N/A	DESIGNED:	KSJ
DATE:	APR 2014	CHECKED:	DP
DRAWN:	LH, RET, BS	APPROVED:	VC

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC11-BJ-3A GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D04	1

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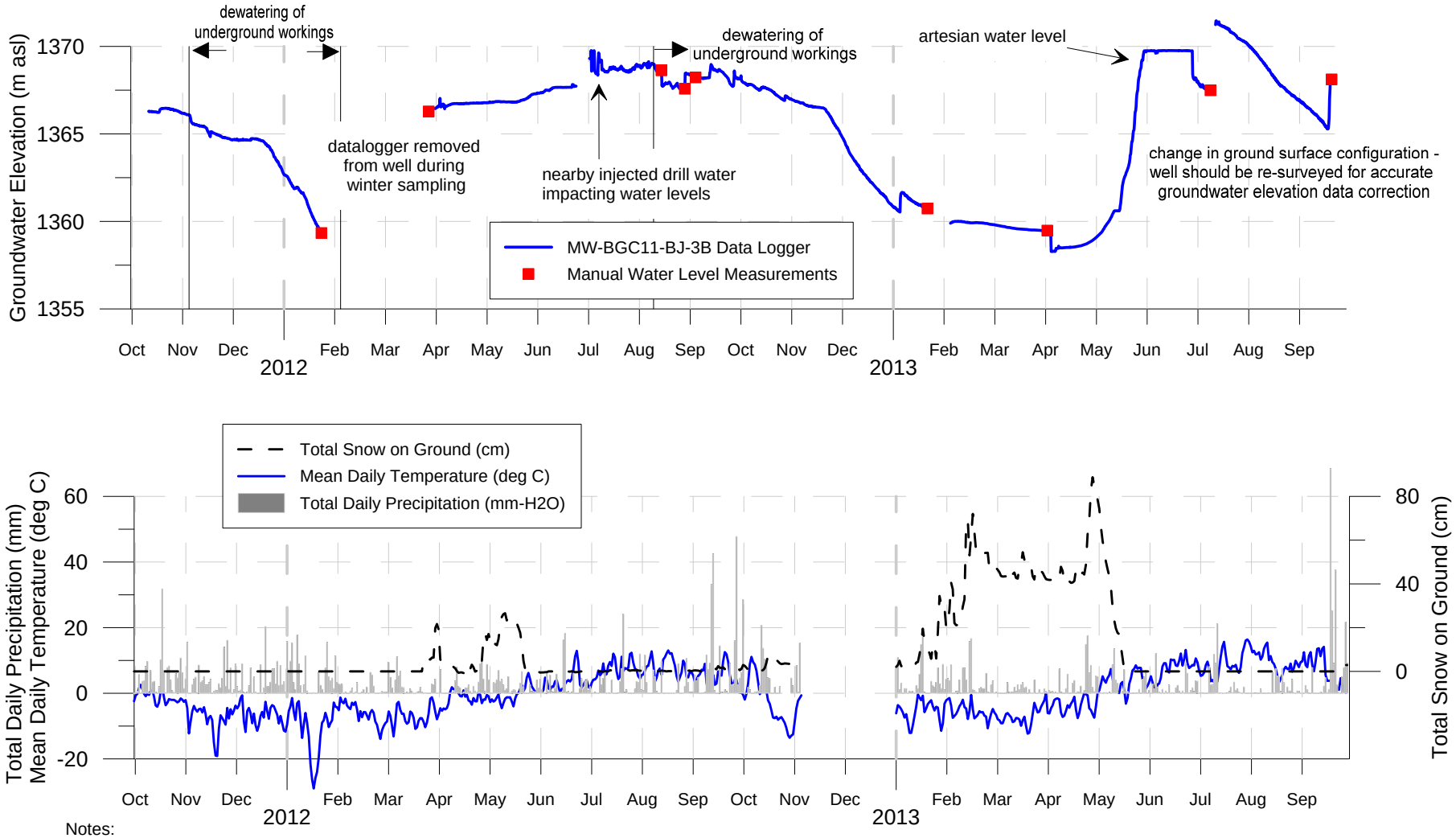

Notes:

1) Well screened from 1358.73 to 1361.73 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET, BS	APPROVED: VC

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC11-BJ-3B GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D05	1

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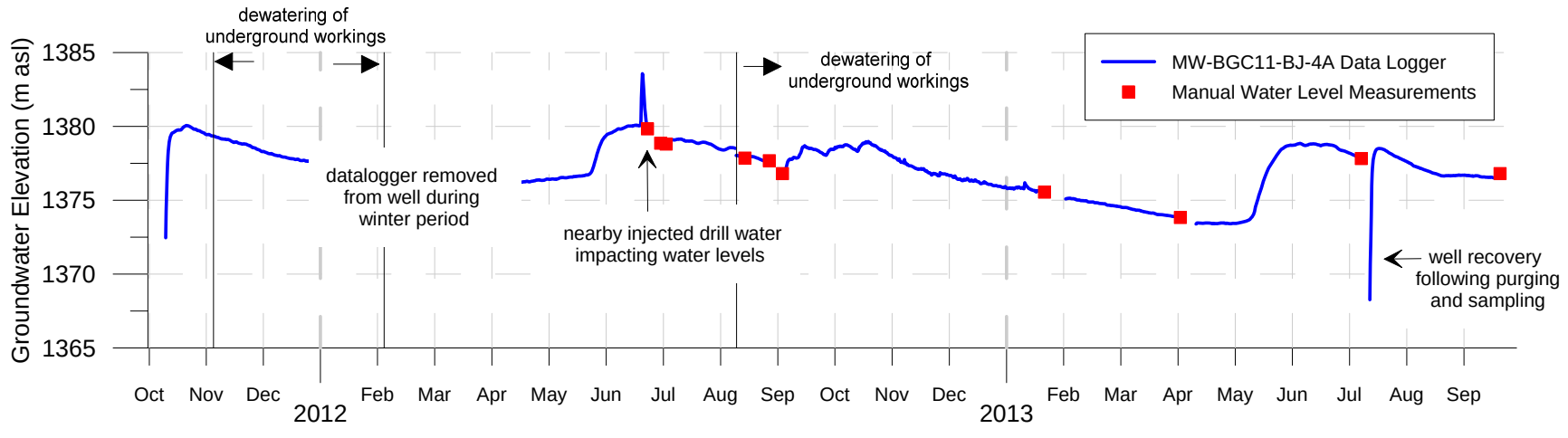

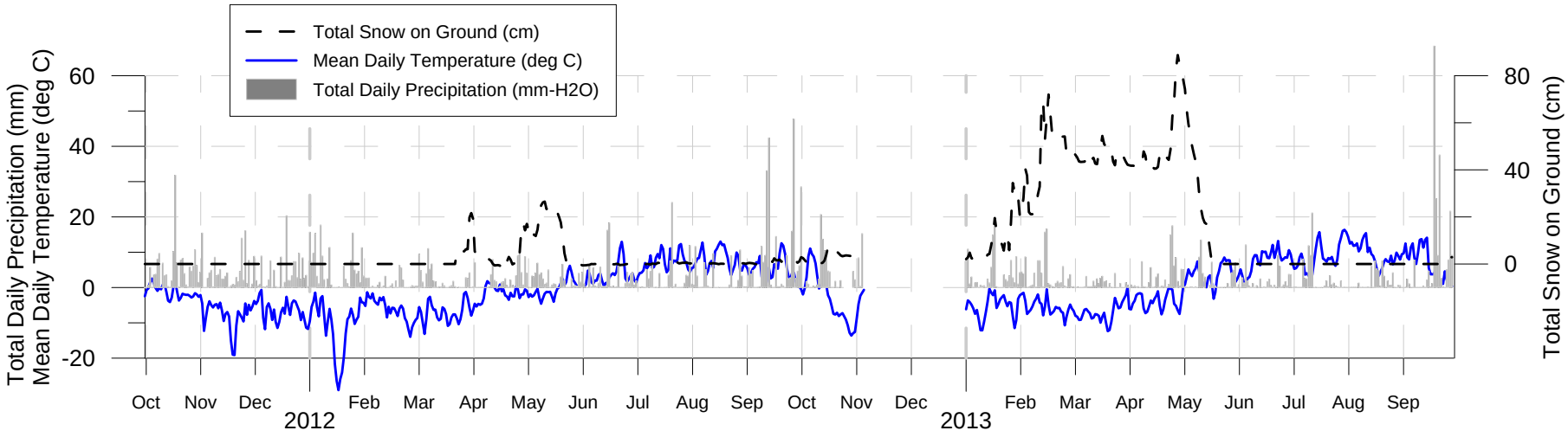

Notes:
1) Well screened from 1359.96 to 1369.16 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC11-BJ-4A GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D06	1

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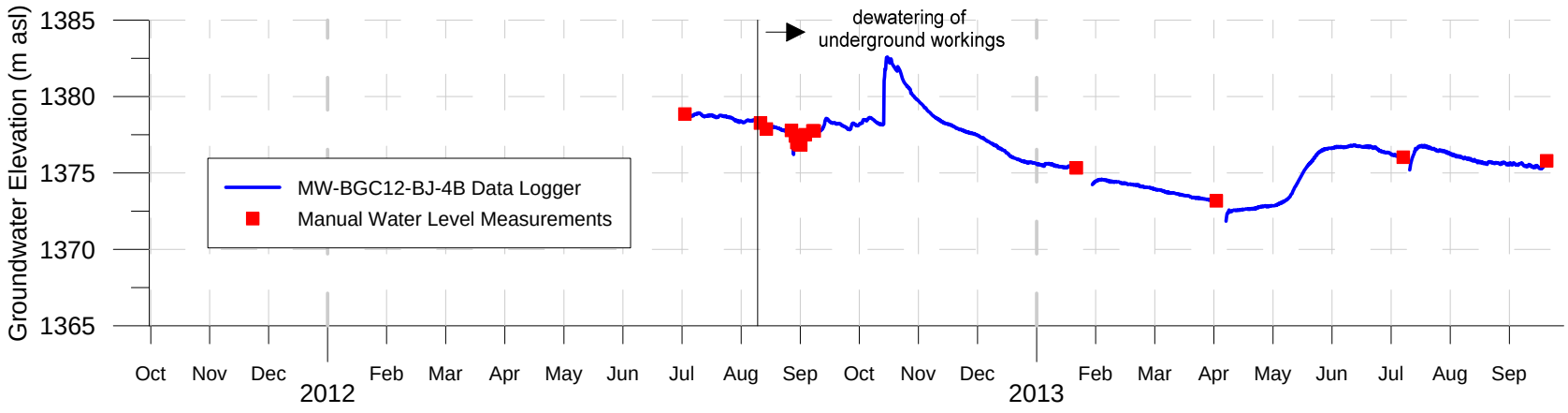

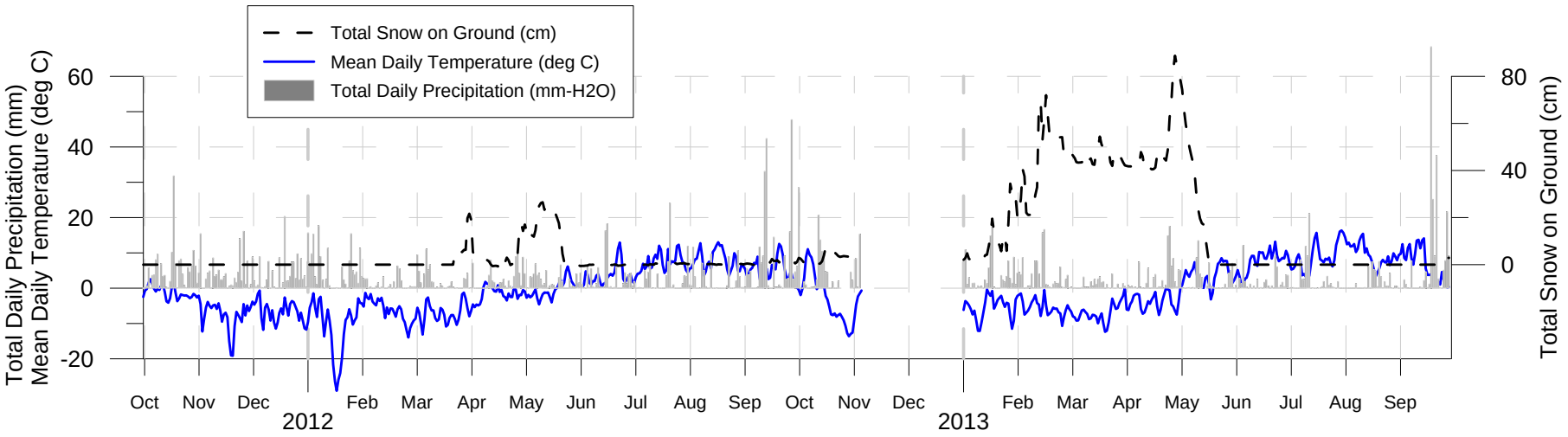

Notes:
1) Well screened from 1292.53 to 1295.53 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

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DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET, BS	APPROVED: VC

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PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC12-BJ-4B GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D07	1

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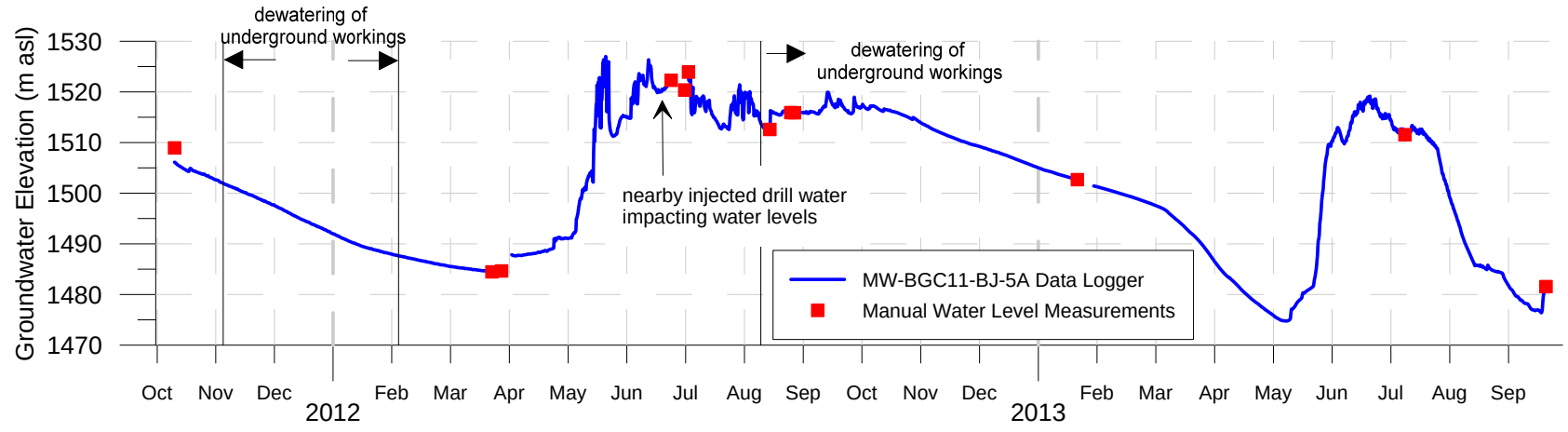

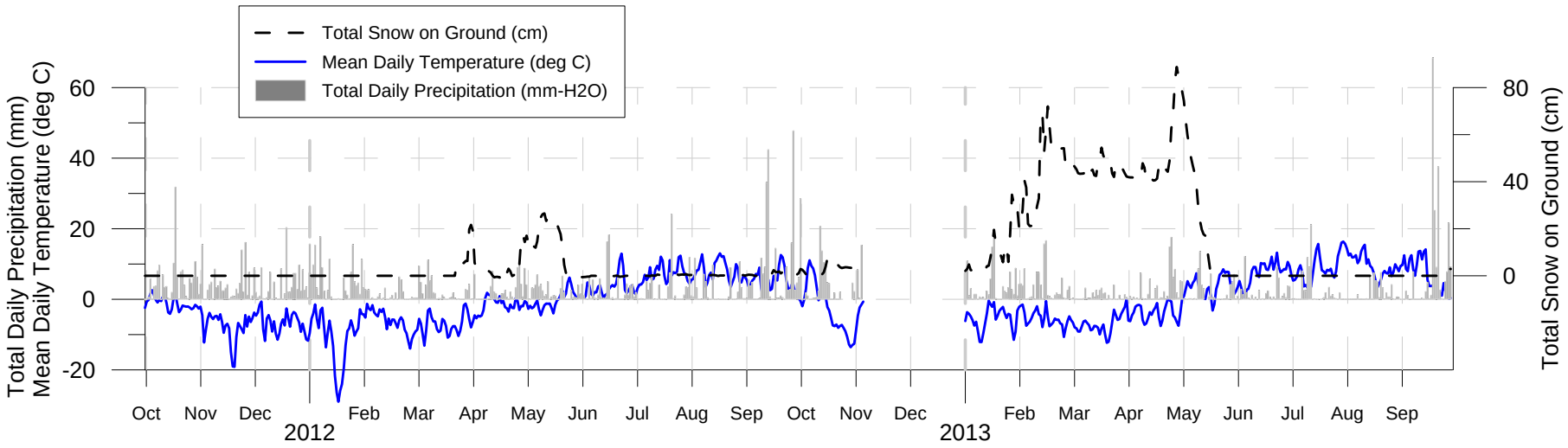

Notes:
1) Well screened from 1448.44 to 1457.54 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

SCALE:	N/A	DESIGNED:	KSJ
DATE:	APR 2014	CHECKED:	DP
DRAWN:	LH, RET, BS	APPROVED:	VC

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC11-BJ-5A GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D08	1

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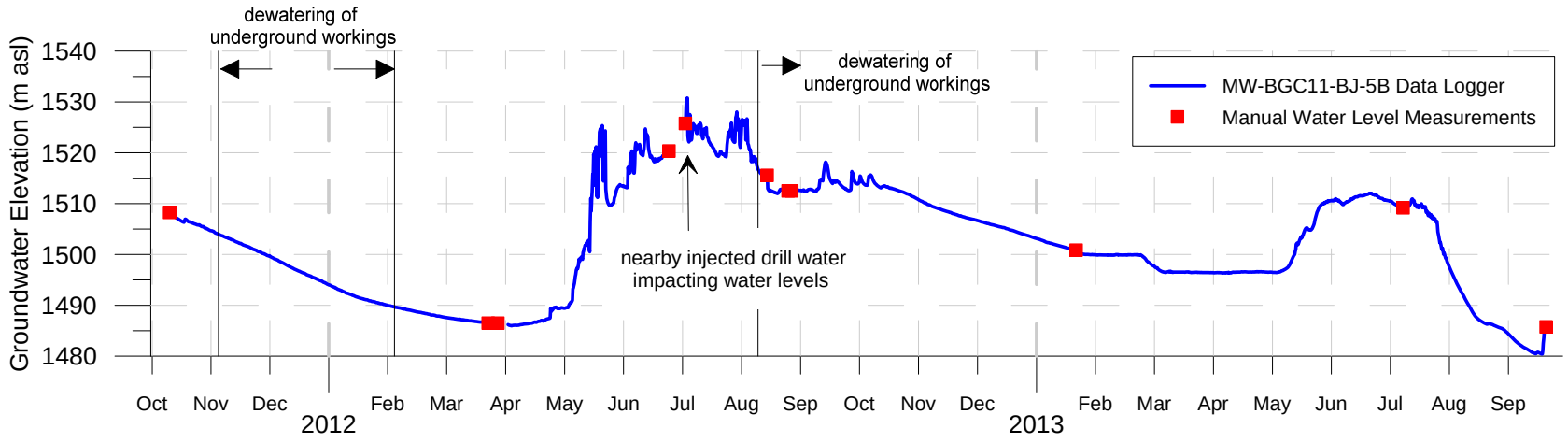

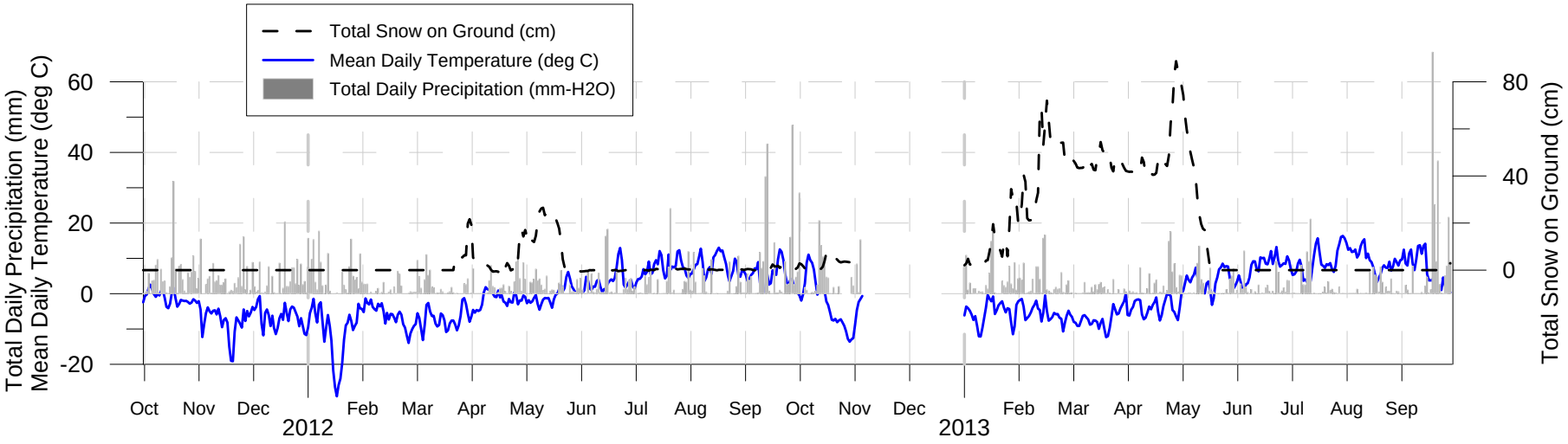

Notes:
1) Well screened from 1475.96 to 1485.16 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC11-BJ-5B GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D09	1

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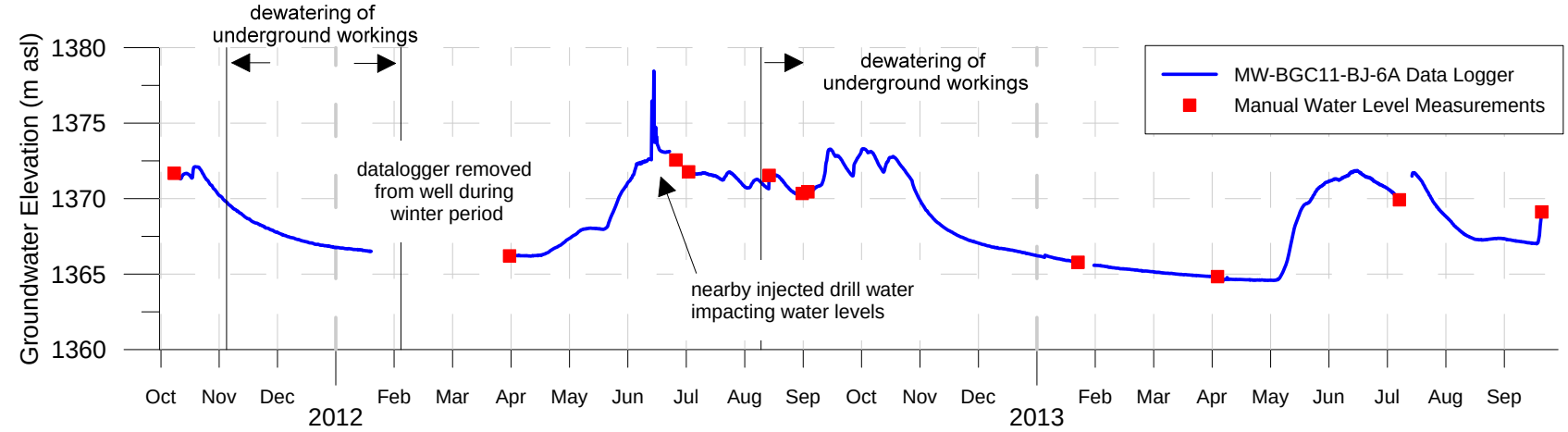

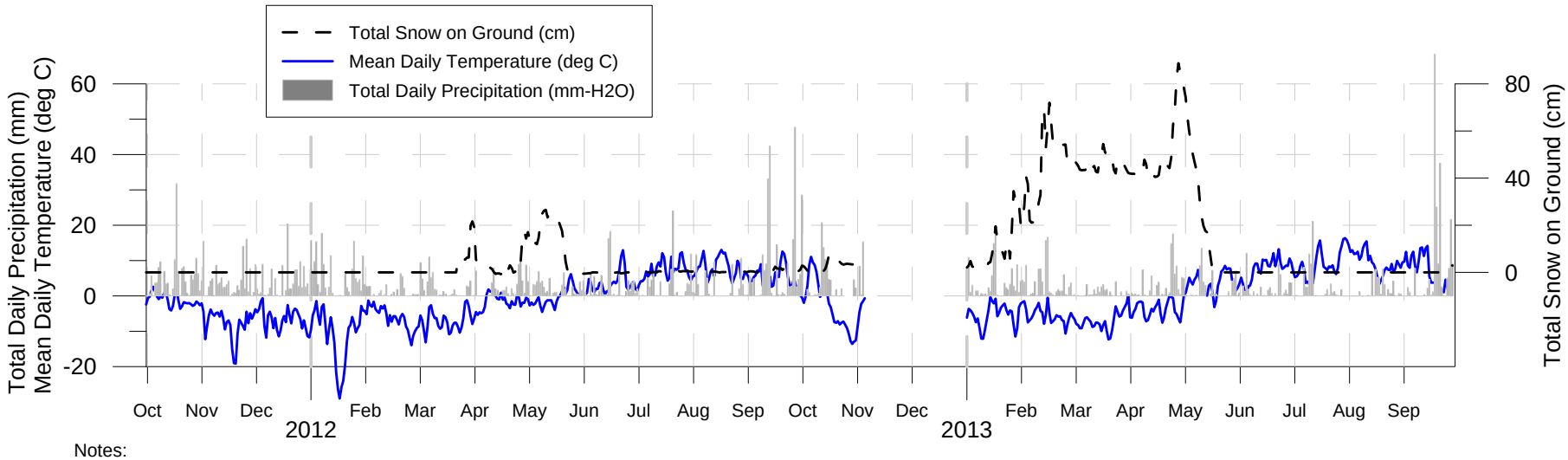

Notes:
1) Well screened from 1349.51 to 1358.61 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC11-BJ-6A GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D10	1

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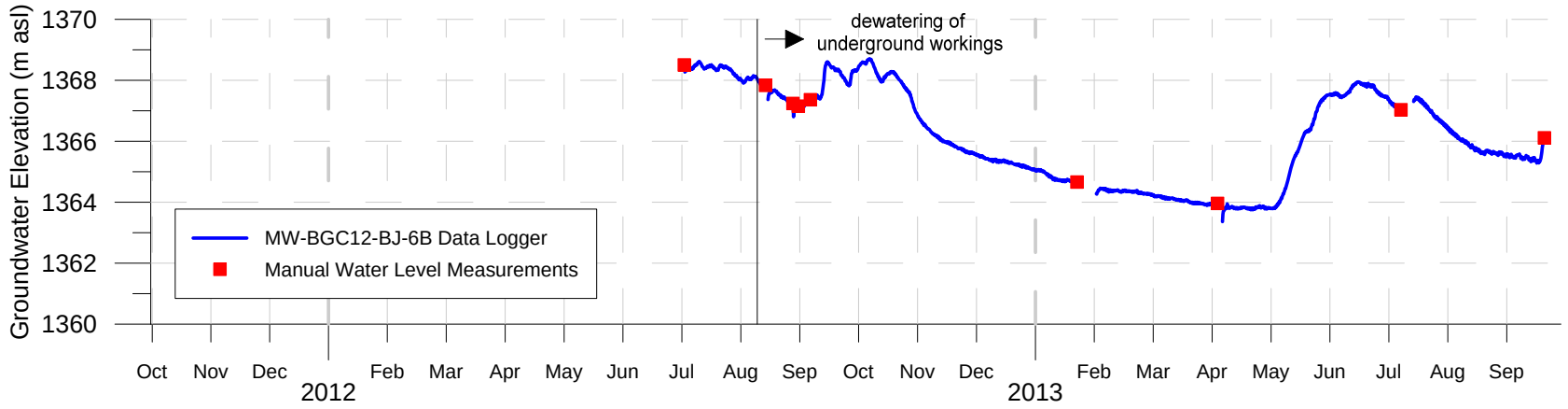

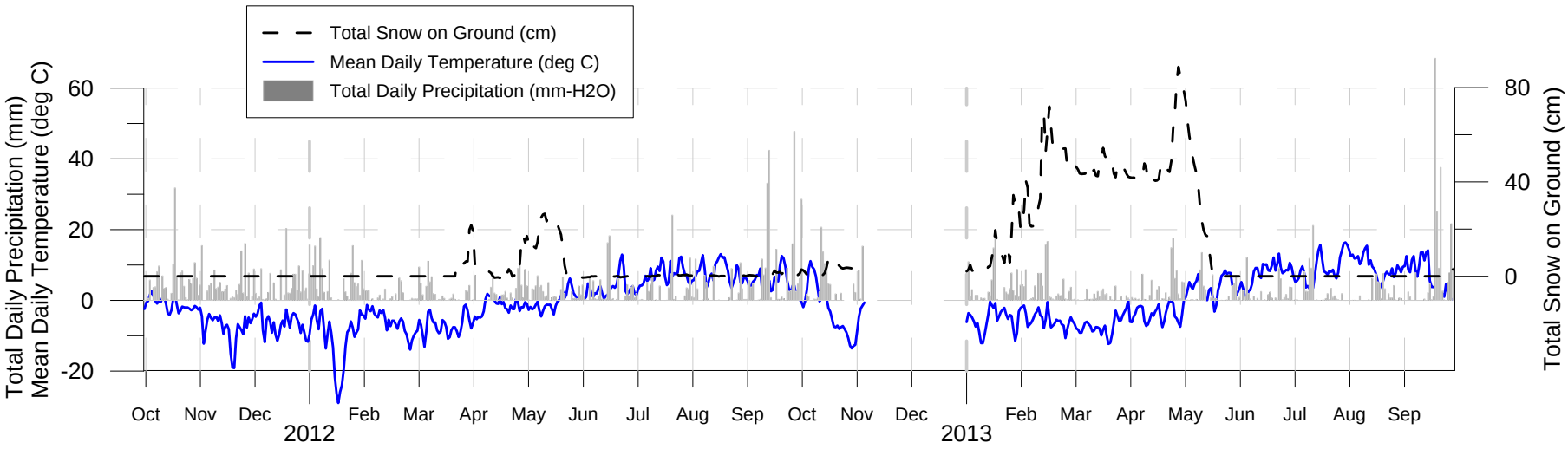

Notes:
1) Well screened from 1276.26 to 1279.26 m asl, see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

SCALE:	N/A	DESIGNED:	KSJ
DATE:	APR 2014	CHECKED:	DP
DRAWN:	LH, RET, BS	APPROVED:	VC

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CLIENT:
PRETIUM RESOURCES INC.

PROJECT:
BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT
HYDROGEOLOGY BASELINE REPORT

TITLE:
MW-BGC12-BJ-6B
GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D11	1

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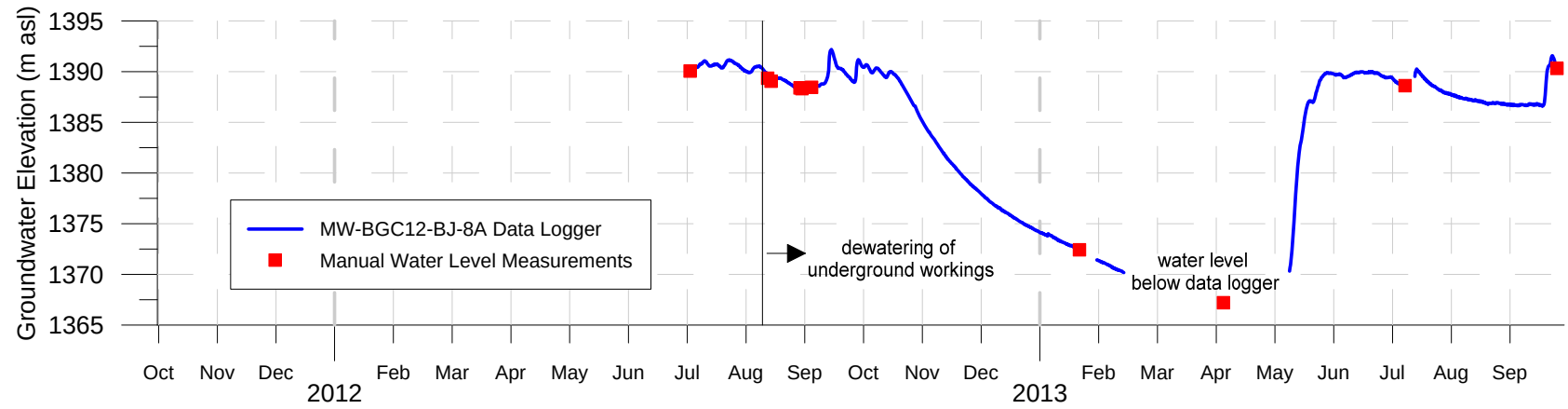

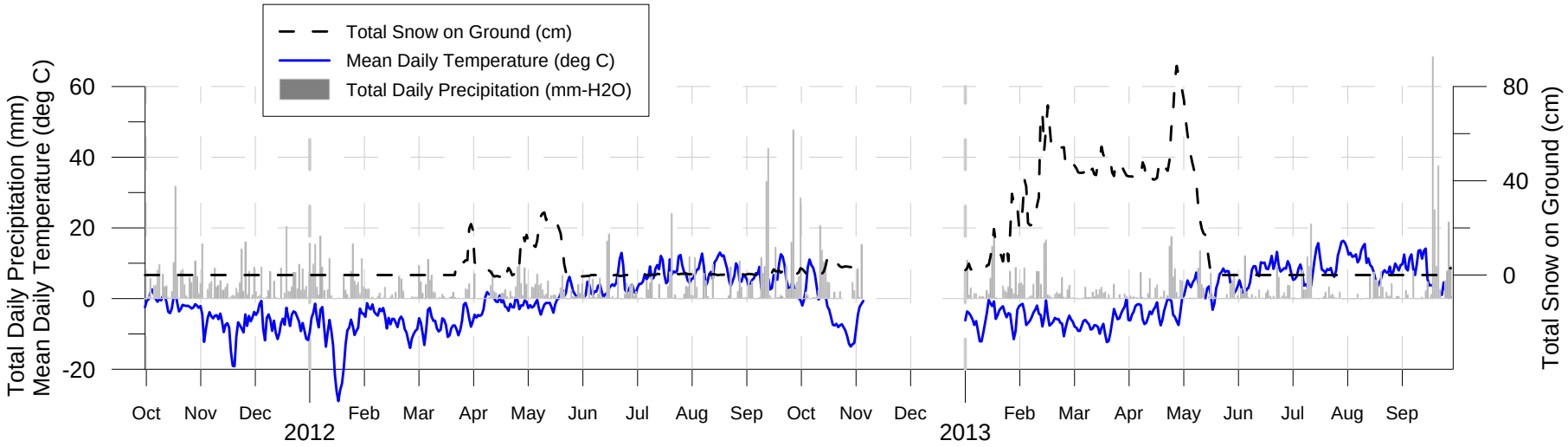

Notes:
1) Well screened from 1311.08 to 1317.18 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

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DATE:	APR 2014	CHECKED:	DP
DRAWN:	LH, RET, BS	APPROVED:	VC

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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

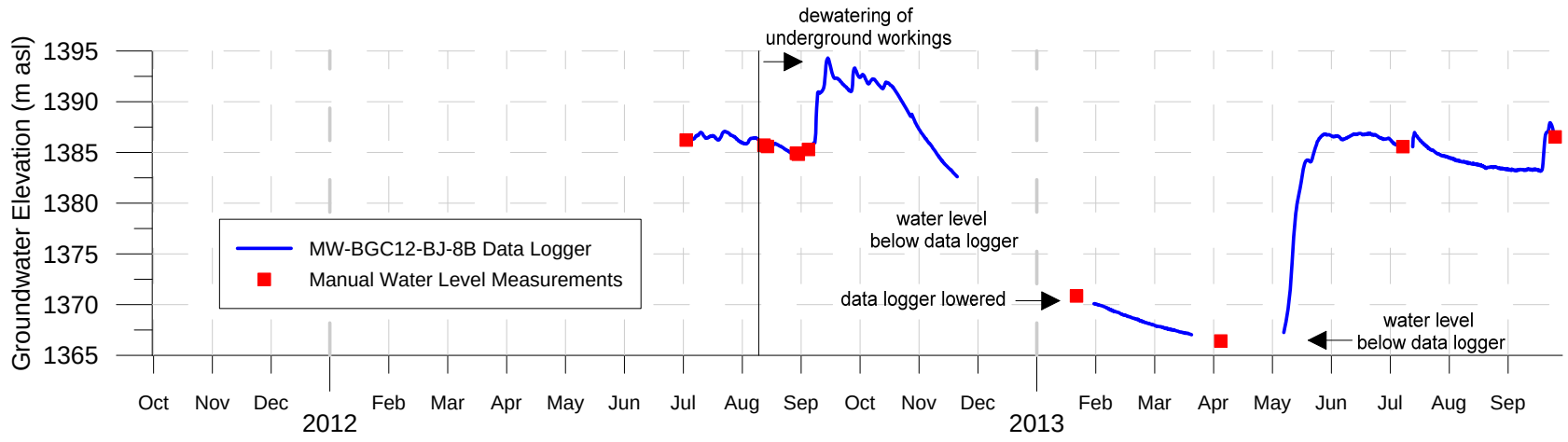
CLIENT: PRETIUM RESOURCES INC.

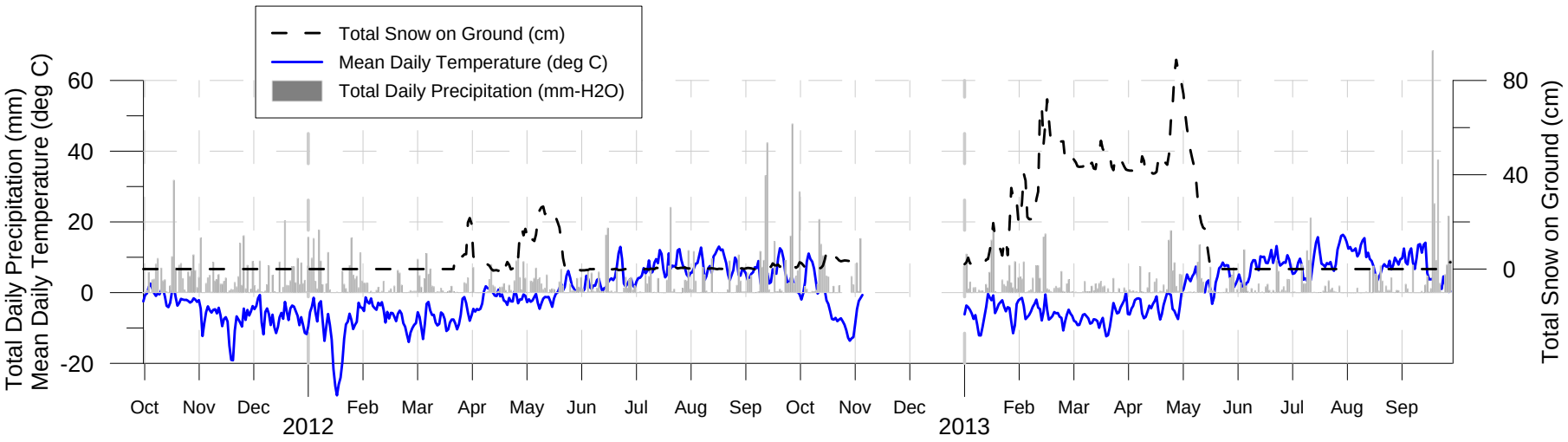
PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT
HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC12-BJ-8A
GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D12	1

N:\BGC\Projects\1008 Pretium\007 Feasibility\004 Hydrogeo - Office\01 Brucejack\02 Water Levels & Hydrographs\Dataloggers and Hydrographs\MW-BGC12-BJ-8A\Hydrograph_MW-BGC12-BJ-8A.grf





Notes:
1) Well screened from 1352.4 to 1358.5 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET, BS	APPROVED: VC

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT
HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC12-BJ-8B
GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D13	1

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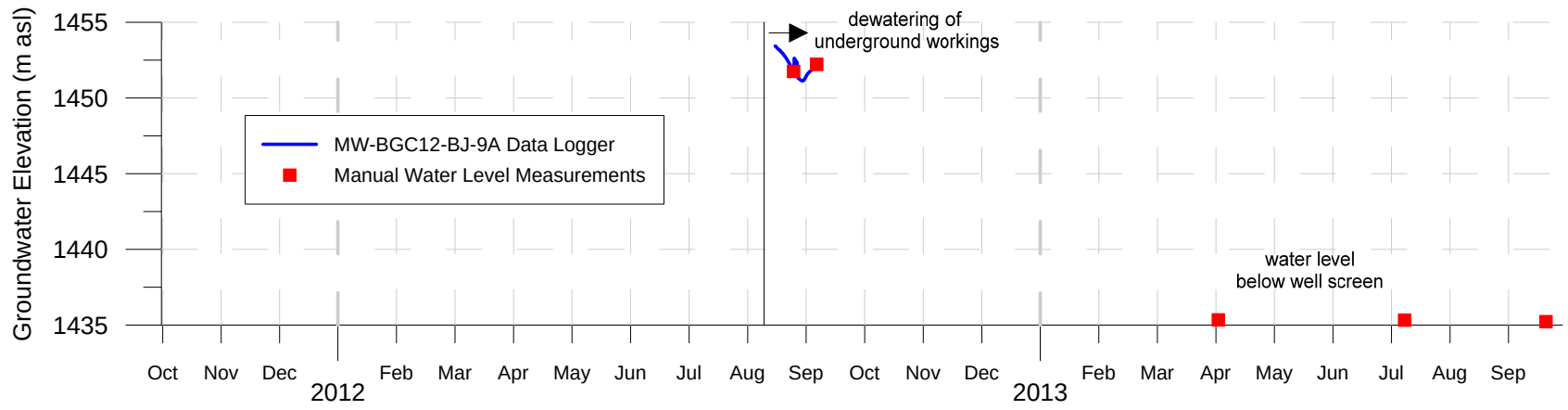

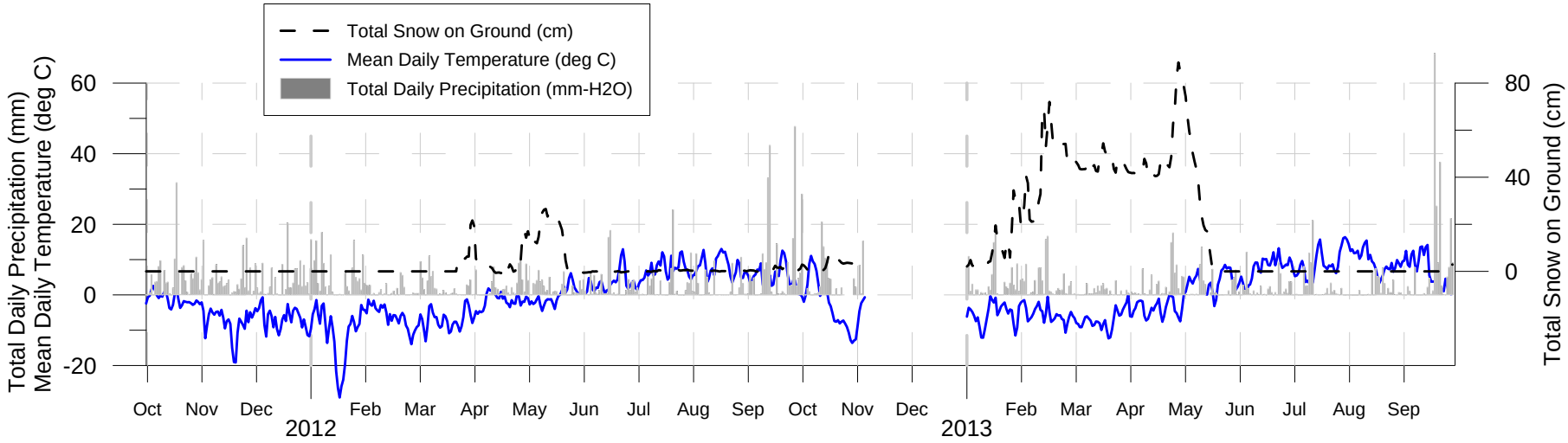

Notes:
1) Well screened from 1435.4 to 1441.5 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT
HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC12-BJ-9A
GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D14	1

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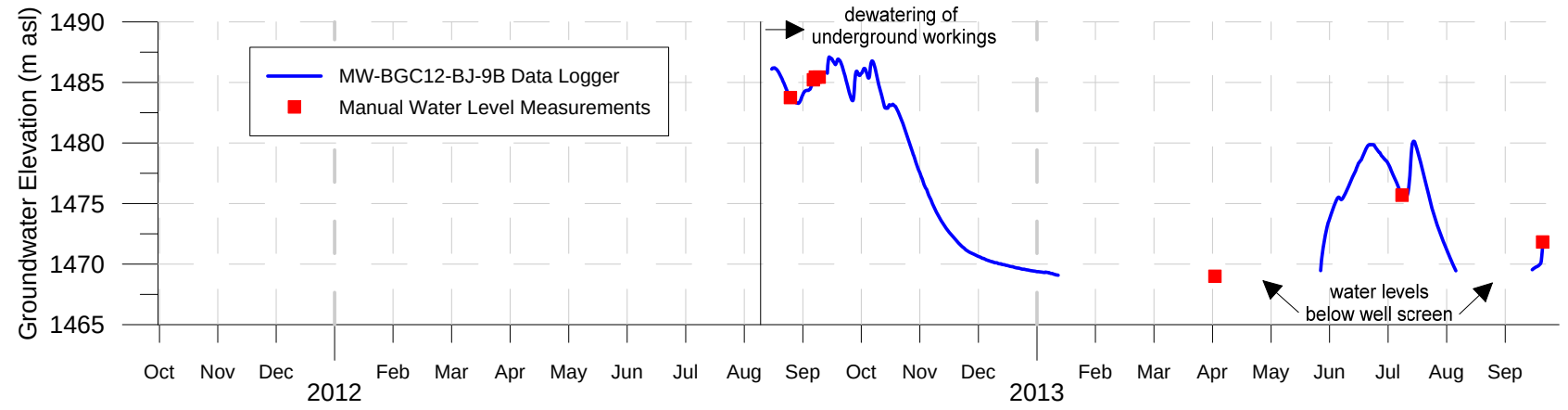

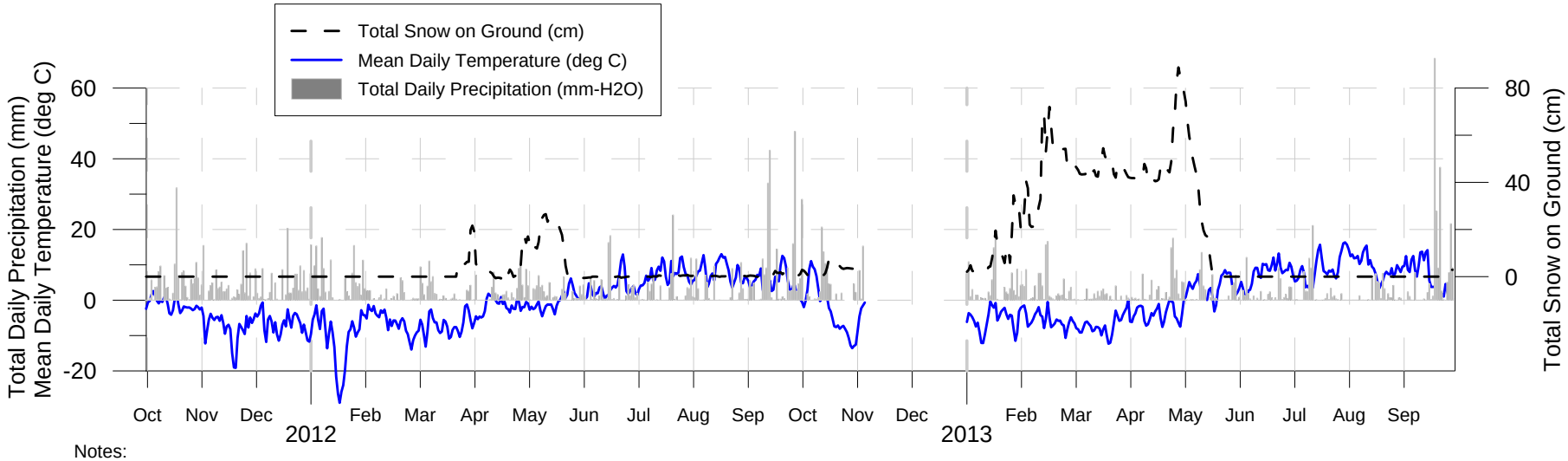

Notes:
1) Well screened from 1467.86 to 1473.96 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

SCALE:	N/A	DESIGNED:	KSJ
DATE:	APR 2014	CHECKED:	DP
DRAWN:	LH, RET, BS	APPROVED:	VC

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CLIENT:
PRETIUM RESOURCES INC.

PROJECT:
BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT
HYDROGEOLOGY BASELINE REPORT

TITLE:
MW-BGC12-BJ-9B
GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D15	1

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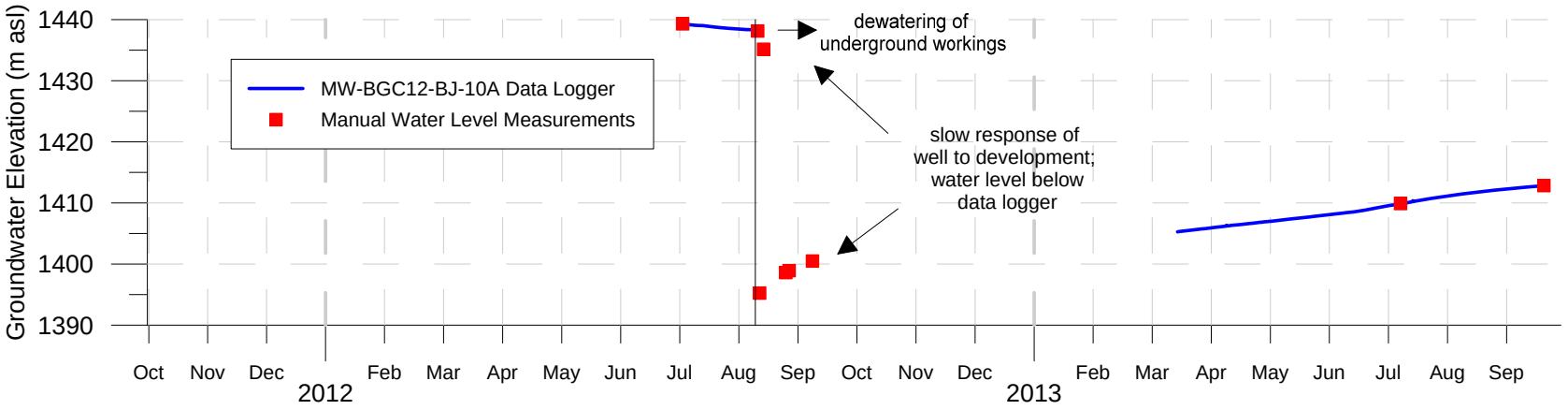

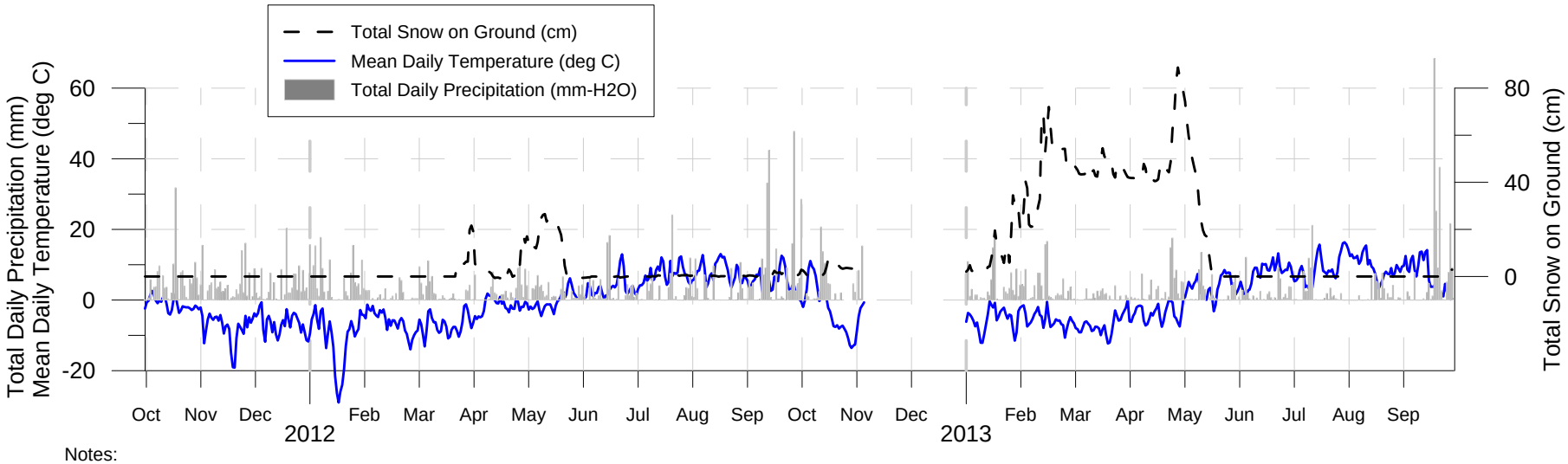

Notes:
1) Well screened from 1386.29 to 1392.39 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

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BGC ENGINEERING INC.
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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC12-BJ-10A GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D16	1

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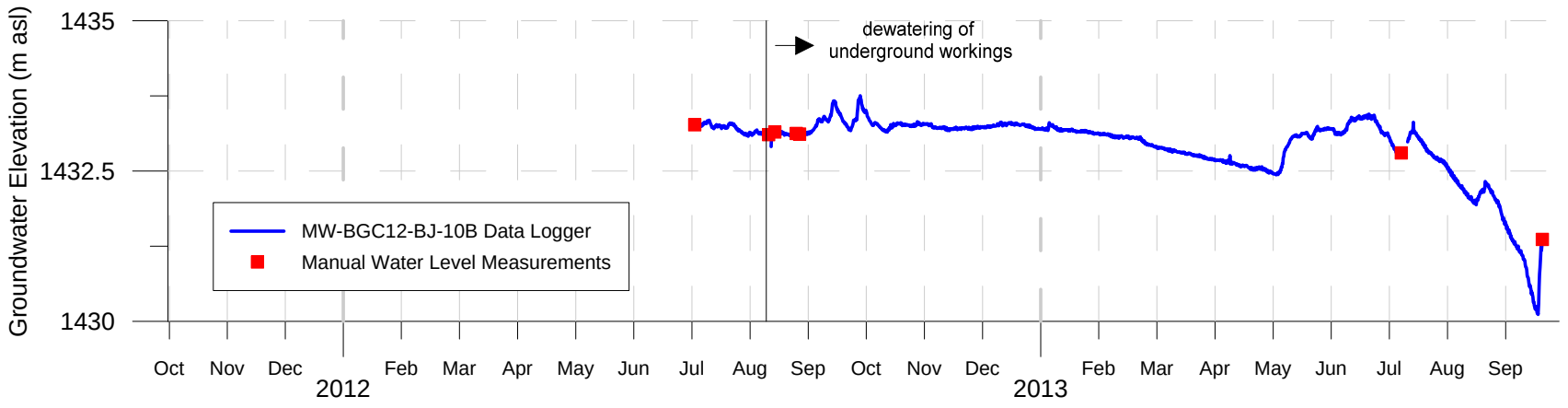

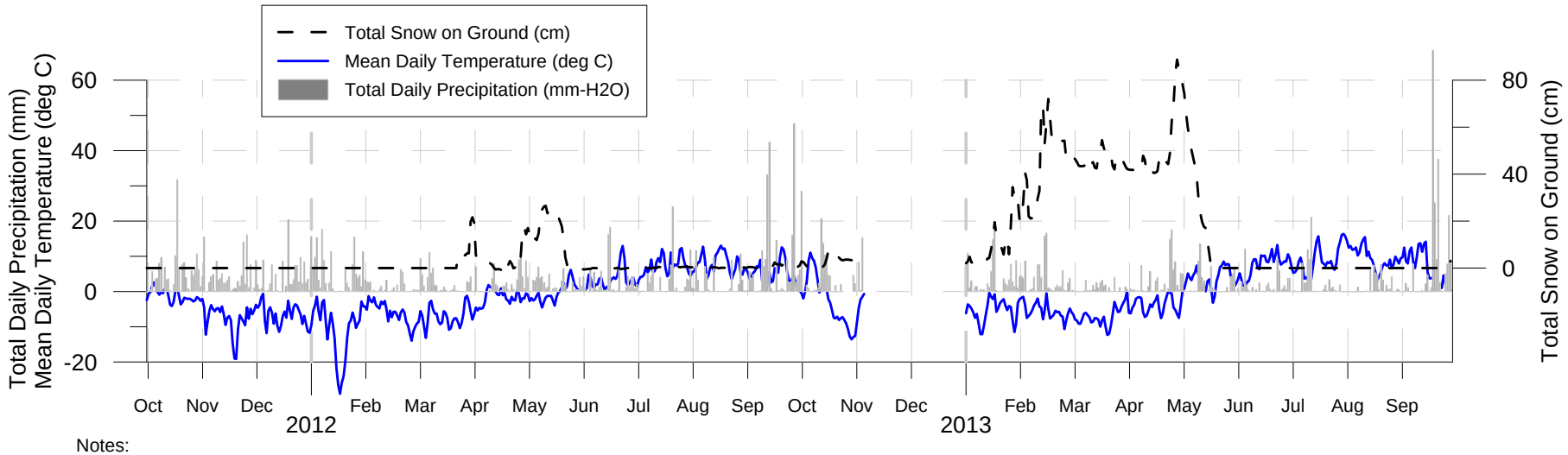

Notes:
1) Well screened from 1404.54 to 1407.54 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET, BS	APPROVED: VC

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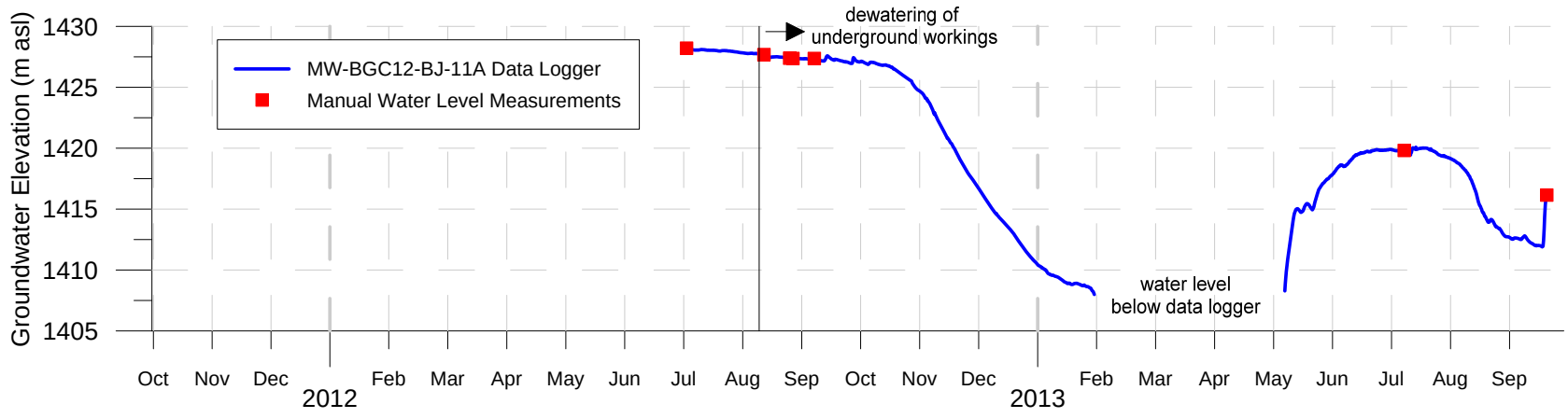
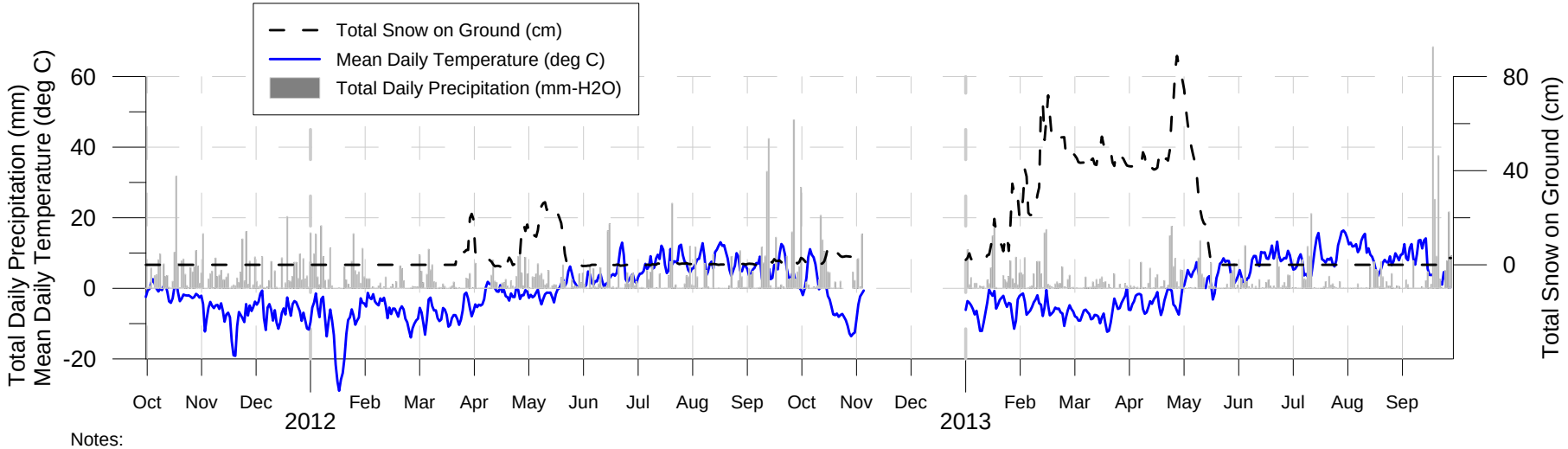
CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC12-BJ-10B GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D17	1





Notes:
1) Well screened from 1404.07 to 1407.07 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT
HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC12-BJ-11A
GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D18	1

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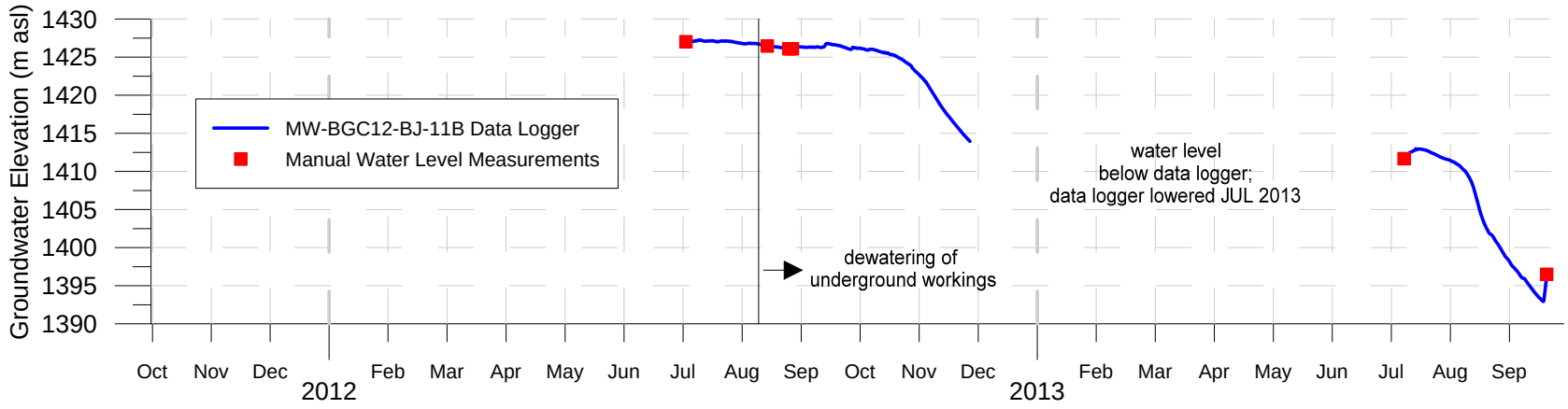

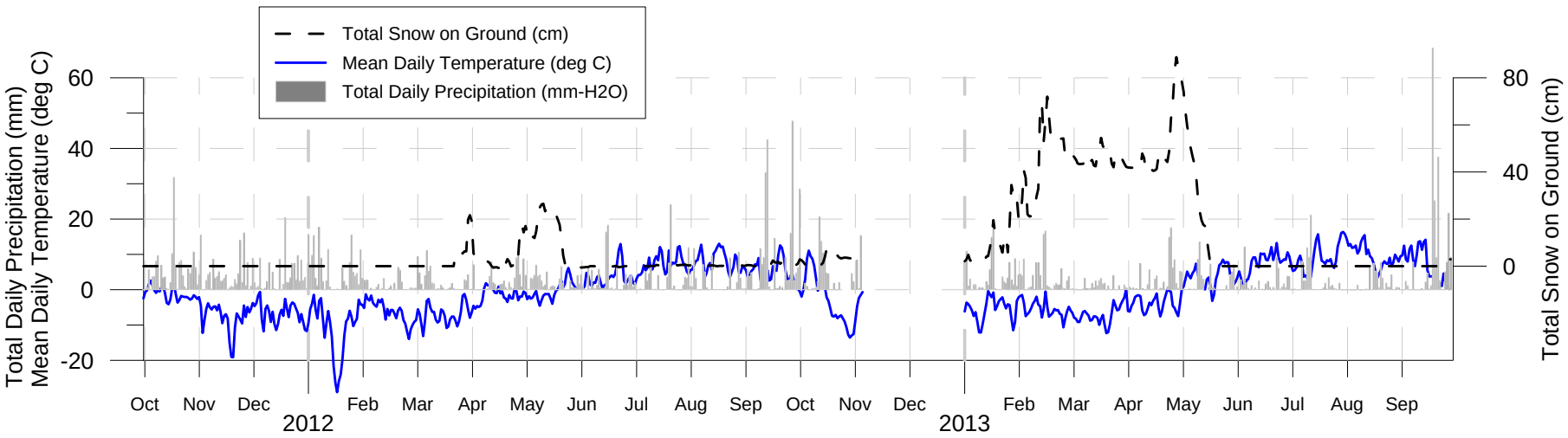

Notes:
1) Well screened from 1379.16 to 1382.26 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC12-BJ-11B GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D19	1

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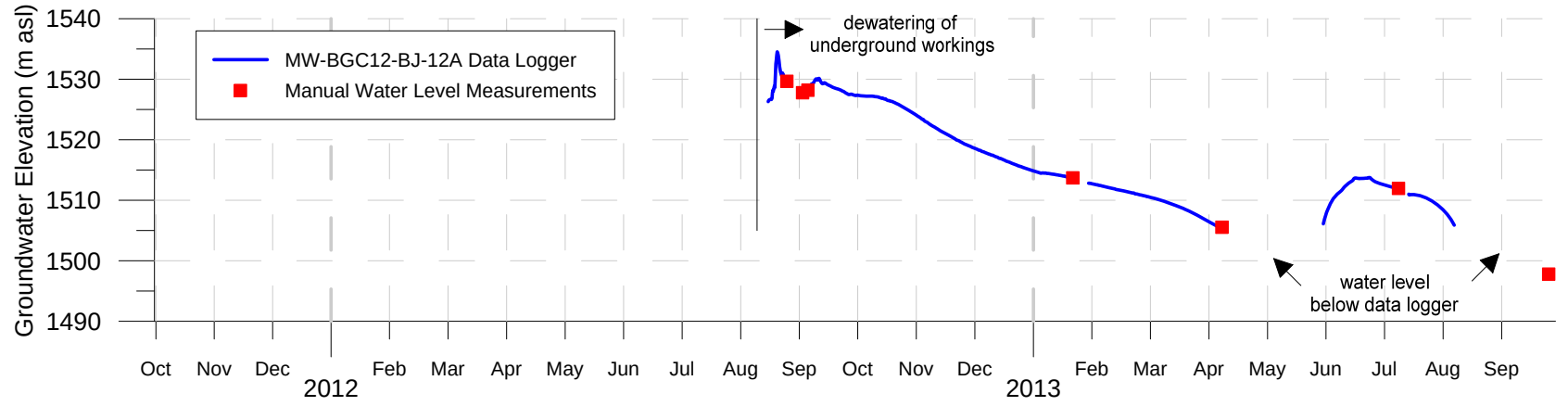

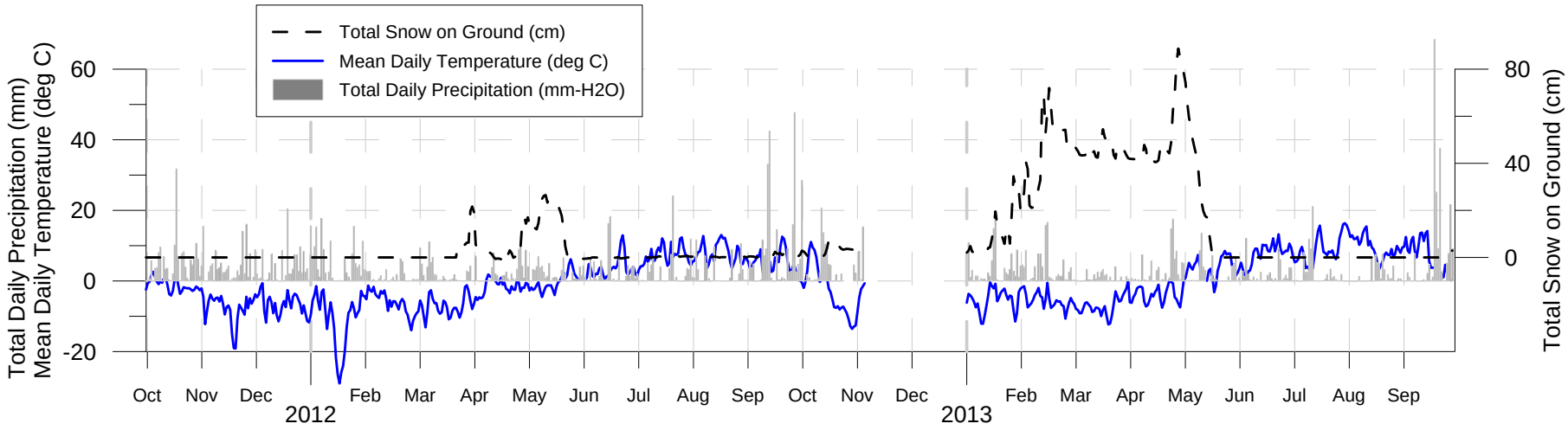

Notes:
1) Well screened from 1485.29 to 1491.39 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

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HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC12-BJ-12A
GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D20	1

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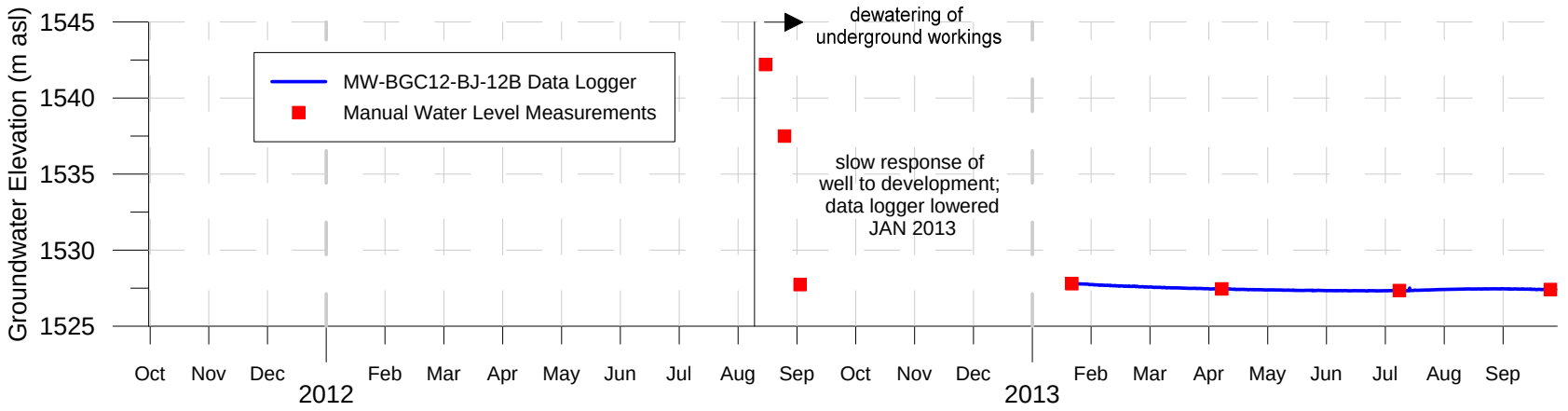

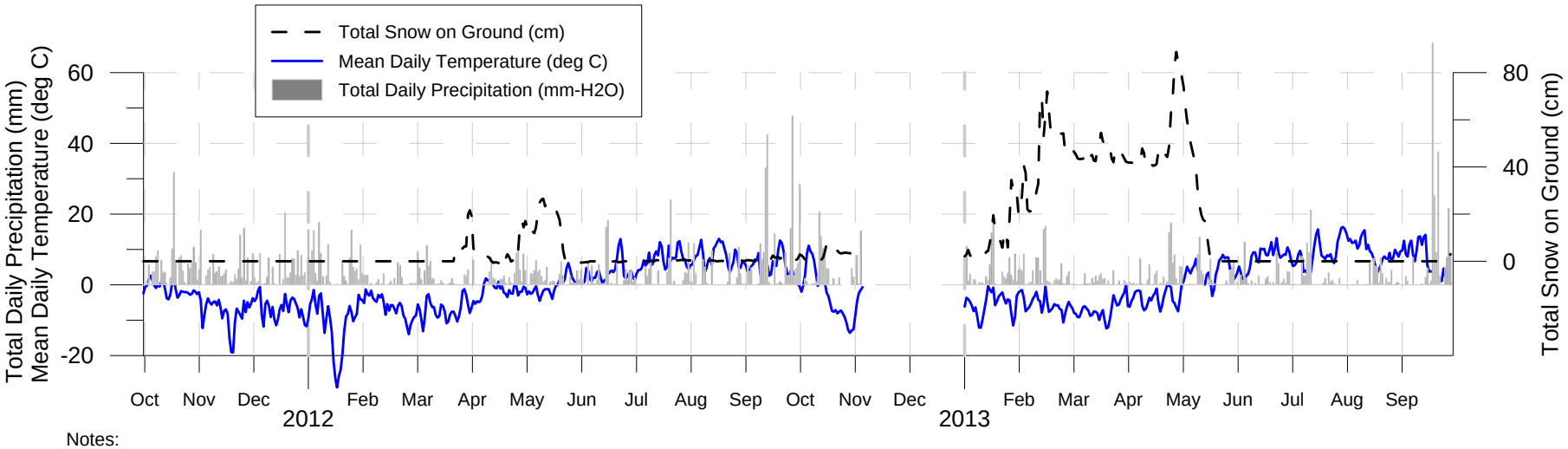

Notes:
1) Well screened from 1526.36 to 1532.46 m asl; see Appendix B for well log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

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PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: MW-BGC12-BJ-12B GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D21	1

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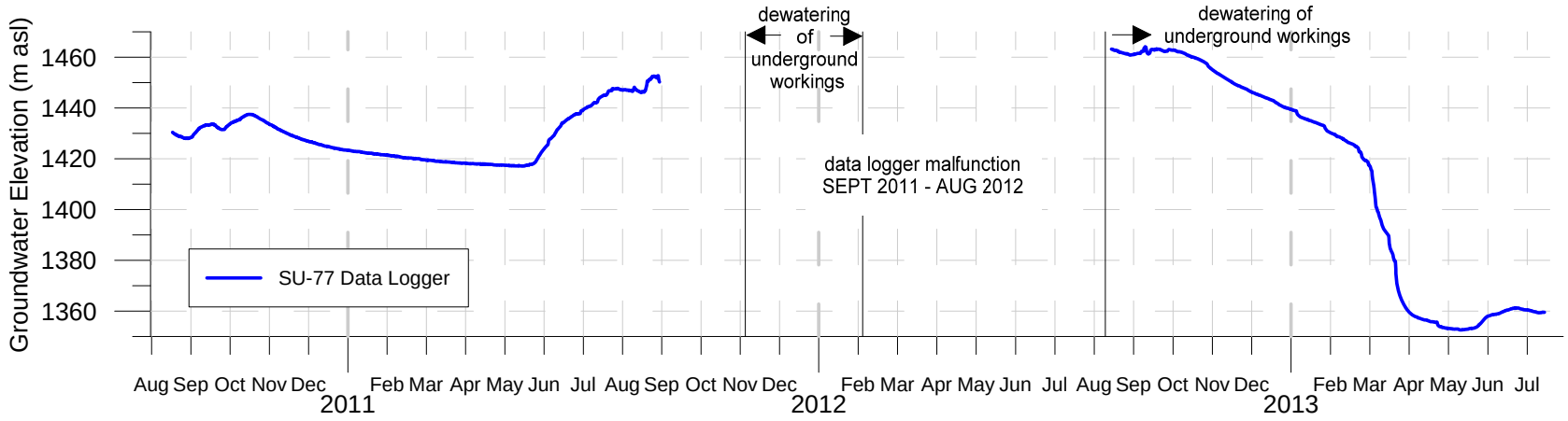

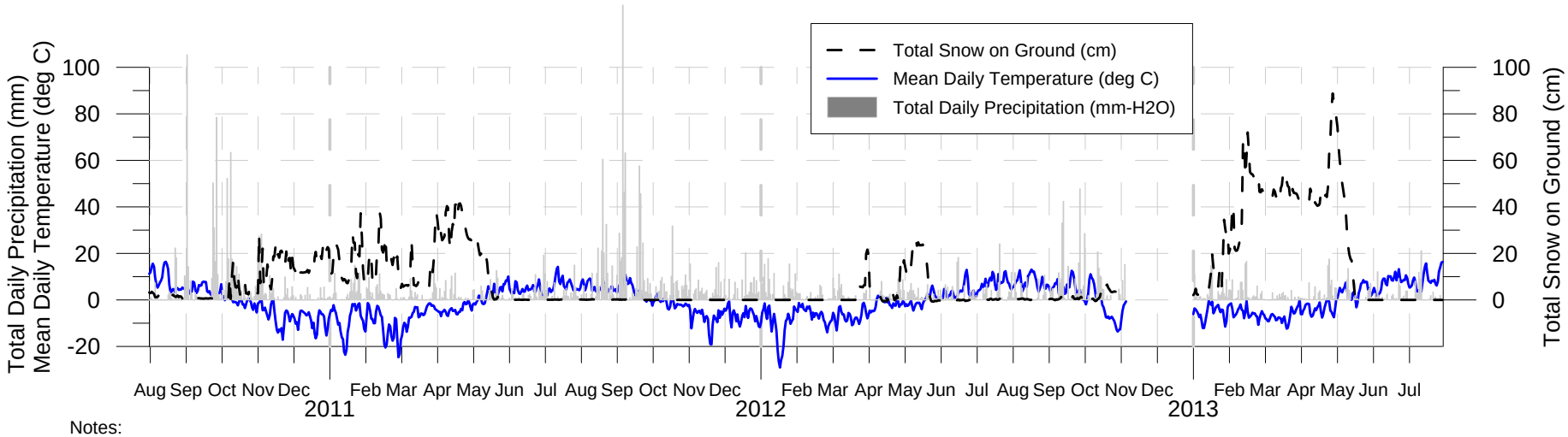

Notes:
1) VWP tip elevation at 1267.5 m asl; see Appendix C for VWP summary log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET	APPROVED: VC

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: SU-77 GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D22	1

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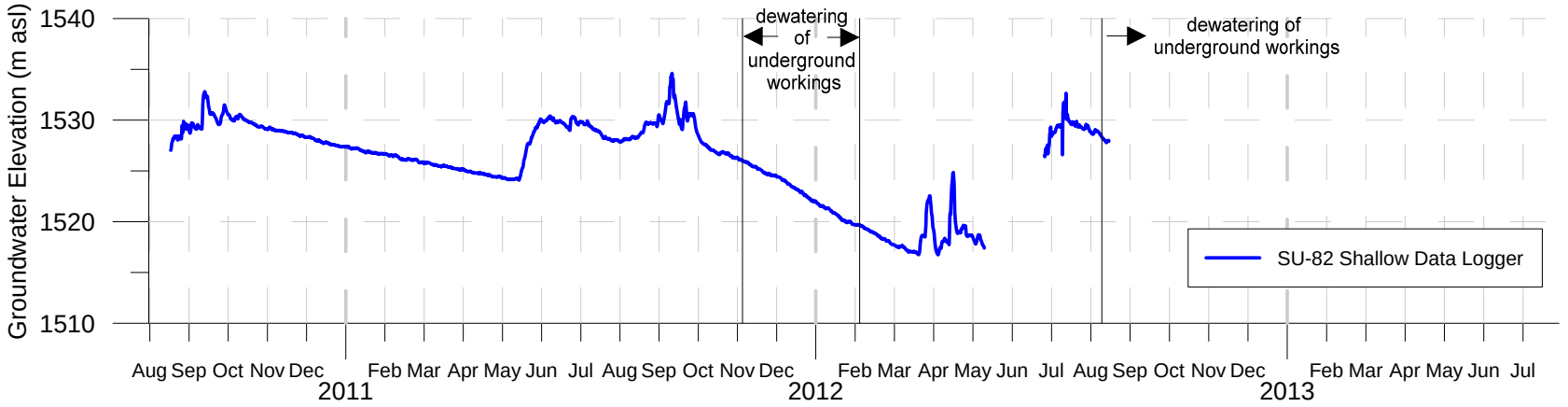

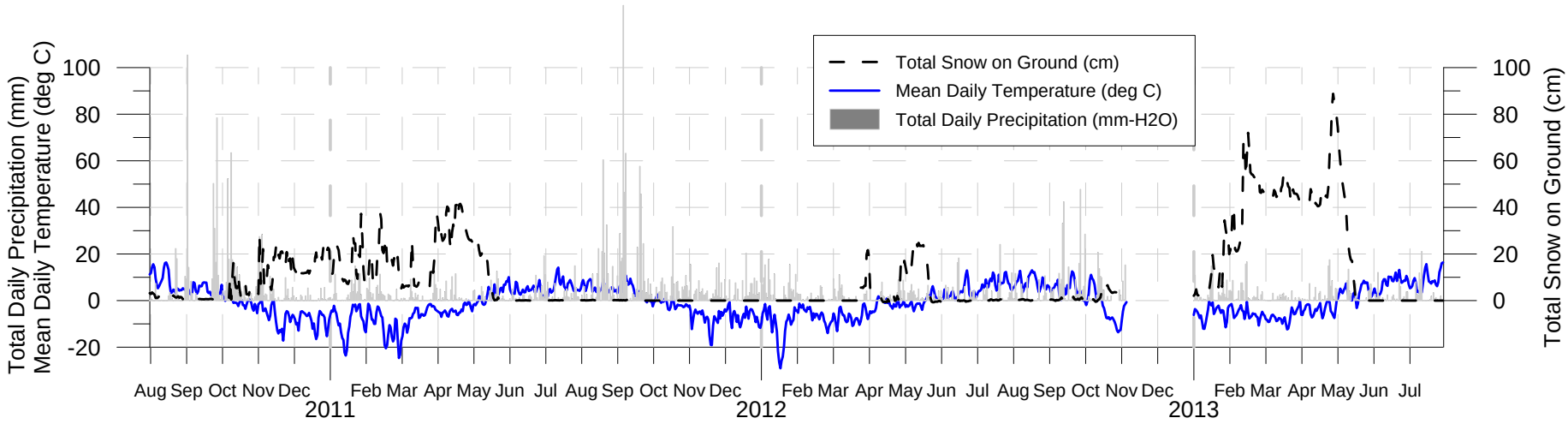

Notes:
1) VWP tip elevation at 1475.5 m asl; see Appendix C for VWP summary log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET	APPROVED: VC

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: SU-82 SHALLOW GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D23	1

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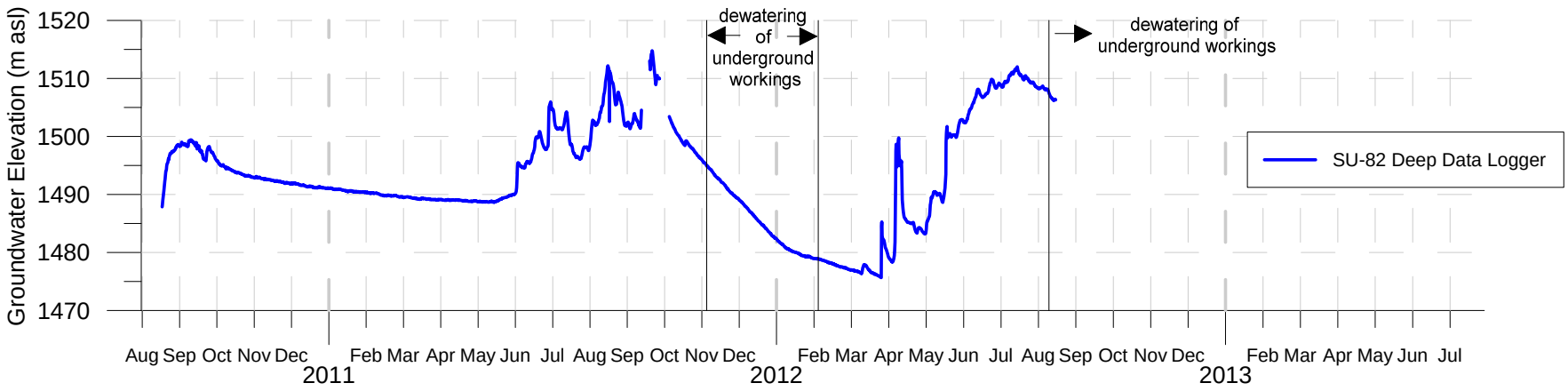

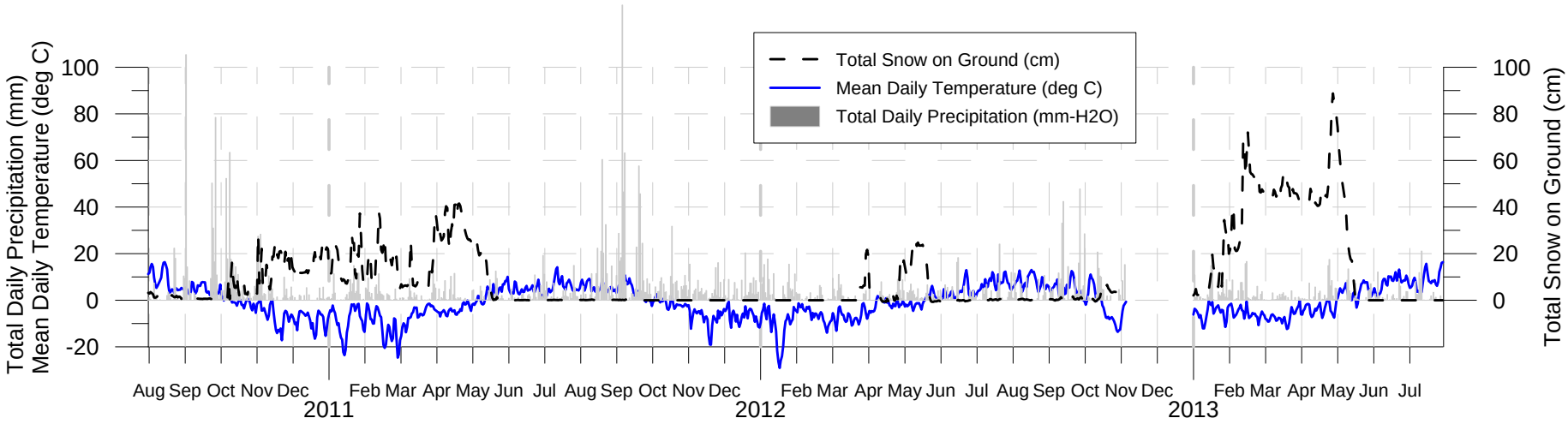

Notes:
1) VWP tip elevation at 1202.4 m asl; see Appendix C for VWP summary log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET	APPROVED: VC

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: SU-82 DEEP GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D24	1

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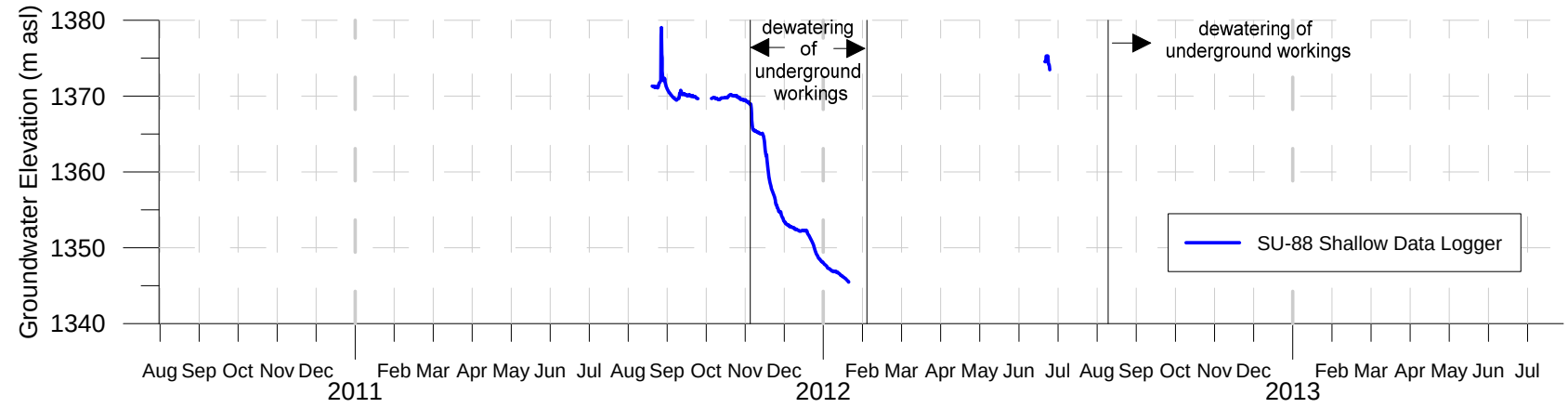

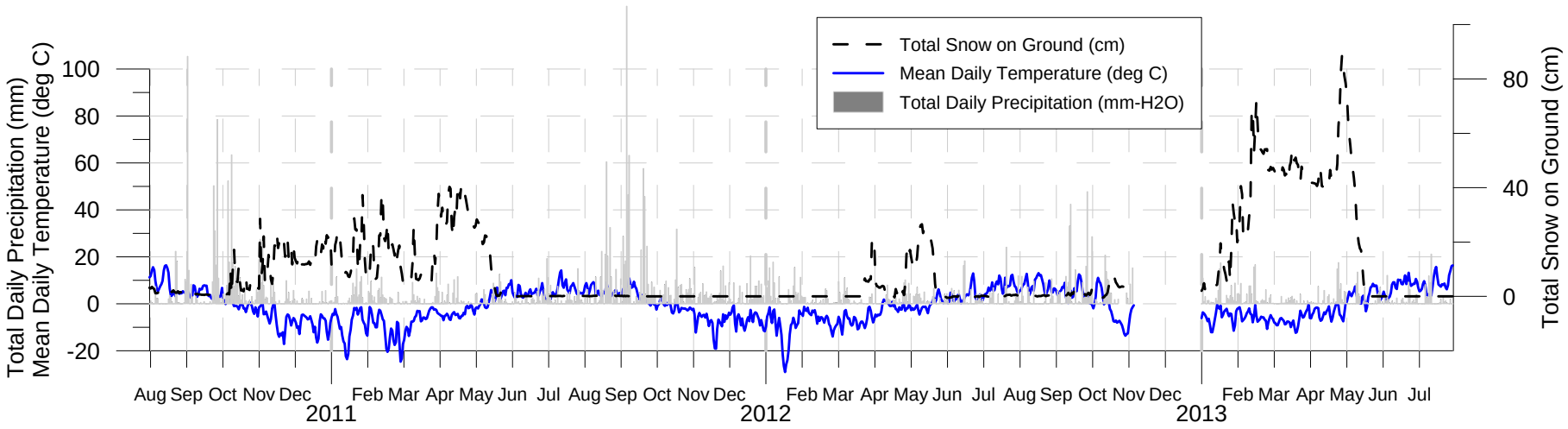

Notes:
1) VWP tip elevation at 1316.9 m asl; see Appendix C for VWP summary log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET	APPROVED: VC

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: SU-88 SHALLOW GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D25	1

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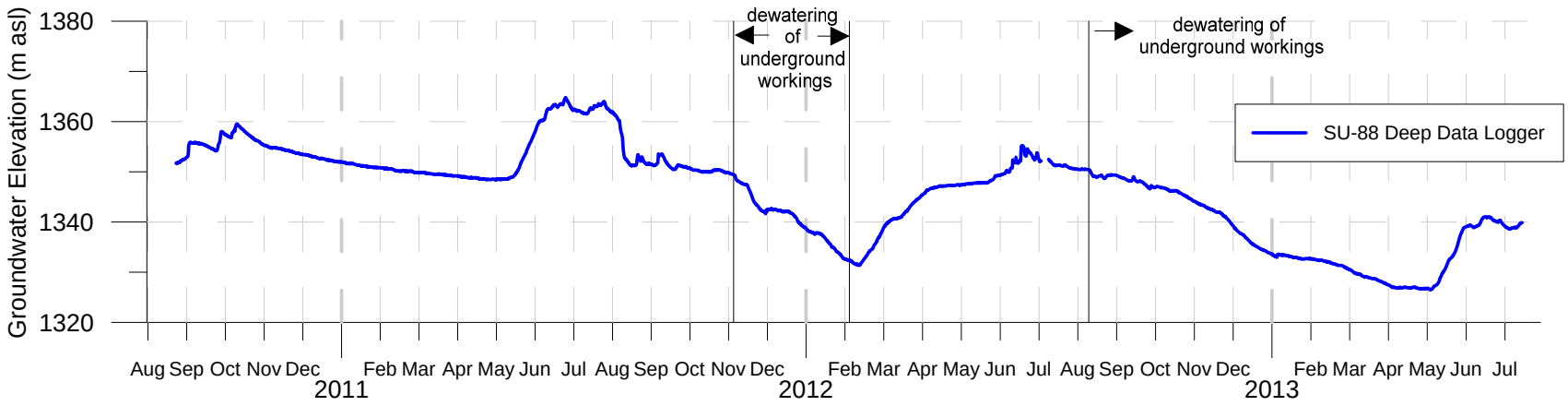

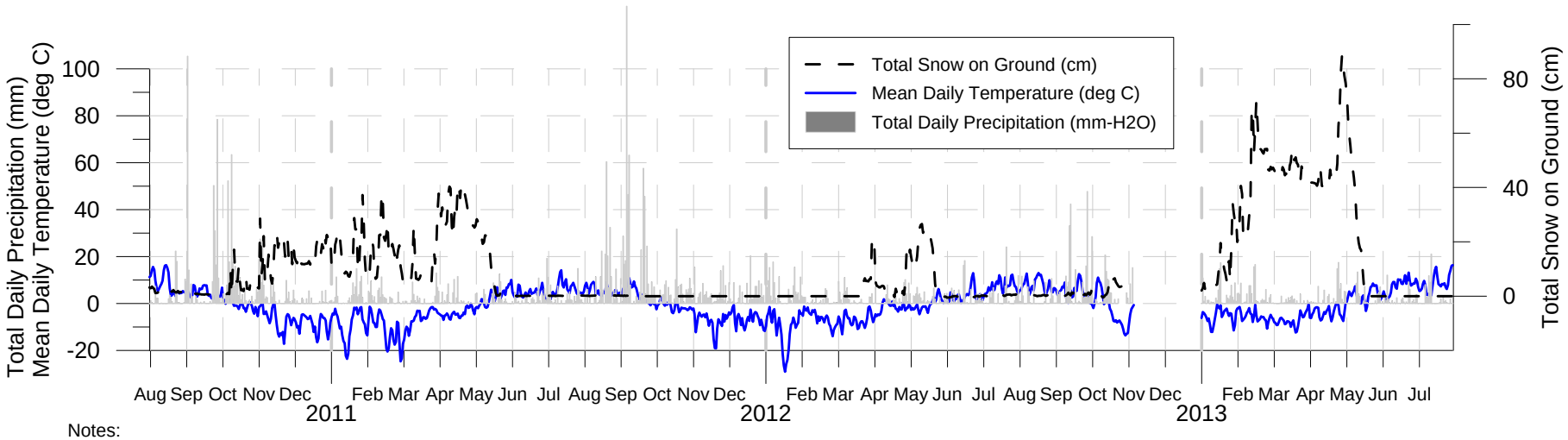

Notes:
1) VWP tip elevation at 1180.7 m asl; see Appendix C for VWP summary log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Nov 2011 to Feb 2012 and from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: SU-88 DEEP GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D26	1

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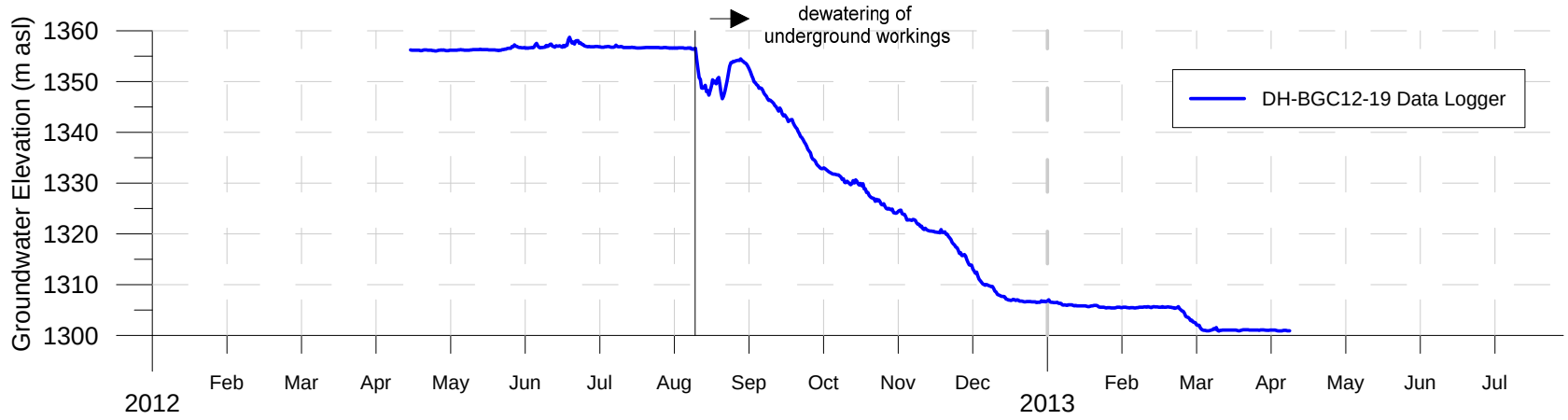

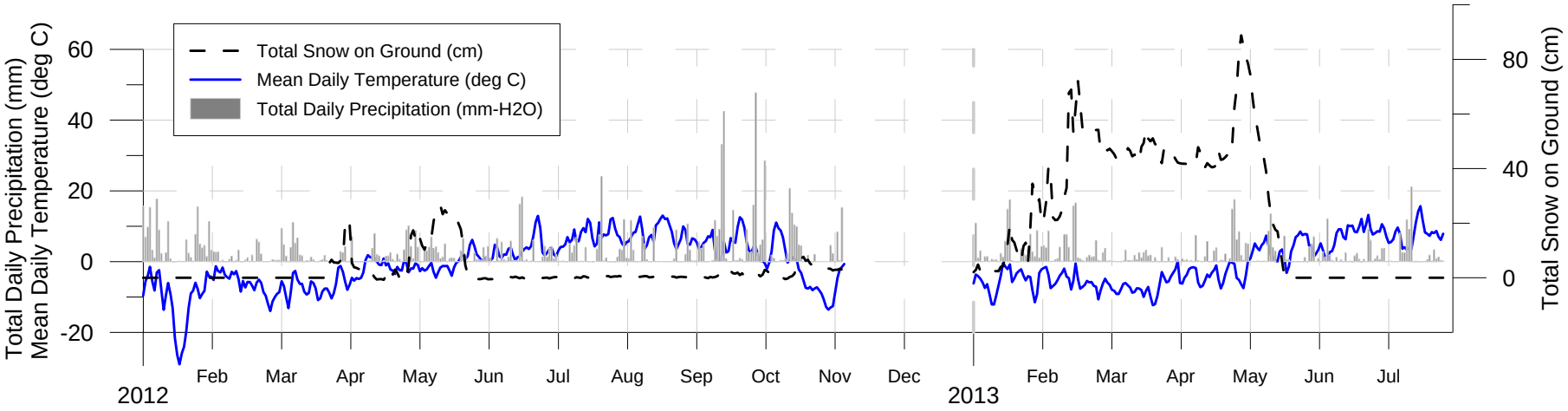

Notes:
1) VWP tip elevation at 1158.9 m asl; see Appendix C for VWP summary log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET	APPROVED: VC

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: DH-BGC12-19 GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D27	1

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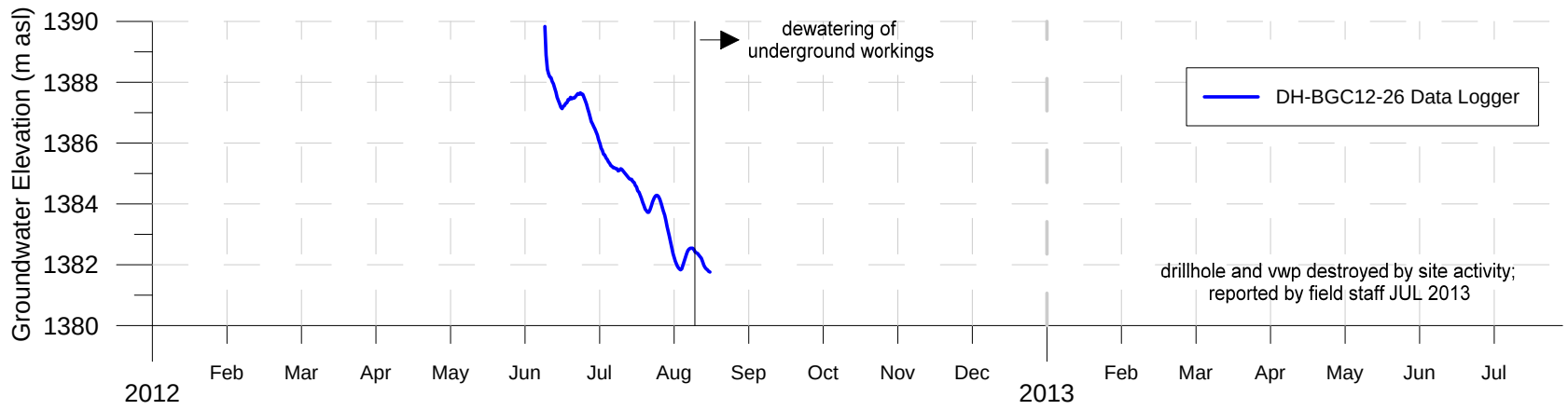

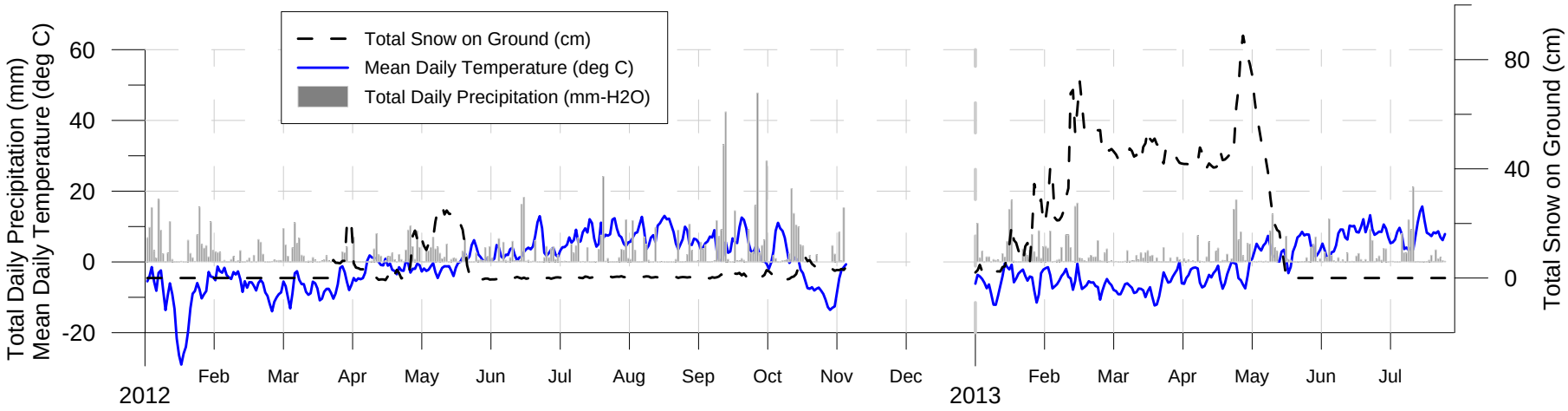

Notes:
1) VWP tip elevation at 1378.2 m asl; see Appendix C for VWP summary log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET	APPROVED: VC

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT
HYDROGEOLOGY BASELINE REPORT

TITLE: DH-BGC12-26
GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D28	1

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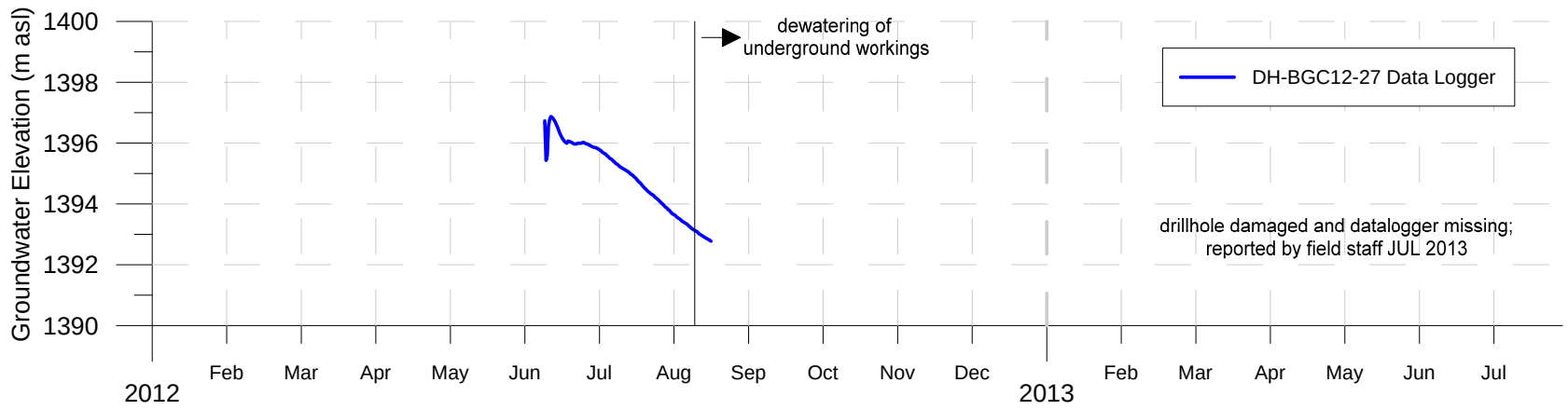

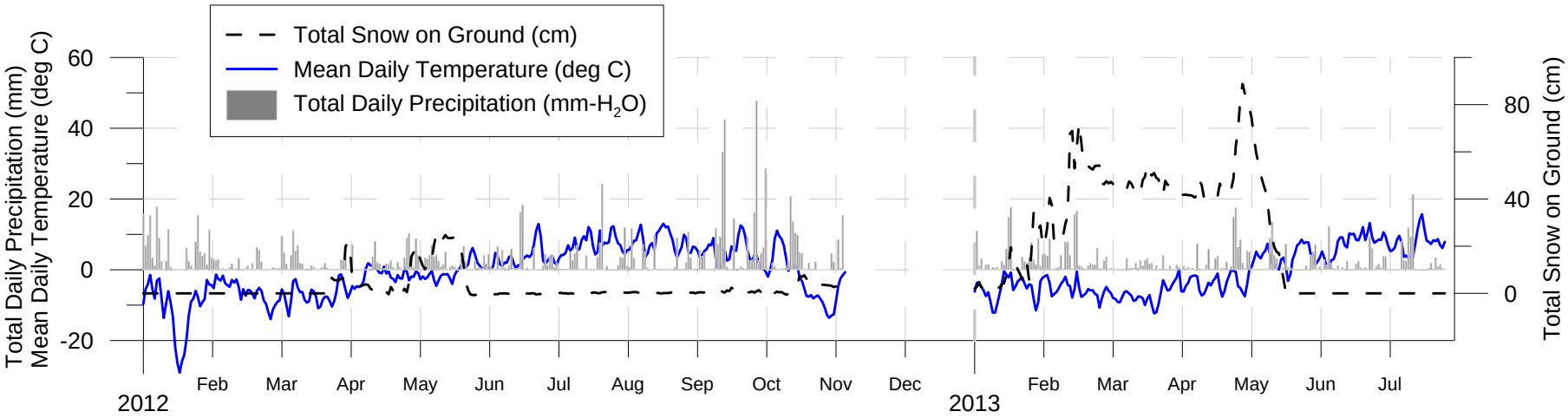

Notes:
1) VWP tip elevation at 1385.7 m asl; see Appendix C for VWP summary log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET	APPROVED: VC

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CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT
HYDROGEOLOGY BASELINE REPORT

TITLE: DH-BGC12-27
GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D29	1

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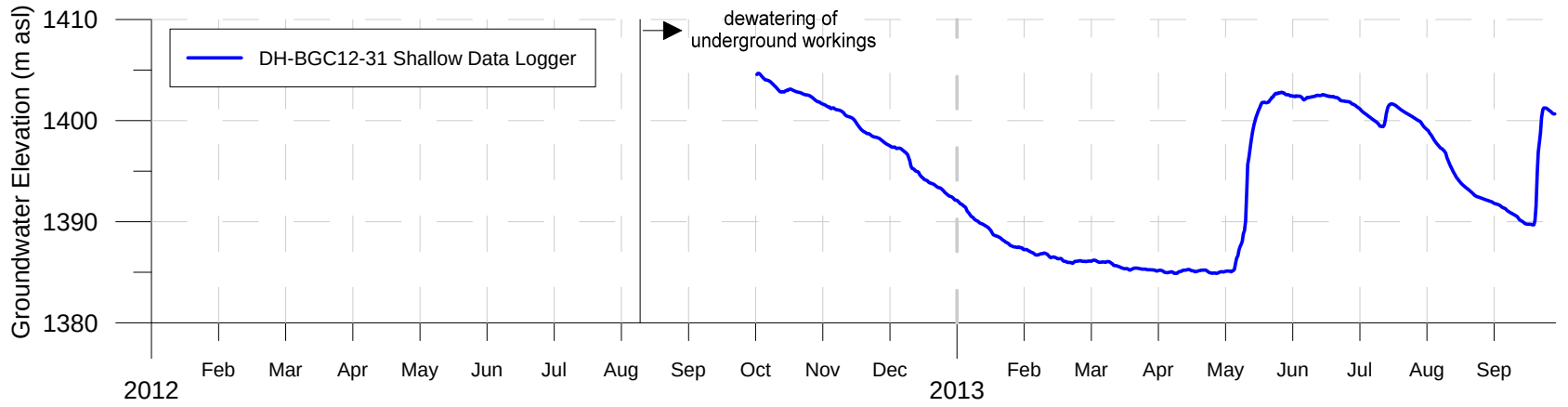

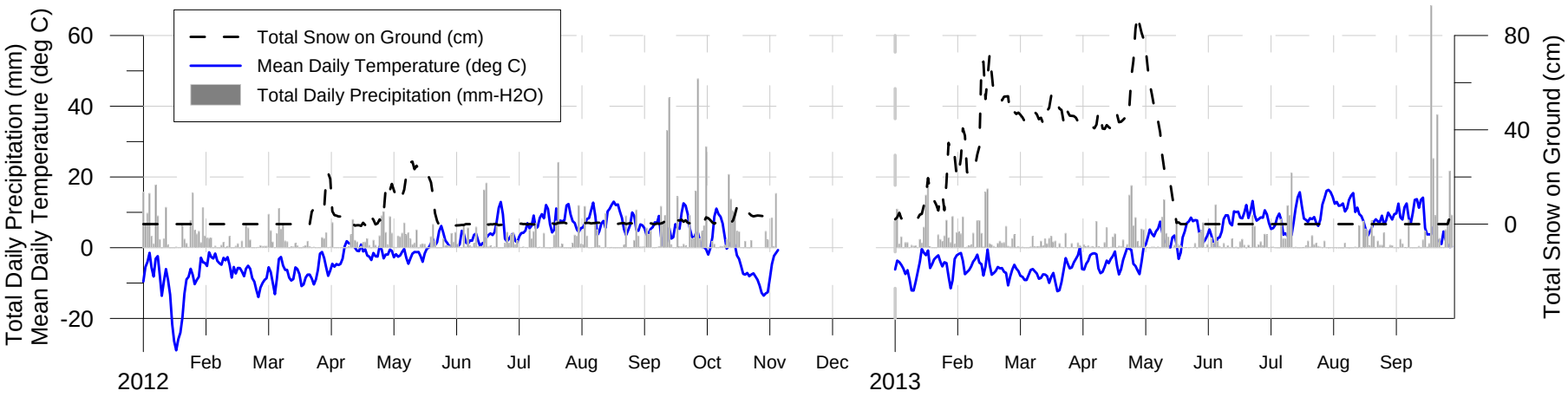

Notes:
1) VWP tip elevation at 1388.4 m asl; see Appendix C for VWP summary log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: RET, BS	APPROVED: VC

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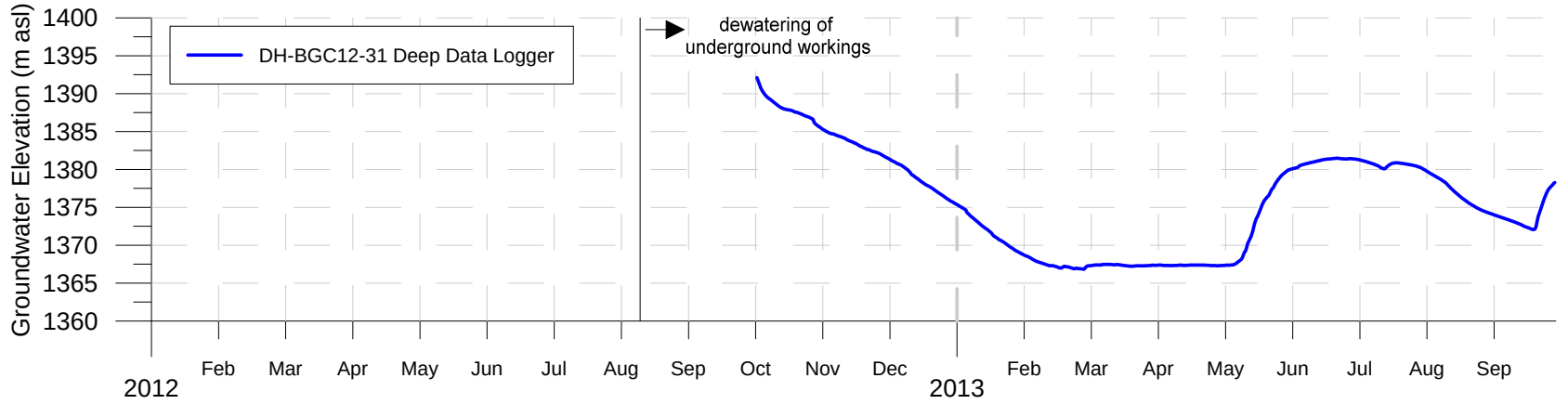
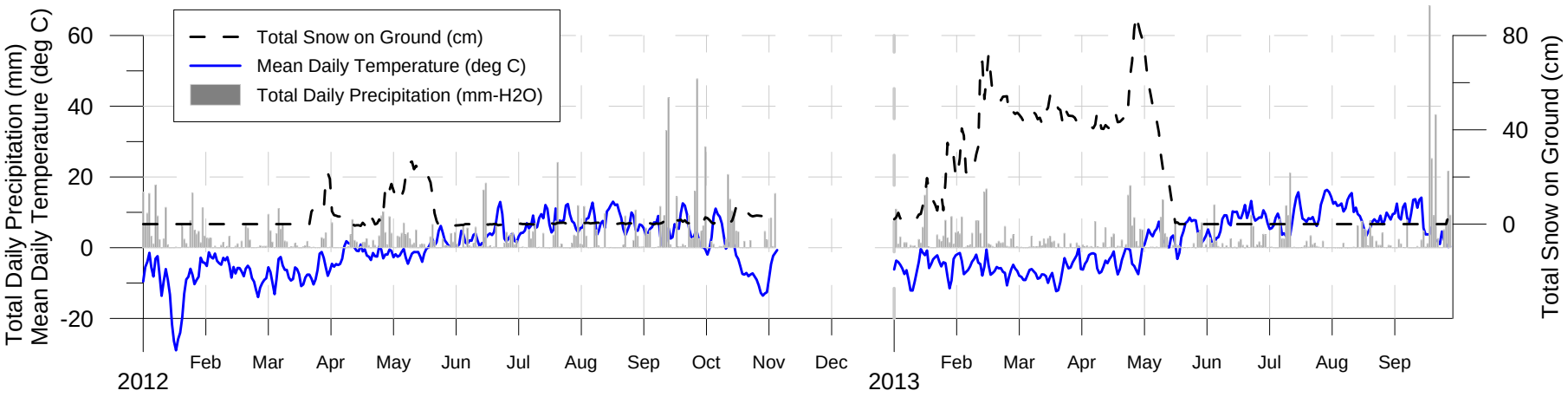
CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT
HYDROGEOLOGY BASELINE REPORT

TITLE: DH-BGC12-31 SHALLOW
GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D30	1





Notes:
1) VWP tip elevation at 1368 m asl; see Appendix C for VWP summary log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: RET, BS	APPROVED: VC

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PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: DH-BGC12-31 DEEP GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D31	1

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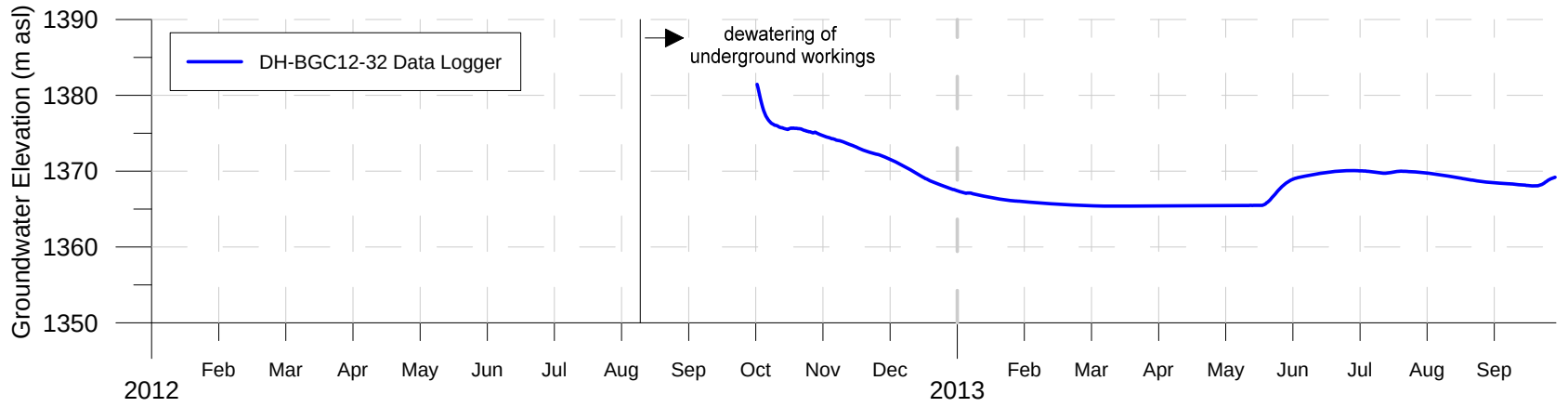

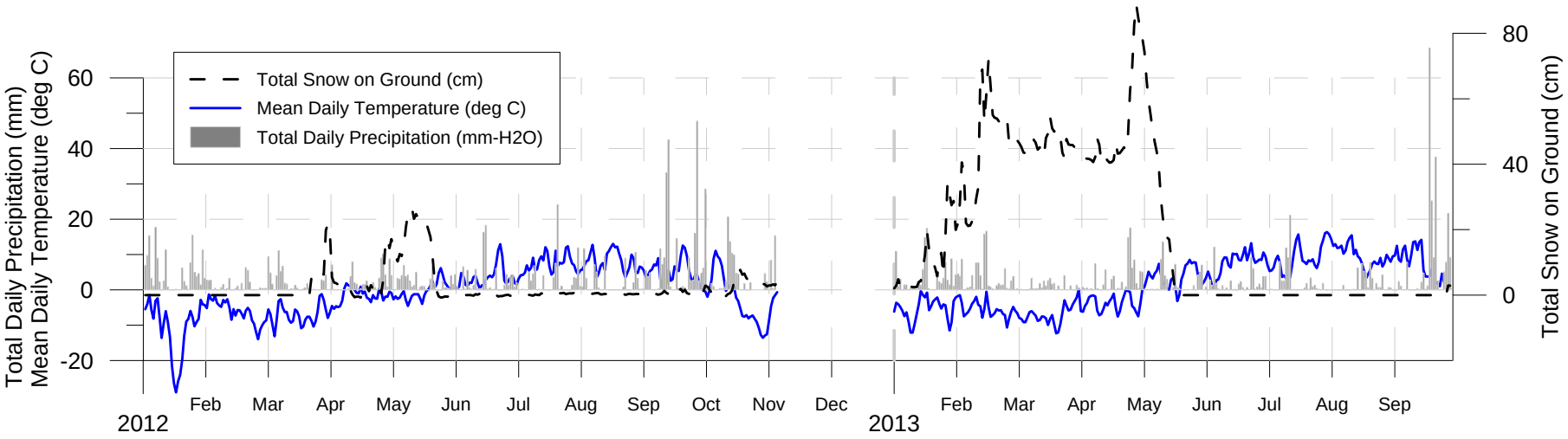

Notes:

1) VWP tip elevation at 1368.3 m asl; see Appendix C for VWP summary log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occurred from Aug 2012 onwards.

SCALE: N/A	DESIGNED: KSJ
DATE: APR 2014	CHECKED: DP
DRAWN: LH, RET, BS	APPROVED: VC

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PROJECT: BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT HYDROGEOLOGY BASELINE REPORT

TITLE: DH-BGC12-32 GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D32	1

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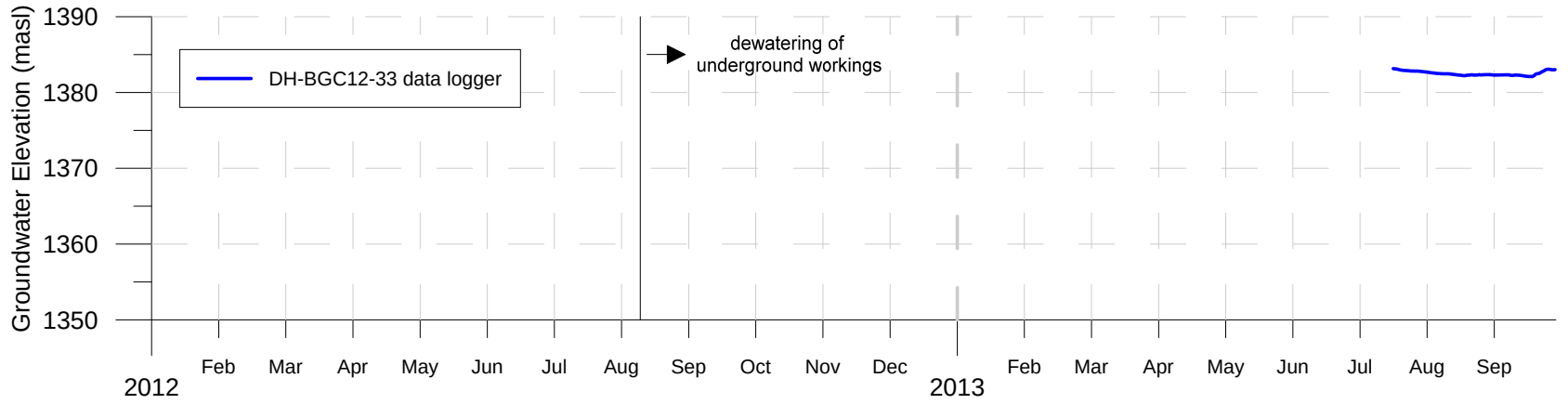

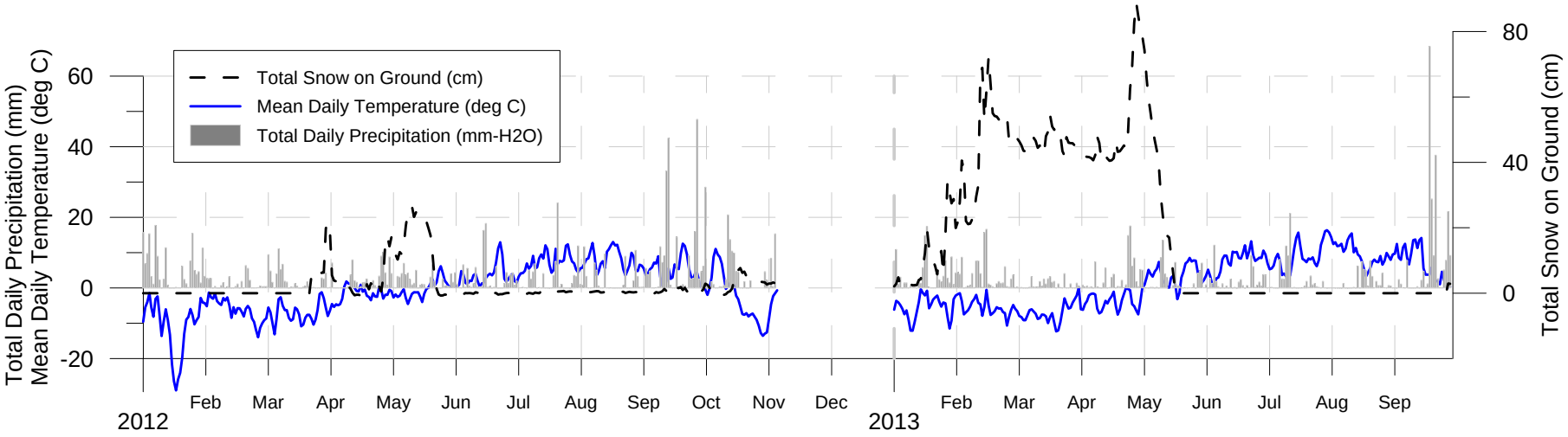

Notes:
1) VWP tip elevation at 1370 masl; see Appendix C for VWP summary log.
2) Meteorological data from the Brucejack meteorological station (Rescan, 2011-2013). No meteorological data available from Nov 2012 to Jan 2013.
3) Dewatering of underground workings impacting groundwater elevations at the site occured from Aug 2012 onwards.

SCALE:	N/A	DESIGNED:	KSJ
DATE:	APR 2014	CHECKED:	DP
DRAWN:	LH, BS	APPROVED:	VC

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PROJECT:
BRUCEJACK PROJECT ENVIRONMENTAL ASSESSMENT
HYDROGEOLOGY BASELINE REPORT

TITLE:
DH-BGC12-33
GROUNDWATER HYDROGRAPH

PROJECT No.	DWG No.	REV.
1008-010	D33	1

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APPENDIX E
SUMMARY OF WATER QUALITY RESULTS

Table E-1: Groundwater Analytical Chemistry Results
(Physical Tests, Anions, Nutrients and Cyanide)

	Sample Location	MW-BGC11-BJ-1A	MW-BGC11-BJ-1B	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A
	BGC Sample ID	BJ-1a	BJ-1B	BJ-2A	BJ-2A	BJ-2A	BJ-2A	BJ-2A	02A	02A_DUP 1
	Date Sampled	10-Oct-11	10-Oct-11	11-Oct-11	30-Mar-12	26-Jun-12	4-Sep-12	27-Jan-13	7-Apr-13	7-Apr-13
	Time Sampled	9:10	9:40	9:00	11:30	14:10	00:00	00:00	00:00	00:00
	ALS Sample ID	L1071509-9	L1071509-10	L1071509-7	L1130044-3	L1171422-1	L1207447-5	L1263921-1	L1287525-1	L1287525-5
Field Parameters	**Unit**									
Temperature	°C			1.1	0.81	2.35	4.5	0.9	2.4	
Temperature (data logger)	°C	-0.5	-0.5	2.9	2.62	2.62	2.62	2.51	2.51	
Data logger reading date		10/10/2011	10/10/2011	10/11/2011	3/31/2012	6/25/2012	9/1/2012	1/21/2013	4/6/2013	
pH	pH			8.54	8.09	8	8.28	7.7	7.45	
Electrical conductivity (EC)	uS/cm			186	280		324	333	326	
Physical Tests	**Unit**									
Temperature	°C	9	9	9	0.1	12	7.9	-	10	10
Colour, True	CU	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Conductivity	uS/cm	110	289	217	262	255	243	256	274	271
Hardness (as CaCO3)	mg/L	45.2	89.8	96.8	133	80	99.7	132	133	130
pH	pH	7.96	7.99	8.14	8.04	7.84	8.09	8.04	8.13	8.12
Total Suspended Solids	mg/L	31.6	86.2	9.6	293	298	557	655	341	167
Total Dissolved Solids	mg/L	59	187	132	173	166	158	166	176	185
Turbidity	NTU	34.1	99.7	19.1	260	144	438	581	228	138
Anions and Nutrients										
Acidity (as CaCO3)	mg/L	1.8	2.4	1.6	1.8	1.9	2	3.3	1.9	1.6
Alkalinity, Bicarbonate (as CaCO3)	mg/L	29.2	86.1	71	79.8	-	78.3	79.4	80.5	79.1
Alkalinity, Carbonate (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	-	<1.0	<2.0	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	-	<1.0	<2.0	<2.0	<2.0
Alkalinity, Total (as CaCO3)	mg/L	29.2	86.1	71	79.8	81.5	78.3	79.4	80.5	79.1
Ammonia (as N)	mg/L	0.0282	0.0229	0.0152	0.0067	0.0271	<0.0050	0.041	<0.0050	<0.0050
Bromide (Br)	mg/L	0.07	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride (Cl)	mg/L	0.66	<0.50	0.94	0.67	3.73	3.32	1.44	1.29	1.2
Fluoride (F)	mg/L	0.039	*0.251*	0.081	0.045	0.097	0.055	0.041	0.037	0.036
Nitrate (as N)	mg/L	0.0137	0.0258	0.0259	0.0077	<0.0050	<0.0050	0.0142	0.0216	0.022
Nitrite (as N)	mg/L	*<0.0010*	0.0036	*<0.0010*	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	0.178	0.106	0.062	0.174	2.54	0.705	0.212	0.089	0.084
Total Nitrogen	mg/L	0.192	0.135	0.0876	0.182	2.54	0.705	-	-	-
Orthophosphate - Dissolved (as P)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L	0.0316	0.0721	0.0127	0.281	0.238	0.33	0.352	0.272	0.167
Sulfate (SO4)	mg/L	19.1	60	37.3	58.5	49.5	46.1	54.6	63.3	63.5
Cyanides										
Cyanide, Weak Acid Diss	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic/ Inorganic Carbon										
Dissolved Organic Carbon	mg/L	1.41	1.06	1.17	<0.50	-	0.81	0.53	<0.50	<0.50
Total Organic Carbon	mg/L	3.6	0.52	0.96	2.01	46.4	5	2.6	1.02	0.78

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-1: Groundwater Analytical Chemistry Results
(Physical Tests, Anions, Nutrients and Cyanide)

	Sample Location	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A
	BGC Sample ID	BJ-2A	BJ-2A	BJ-3A	BJ-3A	BJ-3A	BJ-3A	Duplicate	BJ-3A	03A
	Date Sampled	13-Jul-13	26-Sep-13	8-Oct-11	28-Mar-12	27-Jun-12	4-Sep-12	27-Jun-12	28-Jan-13	7-Apr-13
	Time Sampled	00:00	16:00	16:30	13:15	09:35	00:00	09:45	00:00	00:00
	ALS Sample ID	L1333226-1	L1370207-1	L1071509-6	L1129695-1	L1171422-2	L1207447-1	L1171422-8	L1263921-2	L1287525-2
Field Parameters	**Unit**									
Temperature	°C	3.45		2.2	1.8	2.7	2.83		2.5	3.2
Temperature (data logger)	°C	2.62	0.217	2.2	1.88	2.2	2.3		2.41	2.62
Data logger reading date		7/9/2013	9/26/2013	10/11/2011	4/1/2012	6/27/2012	8/28/2012		1/21/2013	4/4/2013
pH	pH	7.8		7.03	7.87	7.95	8.27		7.95	7.98
Electrical conductivity (EC)	uS/cm	255	242	355	358	210	186		405	408
Physical Tests	**Unit**									
Temperature	°C	16	8.8	9	2	12	7.9	12	-	10
Colour, True	CU	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Conductivity	uS/cm	189	209	358	355	343	351	338	349	348
Hardness (as CaCO3)	mg/L	88.3	98.9	135	167	88.7	137	88.1	167	156
pH	pH	7.13	7.73	8.22	8.05	8.18	8.17	8.2	8.12	8.11
Total Suspended Solids	mg/L	280	507	<3.0	328	54.9	155	48.9	520	10.5
Total Dissolved Solids	mg/L	124	144	212	247	230	240	222	238	230
Turbidity	NTU	160	527	2.94	270	40.2	138	41.1	199	30.5
Anions and Nutrients										
Acidity (as CaCO3)	mg/L	6.2	1.5	1.1	2.2	<1.0	1.9	<1.0	2.9	1.8
Alkalinity, Bicarbonate (as CaCO3)	mg/L	63.3	64.5	93.1	93.8	-	95.1	-	102	96.5
Alkalinity, Carbonate (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	-	<2.0	-	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	-	<2.0	-	<2.0	<2.0
Alkalinity, Total (as CaCO3)	mg/L	63.3	64.5	93.1	93.8	89.4	95.1	85.8	102	96.5
Ammonia (as N)	mg/L	<0.0050	<0.0050	0.0278	0.0289	0.0702	0.0341	0.055	0.0312	0.0325
Bromide (Br)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride (Cl)	mg/L	1.15	1.1	<0.50	<0.50	0.6	<0.50	0.59	<0.50	<0.50
Fluoride (F)	mg/L	0.03	0.031	*0.208*	*0.186*	*0.215*	*0.176*	*0.214*	*0.188*	*0.197*
Nitrate (as N)	mg/L	0.068	0.0927	<0.0050	0.0059	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Nitrite (as N)	mg/L	<0.0010	<0.0010	<0.0010	0.0024	0.0023	0.0021	0.0032	*<0.0010*	<0.0010
Total Kjeldahl Nitrogen	mg/L	0.162	0.273	0.064	0.119	0.133	0.092	0.144	0.169	0.057
Total Nitrogen	mg/L	-	0.366	0.0645	0.127	0.136	0.094	0.148	-	-
Orthophosphate - Dissolved (as P)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.003	<0.0010	0.0028	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L	0.307	0.544	<0.0020	0.113	0.0283	0.117	0.0351	0.293	0.0273
Sulfate (SO4)	mg/L	34.7	41.6	84	89.4	89.7	88.9	89.7	89.1	89.8
Cyanides										
Cyanide, Weak Acid Diss	mg/L	<0.0010	<0.0010	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, Total	mg/L	<0.0010	<0.0010	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic/ Inorganic Carbon										
Dissolved Organic Carbon	mg/L	<0.50	0.63	1.16	<0.50	-	<0.50	-	0.53	<0.50
Total Organic Carbon	mg/L	1.06	1.19	<0.50	1	<0.50	<0.50	<0.50	0.77	<0.50

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-1: Groundwater Analytical Chemistry Results
(Physical Tests, Anions, Nutrients and Cyanide)

	Sample Location	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B
	BGC Sample ID	BJ-3A	BJ-03A	BJ-3B	BJ-3B	BJ-3B	BJ-3B	BJ-3B	BJ-3B	BJ-3B
	Date Sampled	13-Jul-13	25-Sep-13	8-Oct-11	28-Mar-12	27-Jun-12	4-Sep-12	28-Jan-13	11-Jul-13	25-Sep-13
	Time Sampled	00:00	17:00	15:45	11:00	10:00	00:00	00:00	00:00	13:30
	ALS Sample ID	L1333226-2	L1370058-1	L1071509-5	L1129695-2	L1171422-3	L1207447-2	L1263921-3	L1331947-3	L1370058-2
Field Parameters	**Unit**									
Temperature	°C	3.5	4.3	2	0.6	1.72	2.42		1.9	3.3
Temperature (data logger)	°C	2.41	4.6	1.98	1.44	1.44	1.65	2.09	1.55	1.87
Data logger reading date		7/10/2013	9/25/02013	10/11/2011	3/31/2012	6/24/2012	9/4/2012	1/21/2013	7/10/2013	9/21/2013
pH	pH	7.96	8.16	7.03	7.84	7.58	8.24		7.84	7.84
Electrical conductivity (EC)	uS/cm	223	424	380	367	193	176		249	482
Physical Tests	**Unit**									
Temperature	°C	16	12.6	9	2	12	7.9	-	13	12.6
Colour, True	CU	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Conductivity	uS/cm	329	345	339	312	331	340	382	352	386
Hardness (as CaCO3)	mg/L	150	155	167	156	157	156	188	164	182
pH	pH	7.97	8.06	8.14	7.89	8.07	8.1	7.86	8.22	8.07
Total Suspended Solids	mg/L	48.5	1550	<3.0	275	326	1930	675	493	189
Total Dissolved Solids	mg/L	220	235	212	215	229	236	267	223	276
Turbidity	NTU	39.6	2130	1.97	204	288	2540	777	346	156
Anions and Nutrients										
Acidity (as CaCO3)	mg/L	4	1.5	1.7	2.7	1.5	2.3	5	<1.0	1.4
Alkalinity, Bicarbonate (as CaCO3)	mg/L	93.7	99.5	86.4	42.9	-	87.9	76.2	94.6	92.9
Alkalinity, Carbonate (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0
Alkalinity, Total (as CaCO3)	mg/L	93.7	99.5	86.4	42.9	85.6	87.9	76.2	94.6	92.9
Ammonia (as N)	mg/L	0.0291	0.0344	0.0318	0.0145	0.0295	0.0327	0.0316	0.0271	0.0239
Bromide (Br)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride (Cl)	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.19	<0.50	2.36
Fluoride (F)	mg/L	*0.188*	*0.196*	*0.132*	0.091	0.112	*0.135*	0.109	*0.163*	0.113
Nitrate (as N)	mg/L	<0.0050	0.0068	<0.0050	0.02	<0.0050	<0.0050	<0.0050	0.0052	0.205
Nitrite (as N)	mg/L	<0.0010	0.0019	*<0.0010*	0.0018	0.0016	*<0.0010*	0.0013	*<0.0010*	0.0438
Total Kjeldahl Nitrogen	mg/L	0.073	0.668	0.085	0.114	0.138	0.27	0.231	0.67	0.259
Total Nitrogen	mg/L	-	0.676	0.0854	0.136	0.139	0.27	-	-	0.508
Orthophosphate - Dissolved (as P)	mg/L	0.0011	0.0017	<0.0010	0.0021	0.0012	<0.0010	<0.0010	<0.0010	0.0013
Phosphorus (P)-Total	mg/L	0.0587	1.64	<0.0020	0.0453	0.288	1.24	0.506	0.225	0.179
Sulfate (SO4)	mg/L	80.9	89.3	82.5	108	89.6	91.6	125	87.2	112
Cyanides										
Cyanide, Weak Acid Diss	mg/L	<0.0010	<0.0010	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, Total	mg/L	<0.0010	<0.0010	0.0088	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic/ Inorganic Carbon										
Dissolved Organic Carbon	mg/L	<0.50	0.55	0.74	<0.50	-	<0.50	2.05	<0.50	0.74
Total Organic Carbon	mg/L	0.69	4.6	<0.50	0.77	<0.50	1.23	3.12	0.53	1.01

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-1: Groundwater Analytical Chemistry Results
(Physical Tests, Anions, Nutrients and Cyanide)

	Sample Location	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC12-BJ-4B
	BGC Sample ID	BJ-4A	BJ-4A	BJ-4A	BJ-4A	BJ-4A	04A	BJ-4A	BJ-4A	BJ-4B
	Date Sampled	10-Oct-11	30-Mar-12	26-Jun-12	3-Sep-12	28-Jan-13	8-Apr-13	13-Jul-13	25-Sep-13	3-Sep-12
	Time Sampled	11:10	14:05	14:45	00:00	00:00	00:00	00:00	10:20	00:00
	ALS Sample ID	L1071509-1	L1130044-4	L1171422-4	L1205274-1	L1263921-4	L1288325-3	L1333226-3	L1370058-3	L1205274-2
Field Parameters	**Unit**									
Temperature	°C	2.9	1.7	2.7	4.3	1.6	1.72	2.3	2.58	4.1
Temperature (data logger)	°C	2.09	2.09	2.09	2.09	2.09	2.09	2.09	4.6	2.09
Data logger reading date		10/10/2011	3/31/2012	6/23/2012	8/30/2012	1/21/2013	4/4/2013	7/9/2013	9/25/2013	8/29/2012
pH	pH	8.01	7.73	7.8	8.09	8.01	7.96	7.96		10.01
Electrical conductivity (EC)	uS/cm	681	480	245	476	465	560	950	340	511
Physical Tests	**Unit**									
Temperature	°C	4	0.1	12	6.5	-	3.8	16	12.6	6.5
Colour, True	CU	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Conductivity	uS/cm	453	454	402	425	423	430	490	452	389
Hardness (as CaCO3)	mg/L	203	212	170	177	203	190	195	185	67.2
pH	pH	8.08	8.14	8.11	7.26	8.16	8.15	7.94	8.12	**8.57**
Total Suspended Solids	mg/L	6.2	51.7	14.2	18.8	25.3	18.6	30.1	19.5	66.8
Total Dissolved Solids	mg/L	299	312	283	292	282	285	335	311	253
Turbidity	NTU	5.98	20.7	9.19	9.6	11.5	11.2	16.3	11.8	73.9
Anions and Nutrients										
Acidity (as CaCO3)	mg/L	3.1	1.6	1.4	9	2.5	1.4	5.1	1.3	<1.0
Alkalinity, Bicarbonate (as CaCO3)	mg/L	120	126	-	106	115	115	117	112	93.4
Alkalinity, Carbonate (as CaCO3)	mg/L	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	2.3
Alkalinity, Hydroxide (as CaCO3)	mg/L	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Alkalinity, Total (as CaCO3)	mg/L	120	126	108	106	115	115	117	112	95.6
Ammonia (as N)	mg/L	0.269	0.239	0.182	0.163	0.197	0.131	0.114	0.144	0.0869
Bromide (Br)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride (Cl)	mg/L	<0.50	<0.50	<0.50	1.16	0.74	0.55	1.89	0.91	<0.50
Fluoride (F)	mg/L	0.083	0.079	0.077	0.086	0.078	0.081	0.078	0.075	*0.126*
Nitrate (as N)	mg/L	<0.0050	0.0072	0.116	0.114	0.0747	0.191	0.178	0.142	<0.0050
Nitrite (as N)	mg/L	*<0.0010*	0.0035	0.0118	0.0037	0.0045	0.0058	0.0135	0.0379	0.0017
Total Kjeldahl Nitrogen	mg/L	0.294	0.346	0.283	0.237	0.233	0.155	0.238	0.225	0.179
Total Nitrogen	mg/L	0.294	0.357	0.41	0.355	-	0.352	-	0.405	0.181
Orthophosphate - Dissolved (as P)	mg/L	0.0039	0.0032	0.0013	0.0014	<0.0010	<0.0010	<0.0010	0.0014	0.0013
Phosphorus (P)-Total	mg/L	0.0101	0.0304	0.0214	0.0214	0.0183	0.0128	0.0488	0.0194	0.0196
Sulfate (SO4)	mg/L	118	122	109	123	116	120	140	131	104
Cyanides										
Cyanide, Weak Acid Diss	mg/L	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, Total	mg/L	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic/ Inorganic Carbon										
Dissolved Organic Carbon	mg/L	1.35	<0.50	-	2.22	1.02	<0.50	1.87	1.21	0.56
Total Organic Carbon	mg/L	1.2	1.27	1.15	2.35	1.36	1.15	2.33	1.83	1.18

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-1: Groundwater Analytical Chemistry Results
(Physical Tests, Anions, Nutrients and Cyanide)

	Sample Location	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B	MW-BGC11-BJ-4B	MW-BGC11-BJ-5A	MW-BGC11-BJ-5A	MW-BGC11-BJ-5A
	BGC Sample ID	Duplicate	BJ-4B	04B	BJ-4B	DUP1	BJ-4B	Bj-5A	BJ-5A	BJ-5A
	Date Sampled	3-Sep-12	28-Jan-13	8-Apr-13	11-Jul-13	11-Jul-13	25-Sep-13	10-Oct-11	28-Mar-12	26-Jun-12
	Time Sampled	00:00	00:00	00:00	00:00	00:00	9:50	14:12	09:30	09:45
	ALS Sample ID	L1205274-5	L1263921-5	L1288325-4	L1331947-1	L1331947-4	L1370058-4	L1071509-3	L1129695-3	L1171422-5
Field Parameters	**Unit**									
Temperature	°C		1.4	2.32	4.1		3.6			
Temperature (data logger)	°C		1.98	2.09	1.98		4.6	-0.5	-1.23	1.72
Data logger reading date			1/21/2013	4/4/2013	7/9/2013		9/25/2013	10/10/2011	3/28/2012	6/26/2013
pH	pH		7.76	9.84	10.11		10.37			
Electrical conductivity (EC)	uS/cm		520	595	666		238			
Physical Tests	**Unit**									
Temperature	°C	6.5	-	3.8	13	13	12.6	4	2	12
Colour, True	CU	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Conductivity	uS/cm	560	397	489	529	526	511	249	484	460
Hardness (as CaCO3)	mg/L	8.76	204	13.7	8.1	7.71	7.15	91.5	100	198
pH	pH	*9.87*	8.19	*9.37*	*9.46*	*9.43*	*9.71*	7.96	8.2	8.1
Total Suspended Solids	mg/L	10.8	<3.0	3.2	6.9	7.6	4.7	62.2	5380	4980
Total Dissolved Solids	mg/L	359	264	308	337	329	336	149	323	328
Turbidity	NTU	35.2	1.99	6.87	19.7	21.2	13.1	66.6	>4000	>4000
Anions and Nutrients										
Acidity (as CaCO3)	mg/L	<1.0	2.2	<1.0	<1.0	<1.0	<1.0	2.9	1.1	1.5
Alkalinity, Bicarbonate (as CaCO3)	mg/L	74.5	121	96.7	89.8	97	106	39.5	83.1	-
Alkalinity, Carbonate (as CaCO3)	mg/L	97.5	<2.0	35.5	43.5	46.4	47.4	<2.0	<2.0	-
Alkalinity, Hydroxide (as CaCO3)	mg/L	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	-
Alkalinity, Total (as CaCO3)	mg/L	172	121	132	133	143	154	39.5	83.1	98.8
Ammonia (as N)	mg/L	0.162	0.0558	0.152	0.169	0.174	0.162	0.102	0.283	0.371
Bromide (Br)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride (Cl)	mg/L	<0.50	<0.50	<0.50	1.48	1.31	<0.50	1.47	1.47	3.27
Fluoride (F)	mg/L	*0.153*	0.114	*0.14*	*0.137*	*0.133*	*0.13*	*0.152*	*0.221*	*0.194*
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0107	0.0057	<0.0050	<0.0050
Nitrite (as N)	mg/L	*<0.0010*	0.0011	0.0034	*<0.0010*	<0.0010	0.0064	0.0011	*<0.0010*	<0.0010
Total Kjeldahl Nitrogen	mg/L	0.202	0.093	0.181	0.192	0.25	0.225	0.294	0.46	0.685
Total Nitrogen	mg/L	0.202	-	0.184	-	-	0.242	0.301	0.46	0.685
Orthophosphate - Dissolved (as P)	mg/L	0.0025	<0.0010	<0.0010	0.0038	0.0035	0.0048	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L	0.0078	<0.0020	0.0022	0.0061	0.0068	0.0099	0.0417	0.336	3.59
Sulfate (SO4)	mg/L	109	98.2	114	111	111	113	73.6	155	130
Cyanides										
Cyanide, Weak Acid Diss	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0010
Cyanide, Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0010
Organic/ Inorganic Carbon										
Dissolved Organic Carbon	mg/L	<0.50	0.6	<0.50	0.71	0.66	0.93	3.13	3.02	-
Total Organic Carbon	mg/L	<0.50	0.55	0.53	0.6	1.16	1.28	3.17	6.13	4.61

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-1: Groundwater Analytical Chemistry Results
(Physical Tests, Anions, Nutrients and Cyanide)

	Sample Location	MW-BGC11-BJ-5B	MW-BGC11-BJ-5B	MW-BGC11-BJ-5B	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A
	BGC Sample ID	BJ-5B	BJ-5B	BJ-5B	BJ-6A	BJ-6A	Duplicate	BJ-6A	BJ-6A	BJ-6A
	Date Sampled	10-Oct-11	28-Mar-12	26-Jun-12	8-Oct-11	30-Mar-12	30-Mar-12	26-Jun-12	3-Sep-12	27-Jan-13
	Time Sampled	13:30	10:10	10:20	14:50	13:25	13:40	11:45	00:00	00:00
	ALS Sample ID	L1071509-2	L1129695-4	L1171422-6	L1071509-4	L1130044-5	L1130044-1	L1171422-7	L1205274-3	L1263921-6
Field Parameters	**Unit**									
Temperature	°C				2	2.17		2.6	3.4	-
Temperature (data logger)	°C	-0.5	-1.23	1.72	2.41	2.41		2.41	2.41	2.41
Data logger reading date		10/10/2011	3/28/2012	6/26/2012	10/8/2011	4/1/2012		6/23/2012	8/31/2012	1/22/2013
pH	pH				7.72	7.96		10.9	10.2	7.96
Electrical conductivity (EC)	uS/cm				403	340		192	360	327
Physical Tests	**Unit**									
Temperature	°C	4	2	12	9	0.1	0.1	12	6.5	-
Colour, True	CU	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Conductivity	uS/cm	335	338	427	389	347	346	230	212	280
Hardness (as CaCO3)	mg/L	171	145	168	186	178	180	85.3	93.1	138
pH	pH	8.12	8.13	8.05	7.99	8.03	8.05	*9.63*	**8.71**	8.2
Total Suspended Solids	mg/L	34400	6220	3830	717	3460	3990	2580	3050	3410
Total Dissolved Solids	mg/L	255	237	290	255	248	243	171	172	196
Turbidity	NTU	>4000	>4000	>4000	836	>4000	>4000	>4000	>4000	>4000
Anions and Nutrients										
Acidity (as CaCO3)	mg/L	2.4	1.5	1.7	2.8	2.2	1.9	<1.0	<1.0	1.8
Alkalinity, Bicarbonate (as CaCO3)	mg/L	70.8	75.6	-	97.9	96.1	95.3	-	22.7	58.7
Alkalinity, Carbonate (as CaCO3)	mg/L	<1.0	<2.0	-	<2.0	<2.0	<2.0	-	<1.0	<2.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	<1.0	<2.0	-	<2.0	<2.0	<2.0	-	<1.0	<2.0
Alkalinity, Total (as CaCO3)	mg/L	70.8	75.6	89.3	97.9	96.1	95.3	27.8	22.7	58.7
Ammonia (as N)	mg/L	0.393	0.121	0.225	0.0208	0.0636	0.0479	0.18	0.156	0.0902
Bromide (Br)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride (Cl)	mg/L	0.76	2.97	4.31	0.67	<0.50	<0.50	0.58	<0.50	<0.50
Fluoride (F)	mg/L	*0.239*	*0.184*	*0.256*	*0.173*	*0.152*	*0.16*	*0.438*	*0.319*	*0.169*
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	0.0074	<0.0050	<0.0050	<0.0050	0.0071	<0.0050
Nitrite (as N)	mg/L	0.0011	*<0.0010*	<0.0010	0.0011	*<0.0010*	<0.0010	0.0015	0.0014	*<0.0010*
Total Kjeldahl Nitrogen	mg/L	4.4	0.276	1.54	<0.050	1.2	0.254	0.29	1.27	1.26
Total Nitrogen	mg/L	4.4	0.276	1.54	0.0084	1.2	0.254	0.291	1.28	-
Orthophosphate - Dissolved (as P)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.001	<0.0010	0.0042	0.0061	0.0043
Phosphorus (P)-Total	mg/L	15.7	1.11	2.97	0.492	3.55	3.22	1.8	1.7	0.161
Sulfate (SO4)	mg/L	96.3	89.2	121	96.1	86	84.7	73.8	75.6	81.7
Cyanides										
Cyanide, Weak Acid Diss	mg/L	<0.0050	<0.0050	<0.0010	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010
Cyanide, Total	mg/L	<0.0050	<0.0050	<0.0010	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010
Organic/ Inorganic Carbon										
Dissolved Organic Carbon	mg/L	3.68	0.6	-	3.63	<0.50	<0.50	-	0.82	0.52
Total Organic Carbon	mg/L	38.6	2.21	2.96	4.18	1.14	1.42	0.76	0.94	2.94

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-1: Groundwater Analytical Chemistry Results
(Physical Tests, Anions, Nutrients and Cyanide)

	Sample Location	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC12-BJ-6B	MW-BGC12-BJ-6B	MW-BGC12-BJ-6B	MW-BGC11-BJ-8A	MW-BGC12-BJ-8A	MW-BGC11-BJ-8A
	BGC Sample ID	06A	BJ-6A	BJ-6A	BJ-6B	BJ-6B	06B	BJ-8A	BJ-8A	BJ-8A
	Date Sampled	7-Apr-13	11-Jul-13	25-Sep-13	3-Sep-12	27-Jan-13	7-Apr-13	28-Jun-12	4-Sep-12	28-Jan-13
	Time Sampled	00:00	00:00	14:00	00:00	00:00	00:00	14:30	00:00	00:00
	ALS Sample ID	L1287525-3	L1331947-2	L1370058-6	L1205274-4	L1263921-7	L1287525-4	L1174115-1	L1207447-3	L1263921-8
Field Parameters	**Unit**									
Temperature	°C	2.3	4.1	3.3	3.5		3.32	3.46	4.92	1.9
Temperature (data logger)	°C	2.41	2.41	4.6	2.52	2.52	2.52	2.19	1.66	1.55
Data logger reading date		4/5/2013	7/9/2013	9/25/2013	8/31/2012	1/22/2013	4/5/2013	7/2/2012	9/5/2012	1/21/2013
pH	pH	8.57	8.83	8.6	10.52	9.24	9.93	8.14	7.26	8.12
Electrical conductivity (EC)	uS/cm	302	453	351	386	523	373	130	246	333
Physical Tests	**Unit**									
Temperature	°C	10	13	12.6	6.5	-	10	-	7.9	-
Colour, True	CU	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Conductivity	uS/cm	258	284	293	331	333	309	203	200	209
Hardness (as CaCO3)	mg/L	120	126	137	9.83	7.7	9.01	90	85.8	98.2
pH	pH	8.18	8.22	8.14	*9.92*	*9.63*	*9.53*	8.22	8.3	8.24
Total Suspended Solids	mg/L	1340	1010	2770	886	1780	805	212	7.1	114
Total Dissolved Solids	mg/L	184	198	221	426	276	342	145	123	131
Turbidity	NTU	2160	1350	4190	1900	3940	2380	118	4.41	43.6
Anions and Nutrients										
Acidity (as CaCO3)	mg/L	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4
Alkalinity, Bicarbonate (as CaCO3)	mg/L	68.6	68.3	67.8	36.2	42.7	57.5	75.9	73.9	74.3
Alkalinity, Carbonate (as CaCO3)	mg/L	<1.0	<2.0	<2.0	56.1	42.8	29.4	<2.0	<1.0	<2.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0
Alkalinity, Total (as CaCO3)	mg/L	68.6	68.3	67.8	92.3	85.5	86.9	75.9	73.9	74.3
Ammonia (as N)	mg/L	0.084	0.0793	0.0806	0.192	0.156	0.135	<0.0050	<0.0050	<0.0050
Bromide (Br)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride (Cl)	mg/L	0.51	0.5	<0.50	1.27	1.37	1.3	<0.50	<0.50	<0.50
Fluoride (F)	mg/L	*0.184*	*0.169*	*0.149*	*0.243*	*0.252*	*0.233*	0.03	0.031	0.029
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	0.0101	<0.0050	<0.0050	0.0268	0.0065	0.0072
Nitrite (as N)	mg/L	<0.0010	0.001	*<0.0010*	0.0034	*<0.0010*	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	0.66	0.838	1.5	0.86	0.219	0.82	<0.050	<0.050	<0.050
Total Nitrogen	mg/L	-	-	1.5	0.88	-	-	0.0268	<0.050	-
Orthophosphate - Dissolved (as P)	mg/L	0.0028	0.0026	0.003	0.0018	<0.0010	0.0017	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L	1.33	0.573	2.58	0.264	0.382	0.327	0.104	0.0034	0.0222
Sulfate (SO4)	mg/L	69.2	74.4	85	68.4	72.9	67.9	33.9	31.4	36
Cyanides										
Cyanide, Weak Acid Diss	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013	<0.0010	<0.0010	<0.0010
Cyanide, Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0029	<0.0010	<0.0010	<0.0010
Organic/ Inorganic Carbon										
Dissolved Organic Carbon	mg/L	<0.50	<0.50	0.8	1.04	1.72	1.02	-	<0.50	<0.50
Total Organic Carbon	mg/L	0.86	1.11	2.34	1.62	3.22	1.71	0.58	0.51	0.72

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-1: Groundwater Analytical Chemistry Results
(Physical Tests, Anions, Nutrients and Cyanide)

	Sample Location	MW-BGC11-BJ-8A	MW-BGC11-BJ-8A	MW-BGC12-BJ-8A	MW-BGC11-BJ-8A	MW-BGC11-BJ-8A	MW-BGC11-BJ-8B	MW-BGC12-BJ-8B	MW-BGC11-BJ-8B	MW-BGC11-BJ-8B
	BGC Sample ID	BJ-DUP1	08A	BJ-8A	BJ-3A	BJ-DUP1	BJ-8B	BJ-8B	BJ-8B	08B
	Date Sampled	28-Jan-13	8-Apr-13	14-Jul-13	26-Sep-13	26-SEP-13	28-Jun-12	4-Sep-12	28-Jan-13	8-Apr-13
	Time Sampled	00:00	00:00	00:00	11:30	00:00	15:30	00:00	00:00	00:00
	ALS Sample ID	L1263921-10	L1288325-1	L1333226-4	L1370207-2	L1370207-4	L1174115-2	L1207447-4	L1263921-9	L1288325-2
Field Parameters	**Unit**									
Temperature	°C		2.23	3.1	2.66		4.9	3.56	1	1.4
Temperature (data logger)	°C		1.55	1.55	2.26		1.76	1.55	1.44	1.55
Data logger reading date			4/6/2013	7/9/2013	9/26/2013		7/2/2012	8/29/2012	1/21/2013	4/6/2013
pH	pH		8.01	8.68	6.67		8.33	8.49	7.74	8.22
Electrical conductivity (EC)	uS/cm		253	341	222		131	242	211	240
Physical Tests	**Unit**									
Temperature	°C	-	3.8	16	8.8	8.8	-	7.9	-	3.8
Colour, True	CU	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Conductivity	uS/cm	209	213	200	196	196	187	197	200	201
Hardness (as CaCO3)	mg/L	96.1	99.9	91.1	90.8	91.5	64.1	90.8	97.5	99.6
pH	pH	8.22	8.18	8.14	7.02	8.09	8.26	8.25	8.21	8.23
Total Suspended Solids	mg/L	118	15.7	21.7	7.9	8.4	5340	984	193	281
Total Dissolved Solids	mg/L	132	130	127	117	117	142	147	128	133
Turbidity	NTU	43.3	10.8	8.22	3.29	3.11	>4000	969	174	281
Anions and Nutrients										
Acidity (as CaCO3)	mg/L	1.5	1.2	1.8	11	<1.0	<1.0	1	1.6	<1.0
Alkalinity, Bicarbonate (as CaCO3)	mg/L	79.7	76	72.5	74.1	74.8	55.2	72.9	73.2	67.6
Alkalinity, Carbonate (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<2.0	<2.0
Alkalinity, Total (as CaCO3)	mg/L	79.7	76	72.5	74.1	74.8	55.2	72.9	73.2	67.6
Ammonia (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	0.0061	0.008	<0.0050	<0.0050	<0.0050
Bromide (Br)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride (Cl)	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Fluoride (F)	mg/L	0.03	0.03	0.027	0.027	0.028	0.061	0.027	0.023	0.03
Nitrate (as N)	mg/L	0.0084	0.0092	0.0191	0.0182	0.018	<0.0050	<0.0050	0.0151	0.0176
Nitrite (as N)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.57	0.32	0.082	0.068
Total Nitrogen	mg/L	-	<0.050	-	<0.050	<0.050	0.57	0.32	-	0.086
Orthophosphate - Dissolved (as P)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0082	0.0012	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L	0.0189	0.0058	0.0058	0.0021	<0.0020	1.26	0.33	0.091	0.152
Sulfate (SO4)	mg/L	36	36.6	32	30.1	30.2	40.3	33.3	35.7	37.1
Cyanides										
Cyanide, Weak Acid Diss	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic/ Inorganic Carbon										
Dissolved Organic Carbon	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50
Total Organic Carbon	mg/L	0.56	<0.50	<0.50	<0.50	0.56	8.07	2.5	0.71	0.54

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-1: Groundwater Analytical Chemistry Results
(Physical Tests, Anions, Nutrients and Cyanide)

	Sample Location	MW-BGC12-BJ-8B	MW-BGC11-BJ-8B	MW-BGC12-BJ-12A	MW-BGC12-BJ-12A	MW-BGC11-BJ-12A	Drill Water	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)
	BGC Sample ID	BJ-8B	BJ-8B	BJ-12A	BJ-12A	BJ-12A	DRW	FB	FB	FB
	Date Sampled	14-Jul-13	26-Sep-13	5-Sep-12	15-Jul-13	30-Sep-13	27-Jun-12	30-Mar-12	11-Oct-11	27-Jun-12
	Time Sampled	00:00	8:10	12:40	00:00	16:15	11:00	14:30	9:00	11:40
	ALS Sample ID	L1333226-5	L1370207-3	L1206550-1	L1335562-1	L1372080-1	L1171422-10	L1130044-2	L1071509-8	L1171422-9
Field Parameters	**Unit**									
Temperature	°C	2.6	1.9	3	2.5	1.3				
Temperature (data logger)	°C	1.55	1.76	1.87	1.55	1.55				
Data logger reading date		7/9/2013	9/26/2013	9/1/2012	7/10/2013	9/26/2013				
pH	pH	8.67	7.67	8.17	8.41	8.5				
Electrical conductivity (EC)	uS/cm	188	213	252	540	555				
Physical Tests	**Unit**									
Temperature	°C	16	8.8	-	21	4.9	12	0.1	9	12
Colour, True	CU	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Conductivity	uS/cm	200	194	455	485	557	321	<2.0	<2.0	<2.0
Hardness (as CaCO3)	mg/L	94.3	91.4	220	224	267	97.7	<0.50	<0.50	<0.50
pH	pH	8.12	8.02	8.14	8.06	7.69	7.76	*5.55*	*5.72*	*5.73*
Total Suspended Solids	mg/L	182	17.2	842	183	488	18000	6.4	<3.0	<3.0
Total Dissolved Solids	mg/L	131	121	330	338	400	227	<10	<10	<10
Turbidity	NTU	266	53.1	272	2.4	164	>4000	<0.10	<0.10	<0.10
Anions and Nutrients										
Acidity (as CaCO3)	mg/L	2.4	<1.0	2.3	3.1	8	2.6	1.7	1.3	1.7
Alkalinity, Bicarbonate (as CaCO3)	mg/L	68.2	69.9	81.8	98.8	109	-	<2.0	<2.0	-
Alkalinity, Carbonate (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	-
Alkalinity, Hydroxide (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	-
Alkalinity, Total (as CaCO3)	mg/L	68.2	69.9	81.8	98.8	109	45.3	<2.0	<2.0	<2.0
Ammonia (as N)	mg/L	<0.0050	<0.0050	0.125	0.169	0.152	*0.504*	<0.0050	<0.0050	<0.0050
Bromide (Br)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride (Cl)	mg/L	<0.50	<0.50	1.07	1.05	0.71	0.85	<0.50	<0.50	<0.50
Fluoride (F)	mg/L	0.021	0.023	*0.204*	*0.16*	*0.149*	*0.278*	<0.020	<0.020	<0.020
Nitrate (as N)	mg/L	0.0215	0.0196	<0.0050	<0.0050	0.0088	0.0144	<0.0050	<0.0050	<0.0050
Nitrite (as N)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	0.143	<0.050	0.18	0.671	0.592	10.8	0.143	<0.050	<0.050
Total Nitrogen	mg/L	-	<0.050	0.18	0.671	0.601	10.8	0.143	<0.0025	<0.0025
Orthophosphate - Dissolved (as P)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020
Phosphorus (P)-Total	mg/L	0.093	0.0096	0.465	0.265	0.212	14.4	<0.0020	<0.50	<0.50
Sulfate (SO4)	mg/L	35.1	32	153	159	195	104	<0.50	0	0
Cyanides										
Cyanide, Weak Acid Diss	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	-	<0.0010
Cyanide, Total	mg/L	0.0018	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	0	0
Organic/ Inorganic Carbon										
Dissolved Organic Carbon	mg/L	<0.50	<0.50	0.57	1.05	0.63	-	<0.50	<0.50	<0.50
Total Organic Carbon	mg/L	0.66	0.54	4.5	12.3	8.3	7.45	<0.50	0	0

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-1: Groundwater Analytical Chemistry Results
(Physical Tests, Anions, Nutrients and Cyanide)

	Sample Location	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)	BJ-FB	Travel Blank	Travel Blank	Travel Blank
	BGC Sample ID	FB	BJ-FB	FB	BJ-FB	BJ-FB	TRAVEL BLANK	TB	TRAVEL BLANK
	Date Sampled	5-Sep-12	30-Jan-13	8-Apr-13	11-Jul-13	26-SEP-13	27-Jun-12	5-Sep-12	30-Jan-13
	Time Sampled	16:00	00:00	0:00	00:00	00:00	0:00	00:00	00:00
	ALS Sample ID	L1206550-2	L1264492-1	L1288325-5	L1331947-5	L1370207-5	L1171422-11	L1206550-3	L1264492-2
Field Parameters	**Unit**								
Temperature	°C								
Temperature (data logger)	°C								
Data logger reading date									
pH	pH								
Electrical conductivity (EC)	uS/cm								
Physical Tests	**Unit**								
Temperature	°C	-	1.8	3.8	13	8.8	12	-	1.8
Colour, True	CU	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0
Conductivity	uS/cm	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0
Hardness (as CaCO3)	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50
pH	pH	*5.81*	*5.73*	*5.74*	*5.69*	*6.14*	*6.2*	-	*5.77*
Total Suspended Solids	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	-	<3.0
Total Dissolved Solids	mg/L	<10	<10	<10	<10	<10	<10	-	<10
Turbidity	NTU	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-	<0.10
Anions and Nutrients									
Acidity (as CaCO3)	mg/L	2.4	2.7	1.1	<1.0	<1.0	3	-	2
Alkalinity, Bicarbonate (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	0	-	<2.0
Alkalinity, Carbonate (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	0	-	<2.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	0	-	<2.0
Alkalinity, Total (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0
Ammonia (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Bromide (Br)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050
Chloride (Cl)	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50
Fluoride (F)	mg/L	<0.020	<1.0	<0.020	<0.020	<0.020	<0.020	-	<0.020
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.0050
Nitrite (as N)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	-	<0.0010
Total Kjeldahl Nitrogen	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Total Nitrogen	mg/L	<0.050	-	<0.050	-	<0.050	<0.0025	-	-
Orthophosphate - Dissolved (as P)	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	-	<0.0010
Phosphorus (P)-Total	mg/L	<0.50	<0.50	<0.50	<0.50	<0.0020	<0.0020	-	<0.0020
Sulfate (SO4)	mg/L	0	0	0	0	<0.50	<0.50	-	<0.50
Cyanides									
Cyanide, Weak Acid Diss	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, Total	mg/L	0	0	0	0	<0.0010	<0.0010	<0.0010	<0.0010
Organic/ Inorganic Carbon									
Dissolved Organic Carbon	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50
Total Organic Carbon	mg/L	0	0	0	0	<0.50	<0.50	<0.50	<0.50

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-1: Groundwater Analytical Chemistry Results
(Physical Tests, Anions, Nutrients and Cyanide)

	Sample Location	Travel Blank	TRAVEL BLANK
	BGC Sample ID	TRAVEL BLANK	TRAVEL BLANK
	Date Sampled	7-Apr-13	25-SEP-13
	Time Sampled	00:00	00:00
	ALS Sample ID	L1287525-6	L1370058-5
Field Parameters	**Unit**		
Temperature	°C		
Temperature (data logger)	°C		
Data logger reading date			
pH	pH		
Electrical conductivity (EC)	uS/cm		
Physical Tests	**Unit**		
Temperature	°C	10	12.6
Colour, True	CU	<5.0	<5.0
Conductivity	uS/cm	<2.0	<2.0
Hardness (as CaCO3)	mg/L	-	-
pH	pH	*5.59*	*6.17*
Total Suspended Solids	mg/L	<3.0	<3.0
Total Dissolved Solids	mg/L	<10	<10
Turbidity	NTU	<0.10	<0.10
Anions and Nutrients			
Acidity (as CaCO3)	mg/L	1.7	<1.0
Alkalinity, Bicarbonate (as CaCO3)	mg/L	<2.0	<2.0
Alkalinity, Carbonate (as CaCO3)	mg/L	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	<2.0	<2.0
Alkalinity, Total (as CaCO3)	mg/L	<2.0	<2.0
Ammonia (as N)	mg/L	<0.0050	<0.0050
Bromide (Br)	mg/L	<0.050	<0.050
Chloride (Cl)	mg/L	<0.50	<0.50
Fluoride (F)	mg/L	<0.020	<0.020
Nitrate (as N)	mg/L	<0.0050	<0.0050
Nitrite (as N)	mg/L	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	<0.050	<0.050
Total Nitrogen	mg/L	-	<0.050
Orthophosphate - Dissolved (as P)	mg/L	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L	<0.0020	<0.0020
Sulfate (SO4)	mg/L	<0.50	<0.50
Cyanides			
Cyanide, Weak Acid Diss	mg/L	<0.0010	<0.0010
Cyanide, Total	mg/L	<0.0010	<0.0010
Organic/ Inorganic Carbon			
Dissolved Organic Carbon	mg/L	-	-
Total Organic Carbon	mg/L	<0.50	<0.50

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results
(Total Metals)

	Sample Location	MW-BGC11-BJ-1A	MW-BGC11-BJ-1B	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A
	BGC Sample ID	BJ-1a	BJ-1B	BJ-2A	BJ-2A	BJ-2A	BJ-2A	BJ-2A
	Date Sampled	10/10/2011	10/10/2011	10/11/2011	3/30/2012	6/26/2012	9/4/2012	1/27/2013
	Time Sampled	9:10	9:40	9:00	11:30	14:10	00:00	00:00
	ALS Sample ID	L1071509-9	L1071509-10	L1071509-7	L1130044-3	L1171422-1	L1207447-5	L1263921-1
Total Metals	**Unit**							
Aluminum (Al)-Total	mg/L	*0.801*	*2.43*	*0.414*	*7.59*	*2.93*	*10.1*	*14.2*
Antimony (Sb)-Total	mg/L	0.00086	0.00136	0.00188	0.00116	0.00218	0.00105	0.00134
Arsenic (As)-Total	mg/L	*0.00559*	*0.0292*	0.00159	*0.0148*	*0.0119*	*0.0161*	*0.0237*
Barium (Ba)-Total	mg/L	0.061	0.114	0.065	0.273	0.153	0.213	0.356
Beryllium (Be)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.00011	0.00069	0.00095
Bismuth(Bi)- Total	mg/L	<0.20	<0.20	<0.20	<0.20	<0.00050	<0.00050	<0.00050
Boron (B)-Total	mg/L	<0.10	<0.10	<0.10	<0.10	0.023	0.02	0.016
Cadmium (Cd)-Total	mg/L	0.000061	0.000032	0.000021	0.000138	*0.00424*	*0.000359*	*0.000258*
Calcium (Ca)-Total	mg/L	16.8	29.5	34.5	56.1	31.1	42.4	60.2
Chromium (Cr)-Total	mg/L	*0.0013*	*0.0012*	*0.0018*	*0.0153*	*0.105*	*0.0406*	*0.0968*
Cobalt (Co)-Total	mg/L	0.00049	0.00103	<0.00030	0.00366	0.00199	0.0046	0.00759
Copper (Cu)-Total	mg/L	*0.0119*	*0.0047*	*0.0033*	*0.0158*	*0.0232*	*0.0207*	*0.0301*
Iron (Fe)-Total	mg/L	*1.02*	*1.89*	*0.825*	*14.9*	*6*	*16.3*	*21.5*
Lead (Pb)-Total	mg/L	*0.00165*	0.00186	0.00053	0.00467	0.0144	0.00876	0.0115
Lithium (Li)-Total	mg/L	0.0073	0.0817	0.0088	0.0146	0.0357	0.0333	0.0207
Magnesium (Mg)-Total	mg/L	1.19	4.19	1.89	4.81	2.46	4.29	5.91
Manganese (Mn)-Total	mg/L	0.0797	0.129	0.0462	0.429	0.232	0.482	0.647
Mercury (Hg)-Total	mg/L	0.000011	<0.000010	<0.000010	*0.000038*	*0.000048*	*0.000043*	*0.000035*
Molybdenum (Mo)-Total	mg/L	<0.0010	0.0024	0.0047	0.004	0.00333	0.00283	0.0125
Nickel (Ni)-Total	mg/L	0.0012	0.001	<0.0010	0.0031	0.0256	0.0171	0.0493
Phosphorus (P) - Total	mg/L	<0.30	<0.30	<0.30	0.31	<0.30	0.32	0.39
Potassium (K)-Total	mg/L	<2.0	3.2	<2.0	2.6	1.15	2.26	3
Selenium (Se)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.00031	0.00029	0.00026
Silicon (Si)- Total	mg/L	2.06	5.77	2.77	15.2	6.03	17.4	31
Silver (Ag)-Total	mg/L	*0.000105*	0.000073	0.000064	*0.000829*	*0.000569*	*0.0009*	*0.00185*
Sodium (Na)-Total	mg/L	2.6	25.3	5.9	5.7	20.9	13.5	5.4
Strontium (Sr)-Total	mg/L	0.205	0.896	1.33	1.6	1.47	2.04	2.18
Thallium (Tl)-Total	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.000042	0.0001	0.000204
Tin (Sn)-Total	mg/L	0.00401	0.00169	0.00104	<0.00050	0.00303	0.00132	0.00089
Titanium (Ti)-Total	mg/L	<0.010	0.03	0.013	0.274	0.072	0.09	0.27
Uranium (U)-Total	mg/L	<0.00020	<0.00020	0.00033	0.00058	0.000697	0.00134	0.00178
Vanadium (V)-Total	mg/L	0.0011	0.002	<0.0010	0.0116	0.0049	0.0109	0.0181
Zinc (Zn)-Total	mg/L	*0.0392*	0.0181	0.007	*0.0702*	*0.113*	*0.0592*	*0.174*

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results
(Total Metals)

	Sample Location	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A
	BGC Sample ID	02A	02A_DUP 1	BJ-2A	BJ-2A	BJ-3A	BJ-3A	BJ-3A
	Date Sampled	4/7/2013	4/7/2013	7/13/2013	9/26/2013	10/8/2011	3/28/2012	6/27/2012
	Time Sampled	00:00	00:00	00:00	16:00	16:30	13:15	09:35
	ALS Sample ID	L1287525-1	L1287525-5	L1333226-1	L1370207-1	L1071509-6	L1129695-1	L1171422-2
Total Metals	**Unit**							
Aluminum (Al)-Total	mg/L	*8.77*	*6.91*	*12.8*	*14.2*	*0.523*	*7.15*	*0.977*
Antimony (Sb)-Total	mg/L	0.00099	0.0009	0.00123	0.00127	0.00497	0.00446	0.00201
Arsenic (As)-Total	mg/L	*0.0116*	*0.00956*	*0.0294*	*0.0474*	*0.0242*	*0.0534*	*0.0301*
Barium (Ba)-Total	mg/L	0.219	0.247	0.358	0.417	0.04	0.18	0.0426
Beryllium (Be)-Total	mg/L	0.00051	0.00031	0.00035	0.00046	<0.0010	<0.0010	<0.00010
Bismuth(Bi)- Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.20	<0.20	<0.00050
Boron (B)-Total	mg/L	0.013	0.014	0.014	0.013	<0.10	<0.10	0.039
Cadmium (Cd)-Total	mg/L	0.000138	0.000097	0.000066	0.000089	<0.000017	*0.000257*	0.000024
Calcium (Ca)-Total	mg/L	54.2	51.2	34.9	38.1	51	59.4	31.8
Chromium (Cr)-Total	mg/L	*0.0334*	*0.0236*	*0.0177*	*0.00803*	<0.0010	*0.0033*	0.00046
Cobalt (Co)-Total	mg/L	0.00432	0.00299	0.00334	0.00543	<0.00030	0.00226	0.00022
Copper (Cu)-Total	mg/L	*0.0181*	*0.0116*	*0.0121*	*0.0204*	<0.0010	*0.0091*	0.00105
Iron (Fe)-Total	mg/L	*10.9*	*7.89*	*11.2*	*19.4*	0.067	*7.75*	*0.616*
Lead (Pb)-Total	mg/L	0.00621	0.00373	0.00477	0.00792	<0.00050	0.00931	0.00129
Lithium (Li)-Total	mg/L	0.012	0.0114	0.0147	0.0207	0.045	0.0249	0.0751
Magnesium (Mg)-Total	mg/L	4.38	3.42	3.9	5.54	4.18	5.77	2.64
Manganese (Mn)-Total	mg/L	0.363	0.267	0.533	0.826	0.224	0.64	0.246
Mercury (Hg)-Total	mg/L	<0.000010	0.000025	*0.00012*	*0.000172*	<0.000010	0.000022	<0.000010
Molybdenum (Mo)-Total	mg/L	0.00509	0.004	0.00329	0.00238	0.003	0.0019	0.00244
Nickel (Ni)-Total	mg/L	0.0176	0.0123	0.00896	0.00351	<0.0010	0.002	<0.00050
Phosphorus (P) - Total	mg/L	<0.30	<0.30	<0.30	0.49	<0.30	<0.30	<0.30
Potassium (K)-Total	mg/L	2.28	2.33	4.15	2.11	2.1	3.1	1.78
Selenium (Se)-Total	mg/L	0.00019	0.00016	0.00017	0.00026	<0.0010	<0.0010	<0.00010
Silicon (Si)- Total	mg/L	22.2	20	30.7	33.1	4.27	10.6	4.69
Silver (Ag)-Total	mg/L	*0.00104*	*0.000855*	*0.0011*	*0.00162*	<0.000020	*0.00108*	0.000092
Sodium (Na)-Total	mg/L	5.2	5.3	4	3.9	21	9.6	36.5
Strontium (Sr)-Total	mg/L	1.41	1.14	0.982	0.872	1.48	1.2	1.01
Thallium (Tl)-Total	mg/L	0.000136	0.000112	0.000169	0.000103	<0.00020	0.00023	0.000025
Tin (Sn)-Total	mg/L	0.0005	0.00039	0.00023	0.00018	<0.00050	<0.00050	<0.00010
Titanium (Ti)-Total	mg/L	0.237	0.27	0.369	0.471	<0.010	0.105	0.014
Uranium (U)-Total	mg/L	0.00118	0.000681	0.000627	0.000566	<0.00020	0.00033	0.000242
Vanadium (V)-Total	mg/L	0.012	0.011	0.0207	0.0162	<0.0010	0.0113	0.0013
Zinc (Zn)-Total	mg/L	*0.0401*	0.0291	*0.0354*	*0.055*	<0.0050	0.0291	0.0051

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results
(Total Metals)

	Sample Location	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3B
	BGC Sample ID	BJ-3A	Duplicate	BJ-3A	03A	BJ-3A	BJ-03A	BJ-3B
	Date Sampled	9/4/2012	6/27/2012	1/28/2013	4/7/2013	7/13/2013	9/25/2013	10/8/2011
	Time Sampled	00:00	09:45	00:00	00:00	00:00	17:00	15:45
	ALS Sample ID	L1207447-1	L1171422-8	L1263921-2	L1287525-2	L1333226-2	L1370058-1	L1071509-5
Total Metals	**Unit**							
Aluminum (Al)-Total	mg/L	*3.63*	*3.23*	*11.2*	*1.36*	*1.64*	*22.4*	0.0168
Antimony (Sb)-Total	mg/L	0.0027	0.00234	0.0211	0.0059	0.018	0.0467	0.00114
Arsenic (As)-Total	mg/L	*0.0234*	*0.0325*	*0.0873*	*0.0131*	*0.0156*	*0.128*	*0.0159*
Barium (Ba)-Total	mg/L	0.132	0.0897	0.44	0.0571	0.0643	0.795	0.044
Beryllium (Be)-Total	mg/L	0.00014	0.0001	0.00069	<0.00010	<0.00010	0.00117	<0.0010
Bismuth(Bi)- Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00053	<0.20
Boron (B)-Total	mg/L	0.048	0.038	0.054	0.047	0.039	0.055	<0.10
Cadmium (Cd)-Total	mg/L	0.000133	0.000041	*0.00055*	0.000037	0.000097	*0.00195*	<0.000017
Calcium (Ca)-Total	mg/L	49.4	34.7	65.4	55.9	53.1	67.7	61.5
Chromium (Cr)-Total	mg/L	*0.00163*	0.00054	*0.0185*	*0.00156*	*0.00859*	*0.0199*	<0.0010
Cobalt (Co)-Total	mg/L	0.00104	0.00031	0.00603	0.00043	0.00071	0.0149	<0.00030
Copper (Cu)-Total	mg/L	*0.00505*	0.00133	*0.0349*	0.00267	0.00288	*0.0625*	<0.0010
Iron (Fe)-Total	mg/L	*3.18*	*1.04*	*16.4*	*0.979*	*1.88*	*43.1*	0.055
Lead (Pb)-Total	mg/L	0.00524	0.00149	0.0272	0.00373	0.011	**0.12**	<0.00050
Lithium (Li)-Total	mg/L	0.0384	0.0861	0.0313	0.0195	0.0158	0.0466	0.0128
Magnesium (Mg)-Total	mg/L	4.6	2.92	6.8	4.51	4.13	11.2	3.87
Manganese (Mn)-Total	mg/L	0.367	0.269	1.6	0.215	0.216	1.29	0.419
Mercury (Hg)-Total	mg/L	0.000013	<0.000010	*0.000053*	<0.000010	<0.000010	*0.000119*	<0.000010
Molybdenum (Mo)-Total	mg/L	0.00158	0.00282	0.00395	0.00132	0.0031	0.00499	<0.0010
Nickel (Ni)-Total	mg/L	0.00095	0.00085	0.0114	0.00109	0.00176	0.0118	<0.0010
Phosphorus (P) - Total	mg/L	<0.30	<0.30	0.45	<0.30	<0.30	1.25	<0.30
Potassium (K)-Total	mg/L	2.72	2.28	5.96	1.99	1.86	8.49	<2.0
Selenium (Se)-Total	mg/L	0.00032	<0.00010	*0.00141*	<0.00010	<0.00010	*0.00391*	<0.0010
Silicon (Si)- Total	mg/L	8.17	9.36	25.9	6.39	7.36	65.3	3.57
Silver (Ag)-Total	mg/L	*0.00115*	*0.000154*	*0.00524*	*0.000337*	*0.000523*	*0.0149*	<0.000020
Sodium (Na)-Total	mg/L	15.6	39	10	9.4	8.2	10.4	5.6
Strontium (Sr)-Total	mg/L	1.2	1.09	1.3	1.14	1.12	1.22	1.71
Thallium (Tl)-Total	mg/L	0.000169	0.000054	0.000666	0.000089	0.000249	*0.00196*	<0.00020
Tin (Sn)-Total	mg/L	0.00012	<0.00010	0.00031	<0.00010	<0.00010	0.00044	<0.00050
Titanium (Ti)-Total	mg/L	0.056	0.058	0.256	0.033	0.052	0.566	<0.010
Uranium (U)-Total	mg/L	0.000232	0.000293	0.000532	0.000186	0.000203	0.00086	0.00025
Vanadium (V)-Total	mg/L	0.0053	0.003	0.0173	0.0021	0.0033	0.0341	<0.0010
Zinc (Zn)-Total	mg/L	0.0129	0.0058	*0.0683*	0.0115	*0.0443*	*0.319*	<0.0050

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results
(Total Metals)

Sample Location		MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-4A
BGC Sample ID		BJ-3B	BJ-3B	BJ-3B	BJ-3B	BJ-3B	BJ-3B	BJ-4A
Date Sampled		3/28/2012	6/27/2012	9/4/2012	1/28/2013	7/11/2013	9/25/2013	10/10/2011
Time Sampled		11:00	10:00	00:00	00:00	00:00	13:30	11:10
ALS Sample ID		L1129695-2	L1171422-3	L1207447-2	L1263921-3	L1331947-3	L1370058-2	L1071509-1
Total Metals	**Unit**							
Aluminum (Al)-Total	mg/L	*6.72*	*8.47*	*28.3*	*10*	*9.32*	*2.79*	*0.286*
Antimony (Sb)-Total	mg/L	0.00596	0.00388	0.0061	0.0186	0.0114	0.00478	0.0566
Arsenic (As)-Total	mg/L	*0.0568*	*0.0379*	*0.164*	*0.0637*	*0.113*	*0.0338*	*0.0627*
Barium (Ba)-Total	mg/L	0.168	0.339	1.26	0.397	0.408	0.197	0.083
Beryllium (Be)-Total	mg/L	<0.0010	0.00033	0.00171	0.00056	0.00088	0.00023	<0.0010
Bismuth(Bi)- Total	mg/L	<0.20	<0.00050	0.00101	<0.00050	<0.00050	<0.00050	<0.20
Boron (B)-Total	mg/L	<0.10	0.031	0.047	0.04	0.04	0.029	<0.10
Cadmium (Cd)-Total	mg/L	0.000185	*0.000432*	*0.00273*	*0.00049*	*0.000588*	0.000164	0.000033
Calcium (Ca)-Total	mg/L	58.4	68.1	84.1	73.7	75.9	69.6	61
Chromium (Cr)-Total	mg/L	*0.0023*	*0.00266*	*0.0176*	*0.00354*	*0.0045*	*0.0013*	*0.0024*
Cobalt (Co)-Total	mg/L	0.00172	0.00212	0.0127	0.00304	0.00518	0.0012	0.00137
Copper (Cu)-Total	mg/L	*0.0073*	*0.0125*	*0.0825*	*0.0236*	*0.0214*	*0.00523*	0.0027
Iron (Fe)-Total	mg/L	*5.95*	*7.79*	*43*	*7.96*	*15.7*	*3.74*	*0.338*
Lead (Pb)-Total	mg/L	0.00606	0.00614	**0.0888**	*0.0123*	0.0198	0.00518	0.00079
Lithium (Li)-Total	mg/L	0.0104	0.0243	0.0465	0.0199	0.0281	0.0132	0.0383
Magnesium (Mg)-Total	mg/L	4.53	6.69	12	7.43	7.25	4.9	13.2
Manganese (Mn)-Total	mg/L	0.385	0.737	2.26	0.646	1.14	0.422	0.135
Mercury (Hg)-Total	mg/L	0.000012	*0.000031*	*0.000224*	*0.000046*	*0.000072*	0.00002	*0.000543*
Molybdenum (Mo)-Total	mg/L	<0.0010	0.000973	0.00764	0.00218	0.00187	0.000749	0.0033
Nickel (Ni)-Total	mg/L	0.0019	0.00196	0.00973	0.00262	0.00333	0.00109	0.0061
Phosphorus (P) - Total	mg/L	<0.30	0.3	1.56	<0.30	0.54	<0.30	<0.30
Potassium (K)-Total	mg/L	2.1	2.84	9.63	5.26	3.6	1.82	2.6
Selenium (Se)-Total	mg/L	<0.0010	*0.0012*	*0.00546*	*0.00209*	*0.0019*	0.00046	<0.0010
Silicon (Si)- Total	mg/L	8.57	30.3	63.3	25.4	24.2	13.8	3.72
Silver (Ag)-Total	mg/L	*0.000387*	*0.00286*	*0.0281*	*0.00426*	*0.00225*	*0.000405*	0.000047
Sodium (Na)-Total	mg/L	3.2	5.7	7	5	6.6	5.7	18.2
Strontium (Sr)-Total	mg/L	1.04	1.65	1.78	3.03	1.59	1.84	2.74
Thallium (Tl)-Total	mg/L	0.00023	0.000244	*0.00125*	0.000418	0.000383	0.000126	<0.00020
Tin (Sn)-Total	mg/L	<0.00050	0.00016	0.00018	0.00032	0.00032	0.00018	0.00065
Titanium (Ti)-Total	mg/L	0.066	0.28	0.448	0.239	0.145	0.1	0.012
Uranium (U)-Total	mg/L	0.00046	0.000851	0.0021	0.000953	0.000975	0.000724	0.00186
Vanadium (V)-Total	mg/L	0.0105	0.011	0.0393	0.0147	0.0157	0.0048	<0.0010
Zinc (Zn)-Total	mg/L	0.0292	*0.0336*	*0.202*	*0.0407*	*0.0545*	0.0167	0.0131

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results
(Total Metals)

	Sample Location	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A
	BGC Sample ID	BJ-4A	BJ-4A	BJ-4A	BJ-4A	04A	BJ-4A	BJ-4A
	Date Sampled	3/30/2012	6/26/2012	9/3/2012	1/28/2013	4/8/2013	7/13/2013	9/25/2013
	Time Sampled	14:05	14:45	00:00	00:00	00:00	00:00	10:20
	ALS Sample ID	L1130044-4	L1171422-4	L1205274-1	L1263921-4	L1288325-3	L1333226-3	L1370058-3
Total Metals	**Unit**							
Aluminum (Al)-Total	mg/L	*0.792*	*0.62*	*0.243*	*0.592*	*0.419*	*0.332*	*0.297*
Antimony (Sb)-Total	mg/L	0.00853	0.00474	0.00354	0.0017	0.00332	0.00411	0.00314
Arsenic (As)-Total	mg/L	*0.0312*	*0.0214*	*0.0225*	*0.0209*	*0.0164*	*0.0189*	*0.0155*
Barium (Ba)-Total	mg/L	0.066	0.0487	0.0574	0.0473	0.0978	0.0547	0.0467
Beryllium (Be)-Total	mg/L	<0.0010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth(Bi)- Total	mg/L	<0.20	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Total	mg/L	<0.10	0.069	0.07	0.069	0.064	0.07	0.066
Cadmium (Cd)-Total	mg/L	0.000026	0.000015	0.00004	0.000025	0.000043	0.000054	0.000019
Calcium (Ca)-Total	mg/L	60.3	52.2	51.5	62.4	58.1	56.5	50.3
Chromium (Cr)-Total	mg/L	*0.0032*	*0.00113*	0.00075	0.0007	*0.00113*	*0.00118*	0.001
Cobalt (Co)-Total	mg/L	0.00069	0.00064	0.0007	0.00096	0.00082	0.00123	0.00078
Copper (Cu)-Total	mg/L	0.0011	0.00101	0.0017	0.001	0.00166	0.00179	0.00149
Iron (Fe)-Total	mg/L	*0.821*	*0.407*	*0.386*	*0.363*	*0.383*	*0.63*	*0.486*
Lead (Pb)-Total	mg/L	0.00105	0.000506	0.000528	0.000716	0.000753	0.00118	0.00071
Lithium (Li)-Total	mg/L	0.0312	0.0343	0.0298	0.028	0.0281	0.0292	0.0325
Magnesium (Mg)-Total	mg/L	14.1	11.8	11.6	13.3	11.5	11.8	11.4
Manganese (Mn)-Total	mg/L	0.147	0.106	0.114	0.171	0.102	0.141	0.099
Mercury (Hg)-Total	mg/L	0.000023	0.000011	<0.000010	<0.000010	<0.000010	0.000014	<0.000010
Molybdenum (Mo)-Total	mg/L	0.0021	0.00132	0.00135	0.00102	0.000983	0.00206	0.00104
Nickel (Ni)-Total	mg/L	0.0011	0.00067	0.00084	0.00063	0.00074	0.00085	0.00057
Phosphorus (P) - Total	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Total	mg/L	2.2	1.84	1.62	1.94	1.7	1.66	1.62
Selenium (Se)-Total	mg/L	<0.0010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Silicon (Si)- Total	mg/L	4.97	4.65	3.33	4.42	4.02	3.59	3.45
Silver (Ag)-Total	mg/L	<0.000020	0.000017	0.000031	0.000018	0.000019	0.000074	0.000032
Sodium (Na)-Total	mg/L	18	18.1	21	18.4	17.9	27.6	21.8
Strontium (Sr)-Total	mg/L	3.03	2.65	2.59	3.05	2.87	2.84	2.58
Thallium (Tl)-Total	mg/L	<0.00020	0.00003	0.000021	0.000028	0.000027	0.000027	0.000021
Tin (Sn)-Total	mg/L	<0.00050	0.00023	0.00033	0.00018	0.00023	0.00033	0.00036
Titanium (Ti)-Total	mg/L	0.025	0.025	0.014	0.021	0.017	0.016	0.011
Uranium (U)-Total	mg/L	0.00495	0.00277	0.00292	0.00235	0.00209	0.00485	0.00217
Vanadium (V)-Total	mg/L	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Total	mg/L	0.0067	0.0037	0.0071	0.0058	0.0072	0.0084	0.007

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results
(Total Metals)

	Sample Location	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B	MW-BGC11-BJ-4B
	BGC Sample ID	BJ-4B	Duplicate	BJ-4B	04B	BJ-4B	DUP1	BJ-4B
	Date Sampled	9/3/2012	9/3/2012	1/28/2013	4/8/2013	7/11/2013	7/11/2013	9/25/2013
	Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	9:50
	ALS Sample ID	L1205274-2	L1205274-5	L1263921-5	L1288325-4	L1331947-1	L1331947-4	L1370058-4
Total Metals	**Unit**							
Aluminum (Al)-Total	mg/L	*1.12*	*0.802*	0.0555	*0.571*	*1.49*	*1.25*	*0.578*
Antimony (Sb)-Total	mg/L	0.00374	0.00396	0.00061	0.00115	0.0007	0.00066	0.00059
Arsenic (As)-Total	mg/L	*0.0143*	*0.0134*	0.00372	*0.0169*	*0.0129*	*0.0127*	*0.0115*
Barium (Ba)-Total	mg/L	0.0623	0.0578	0.0221	0.0222	0.0423	0.0369	0.0289
Beryllium (Be)-Total	mg/L	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth(Bi)- Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Total	mg/L	0.054	0.046	0.021	0.057	0.069	0.062	0.065
Cadmium (Cd)-Total	mg/L	0.000011	0.000012	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Calcium (Ca)-Total	mg/L	22.8	29.5	74.2	7.06	2.94	2.74	2.58
Chromium (Cr)-Total	mg/L	*0.0122*	*0.011*	0.00073	*0.00179*	*0.00216*	*0.00189*	*0.00218*
Cobalt (Co)-Total	mg/L	0.00022	0.00026	0.00013	<0.00010	<0.00010	<0.00010	0.00016
Copper (Cu)-Total	mg/L	*0.00489*	*0.00666*	0.00075	0.00081	0.0009	<0.00050	0.00054
Iron (Fe)-Total	mg/L	*0.57*	*0.517*	<0.030	0.073	0.15	0.146	0.124
Lead (Pb)-Total	mg/L	0.00117	*0.00155*	0.000085	0.000164	0.000279	0.000232	0.000188
Lithium (Li)-Total	mg/L	0.176	0.156	0.0198	0.221	0.23	0.227	0.219
Magnesium (Mg)-Total	mg/L	2.21	2.9	7.77	0.932	0.511	0.466	0.342
Manganese (Mn)-Total	mg/L	0.0467	0.0591	0.0599	0.00665	0.012	0.0112	0.0109
Mercury (Hg)-Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Total	mg/L	0.00155	0.0017	0.00049	0.000956	0.00102	0.000946	0.000993
Nickel (Ni)-Total	mg/L	0.00592	0.00567	0.0008	0.00086	0.00079	0.00065	0.00096
Phosphorus (P) - Total	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Total	mg/L	1.71	1.62	0.967	0.969	1.35	1.21	0.934
Selenium (Se)-Total	mg/L	<0.00010	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Silicon (Si)- Total	mg/L	6.15	5.06	2.48	4.41	6.13	6.29	5.66
Silver (Ag)-Total	mg/L	0.000073	0.000095	0.000074	*0.000188*	0.000037	0.000031	0.000092
Sodium (Na)-Total	mg/L	86.2	72	7.9	111	116	115	113
Strontium (Sr)-Total	mg/L	0.437	0.491	1.05	0.146	0.112	0.0971	0.103
Thallium (Tl)-Total	mg/L	0.000044	0.00004	0.000013	0.00002	0.000042	0.000036	0.000019
Tin (Sn)-Total	mg/L	0.00035	0.00043	0.0002	0.00024	0.00014	<0.00010	0.00011
Titanium (Ti)-Total	mg/L	0.014	<0.010	<0.010	<0.010	0.011	0.01	<0.010
Uranium (U)-Total	mg/L	0.00121	0.00156	0.0008	0.000152	0.00014	0.000128	0.000128
Vanadium (V)-Total	mg/L	0.0019	0.0014	<0.0010	0.0011	0.0024	0.0022	0.001
Zinc (Zn)-Total	mg/L	0.0077	0.0098	0.0264	<0.0030	0.0041	0.0032	<0.0030

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results
(Total Metals)

Sample Location		MW-BGC11-BJ-5A	MW-BGC11-BJ-5A	MW-BGC11-BJ-5A	MW-BGC11-BJ-5B	MW-BGC11-BJ-5B	MW-BGC11-BJ-5B	MW-BGC11-BJ-6A
BGC Sample ID		Bj-5A	BJ-5A	BJ-5A	BJ-5B	BJ-5B	BJ-5B	BJ-6A
Date Sampled		10/10/2011	3/28/2012	6/26/2012	10/10/2011	3/28/2012	6/26/2012	10/8/2011
Time Sampled		14:12	09:30	09:45	13:30	10:10	10:20	14:50
ALS Sample ID		L1071509-3	L1129695-3	L1171422-5	L1071509-2	L1129695-4	L1171422-6	L1071509-4
Total Metals	**Unit**							
Aluminum (Al)-Total	mg/L	*1.04*	*52.5*	*32.1*	*240*	*158*	*38.3*	*4.9*
Antimony (Sb)-Total	mg/L	0.00319	0.0029	0.0122	<0.010	0.013	0.0128	0.0075
Arsenic (As)-Total	mg/L	*0.0126*	*0.311*	*0.798*	*5.04*	*3.52*	*0.937*	*0.0465*
Barium (Ba)-Total	mg/L	0.072	0.76	1.37	6.33	3.44	2.08	0.331
Beryllium (Be)-Total	mg/L	<0.0010	0.0091	0.00345	<0.020	<0.020	0.00253	<0.0010
Bismuth(Bi)- Total	mg/L	<0.20	<0.20	0.0024	<0.20	<0.20	0.0016	<0.20
Boron (B)-Total	mg/L	<0.10	0.11	0.065	0.25	0.15	0.059	<0.10
Cadmium (Cd)-Total	mg/L	*0.00023*	*0.0021*	*0.00809*	*0.0109*	*0.00641*	*0.0113*	*0.00229*
Calcium (Ca)-Total	mg/L	32.4	164	162	620	460	171	75.7
Chromium (Cr)-Total	mg/L	*0.002*	*0.0264*	*0.0481*	*0.241*	*0.146*	*0.0673*	*0.0024*
Cobalt (Co)-Total	mg/L	0.00435	0.0239	0.0337	0.202	0.152	0.038	0.00423
Copper (Cu)-Total	mg/L	*0.0091*	*0.12*	*0.198*	**1.52**	**1.04**	*0.294*	*0.0658*
Iron (Fe)-Total	mg/L	*1.5*	*54.8*	*82.3*	*460*	*344*	*92.6*	*6.9*
Lead (Pb)-Total	mg/L	0.00245	**0.121**	*0.139*	**0.518**	**0.267**	**0.127**	*0.13*
Lithium (Li)-Total	mg/L	0.0229	0.111	0.1	0.3	0.22	0.0794	0.0058
Magnesium (Mg)-Total	mg/L	3.6	24.5	21.8	118	94.3	21.9	4.9
Manganese (Mn)-Total	mg/L	0.654	1.94	3.8	24.4	17.9	5.06	1.15
Mercury (Hg)-Total	mg/L	<0.000010	*0.000124*	<0.00010	*0.0015*	*0.000351*	<0.00010	*0.00062*
Molybdenum (Mo)-Total	mg/L	0.0063	0.0058	0.0172	0.03	<0.020	0.0254	<0.0010
Nickel (Ni)-Total	mg/L	0.0038	0.0422	0.0749	*0.357*	*0.251*	0.0755	0.0048
Phosphorus (P) - Total	mg/L	<0.30	1.51	2.22	12.5	9.74	2.51	0.64
Potassium (K)-Total	mg/L	3.3	13.8	15.8	74.8	48.1	16.3	4.8
Selenium (Se)-Total	mg/L	<0.0010	<0.0050	*0.00594*	<0.020	<0.020	*0.00759*	<0.0010
Silicon (Si)- Total	mg/L	4.92	84.5	57.8	228	134	60.4	11.1
Silver (Ag)-Total	mg/L	*0.000524*	*0.0189*	*0.0412*	*0.244*	*0.136*	*0.0567*	*0.00238*
Sodium (Na)-Total	mg/L	12.4	62.5	29.9	14.3	11.1	15	2.3
Strontium (Sr)-Total	mg/L	0.842	4.65	3.47	3.83	4.33	2.35	1.01
Thallium (Tl)-Total	mg/L	<0.00020	*0.0018*	*0.00407*	*0.0105*	*0.0091*	*0.00329*	<0.00020
Tin (Sn)-Total	mg/L	0.00193	<0.0025	0.00066	<0.010	<0.010	0.00043	0.0006
Titanium (Ti)-Total	mg/L	0.02	0.075	0.143	0.335	0.228	0.188	0.106
Uranium (U)-Total	mg/L	0.00028	*0.0175*	0.00561	*0.0526*	0.0132	0.00393	0.00055
Vanadium (V)-Total	mg/L	0.0015	0.039	0.0478	0.341	0.221	0.0598	0.0074
Zinc (Zn)-Total	mg/L	*0.0317*	*0.321*	*0.461*	*1.63*	*1.27*	*0.5*	*0.55*

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results
(Total Metals)

	Sample Location	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A
	BGC Sample ID	BJ-6A	Duplicate	BJ-6A	BJ-6A	BJ-6A	06A	BJ-6A
	Date Sampled	3/30/2012	3/30/2012	6/26/2012	9/3/2012	1/27/2013	4/7/2013	7/11/2013
	Time Sampled	13:25	13:40	11:45	00:00	00:00	00:00	00:00
	ALS Sample ID	L1130044-5	L1130044-1	L1171422-7	L1205274-3	L1263921-6	L1287525-3	L1331947-2
Total Metals	**Unit**							
Aluminum (Al)-Total	mg/L	*44.8*	*44.7*	*28.1*	*29.6*	*40.2*	*24.3*	*15.8*
Antimony (Sb)-Total	mg/L	0.0207	0.0243	0.0131	0.0137	0.0166	0.0122	0.0087
Arsenic (As)-Total	mg/L	*0.643*	*0.72*	*0.331*	*0.36*	*0.437*	*0.173*	*0.12*
Barium (Ba)-Total	mg/L	33.1	34.3	18.8	20.9	24.8	13.3	4.1
Beryllium (Be)-Total	mg/L	<0.010	<0.010	0.00254	0.00359	0.00462	0.00188	0.00136
Bismuth(Bi)- Total	mg/L	<0.20	<0.20	<0.0010	<0.0010	<0.0025	<0.0010	<0.00050
Boron (B)-Total	mg/L	<0.10	<0.10	0.03	0.034	<0.050	0.039	0.028
Cadmium (Cd)-Total	mg/L	*0.00145*	*0.00232*	*0.00194*	*0.0014*	*0.00216*	*0.000874*	*0.000702*
Calcium (Ca)-Total	mg/L	77	80.6	98.2	86.4	114	63.4	60
Chromium (Cr)-Total	mg/L	*0.019*	*0.018*	*0.0157*	*0.0184*	*0.0235*	*0.0106*	*0.00831*
Cobalt (Co)-Total	mg/L	0.0269	0.0337	0.0141	0.0154	0.0211	0.00865	0.00602
Copper (Cu)-Total	mg/L	*0.165*	*0.185*	*0.105*	*0.113*	*0.166*	*0.0646*	*0.0523*
Iron (Fe)-Total	mg/L	*95.3*	*110*	*46.3*	*55.6*	*74.7*	*30.1*	*18.9*
Lead (Pb)-Total	mg/L	**0.283**	**0.351**	**0.165**	**0.188**	**0.224**	**0.0896**	**0.0672**
Lithium (Li)-Total	mg/L	0.054	<0.050	0.0251	0.038	0.0483	0.0236	0.0178
Magnesium (Mg)-Total	mg/L	22	20	8.03	12.6	16.8	9	7.35
Manganese (Mn)-Total	mg/L	3.49	4.51	2.23	2.1	2.78	1.07	0.731
Mercury (Hg)-Total	mg/L	*0.0011*	*0.00111*	*0.00057*	*0.00046*	*0.00087*	*0.00024*	*0.00013*
Molybdenum (Mo)-Total	mg/L	<0.010	<0.010	0.0193	0.0108	0.00741	0.00407	0.00316
Nickel (Ni)-Total	mg/L	0.027	0.029	0.0141	0.0176	0.0222	0.009	0.00702
Phosphorus (P) - Total	mg/L	2.72	3.21	1.74	1.81	2.42	0.96	0.74
Potassium (K)-Total	mg/L	11.6	10.8	11.9	8.96	11.9	9.8	5.8
Selenium (Se)-Total	mg/L	<0.010	<0.010	*0.0025*	*0.00248*	*0.00314*	*0.00116*	0.00087
Silicon (Si)- Total	mg/L	53.9	51.3	49.7	63	61.2	76.8	59.8
Silver (Ag)-Total	mg/L	*0.0189*	*0.0245*	*0.0242*	*0.0211*	*0.0256*	*0.0117*	*0.00574*
Sodium (Na)-Total	mg/L	3.6	3.2	6.3	6.7	6.4	6.9	6.7
Strontium (Sr)-Total	mg/L	3.01	2.86	2.18	2.62	3.34	2.42	2.28
Thallium (Tl)-Total	mg/L	<0.0020	<0.0020	*0.000829*	0.000697	*0.000936*	0.000573	0.000377
Tin (Sn)-Total	mg/L	<0.0050	<0.0050	0.0006	0.00072	0.00142	0.00075	0.00072
Titanium (Ti)-Total	mg/L	0.539	0.545	0.441	0.515	0.522	0.841	0.66
Uranium (U)-Total	mg/L	<0.0020	<0.0020	0.000839	0.0011	0.0018	0.00105	0.00118
Vanadium (V)-Total	mg/L	0.078	0.078	0.049	0.0496	0.0656	0.0384	0.0211
Zinc (Zn)-Total	mg/L	*1.19*	*1.26*	*0.539*	*0.651*	*0.905*	*0.354*	*0.302*

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results
(Total Metals)

	Sample Location	MW-BGC11-BJ-6A	MW-BGC12-BJ-6B	MW-BGC12-BJ-6B	MW-BGC12-BJ-6B	MW-BGC11-BJ-8A	MW-BGC12-BJ-8A	MW-BGC11-BJ-8A
	BGC Sample ID	BJ-6A	BJ-6B	BJ-6B	06B	BJ-8A	BJ-8A	BJ-8A
	Date Sampled	9/25/2013	9/3/2012	1/27/2013	4/7/2013	6/28/2012	9/4/2012	1/28/2013
	Time Sampled	14:00	00:00	00:00	00:00	14:30	00:00	00:00
	ALS Sample ID	L1370058-6	L1205274-4	L1263921-7	L1287525-4	L1174115-1	L1207447-3	L1263921-8
Total Metals	**Unit**							
Aluminum (Al)-Total	mg/L	*28.2*	*16.7*	*23.9*	*22.9*	*5.14*	*0.785*	*3.91*
Antimony (Sb)-Total	mg/L	0.0119	0.00706	0.00628	0.00559	0.00156	0.00098	0.00074
Arsenic (As)-Total	mg/L	*0.21*	*0.0457*	*0.0592*	*0.042*	*0.0315*	*0.00761*	*0.00843*
Barium (Ba)-Total	mg/L	13.8	0.557	0.809	0.707	0.101	0.022	0.042
Beryllium (Be)-Total	mg/L	0.00307	0.00227	0.00295	0.00197	0.00044	<0.00010	0.00073
Bismuth(Bi)- Total	mg/L	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Total	mg/L	0.031	0.155	0.162	0.152	0.014	0.011	0.014
Cadmium (Cd)-Total	mg/L	*0.000546*	*0.00023*	*0.000335*	*0.000215*	*0.000235*	0.000014	0.000037
Calcium (Ca)-Total	mg/L	67	6.66	8.93	6.77	41.4	27	34.1
Chromium (Cr)-Total	mg/L	*0.0144*	*0.00826*	*0.0143*	*0.0094*	*0.00459*	0.00027	*0.00672*
Cobalt (Co)-Total	mg/L	0.0117	0.00841	0.0122	0.00835	0.00155	<0.00010	0.00057
Copper (Cu)-Total	mg/L	*0.0828*	*0.0662*	*0.101*	*0.0592*	*0.00741*	<0.00050	*0.0183*
Iron (Fe)-Total	mg/L	*40.1*	*25.1*	*36.4*	*24.6*	*4.97*	0.183	*1.3*
Lead (Pb)-Total	mg/L	**0.132**	*0.179*	*0.228*	*0.147*	0.00752	0.000447	0.00299
Lithium (Li)-Total	mg/L	0.0348	0.175	0.188	0.159	0.0114	0.00821	0.0103
Magnesium (Mg)-Total	mg/L	14	7.93	10.2	7.17	6.89	5.03	6.42
Manganese (Mn)-Total	mg/L	1.08	0.84	1.24	0.822	0.282	0.01	0.0421
Mercury (Hg)-Total	mg/L	*0.000338*	*0.000099*	*0.00025*	*0.000123*	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Total	mg/L	0.00366	0.00508	0.0045	0.0038	0.00261	0.00159	0.00197
Nickel (Ni)-Total	mg/L	0.014	0.00924	0.0143	0.00953	0.00116	<0.00050	0.00423
Phosphorus (P) - Total	mg/L	1.05	<0.30	0.48	0.32	<0.30	<0.30	<0.30
Potassium (K)-Total	mg/L	8.92	6.74	8.43	8.98	1.88	0.606	0.99
Selenium (Se)-Total	mg/L	*0.00162*	*0.00143*	*0.00171*	0.00081	0.00023	0.00018	0.00019
Silicon (Si)- Total	mg/L	86.6	43	40.6	77.8	13.6	3.31	12.8
Silver (Ag)-Total	mg/L	*0.00935*	*0.00764*	*0.0107*	*0.00677*	*0.000223*	0.000021	*0.000209*
Sodium (Na)-Total	mg/L	6	67.8	67.6	67.7	6	7	6.8
Strontium (Sr)-Total	mg/L	2.76	0.348	0.394	0.315	0.762	0.627	0.724
Thallium (Tl)-Total	mg/L	0.000683	0.00035	0.00048	0.00052	0.000132	<0.000010	0.000059
Tin (Sn)-Total	mg/L	0.00056	0.00015	0.00062	0.00039	0.00047	0.00029	0.00039
Titanium (Ti)-Total	mg/L	0.871	0.223	0.198	0.689	0.051	<0.010	0.049
Uranium (U)-Total	mg/L	0.00108	0.000504	0.00067	0.000532	0.00119	0.000367	0.00111
Vanadium (V)-Total	mg/L	0.047	0.0304	0.0429	0.0406	0.0048	<0.0010	0.0023
Zinc (Zn)-Total	mg/L	*0.502*	*0.384*	*0.549*	*0.349*	*0.0337*	<0.0030	0.014

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results
(Total Metals)

	Sample Location	MW-BGC11-BJ-8A	MW-BGC11-BJ-8A	MW-BGC12-BJ-8A	MW-BGC11-BJ-8A	MW-BGC11-BJ-8A	MW-BGC11-BJ-8B	MW-BGC12-BJ-8B
	BGC Sample ID	BJ-DUP1	08A	BJ-8A	BJ-3A	BJ-DUP1	BJ-8B	BJ-8B
	Date Sampled	1/28/2013	4/8/2013	7/14/2013	9/26/2013	26-SEP-13	6/28/2012	9/4/2012
	Time Sampled	00:00	00:00	00:00	11:30	00:00	15:30	00:00
	ALS Sample ID	L1263921-10	L1288325-1	L1333226-4	L1370207-2	L1370207-4	L1174115-2	L1207447-4
Total Metals	**Unit**							
Aluminum (Al)-Total	mg/L	*3.51*	*0.868*	*0.91*	*0.298*	*0.369*	*50.4*	*17.1*
Antimony (Sb)-Total	mg/L	0.0007	0.00081	0.00088	0.00082	0.00088	0.00251	0.00271
Arsenic (As)-Total	mg/L	*0.00823*	*0.00736*	*0.00868*	*0.00887*	*0.00873*	*0.525*	*0.344*
Barium (Ba)-Total	mg/L	0.0411	0.0264	0.0265	0.0212	0.0223	0.91	0.494
Beryllium (Be)-Total	mg/L	0.00059	<0.00010	<0.00010	<0.00010	<0.00010	0.00732	0.00156
Bismuth(Bi)- Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050
Boron (B)-Total	mg/L	0.014	0.012	0.011	0.011	0.011	0.044	0.019
Cadmium (Cd)-Total	mg/L	0.000035	0.000015	0.000018	0.000012	0.000012	*0.000601*	*0.000177*
Calcium (Ca)-Total	mg/L	34.8	32	28.9	26.3	27.8	118	50.1
Chromium (Cr)-Total	mg/L	*0.00664*	*0.00112*	0.00068	0.00019	0.00024	*0.0281*	*0.0068*
Cobalt (Co)-Total	mg/L	0.00054	0.00016	0.00016	<0.00010	<0.00010	0.0334	0.0178
Copper (Cu)-Total	mg/L	*0.0131*	*0.0025*	0.00053	<0.00050	<0.00050	*0.104*	*0.0362*
Iron (Fe)-Total	mg/L	*1.12*	*0.33*	*0.339*	0.092	0.153	*52.2*	*25.3*
Lead (Pb)-Total	mg/L	0.00248	0.000485	0.000614	0.000127	0.000263	**0.0699**	0.0204
Lithium (Li)-Total	mg/L	0.0104	0.0114	0.00901	0.00903	0.00937	0.0531	0.0232
Magnesium (Mg)-Total	mg/L	6.25	5.63	5.51	5.86	5.74	19.4	10.2
Manganese (Mn)-Total	mg/L	0.0394	0.0246	0.0171	0.0049	0.00746	3.22	2.04
Mercury (Hg)-Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	*0.00048*	*0.000136*
Molybdenum (Mo)-Total	mg/L	0.00203	0.00169	0.00143	0.00131	0.00143	0.0015	0.00165
Nickel (Ni)-Total	mg/L	0.00418	0.00077	<0.00050	<0.00050	<0.00050	0.0212	0.00698
Phosphorus (P) - Total	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.88	0.36
Potassium (K)-Total	mg/L	0.946	0.586	0.558	0.494	0.493	7.9	4.05
Selenium (Se)-Total	mg/L	0.0002	0.00017	0.00016	0.00017	0.00015	0.00061	0.00039
Silicon (Si)- Total	mg/L	11.3	4.88	5.22	3.24	3.67	84.7	40.5
Silver (Ag)-Total	mg/L	*0.000296*	0.000075	0.000022	<0.000010	<0.000010	*0.00161*	*0.000455*
Sodium (Na)-Total	mg/L	6.6	5.2	4.2	4.2	4	13.2	3.3
Strontium (Sr)-Total	mg/L	0.715	0.747	0.745	0.632	0.695	0.96	0.585
Thallium (Tl)-Total	mg/L	0.000048	0.000014	0.000014	<0.000010	<0.000010	*0.000912*	0.000404
Tin (Sn)-Total	mg/L	0.00034	0.00012	<0.00010	<0.00010	<0.00010	0.00134	0.00029
Titanium (Ti)-Total	mg/L	0.043	0.018	0.023	0.01	0.012	0.093	0.201
Uranium (U)-Total	mg/L	0.000972	0.00036	0.000323	0.000202	0.00024	0.0116	0.00207
Vanadium (V)-Total	mg/L	0.0021	<0.0010	<0.0010	<0.0010	<0.0010	0.049	0.0241
Zinc (Zn)-Total	mg/L	0.0195	0.0041	0.0041	<0.0030	0.0033	*0.358*	*0.0876*

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results
(Total Metals)

	Sample Location	MW-BGC11-BJ-8B	MW-BGC11-BJ-8B	MW-BGC12-BJ-8B	MW-BGC11-BJ-8B	MW-BGC12-BJ-12A	MW-BGC12-BJ-12A	MW-BGC11-BJ-12A
	BGC Sample ID	BJ-8B	08B	41469	41543	41157	41470	41547
	Date Sampled	1/28/2013	4/8/2013	00:00	1/0/1900	12:40	00:00	1/0/1900
	Time Sampled	00:00	00:00	L1333226-5	L1370207-3	L1206550-1	L1335562-1	L1372080-1
	ALS Sample ID	L1263921-9	L1288325-2	0	Water	Water	0	Water
Total Metals	**Unit**							
Aluminum (Al)-Total	mg/L	*7.02*	*12.7*	*12.2*	*2.83*	*5.93*	*1.48*	*4.39*
Antimony (Sb)-Total	mg/L	0.00176	0.0017	0.00181	0.00097	0.00716	0.00501	0.00318
Arsenic (As)-Total	mg/L	*0.0692*	*0.0671*	*0.0818*	*0.0301*	*0.326*	*0.192*	*0.0825*
Barium (Ba)-Total	mg/L	0.16	0.186	0.282	0.0789	0.641	0.3	0.234
Beryllium (Be)-Total	mg/L	0.00031	0.00028	0.00017	<0.00010	0.00057	<0.00010	0.0005
Bismuth(Bi)- Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00056	<0.00050	<0.00050
Boron (B)-Total	mg/L	0.012	0.014	<0.010	<0.010	0.02	0.021	0.026
Cadmium (Cd)-Total	mg/L	0.00004	0.000042	0.000033	<0.000010	*0.00108*	0.00029	*0.000521*
Calcium (Ca)-Total	mg/L	39	33.6	32.3	30.3	87.7	74.5	95.3
Chromium (Cr)-Total	mg/L	*0.0156*	*0.0138*	*0.0023*	0.0008	*0.00853*	*0.158*	*0.0285*
Cobalt (Co)-Total	mg/L	0.00328	0.00333	0.00298	0.00056	0.00662	0.0022	0.00255
Copper (Cu)-Total	mg/L	*0.00979*	*0.00909*	*0.00771*	0.00179	*0.0246*	*0.0139*	*0.0155*
Iron (Fe)-Total	mg/L	*5.06*	*5.32*	*6.82*	*1.41*	*23.7*	*8.02*	*5.36*
Lead (Pb)-Total	mg/L	0.00419	0.00389	0.00573	0.00104	*0.0458*	*0.047*	*0.0213*
Lithium (Li)-Total	mg/L	0.00959	0.00846	0.00958	0.00663	0.00837	0.0107	0.0156
Magnesium (Mg)-Total	mg/L	5.28	5.69	4.81	4.08	11.5	10.5	14
Manganese (Mn)-Total	mg/L	0.29	0.29	0.334	0.0608	0.554	0.366	0.434
Mercury (Hg)-Total	mg/L	*0.00004*	<0.000010	*0.000056*	<0.000010	0.000011	<0.000010	0.000012
Molybdenum (Mo)-Total	mg/L	0.00306	0.00311	0.00185	0.00161	0.00385	0.00524	0.00279
Nickel (Ni)-Total	mg/L	0.00866	0.00888	0.00246	0.00051	0.00419	0.0592	0.013
Phosphorus (P) - Total	mg/L	<0.30	<0.30	<0.30	<0.30	0.46	<0.30	<0.30
Potassium (K)-Total	mg/L	3.07	3.14	2.09	1.28	7.68	5.33	5.28
Selenium (Se)-Total	mg/L	0.00028	0.00027	0.00028	0.00022	*0.00241*	0.0007	0.00031
Silicon (Si)- Total	mg/L	15.6	22.1	23.4	6.86	15.2	6.08	13.8
Silver (Ag)-Total	mg/L	*0.000772*	*0.00089*	*0.000231*	0.000036	*0.00464*	*0.00165*	*0.000871*
Sodium (Na)-Total	mg/L	2.6	2.7	2.8	2.5	5.7	6.4	9.2
Strontium (Sr)-Total	mg/L	0.492	0.564	0.462	0.432	1.24	1.41	1.87
Thallium (Tl)-Total	mg/L	0.00017	0.000158	0.00012	0.000045	0.000782	0.000146	0.000236
Tin (Sn)-Total	mg/L	0.00065	0.00029	0.00034	<0.00010	0.00046	0.00283	0.0014
Titanium (Ti)-Total	mg/L	0.121	0.175	0.189	0.047	0.041	0.041	0.054
Uranium (U)-Total	mg/L	0.000516	0.000399	0.000234	0.00018	0.00449	0.000545	0.00164
Vanadium (V)-Total	mg/L	0.0112	0.0117	0.0081	0.0033	0.0042	0.0024	0.0029
Zinc (Zn)-Total	mg/L	*0.0311*	0.0267	*0.0339*	0.0082	*0.171*	*0.0474*	*0.0608*

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results
(Total Metals)

	Sample Location	Drill Water	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)
	BGC Sample ID	41087	40998	FB	FB	FB	BJ-FB
	Date Sampled	11:00	14:30	10/11/2011	6/27/2012	9/5/2012	1/30/2013
	Time Sampled	L1171422-10	L1130044-2	9:00	11:40	16:00	00:00
	ALS Sample ID	Water	Water	L1071509-8	L1171422-9	L1206550-2	L1264492-1
Total Metals	**Unit**						
Aluminum (Al)-Total	mg/L	*338*	<0.0050	<0.00050	<0.00010	<0.00010	<0.00010
Antimony (Sb)-Total	mg/L	0.0119	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	mg/L	*17.1*	<0.00050	<0.020	<0.000050	<0.000050	<0.000050
Barium (Ba)-Total	mg/L	2.91	<0.020	<0.0010	<0.00010	<0.00010	<0.00010
Beryllium (Be)-Total	mg/L	0.033	<0.0010	<0.20	<0.00050	<0.00050	<0.00050
Bismuth(Bi)- Total	mg/L	0.015	<0.20	<0.10	<0.010	<0.010	<0.010
Boron (B)-Total	mg/L	<0.20	<0.10	<0.000017	<0.000010	<0.000010	<0.000010
Cadmium (Cd)-Total	mg/L	*0.0688*	<0.000017	<0.10	<0.020	<0.020	<0.020
Calcium (Ca)-Total	mg/L	1960	<0.10	<0.0010	<0.00010	<0.00010	<0.00010
Chromium (Cr)-Total	mg/L	*0.671*	<0.0010	<0.00030	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Total	mg/L	0.714	<0.00030	<0.0010	<0.00050	<0.00050	<0.00050
Copper (Cu)-Total	mg/L	**3.2**	<0.0010	<0.030	<0.030	<0.030	<0.030
Iron (Fe)-Total	mg/L	*1320*	<0.030	<0.00050	<0.000050	<0.000050	<0.000050
Lead (Pb)-Total	mg/L	**0.679**	<0.00050	<0.0050	<0.00050	0.00065	<0.00050
Lithium (Li)-Total	mg/L	0.682	<0.0050	<0.10	<0.0050	<0.0050	<0.0050
Magnesium (Mg)-Total	mg/L	228	<0.10	<0.00030	<0.000050	<0.000050	<0.000050
Manganese (Mn)-Total	mg/L	68.4	<0.00030	<0.000010	<0.000010	<0.000010	<0.000010
Mercury (Hg)-Total	mg/L	<0.00050	<0.000010	<0.0010	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)-Total	mg/L	*0.0752*	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050
Nickel (Ni)-Total	mg/L	*1.83*	<0.0010	<0.30	<0.30	<0.30	<0.30
Phosphorus (P) - Total	mg/L	44.4	<0.30	<2.0	<0.050	<0.050	<0.050
Potassium (K)-Total	mg/L	107	<2.0	<0.0010	<0.00010	<0.00010	<0.00010
Selenium (Se)-Total	mg/L	*0.0292*	<0.0010	<0.050	<0.050	<0.050	<0.050
Silicon (Si)- Total	mg/L	339	<0.050	<0.000020	<0.000010	<0.000010	<0.000010
Silver (Ag)-Total	mg/L	*0.262*	<0.000020	<2.0	<2.0	<2.0	<2.0
Sodium (Na)-Total	mg/L	<4.0	<2.0	<0.0050	<0.00020	<0.00020	<0.00020
Strontium (Sr)-Total	mg/L	6.74	<0.0050	<0.00020	<0.000010	<0.000010	<0.000010
Thallium (Tl)-Total	mg/L	*0.0157*	<0.00020	<0.00050	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total	mg/L	<0.0020	<0.00050	<0.010	<0.010	<0.010	<0.010
Titanium (Ti)-Total	mg/L	0.391	<0.010	<0.00020	<0.000010	<0.000010	<0.000010
Uranium (U)-Total	mg/L	*0.0156*	<0.00020	<0.0010	<0.0010	<0.0010	<0.0010
Vanadium (V)-Total	mg/L	0.55	<0.0010	<0.0050	<0.0030	<0.0030	<0.0030
Zinc (Zn)-Total	mg/L	*4.6*	<0.0050	0	0	0	0

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results
(Total Metals)

	Sample Location	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)	BJ-FB	Travel Blank	Travel Blank	Travel Blank
	BGC Sample ID	FB	BJ-FB	BJ-FB	TRAVEL BLANK	TB	TRAVEL BLANK
	Date Sampled	4/8/2013	7/11/2013	26-SEP-13	6/27/2012	9/5/2012	1/30/2013
	Time Sampled	0:00	00:00	00:00	0:00	00:00	00:00
	ALS Sample ID	L1288325-5	L1331947-5	L1370207-5	L1171422-11	L1206550-3	L1264492-2
Total Metals	**Unit**						
Aluminum (Al)-Total	mg/L	<0.00010	<0.00010	<0.0030	<0.0030	<0.0030	<0.0030
Antimony (Sb)-Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	mg/L	<0.000050	<0.000050	<0.00010	<0.00010	<0.00010	<0.00010
Barium (Ba)-Total	mg/L	<0.00010	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050
Beryllium (Be)-Total	mg/L	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth(Bi)- Total	mg/L	<0.010	<0.010	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Total	mg/L	<0.000010	<0.000010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Total	mg/L	<0.020	<0.020	<0.000010	<0.000010	<0.000010	<0.000010
Calcium (Ca)-Total	mg/L	<0.00010	<0.00010	<0.020	<0.020	<0.020	<0.020
Chromium (Cr)-Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Total	mg/L	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	mg/L	<0.030	<0.030	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Total	mg/L	<0.000050	<0.000050	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Total	mg/L	<0.00050	<0.00050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total	mg/L	<0.0050	<0.0050	<0.00050	<0.00050	0.0006	<0.00050
Magnesium (Mg)-Total	mg/L	<0.000050	<0.000050	<0.0050	<0.0050	<0.0050	<0.0050
Manganese (Mn)-Total	mg/L	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050
Mercury (Hg)-Total	mg/L	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Total	mg/L	<0.00050	<0.00050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel (Ni)-Total	mg/L	<0.30	<0.30	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P) - Total	mg/L	<0.050	<0.050	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Total	mg/L	<0.00010	<0.00010	<0.050	<0.050	<0.050	<0.050
Selenium (Se)-Total	mg/L	<0.050	<0.050	<0.00010	<0.00010	<0.00010	<0.00010
Silicon (Si)- Total	mg/L	<0.000010	<0.000010	<0.050	<0.050	<0.050	<0.050
Silver (Ag)-Total	mg/L	<2.0	<2.0	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	mg/L	<0.00020	<0.00020	<2.0	<2.0	<2.0	<2.0
Strontium (Sr)-Total	mg/L	<0.000010	<0.000010	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total	mg/L	<0.00010	<0.00010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Total	mg/L	<0.010	<0.010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	mg/L	<0.000010	<0.000010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	mg/L	<0.0010	<0.0010	<0.000010	<0.000010	<0.000010	<0.000010
Vanadium (V)-Total	mg/L	<0.0030	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Total	mg/L	0	0	<0.0030	<0.0030	<0.0030	<0.0030

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-2: Groundwater Analytical Chemistry Results (Total Metals)

	Sample Location	Travel Blank	TRAVEL BLANK
	BGC Sample ID	TRAVEL BLANK	TRAVEL BLANK
	Date Sampled	4/7/2013	25-SEP-13
	Time Sampled	00:00	00:00
	ALS Sample ID	L1287525-6	L1370058-5
Total Metals	**Unit**		
Aluminum (Al)-Total	mg/L	<0.0030	<0.0030
Antimony (Sb)-Total	mg/L	<0.00010	<0.00010
Arsenic (As)-Total	mg/L	<0.00010	<0.00010
Barium (Ba)-Total	mg/L	<0.000050	<0.000050
Beryllium (Be)-Total	mg/L	<0.00010	<0.00010
Bismuth(Bi)- Total	mg/L	<0.00050	<0.00050
Boron (B)-Total	mg/L	<0.010	<0.010
Cadmium (Cd)-Total	mg/L	<0.000010	<0.000010
Calcium (Ca)-Total	mg/L	<0.020	<0.020
Chromium (Cr)-Total	mg/L	<0.00010	<0.00010
Cobalt (Co)-Total	mg/L	<0.00010	<0.00010
Copper (Cu)-Total	mg/L	<0.00050	<0.00050
Iron (Fe)-Total	mg/L	<0.030	<0.030
Lead (Pb)-Total	mg/L	<0.000050	<0.000050
Lithium (Li)-Total	mg/L	<0.00050	<0.00050
Magnesium (Mg)-Total	mg/L	<0.0050	<0.0050
Manganese (Mn)-Total	mg/L	<0.000050	<0.000050
Mercury (Hg)-Total	mg/L	<0.000010	<0.000010
Molybdenum (Mo)-Total	mg/L	<0.000050	<0.000050
Nickel (Ni)-Total	mg/L	<0.00050	<0.00050
Phosphorus (P) - Total	mg/L	<0.30	<0.30
Potassium (K)-Total	mg/L	<0.050	<0.050
Selenium (Se)-Total	mg/L	<0.00010	<0.00010
Silicon (Si)- Total	mg/L	<0.050	<0.050
Silver (Ag)-Total	mg/L	<0.000010	<0.000010
Sodium (Na)-Total	mg/L	<2.0	<2.0
Strontium (Sr)-Total	mg/L	<0.00020	<0.00020
Thallium (Tl)-Total	mg/L	<0.000010	<0.000010
Tin (Sn)-Total	mg/L	<0.00010	<0.00010
Titanium (Ti)-Total	mg/L	<0.010	<0.010
Uranium (U)-Total	mg/L	<0.000010	<0.000010
Vanadium (V)-Total	mg/L	<0.0010	<0.0010
Zinc (Zn)-Total	mg/L	<0.0030	<0.0030

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

Sample Location		MW-BGC11-BJ-1A	MW-BGC11-BJ-1B	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A
BGC Sample ID		BJ-1a	BJ-1B	BJ-2A	BJ-2A	BJ-2A	BJ-2A
Date Sampled		10/10/2011	10/10/2011	10/11/2011	3/30/2012	6/26/2012	9/4/2012
Time Sampled		9:10	9:40	9:00	11:30	14:10	00:00
ALS Sample ID		L1071509-9	L1071509-10	L1071509-7	L1130044-3	L1171422-1	L1207447-5
Dissolved Metals	**Unit**						
Aluminum (Al)-Dissolved	mg/L	0.0339	0.0145	0.0256	0.0188	0.0122	0.0598
Antimony (Sb)-Dissolved	mg/L	0.0008	0.00093	0.00181	<0.00050	0.00082	0.0005
Arsenic (As)-Dissolved	mg/L	0.00111	0.00797	0.00087	0.00091	0.00218	0.00105
Barium (Ba)-Dissolved	mg/L	0.028	0.022	0.041	0.044	0.0688	0.0394
Beryllium (Be)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.00010	<0.00010
Bismuth(Bi)- Dissolved	mg/L	<0.20	<0.20	<0.20	<0.20	<0.00050	<0.00050
Boron (B)-Dissolved	mg/L	<0.10	<0.10	<0.10	<0.10	0.021	0.016
Cadmium (Cd)-Dissolved	mg/L	0.000027	<0.000017	<0.000017	<0.000017	0.00101	0.000014
Calcium (Ca)-Dissolved	mg/L	16.4	29.7	35.7	49.5	29.5	36.9
Chromium (Cr)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.00694	0.00014
Cobalt (Co)-Dissolved	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	0.00041	<0.00010
Copper (Cu)-Dissolved	mg/L	0.009	<0.0010	<0.0010	<0.0010	0.002	<0.00050
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030	<0.030	0.039	<0.030
Lead (Pb)-Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00008	<0.000050
Lithium (Li)-Dissolved	mg/L	0.0073	0.0781	0.0084	0.007	0.0323	0.0205
Magnesium (Mg)-Dissolved	mg/L	1.01	3.8	1.86	2.38	1.53	1.81
Manganese (Mn)-Dissolved	mg/L	0.0331	0.0306	0.0353	0.0775	0.129	0.0181
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	<0.0010	0.0023	0.0044	0.0018	0.00252	0.00121
Nickel (Ni)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.00632	0.00054
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Dissolved	mg/L	<2.0	2.5	<2.0	<2.0	0.81	0.669
Selenium (Se)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.00010	<0.00010
Silicon (Si)-Dissolved	mg/L	0.977	2.77	1.98	2.03	2.11	1.85
Silver (Ag)-Dissolved	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010
Sodium (Na)-Dissolved	mg/L	2.9	25.8	5.6	4.8	20	11.3
Strontium (Sr)-Dissolved	mg/L	0.208	0.897	1.36	1.52	1.39	1.74
Thallium (Tl)-Dissolved	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.000010	<0.000010
Tin (Sn)-Dissolved	mg/L	0.00161	0.00118	<0.00050	<0.00050	0.00021	<0.00010
Titanium (Ti)-Dissolved	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	mg/L	<0.00020	<0.00020	0.00031	0.00032	0.000323	0.000289
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Dissolved	mg/L	0.0167	<0.0050	0.0067	<0.0050	0.0188	<0.0030

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

Sample Location		MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-2A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A
BGC Sample ID		BJ-2A	02A	02A_DUP 1	BJ-2A	BJ-2A	BJ-3A	BJ-3A
Date Sampled		1/27/2013	4/7/2013	4/7/2013	7/13/2013	9/26/2013	10/8/2011	3/28/2012
Time Sampled		00:00	00:00	00:00	00:00	16:00	16:30	13:15
ALS Sample ID		L1263921-1	L1287525-1	L1287525-5	L1333226-1	L1370207-1	L1071509-6	L1129695-1
Dissolved Metals	**Unit**							
Aluminum (Al)-Dissolved	mg/L	0.201	0.0143	0.0121	0.0166	0.0124	0.0235	0.0142
Antimony (Sb)-Dissolved	mg/L	0.00048	0.00036	0.00033	0.00023	0.0002	0.00468	0.0013
Arsenic (As)-Dissolved	mg/L	0.00058	0.0005	0.00052	0.00107	0.00136	0.0226	0.00758
Barium (Ba)-Dissolved	mg/L	0.043	0.037	0.0376	0.0271	0.0291	0.029	0.031
Beryllium (Be)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0010	<0.0010
Bismuth(Bi)- Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.20	<0.20
Boron (B)-Dissolved	mg/L	0.01	0.012	0.012	<0.010	<0.010	<0.10	<0.10
Cadmium (Cd)-Dissolved	mg/L	0.000021	<0.000010	<0.000010	<0.000010	<0.000010	0.000029	0.000038
Calcium (Ca)-Dissolved	mg/L	49.2	49.6	48.2	32.9	36.8	47.4	60
Chromium (Cr)-Dissolved	mg/L	0.00047	<0.00010	<0.00010	0.0001	<0.00010	<0.0010	<0.0010
Cobalt (Co)-Dissolved	mg/L	0.00041	0.00022	0.00022	<0.00010	<0.00010	<0.00030	<0.00030
Copper (Cu)-Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	<0.0010
Iron (Fe)-Dissolved	mg/L	0.108	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	0.000071	<0.000050	<0.000050	<0.000050	<0.000050	<0.00050	<0.00050
Lithium (Li)-Dissolved	mg/L	0.00751	0.00601	0.00541	0.00479	0.0047	0.0445	0.02
Magnesium (Mg)-Dissolved	mg/L	2.26	2.28	2.26	1.5	1.72	3.93	4.12
Manganese (Mn)-Dissolved	mg/L	0.0952	0.0657	0.0513	0.00124	0.000431	0.198	0.139
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	0.00376	0.00155	0.00126	0.0013	0.000855	0.0026	0.0015
Nickel (Ni)-Dissolved	mg/L	0.00434	0.00137	0.00128	0.00071	<0.00050	<0.0010	<0.0010
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Dissolved	mg/L	0.419	0.343	0.32	0.318	0.239	<2.0	<2.0
Selenium (Se)-Dissolved	mg/L	0.00012	0.00012	0.00012	<0.00010	0.00016	<0.0010	<0.0010
Silicon (Si)-Dissolved	mg/L	2.32	1.81	1.82	1.66	1.63	3.31	3.3
Silver (Ag)-Dissolved	mg/L	0.000011	<0.000010	<0.000010	<0.000010	<0.000010	<0.000020	<0.000020
Sodium (Na)-Dissolved	mg/L	4.3	4.4	4.5	2.6	2.5	19.3	9.4
Strontium (Sr)-Dissolved	mg/L	1.97	1.41	1.08	0.912	0.852	1.34	1.18
Thallium (Tl)-Dissolved	mg/L	0.000016	0.000011	0.00001	<0.000010	<0.000010	<0.00020	<0.00020
Tin (Sn)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00050
Titanium (Ti)-Dissolved	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	mg/L	0.000427	0.000348	0.000309	0.000153	0.000178	<0.00020	<0.00020
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Dissolved	mg/L	0.0122	<0.0030	<0.0030	<0.0030	<0.0030	0.031	<0.0050

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

Sample Location		MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A	MW-BGC11-BJ-3A
BGC Sample ID		BJ-3A	BJ-3A	Duplicate	BJ-3A	03A	BJ-3A	BJ-03A
Date Sampled		6/27/2012	9/4/2012	6/27/2012	1/28/2013	4/7/2013	7/13/2013	9/25/2013
Time Sampled		09:35	00:00	09:45	00:00	00:00	00:00	17:00
ALS Sample ID		L1171422-2	L1207447-1	L1171422-8	L1263921-2	L1287525-2	L1333226-2	L1370058-1
Dissolved Metals	**Unit**							
Aluminum (Al)-Dissolved	mg/L	0.0159	0.0204	0.0168	0.021	0.0065	0.0088	0.0154
Antimony (Sb)-Dissolved	mg/L	0.00179	0.00133	0.00183	0.0118	0.00334	0.0094	0.0319
Arsenic (As)-Dissolved	mg/L	0.0279	0.00871	0.0276	0.00599	0.00691	0.00552	0.00404
Barium (Ba)-Dissolved	mg/L	0.0235	0.0294	0.0234	0.03	0.0252	0.0223	0.032
Beryllium (Be)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth(Bi)- Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Dissolved	mg/L	0.037	0.046	0.037	0.049	0.047	0.037	0.048
Cadmium (Cd)-Dissolved	mg/L	<0.000010	0.00002	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Calcium (Ca)-Dissolved	mg/L	31.5	48.3	31.3	59.9	55.4	53.4	54.8
Chromium (Cr)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Dissolved	mg/L	<0.00010	0.00011	<0.00010	0.00038	<0.00010	0.00015	0.00059
Copper (Cu)-Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.000065	<0.000050	0.000107	0.000108
Lithium (Li)-Dissolved	mg/L	0.074	0.0357	0.0737	0.0224	0.019	0.0156	0.0203
Magnesium (Mg)-Dissolved	mg/L	2.45	3.9	2.38	4.34	4.25	3.93	4.41
Manganese (Mn)-Dissolved	mg/L	0.192	0.193	0.192	0.22	0.176	0.132	0.149
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	0.00247	0.0014	0.00251	0.0018	0.00123	0.00114	0.00117
Nickel (Ni)-Dissolved	mg/L	<0.00050	<0.00050	<0.00050	0.00177	<0.00050	0.00072	0.00096
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Dissolved	mg/L	1.55	1.5	1.53	1.51	1.47	1.35	1.46
Selenium (Se)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	0.00018	<0.00010	<0.00010	0.00028
Silicon (Si)-Dissolved	mg/L	2.91	3.22	2.8	3.51	3.48	3.5	3.47
Silver (Ag)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	mg/L	36.7	15.9	36.8	9.9	9.3	7.9	9.1
Strontium (Sr)-Dissolved	mg/L	0.991	1.23	0.994	1.26	1.15	1.1	1.12
Thallium (Tl)-Dissolved	mg/L	<0.000010	0.000055	0.00001	0.000147	0.000027	0.000076	0.000254
Tin (Sn)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	mg/L	0.000181	0.00015	0.000193	0.000168	0.000136	0.000142	0.000179
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Dissolved	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0032

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

Sample Location		MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B	MW-BGC11-BJ-3B
BGC Sample ID		BJ-3B	BJ-3B	BJ-3B	BJ-3B	BJ-3B	BJ-3B	BJ-3B
Date Sampled		10/8/2011	3/28/2012	6/27/2012	9/4/2012	1/28/2013	7/11/2013	9/25/2013
Time Sampled		15:45	11:00	10:00	00:00	00:00	00:00	13:30
ALS Sample ID		L1071509-5	L1129695-2	L1171422-3	L1207447-2	L1263921-3	L1331947-3	L1370058-2
Dissolved Metals	**Unit**							
Aluminum (Al)-Dissolved	mg/L	0.0075	0.0158	0.0246	0.0489	0.0146	0.0474	0.0134
Antimony (Sb)-Dissolved	mg/L	0.00114	0.00245	0.00331	0.00508	0.019	0.00284	0.0019
Arsenic (As)-Dissolved	mg/L	0.0165	0.0202	0.00768	0.00542	0.0281	0.0128	0.00963
Barium (Ba)-Dissolved	mg/L	0.042	0.034	0.0384	0.0512	0.0521	0.0525	0.0431
Beryllium (Be)-Dissolved	mg/L	<0.0010	<0.0010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth(Bi)- Dissolved	mg/L	<0.20	<0.20	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Dissolved	mg/L	<0.10	<0.10	0.025	0.034	0.032	0.036	0.028
Cadmium (Cd)-Dissolved	mg/L	<0.000017	0.00006	0.000081	0.000075	0.000057	0.00003	0.000046
Calcium (Ca)-Dissolved	mg/L	60.5	57.8	57.2	56.8	66.6	59.5	66.4
Chromium (Cr)-Dissolved	mg/L	<0.0010	<0.0010	<0.00010	<0.00010	<0.00010	0.0001	<0.00010
Cobalt (Co)-Dissolved	mg/L	<0.00030	<0.00030	0.00018	0.00027	0.0005	<0.00010	<0.00010
Copper (Cu)-Dissolved	mg/L	<0.0010	<0.0010	<0.00050	<0.00050	0.00089	<0.00050	<0.00050
Iron (Fe)-Dissolved	mg/L	0.036	<0.030	<0.030	<0.030	<0.030	<0.030	0.076
Lead (Pb)-Dissolved	mg/L	<0.00050	<0.00050	<0.000050	0.00009	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved	mg/L	0.0115	<0.0050	0.0094	0.0132	0.0113	0.0152	0.00946
Magnesium (Mg)-Dissolved	mg/L	3.78	2.78	3.46	3.36	5.32	3.82	4.01
Manganese (Mn)-Dissolved	mg/L	0.397	0.0825	0.25	0.491	0.317	0.0412	0.133
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	<0.0010	<0.0010	0.000584	0.0018	0.00118	0.000882	0.000607
Nickel (Ni)-Dissolved	mg/L	<0.0010	<0.0010	<0.00050	0.00078	0.00083	<0.00050	<0.00050
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Dissolved	mg/L	<2.0	<2.0	0.976	1.49	1.76	1.15	1.08
Selenium (Se)-Dissolved	mg/L	<0.0010	<0.0010	0.00059	0.00104	0.00118	0.00029	0.00017
Silicon (Si)-Dissolved	mg/L	3.49	1.91	2.84	3.18	3.05	3.19	2.91
Silver (Ag)-Dissolved	mg/L	<0.000020	<0.000020	<0.000010	0.000011	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	mg/L	5.5	3.1	5	6.3	4.7	6.4	5.2
Strontium (Sr)-Dissolved	mg/L	1.64	1.03	1.58	1.48	2.9	1.48	1.84
Thallium (Tl)-Dissolved	mg/L	<0.00020	<0.00020	0.000044	0.000086	0.000055	0.00004	0.000032
Tin (Sn)-Dissolved	mg/L	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	mg/L	0.00024	0.00032	0.000663	0.000661	0.000634	0.000425	0.000637
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Dissolved	mg/L	0.0074	<0.0050	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

Sample Location		MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A	MW-BGC11-BJ-4A
BGC Sample ID		BJ-4A	BJ-4A	BJ-4A	BJ-4A	BJ-4A	04A	BJ-4A
Date Sampled		10/10/2011	3/30/2012	6/26/2012	9/3/2012	1/28/2013	4/8/2013	7/13/2013
Time Sampled		11:10	14:05	14:45	00:00	00:00	00:00	00:00
ALS Sample ID		L1071509-1	L1130044-4	L1171422-4	L1205274-1	L1263921-4	L1288325-3	L1333226-3
Dissolved Metals	**Unit**							
Aluminum (Al)-Dissolved	mg/L	<0.0050	0.0055	0.0187	0.008	0.0036	0.0075	0.0089
Antimony (Sb)-Dissolved	mg/L	0.0546	0.00868	0.00463	0.00349	0.00155	0.00293	0.00354
Arsenic (As)-Dissolved	mg/L	0.0613	0.0295	0.019	0.0192	0.0159	0.014	0.015
Barium (Ba)-Dissolved	mg/L	0.069	0.039	0.0384	0.0338	0.0339	0.0338	0.0444
Beryllium (Be)-Dissolved	mg/L	<0.0010	<0.0010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth(Bi)- Dissolved	mg/L	<0.20	<0.20	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Dissolved	mg/L	<0.10	<0.10	0.066	0.072	0.063	0.064	0.07
Cadmium (Cd)-Dissolved	mg/L	0.000019	<0.000017	0.000012	0.000024	0.000011	0.000033	0.000034
Calcium (Ca)-Dissolved	mg/L	59.8	61.5	49.5	51.5	60.7	57.1	58.2
Chromium (Cr)-Dissolved	mg/L	<0.0010	<0.0010	0.00014	0.00015	<0.00010	<0.00010	0.00014
Cobalt (Co)-Dissolved	mg/L	0.00115	0.00037	0.00027	0.00026	0.00065	0.00012	0.00023
Copper (Cu)-Dissolved	mg/L	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	<0.00050	<0.00050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved	mg/L	0.0345	0.0314	0.0296	0.0306	0.0267	0.0274	0.0305
Magnesium (Mg)-Dissolved	mg/L	12.9	14.1	11.3	11.6	12.5	11.5	12.1
Manganese (Mn)-Dissolved	mg/L	0.116	0.126	0.0695	0.086	0.143	0.0521	0.0709
Mercury (Hg)-Dissolved	mg/L	0.000619	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	0.0028	0.0018	0.0012	0.00134	0.000939	0.000893	0.00203
Nickel (Ni)-Dissolved	mg/L	0.0054	<0.0010	0.00052	<0.00050	<0.00050	0.00058	0.00053
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Dissolved	mg/L	2.4	<2.0	1.62	1.59	1.59	1.61	1.61
Selenium (Se)-Dissolved	mg/L	<0.0010	<0.0010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Silicon (Si)-Dissolved	mg/L	2.89	3.23	3.07	2.9	3	3	3.04
Silver (Ag)-Dissolved	mg/L	<0.000020	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	mg/L	17.5	17.9	17.9	21	17.3	17.7	27.7
Strontium (Sr)-Dissolved	mg/L	2.71	3.04	2.56	2.63	2.93	2.81	2.88
Thallium (Tl)-Dissolved	mg/L	<0.00020	<0.00020	0.00002	0.000018	0.000017	0.000017	0.000018
Tin (Sn)-Dissolved	mg/L	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	mg/L	0.00166	0.00487	0.00269	0.00307	0.00224	0.00201	0.00471
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Dissolved	mg/L	0.0091	<0.0050	<0.0030	0.0031	<0.0030	0.0036	0.0033

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

	Sample Location	MW-BGC11-BJ-4A	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B	MW-BGC12-BJ-4B
	BGC Sample ID	BJ-4A	BJ-4B	Duplicate	BJ-4B	04B	BJ-4B	DUP1
	Date Sampled	9/25/2013	9/3/2012	9/3/2012	1/28/2013	4/8/2013	7/11/2013	7/11/2013
	Time Sampled	10:20	00:00	00:00	00:00	00:00	00:00	00:00
	ALS Sample ID	L1370058-3	L1205274-2	L1205274-5	L1263921-5	L1288325-4	L1331947-1	L1331947-4
Dissolved Metals	**Unit**							
Aluminum (Al)-Dissolved	mg/L	0.0126	0.0587	0.327	0.0074	0.387	0.12	0.174
Antimony (Sb)-Dissolved	mg/L	0.0027	0.00316	0.00381	0.00052	0.00109	0.00068	0.00065
Arsenic (As)-Dissolved	mg/L	0.0132	0.00985	0.0186	0.003	0.0161	0.0129	0.0128
Barium (Ba)-Dissolved	mg/L	0.033	0.0353	0.0386	0.0195	0.016	0.0204	0.022
Beryllium (Be)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth(Bi)- Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Dissolved	mg/L	0.07	0.035	0.069	0.018	0.055	0.06	0.058
Cadmium (Cd)-Dissolved	mg/L	0.000011	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Calcium (Ca)-Dissolved	mg/L	54.3	21.3	3.16	69.8	4.13	2.68	2.56
Chromium (Cr)-Dissolved	mg/L	<0.00010	0.00047	0.00043	<0.00010	0.00073	0.00039	0.00046
Cobalt (Co)-Dissolved	mg/L	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	mg/L	<0.00050	0.00086	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030	<0.030	0.039	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.000050	0.000087	<0.000050	0.000065	<0.000050	0.000051
Lithium (Li)-Dissolved	mg/L	0.0346	0.109	0.284	0.0158	0.21	0.226	0.227
Magnesium (Mg)-Dissolved	mg/L	12	3.38	0.212	7.33	0.832	0.341	0.319
Manganese (Mn)-Dissolved	mg/L	0.0534	0.00456	0.0029	0.0565	0.00159	0.00602	0.0061
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	0.000996	0.00149	0.000843	0.000441	0.000855	0.000877	0.000882
Nickel (Ni)-Dissolved	mg/L	0.00064	<0.00050	<0.00050	0.00061	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Dissolved	mg/L	1.62	1.42	1.58	0.915	0.794	0.822	0.808
Selenium (Se)-Dissolved	mg/L	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Silicon (Si)-Dissolved	mg/L	2.94	3.59	4.16	2.27	3.9	3.58	3.71
Silver (Ag)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.00006	<0.000010	<0.000010
Sodium (Na)-Dissolved	mg/L	22.6	57.6	120	6.6	107	113	113
Strontium (Sr)-Dissolved	mg/L	2.73	0.474	0.234	0.98	0.127	0.0953	0.0913
Thallium (Tl)-Dissolved	mg/L	0.000017	0.000015	0.000029	<0.000010	0.000013	<0.000010	<0.000010
Tin (Sn)-Dissolved	mg/L	<0.00010	<0.00010	0.00013	<0.00010	0.00019	<0.00010	<0.00010
Titanium (Ti)-Dissolved	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	mg/L	0.0022	0.00213	0.000173	0.000728	0.000138	0.000099	0.000098
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Dissolved	mg/L	0.0037	<0.0030	<0.0030	0.0173	<0.0030	<0.0030	<0.0030

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

	Sample Location	MW-BGC11-BJ-4B	MW-BGC11-BJ-5A	MW-BGC11-BJ-5A	MW-BGC11-BJ-5A	MW-BGC11-BJ-5B	MW-BGC11-BJ-5B	MW-BGC11-BJ-5B
	BGC Sample ID	BJ-4B	Bj-5A	BJ-5A	BJ-5A	BJ-5B	BJ-5B	BJ-5B
	Date Sampled	9/25/2013	10/10/2011	3/28/2012	6/26/2012	10/10/2011	3/28/2012	6/26/2012
	Time Sampled	9:50	14:12	09:30	09:45	13:30	10:10	10:20
	ALS Sample ID	L1370058-4	L1071509-3	L1129695-3	L1171422-5	L1071509-2	L1129695-4	L1171422-6
Dissolved Metals	**Unit**							
Aluminum (Al)-Dissolved	mg/L	0.0637	0.0566	0.148	5.8	0.0868	0.0297	0.0747
Antimony (Sb)-Dissolved	mg/L	0.00054	0.00277	0.00501	0.01	0.0113	0.00722	0.00457
Arsenic (As)-Dissolved	mg/L	0.0117	0.00641	0.0144	0.0958	0.0102	0.012	0.00533
Barium (Ba)-Dissolved	mg/L	0.0211	0.027	0.021	0.285	0.042	0.024	0.0492
Beryllium (Be)-Dissolved	mg/L	<0.00010	<0.0010	<0.0010	0.00047	<0.0010	<0.0010	<0.00020
Bismuth(Bi)- Dissolved	mg/L	<0.00050	<0.20	<0.20	<0.0010	<0.20	<0.20	<0.0010
Boron (B)-Dissolved	mg/L	0.062	<0.10	<0.10	0.047	<0.10	<0.10	0.039
Cadmium (Cd)-Dissolved	mg/L	<0.000010	0.000112	<0.000017	0.0012	<0.000017	<0.000017	0.00033
Calcium (Ca)-Dissolved	mg/L	2.44	31.3	30.1	63.9	58.5	48.6	56.9
Chromium (Cr)-Dissolved	mg/L	0.00065	<0.0010	<0.0010	0.00811	<0.0010	<0.0010	<0.00020
Cobalt (Co)-Dissolved	mg/L	<0.00010	0.00331	<0.00030	0.00437	<0.00030	<0.00030	0.00037
Copper (Cu)-Dissolved	mg/L	<0.00050	0.0024	<0.0010	0.0165	<0.0010	<0.0010	<0.0010
Iron (Fe)-Dissolved	mg/L	<0.030	0.072	0.038	9.15	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.00050	<0.00050	0.0186	<0.00050	<0.00050	<0.00010
Lithium (Li)-Dissolved	mg/L	0.219	0.0214	0.0865	0.0655	0.0094	0.0151	0.0232
Magnesium (Mg)-Dissolved	mg/L	0.256	3.22	6.1	9.37	5.91	5.74	6.38
Manganese (Mn)-Dissolved	mg/L	0.00676	0.569	0.0576	0.831	0.134	0.262	0.554
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.00010	<0.000010	<0.000010	<0.00010
Molybdenum (Mo)-Dissolved	mg/L	0.000902	0.0058	0.0054	0.0141	0.0075	0.0055	0.0158
Nickel (Ni)-Dissolved	mg/L	<0.00050	0.0026	<0.0010	0.0119	<0.0010	<0.0010	0.0017
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	<0.30	0.35	<0.30	<0.30	<0.30
Potassium (K)-Dissolved	mg/L	0.795	2.5	5	8.49	7.4	3.7	5.53
Selenium (Se)-Dissolved	mg/L	<0.00010	<0.0010	<0.0010	0.00072	<0.0010	<0.0010	<0.00020
Silicon (Si)-Dissolved	mg/L	3.5	1.94	3.42	19.2	3.78	2.8	2.57
Silver (Ag)-Dissolved	mg/L	<0.000010	<0.000020	<0.000020	0.00503	<0.000020	<0.000020	<0.000020
Sodium (Na)-Dissolved	mg/L	107	12.3	65.2	29.2	12.7	9.8	14.5
Strontium (Sr)-Dissolved	mg/L	0.0958	0.811	2.16	2.54	0.747	1.55	1.66
Thallium (Tl)-Dissolved	mg/L	<0.000010	<0.00020	<0.00020	0.000746	<0.00020	<0.00020	0.000129
Tin (Sn)-Dissolved	mg/L	<0.00010	0.00091	<0.00050	<0.00020	0.00116	<0.00050	<0.00020
Titanium (Ti)-Dissolved	mg/L	<0.010	<0.010	<0.010	0.102	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	mg/L	0.000099	0.00022	0.00167	0.00156	0.00146	0.00082	0.00107
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	0.0094	<0.0010	<0.0010	<0.0020
Zinc (Zn)-Dissolved	mg/L	<0.0030	0.0102	<0.0050	0.0425	<0.0050	<0.0050	<0.0060

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

	Sample Location	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A
	BGC Sample ID	BJ-6A	BJ-6A	Duplicate	BJ-6A	BJ-6A	BJ-6A	06A
	Date Sampled	10/8/2011	3/30/2012	3/30/2012	6/26/2012	9/3/2012	1/27/2013	4/7/2013
	Time Sampled	14:50	13:25	13:40	11:45	00:00	00:00	00:00
	ALS Sample ID	L1071509-4	L1130044-5	L1130044-1	L1171422-7	L1205274-3	L1263921-6	L1287525-3
Dissolved Metals	**Unit**							
Aluminum (Al)-Dissolved	mg/L	0.021	0.0102	0.0145	0.353	0.0967	0.0538	0.0252
Antimony (Sb)-Dissolved	mg/L	0.00178	0.00275	0.00306	0.0112	0.00975	0.00677	0.00339
Arsenic (As)-Dissolved	mg/L	0.00172	0.00375	0.00354	0.0795	0.0844	0.0293	0.0281
Barium (Ba)-Dissolved	mg/L	0.036	0.035	0.037	0.0446	0.0427	0.0499	0.0501
Beryllium (Be)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.00020	<0.00020	<0.00010	<0.00020
Bismuth(Bi)- Dissolved	mg/L	<0.20	<0.20	<0.20	<0.0010	<0.0010	<0.00050	<0.0010
Boron (B)-Dissolved	mg/L	<0.10	<0.10	<0.10	<0.020	0.021	0.027	0.032
Cadmium (Cd)-Dissolved	mg/L	0.000359	0.000029	0.000028	<0.000020	<0.000020	<0.000010	<0.000020
Calcium (Ca)-Dissolved	mg/L	68.7	64.1	64.7	33.6	34.5	49.2	42.3
Chromium (Cr)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	0.00081	<0.00020	<0.00010	<0.00020
Cobalt (Co)-Dissolved	mg/L	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00010	<0.00020
Copper (Cu)-Dissolved	mg/L	0.0024	<0.0010	<0.0010	0.0013	<0.0010	<0.00050	<0.00050
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00010	0.00024	0.000222	<0.00010
Lithium (Li)-Dissolved	mg/L	<0.0050	<0.0050	<0.0050	0.0021	0.0038	0.00664	0.0066
Magnesium (Mg)-Dissolved	mg/L	3.45	4.34	4.33	0.34	1.71	3.8	3.57
Manganese (Mn)-Dissolved	mg/L	0.0422	0.0617	0.0617	<0.00010	0.00236	0.0423	0.0465
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.00010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	0.0176	0.0094	0.0035	0.00232
Nickel (Ni)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	0.0031
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Dissolved	mg/L	2.5	2.2	2.2	3.79	2.79	2.66	2.52
Selenium (Se)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	0.00169	0.00106	0.00064	0.00023
Silicon (Si)-Dissolved	mg/L	2.26	2.93	2.93	4.36	3.51	3.65	3.66
Silver (Ag)-Dissolved	mg/L	<0.000020	<0.000020	<0.000020	0.000049	0.000021	0.000019	<0.000020
Sodium (Na)-Dissolved	mg/L	2.5	2.9	2.8	5.3	5	4.5	4.8
Strontium (Sr)-Dissolved	mg/L	0.894	1.99	1.96	1.23	1.7	2.22	2
Thallium (Tl)-Dissolved	mg/L	<0.00020	<0.00020	<0.00020	0.000051	0.000056	0.000068	0.000053
Tin (Sn)-Dissolved	mg/L	0.00052	<0.00050	<0.00050	<0.00020	<0.00020	<0.00010	<0.00020
Titanium (Ti)-Dissolved	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	mg/L	<0.00020	0.00032	0.0003	<0.000020	0.000231	0.000617	0.000531
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	0.0051	0.002	<0.0010	<0.0020
Zinc (Zn)-Dissolved	mg/L	0.0548	<0.0050	<0.0050	<0.0060	<0.0060	<0.0030	<0.0030

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

	Sample Location	MW-BGC11-BJ-6A	MW-BGC11-BJ-6A	MW-BGC12-BJ-6B	MW-BGC12-BJ-6B	MW-BGC12-BJ-6B	MW-BGC11-BJ-8A	MW-BGC12-BJ-8A
	BGC Sample ID	BJ-6A	BJ-6A	BJ-6B	BJ-6B	06B	BJ-8A	BJ-8A
	Date Sampled	7/11/2013	9/25/2013	9/3/2012	1/27/2013	4/7/2013	6/28/2012	9/4/2012
	Time Sampled	00:00	14:00	00:00	00:00	00:00	14:30	00:00
	ALS Sample ID	L1331947-2	L1370058-6	L1205274-4	L1263921-7	L1287525-4	L1174115-1	L1207447-3
Dissolved Metals	**Unit**							
Aluminum (Al)-Dissolved	mg/L	0.0898	0.827	0.504	0.534	0.15	0.02	0.0123
Antimony (Sb)-Dissolved	mg/L	0.0037	0.00483	0.0108	0.00518	0.00261	0.00137	0.0009
Arsenic (As)-Dissolved	mg/L	0.026	0.0222	0.0294	0.0263	0.0192	0.00691	0.00703
Barium (Ba)-Dissolved	mg/L	0.0471	0.136	0.039	0.0391	0.0334	0.0223	0.0192
Beryllium (Be)-Dissolved	mg/L	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth(Bi)- Dissolved	mg/L	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Dissolved	mg/L	0.024	<0.020	0.145	0.149	0.14	0.013	0.013
Cadmium (Cd)-Dissolved	mg/L	0.000016	<0.000020	<0.000010	0.000066	<0.000010	0.000012	<0.000010
Calcium (Ca)-Dissolved	mg/L	44.4	47.7	3.68	2.86	3.36	27.7	26.3
Chromium (Cr)-Dissolved	mg/L	<0.00010	<0.00020	0.00019	0.00016	0.00011	0.00019	0.00018
Cobalt (Co)-Dissolved	mg/L	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	mg/L	<0.00050	0.00089	0.00092	0.00117	<0.00050	<0.00050	<0.00050
Iron (Fe)-Dissolved	mg/L	<0.030	0.32	0.135	0.145	0.044	<0.030	0.045
Lead (Pb)-Dissolved	mg/L	0.000142	0.00103	0.00144	0.0016	0.000607	<0.000050	<0.000050
Lithium (Li)-Dissolved	mg/L	0.00655	0.0056	0.141	0.144	0.128	0.00913	0.00831
Magnesium (Mg)-Dissolved	mg/L	3.74	4.45	0.153	0.137	0.147	5.06	4.88
Manganese (Mn)-Dissolved	mg/L	0.0482	0.0364	0.00664	0.00805	0.00801	0.0118	0.00468
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	0.00246	0.00234	0.00644	0.00539	0.00371	0.00246	0.00159
Nickel (Ni)-Dissolved	mg/L	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Dissolved	mg/L	2.48	2.67	2.67	2.42	2.19	0.858	0.54
Selenium (Se)-Dissolved	mg/L	0.0003	0.00031	0.00075	0.00051	0.00021	0.00019	0.00017
Silicon (Si)-Dissolved	mg/L	3.81	5.49	5.49	4.83	3.91	2.03	1.9
Silver (Ag)-Dissolved	mg/L	0.000014	0.000048	0.000089	0.000112	0.000028	<0.000010	<0.000010
Sodium (Na)-Dissolved	mg/L	5.1	3.6	67.9	66.3	66.6	5.9	6.9
Strontium (Sr)-Dissolved	mg/L	1.98	2.18	0.214	0.182	0.19	0.655	0.608
Thallium (Tl)-Dissolved	mg/L	0.00006	0.000085	0.000037	0.000035	0.000023	0.000011	<0.000010
Tin (Sn)-Dissolved	mg/L	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	mg/L	<0.010	0.023	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	mg/L	0.000689	0.00039	0.000135	0.000127	0.000073	0.000249	0.000289
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0020	0.0023	0.0021	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Dissolved	mg/L	<0.0030	0.0051	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

	Sample Location	MW-BGC11-BJ-8A	MW-BGC11-BJ-8A	MW-BGC11-BJ-8A	MW-BGC12-BJ-8A	MW-BGC11-BJ-8A	MW-BGC11-BJ-8A	MW-BGC11-BJ-8B
	BGC Sample ID	BJ-8A	BJ-DUP1	08A	BJ-8A	BJ-3A	BJ-DUP1	BJ-8B
	Date Sampled	1/28/2013	1/28/2013	4/8/2013	7/14/2013	9/26/2013	26-SEP-13	6/28/2012
	Time Sampled	00:00	00:00	00:00	00:00	11:30	00:00	15:30
	ALS Sample ID	L1263921-8	L1263921-10	L1288325-1	L1333226-4	L1370207-2	L1370207-4	L1174115-2
Dissolved Metals	**Unit**							
Aluminum (Al)-Dissolved	mg/L	0.016	0.0098	0.0142	0.0138	0.013	0.0153	2.12
Antimony (Sb)-Dissolved	mg/L	0.00081	0.00084	0.00085	0.00086	0.00086	0.00084	0.00148
Arsenic (As)-Dissolved	mg/L	0.00689	0.00701	0.00705	0.00775	0.00825	0.00804	0.0492
Barium (Ba)-Dissolved	mg/L	0.0213	0.0208	0.0218	0.0203	0.0191	0.0191	0.0575
Beryllium (Be)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth(Bi)- Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Dissolved	mg/L	0.011	0.011	0.012	<0.010	0.011	<0.010	0.017
Cadmium (Cd)-Dissolved	mg/L	<0.000010	<0.000010	0.000011	<0.000010	<0.000010	0.000013	<0.000010
Calcium (Ca)-Dissolved	mg/L	30.6	29.6	31.1	27.8	27.2	27.5	21.5
Chromium (Cr)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00152
Cobalt (Co)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00029
Copper (Cu)-Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00108
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.768
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000639
Lithium (Li)-Dissolved	mg/L	0.00949	0.0094	0.0106	0.00901	0.00892	0.00903	0.00739
Magnesium (Mg)-Dissolved	mg/L	5.32	5.41	5.4	5.28	5.53	5.55	2.52
Manganese (Mn)-Dissolved	mg/L	0.00341	0.0033	0.00417	0.00432	0.00251	0.00239	0.0242
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	0.00173	0.00164	0.00163	0.00142	0.00139	0.00141	0.00301
Nickel (Ni)-Dissolved	mg/L	0.00084	0.00063	0.00055	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Dissolved	mg/L	0.519	0.52	0.484	0.454	0.441	0.442	1.86
Selenium (Se)-Dissolved	mg/L	0.00019	0.00019	0.00018	0.00017	0.00017	0.00015	0.00039
Silicon (Si)-Dissolved	mg/L	1.99	1.95	2.06	2.04	1.99	2.04	10.8
Silver (Ag)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000015
Sodium (Na)-Dissolved	mg/L	6.5	6.1	5.2	4	3.9	4	12.4
Strontium (Sr)-Dissolved	mg/L	0.696	0.706	0.737	0.701	0.679	0.685	0.328
Thallium (Tl)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.00005
Tin (Sn)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00016
Titanium (Ti)-Dissolved	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.04
Uranium (U)-Dissolved	mg/L	0.000298	0.000284	0.000231	0.000189	0.000181	0.000186	0.00111
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0045
Zinc (Zn)-Dissolved	mg/L	0.0063	0.0044	<0.0030	<0.0030	<0.0030	<0.0030	0.0044

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

	Sample Location	MW-BGC12-BJ-8B	MW-BGC11-BJ-8B	MW-BGC11-BJ-8B	MW-BGC12-BJ-8B	MW-BGC11-BJ-8B	MW-BGC12-BJ-12A	MW-BGC12-BJ-12A
	BGC Sample ID	BJ-8B	BJ-8B	08B	BJ-8B	BJ-8B	BJ-12A	BJ-12A
	Date Sampled	9/4/2012	1/28/2013	4/8/2013	7/14/2013	9/26/2013	9/5/2012	7/15/2013
	Time Sampled	00:00	00:00	00:00	00:00	8:10	12:40	00:00
	ALS Sample ID	L1207447-4	L1263921-9	L1288325-2	L1333226-5	L1370207-3	L1206550-1	L1335562-1
Dissolved Metals	**Unit**							
Aluminum (Al)-Dissolved	mg/L	0.0497	0.0173	3.59	0.0352	0.0312	0.0281	0.0119
Antimony (Sb)-Dissolved	mg/L	0.00074	0.00072	0.00092	0.00067	0.00067	0.00289	0.00055
Arsenic (As)-Dissolved	mg/L	0.0199	0.0159	0.0235	0.0167	0.0166	0.0609	0.00433
Barium (Ba)-Dissolved	mg/L	0.0214	0.0171	0.0785	0.0156	0.0152	0.0412	0.0706
Beryllium (Be)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth(Bi)- Dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Dissolved	mg/L	0.01	<0.010	0.012	<0.010	<0.010	0.015	0.02
Cadmium (Cd)-Dissolved	mg/L	<0.000010	<0.000010	0.000012	<0.000010	<0.000010	0.000156	0.000039
Calcium (Ca)-Dissolved	mg/L	30.8	33.2	32.5	32.2	30.4	72.1	73.1
Chromium (Cr)-Dissolved	mg/L	0.00016	<0.00010	0.00287	0.00013	<0.00010	<0.00010	0.00186
Cobalt (Co)-Dissolved	mg/L	<0.00010	<0.00010	0.00069	<0.00010	<0.00010	0.00067	0.00072
Copper (Cu)-Dissolved	mg/L	<0.00050	<0.00050	0.00164	<0.00050	<0.00050	0.00097	<0.00050
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	1.06	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.000050	0.000739	<0.000050	<0.000050	0.000053	<0.000050
Lithium (Li)-Dissolved	mg/L	0.00485	0.00545	0.00557	0.00501	0.00525	0.00638	0.01
Magnesium (Mg)-Dissolved	mg/L	3.37	3.53	4.45	3.39	3.75	9.83	10.1
Manganese (Mn)-Dissolved	mg/L	0.000784	0.00822	0.0929	0.000513	0.00066	0.361	0.314
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	0.00171	0.00224	0.00218	0.00166	0.00161	0.0023	0.00297
Nickel (Ni)-Dissolved	mg/L	<0.00050	0.00132	0.00226	<0.00050	<0.00050	0.00091	0.00716
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Dissolved	mg/L	0.592	0.631	1.59	0.598	0.544	4.88	4.53
Selenium (Se)-Dissolved	mg/L	0.00033	0.00024	0.00026	0.00023	0.00021	<0.00010	0.0001
Silicon (Si)-Dissolved	mg/L	2.22	1.97	7.96	2.04	1.92	3.36	3.63
Silver (Ag)-Dissolved	mg/L	<0.000010	<0.000010	0.000085	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	mg/L	2.7	2.3	2.4	2.3	2.4	5.5	6.2
Strontium (Sr)-Dissolved	mg/L	0.465	0.451	0.541	0.44	0.446	1.08	1.37
Thallium (Tl)-Dissolved	mg/L	<0.000010	<0.000010	0.00006	<0.000010	<0.000010	0.000075	0.000024
Tin (Sn)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00018
Titanium (Ti)-Dissolved	mg/L	<0.010	<0.010	0.056	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	mg/L	0.000322	0.000156	0.00027	0.00016	0.000156	0.00245	0.000257
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.0010	0.004	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Dissolved	mg/L	<0.0030	<0.0030	0.0063	<0.0030	<0.0030	0.0059	0.0057

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

Sample Location		MW-BGC11-BJ-12A	Drill Water	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)
BGC Sample ID		BJ-12A	DRW	FB	FB	FB	FB
Date Sampled		9/30/2013	6/27/2012	3/30/2012	10/11/2011	6/27/2012	9/5/2012
Time Sampled		16:15	11:00	14:30	9:00	11:40	16:00
ALS Sample ID		L1372080-1	L1171422-10	L1130044-2	L1071509-8	L1171422-9	L1206550-2
Dissolved Metals	**Unit**						
Aluminum (Al)-Dissolved	mg/L	0.005	0.25	<0.0050	<0.00050	<0.00010	<0.00010
Antimony (Sb)-Dissolved	mg/L	0.0013	0.0556	<0.00050	<0.00050	<0.00010	<0.00010
Arsenic (As)-Dissolved	mg/L	0.0252	0.0258	<0.00050	<0.020	<0.000050	<0.000050
Barium (Ba)-Dissolved	mg/L	0.0398	0.0181	<0.020	<0.0010	<0.00010	<0.00010
Beryllium (Be)-Dissolved	mg/L	<0.00010	<0.0020	<0.0010	<0.20	<0.00050	<0.00050
Bismuth(Bi)- Dissolved	mg/L	<0.00050	<0.010	<0.20	<0.10	<0.010	<0.010
Boron (B)-Dissolved	mg/L	0.022	<0.20	<0.10	<0.000017	<0.000010	<0.000010
Cadmium (Cd)-Dissolved	mg/L	<0.000010	<0.00020	<0.000017	<0.10	<0.020	<0.020
Calcium (Ca)-Dissolved	mg/L	85.4	31.1	<0.10	<0.0010	<0.00010	<0.00010
Chromium (Cr)-Dissolved	mg/L	0.00012	<0.0020	<0.0010	<0.00030	<0.00010	<0.00010
Cobalt (Co)-Dissolved	mg/L	0.00033	<0.0020	<0.00030	<0.0010	<0.00050	<0.00050
Copper (Cu)-Dissolved	mg/L	<0.00050	<0.010	<0.0010	<0.030	<0.030	<0.030
Iron (Fe)-Dissolved	mg/L	<0.030	<0.060	<0.030	<0.00050	<0.000050	<0.000050
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.0010	<0.00050	<0.0050	<0.00050	<0.00050
Lithium (Li)-Dissolved	mg/L	0.0131	0.017	<0.0050	<0.10	<0.0050	<0.0050
Magnesium (Mg)-Dissolved	mg/L	13	4.88	<0.10	<0.00030	<0.000050	<0.000050
Manganese (Mn)-Dissolved	mg/L	0.344	0.0382	<0.00030	<0.000010	<0.000010	<0.000010
Mercury (Hg)-Dissolved	mg/L	<0.000010	<0.00050	<0.000010	<0.0010	<0.000050	<0.000050
Molybdenum (Mo)-Dissolved	mg/L	0.00212	0.0317	<0.0010	<0.0010	<0.00050	<0.00050
Nickel (Ni)-Dissolved	mg/L	0.00213	<0.010	<0.0010	<0.30	<0.30	<0.30
Phosphorus (P)-Dissolved	mg/L	<0.30	<0.60	<0.30	<2.0	<0.050	<0.050
Potassium (K)-Dissolved	mg/L	4.47	41.1	<2.0	<0.0010	<0.00010	<0.00010
Selenium (Se)-Dissolved	mg/L	<0.00010	<0.0020	<0.0010	<0.050	<0.050	<0.050
Silicon (Si)-Dissolved	mg/L	3.69	2.3	<0.050	<0.000020	<0.000010	<0.000010
Silver (Ag)-Dissolved	mg/L	<0.000010	<0.00020	<0.000020	<2.0	<2.0	<2.0
Sodium (Na)-Dissolved	mg/L	9.2	<4.0	<2.0	<0.0050	<0.00020	<0.00020
Strontium (Sr)-Dissolved	mg/L	1.78	0.212	<0.0050	<0.00020	<0.000010	<0.000010
Thallium (Tl)-Dissolved	mg/L	0.000018	<0.00020	<0.00020	<0.00050	<0.00010	<0.00010
Tin (Sn)-Dissolved	mg/L	<0.00010	<0.0020	<0.00050	<0.010	<0.010	<0.010
Titanium (Ti)-Dissolved	mg/L	0.01	<0.020	<0.010	<0.00020	<0.000010	<0.000010
Uranium (U)-Dissolved	mg/L	0.000364	<0.00020	<0.00020	<0.0010	<0.0010	<0.0010
Vanadium (V)-Dissolved	mg/L	<0.0010	<0.020	<0.0010	<0.0050	<0.0030	<0.0030
Zinc (Zn)-Dissolved	mg/L	0.003	<0.060	<0.0050	<0.0050	<0.0030	<0.0030

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

Sample Location		Field Blank (De-Ionized water)	Field Blank (De-Ionized water)	Field Blank (De-Ionized water)	BJ-FB	Travel Blank	Travel Blank
BGC Sample ID		BJ-FB	FB	BJ-FB	BJ-FB	TRAVEL BLANK	TB
Date Sampled		1/30/2013	4/8/2013	7/11/2013	26-SEP-13	6/27/2012	9/5/2012
Time Sampled		00:00	0:00	00:00	00:00	0:00	00:00
ALS Sample ID		L1264492-1	L1288325-5	L1331947-5	L1370207-5	L1171422-11	L1206550-3
Dissolved Metals	**Unit**						
Aluminum (Al)-Dissolved	mg/L	<0.00010	<0.00010	<0.0030	<0.0030	-	-
Antimony (Sb)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	-	-
Arsenic (As)-Dissolved	mg/L	<0.000050	<0.000050	<0.00010	<0.00010	-	-
Barium (Ba)-Dissolved	mg/L	<0.00010	<0.00010	<0.000050	<0.000050	-	-
Beryllium (Be)-Dissolved	mg/L	<0.00050	<0.00050	<0.00010	<0.00010	-	-
Bismuth(Bi)- Dissolved	mg/L	<0.010	<0.010	<0.00050	<0.00050	-	-
Boron (B)-Dissolved	mg/L	<0.000010	<0.000010	<0.010	<0.010	-	-
Cadmium (Cd)-Dissolved	mg/L	<0.020	<0.020	<0.000010	<0.000010	-	-
Calcium (Ca)-Dissolved	mg/L	<0.00010	<0.00010	<0.020	<0.020	-	-
Chromium (Cr)-Dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	-	-
Cobalt (Co)-Dissolved	mg/L	<0.00050	<0.00050	<0.00010	<0.00010	-	-
Copper (Cu)-Dissolved	mg/L	<0.030	<0.030	<0.00050	<0.00050	-	-
Iron (Fe)-Dissolved	mg/L	<0.000050	<0.000050	<0.030	<0.030	-	-
Lead (Pb)-Dissolved	mg/L	<0.00050	<0.00050	<0.000050	<0.000050	-	-
Lithium (Li)-Dissolved	mg/L	<0.0050	<0.0050	<0.00050	<0.00050	-	-
Magnesium (Mg)-Dissolved	mg/L	<0.000050	<0.000050	<0.0050	<0.0050	-	-
Manganese (Mn)-Dissolved	mg/L	<0.000010	<0.000010	<0.000050	<0.000050	-	-
Mercury (Hg)-Dissolved	mg/L	<0.000050	<0.000050	<0.000010	<0.000010	-	-
Molybdenum (Mo)-Dissolved	mg/L	<0.00050	<0.00050	<0.000050	<0.000050	-	-
Nickel (Ni)-Dissolved	mg/L	<0.30	<0.30	<0.00050	<0.00050	-	-
Phosphorus (P)-Dissolved	mg/L	<0.050	<0.050	<0.30	<0.30	-	-
Potassium (K)-Dissolved	mg/L	<0.00010	<0.00010	<0.050	<0.050	-	-
Selenium (Se)-Dissolved	mg/L	<0.050	<0.050	<0.00010	<0.00010	-	-
Silicon (Si)-Dissolved	mg/L	<0.000010	<0.000010	<0.050	<0.050	-	-
Silver (Ag)-Dissolved	mg/L	<2.0	<2.0	<0.000010	<0.000010	-	-
Sodium (Na)-Dissolved	mg/L	<0.00020	<0.00020	<2.0	<2.0	-	-
Strontium (Sr)-Dissolved	mg/L	<0.000010	<0.000010	<0.00020	<0.00020	-	-
Thallium (Tl)-Dissolved	mg/L	<0.00010	<0.00010	<0.000010	<0.000010	-	-
Tin (Sn)-Dissolved	mg/L	<0.010	<0.010	<0.00010	<0.00010	-	-
Titanium (Ti)-Dissolved	mg/L	<0.000010	<0.000010	<0.010	<0.010	-	-
Uranium (U)-Dissolved	mg/L	<0.0010	<0.0010	<0.000010	<0.000010	-	-
Vanadium (V)-Dissolved	mg/L	<0.0030	<0.0030	<0.0010	<0.0010	-	-
Zinc (Zn)-Dissolved	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	-	-

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations

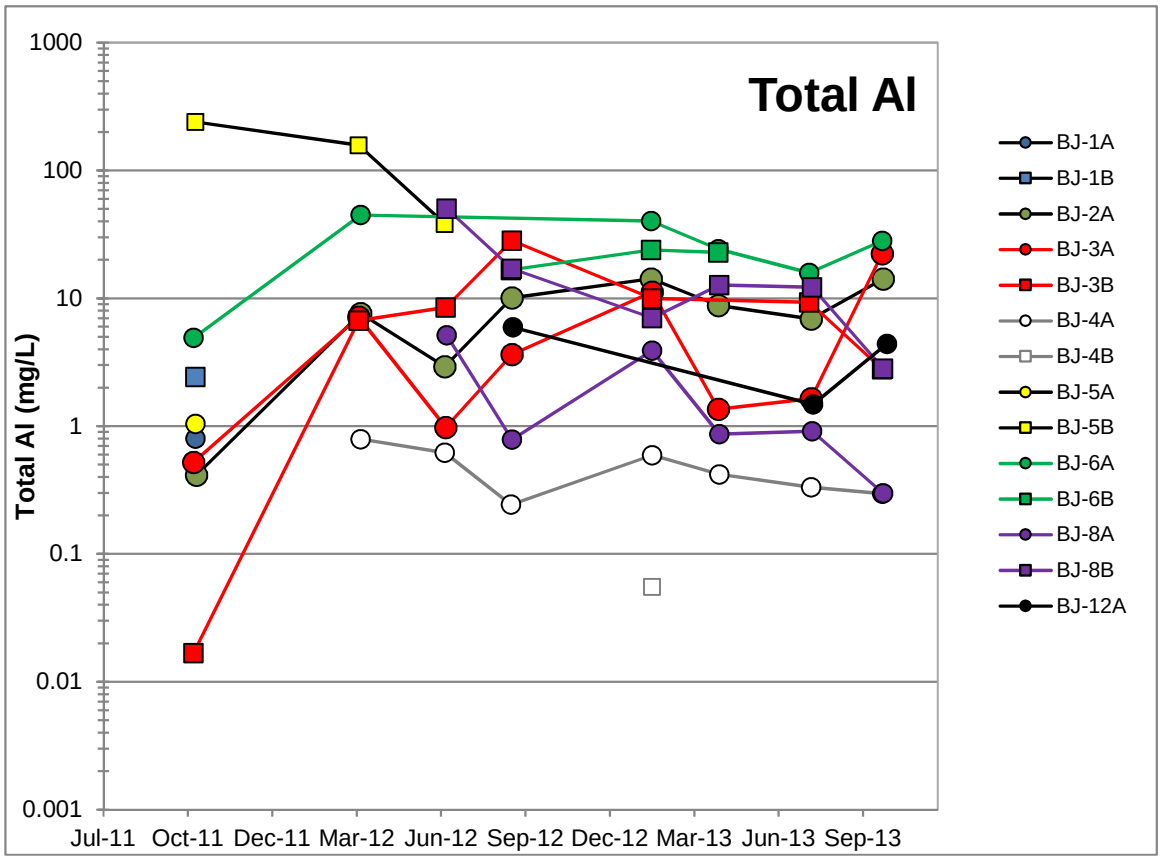
Table E-3: Groundwater Analytical Chemistry Results (Dissolved Metals)

Sample Location		Travel Blank	Travel Blank	TRAVEL BLANK
BGC Sample ID		TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK
Date Sampled		1/30/2013	4/7/2013	25-SEP-13
Time Sampled		00:00	00:00	00:00
ALS Sample ID		L1264492-2	L1287525-6	L1370058-5
Dissolved Metals	**Unit**			
Aluminum (Al)-Dissolved	mg/L	-	-	-
Antimony (Sb)-Dissolved	mg/L	-	-	-
Arsenic (As)-Dissolved	mg/L	-	-	-
Barium (Ba)-Dissolved	mg/L	-	-	-
Beryllium (Be)-Dissolved	mg/L	-	-	-
Bismuth(Bi)- Dissolved	mg/L	-	-	-
Boron (B)-Dissolved	mg/L	-	-	-
Cadmium (Cd)-Dissolved	mg/L	-	-	-
Calcium (Ca)-Dissolved	mg/L	-	-	-
Chromium (Cr)-Dissolved	mg/L	-	-	-
Cobalt (Co)-Dissolved	mg/L	-	-	-
Copper (Cu)-Dissolved	mg/L	-	-	-
Iron (Fe)-Dissolved	mg/L	-	-	-
Lead (Pb)-Dissolved	mg/L	-	-	-
Lithium (Li)-Dissolved	mg/L	-	-	-
Magnesium (Mg)-Dissolved	mg/L	-	-	-
Manganese (Mn)-Dissolved	mg/L	-	-	-
Mercury (Hg)-Dissolved	mg/L	-	-	-
Molybdenum (Mo)-Dissolved	mg/L	-	-	-
Nickel (Ni)-Dissolved	mg/L	-	-	-
Phosphorus (P)-Dissolved	mg/L	-	-	-
Potassium (K)-Dissolved	mg/L	-	-	-
Selenium (Se)-Dissolved	mg/L	-	-	-
Silicon (Si)-Dissolved	mg/L	-	-	-
Silver (Ag)-Dissolved	mg/L	-	-	-
Sodium (Na)-Dissolved	mg/L	-	-	-
Strontium (Sr)-Dissolved	mg/L	-	-	-
Thallium (Tl)-Dissolved	mg/L	-	-	-
Tin (Sn)-Dissolved	mg/L	-	-	-
Titanium (Ti)-Dissolved	mg/L	-	-	-
Uranium (U)-Dissolved	mg/L	-	-	-
Vanadium (V)-Dissolved	mg/L	-	-	-
Zinc (Zn)-Dissolved	mg/L	-	-	-

LEGEND
Concentration exceeds CCME Guideline
Concentration exceeds BC MOE AW 30-d avg. Standard
Concentration exceeds BC MOE AW Max. Standard
Concentration exceeds BC MOE DW Standard

Note: The British Columbia drinking water (BC MOE DW) and protection of aquatic life (BC MOE AW) standards as well as the Canadian Council of Ministers of the Environment (CCME) are shown in Table 10.

For CCME the results are compared to the long term max. concentrations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Total Al (mg/L)
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0.01
0.001
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Oct-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
BJ-1A
BJ-1B
BJ-2A
BJ-3A
BJ-3B
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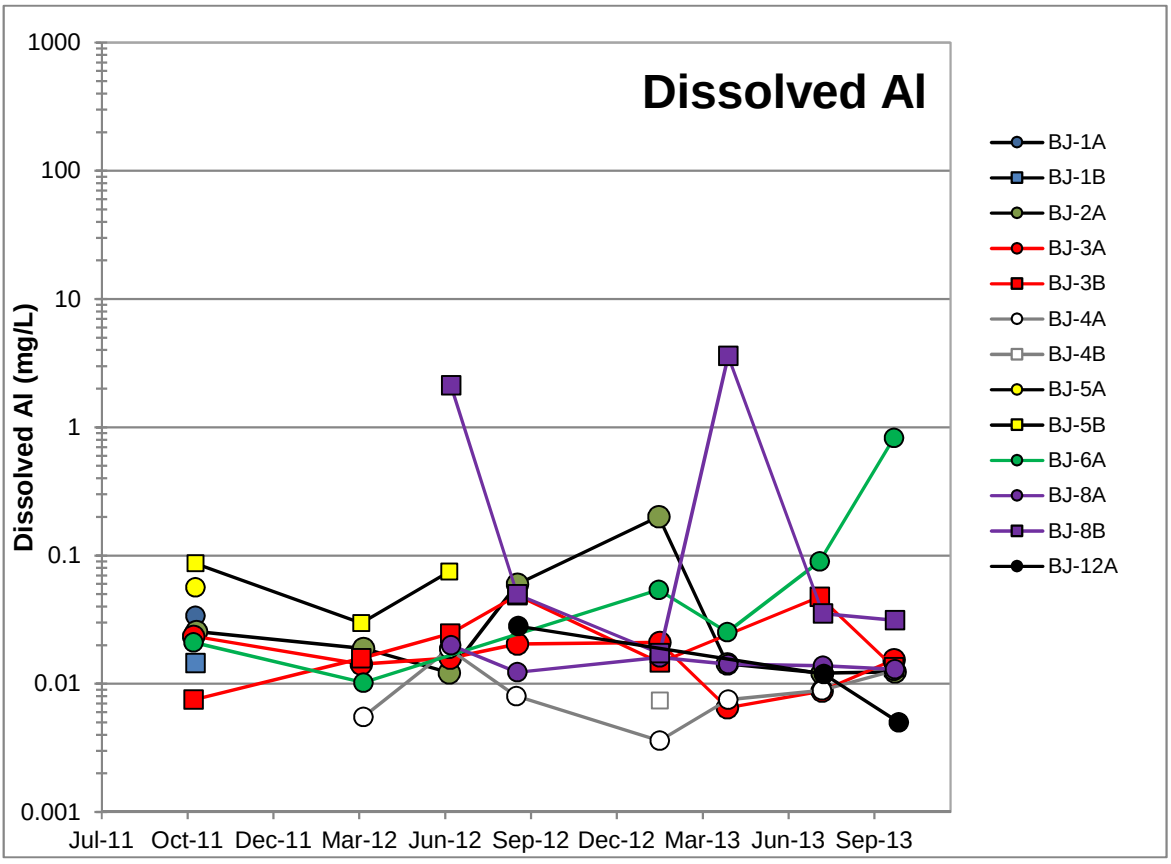
Dissolved Al
Dissolved Al (mg/L)
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100
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0.1
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Jul-11
Oct-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
BJ-1A
BJ-1B
BJ-2A
BJ-3A
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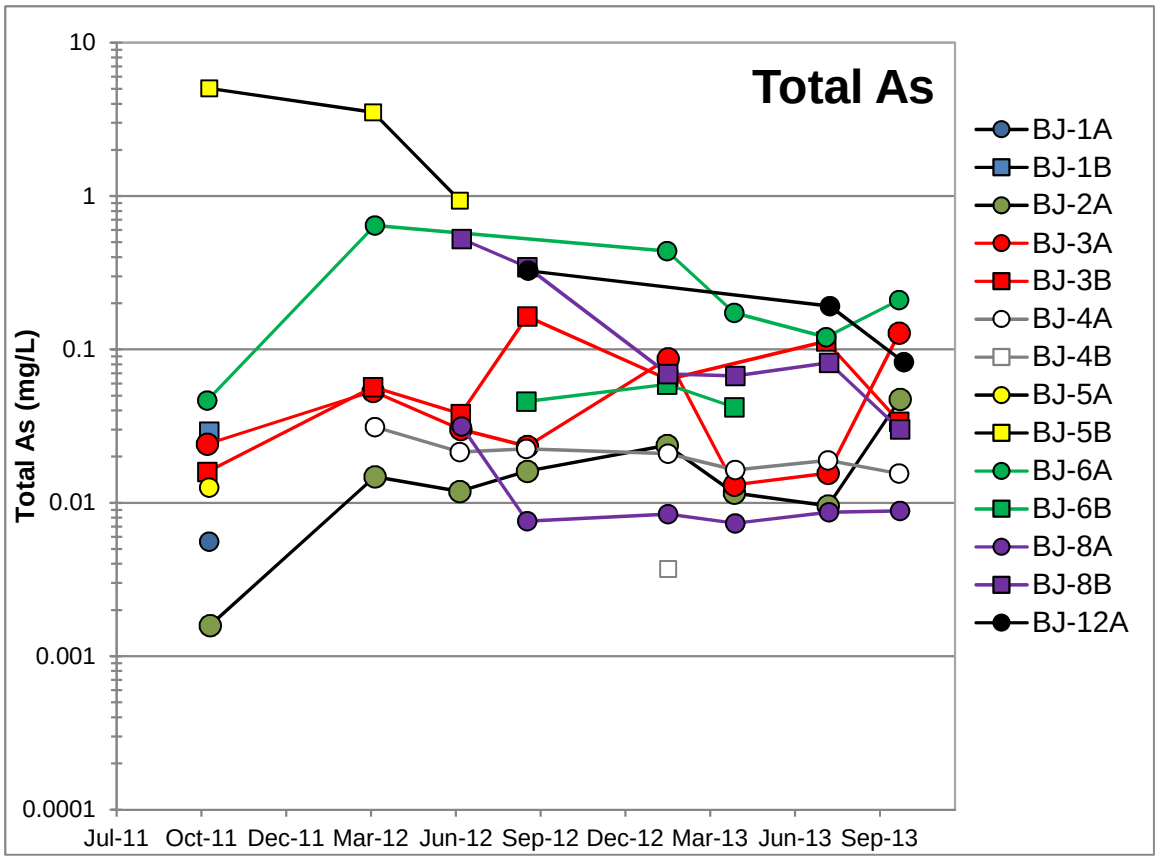
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Total As (mg/L)
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Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
BJ-1A
BJ-1B
BJ-2A
BJ-3A
BJ-3B
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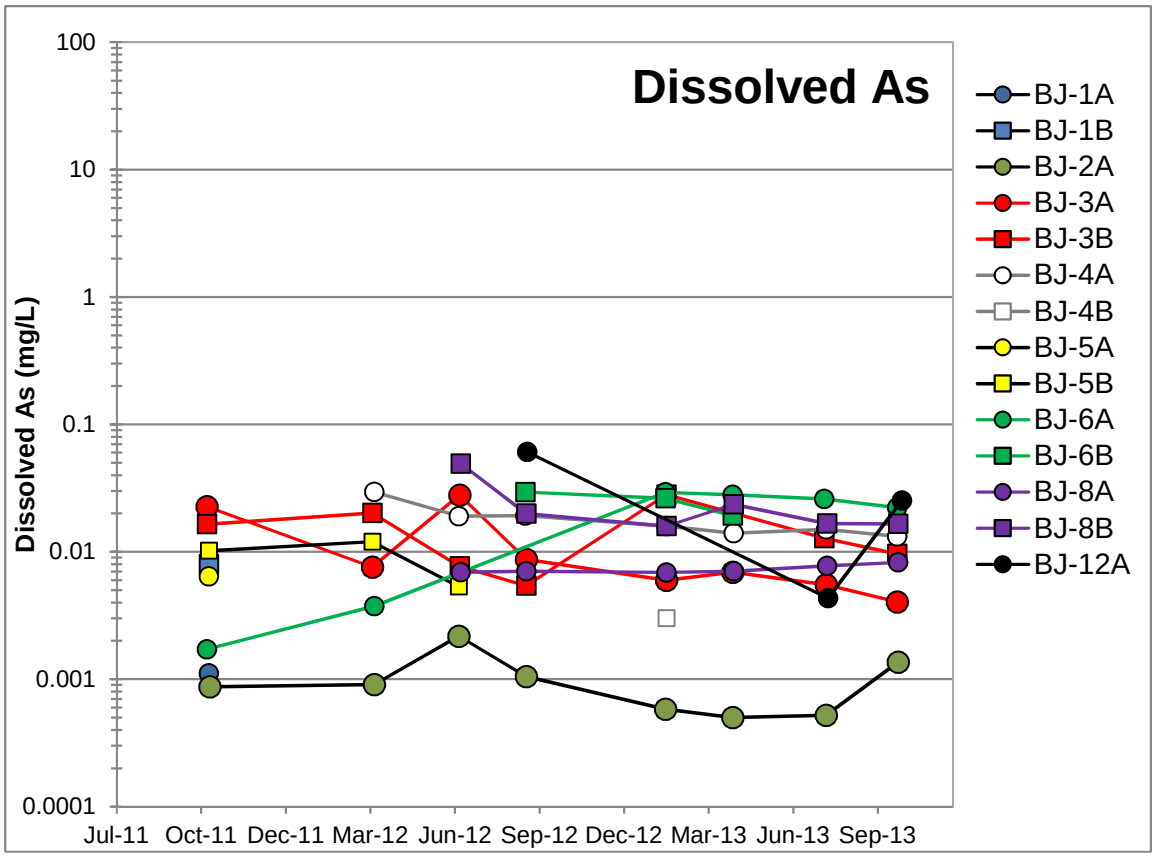
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Dissolved As (mg/L)
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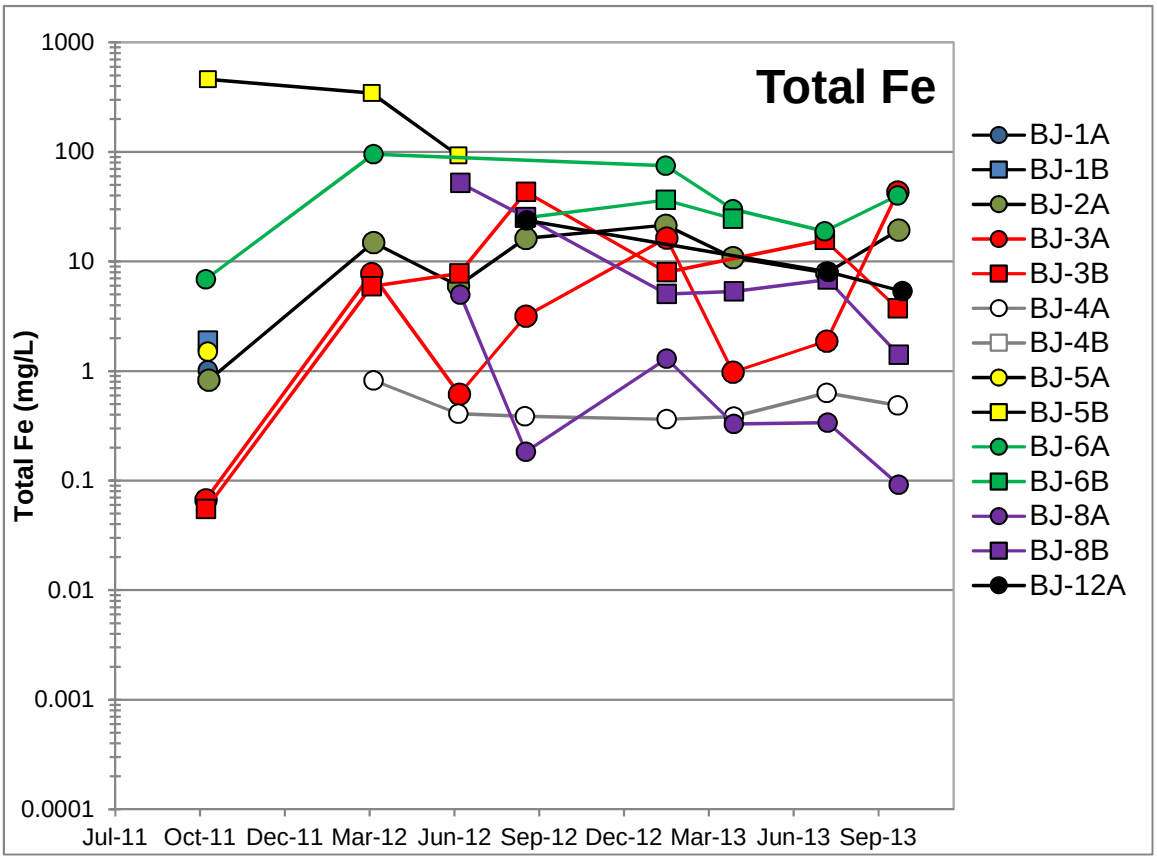
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0.001
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Mar-13
Jun-13
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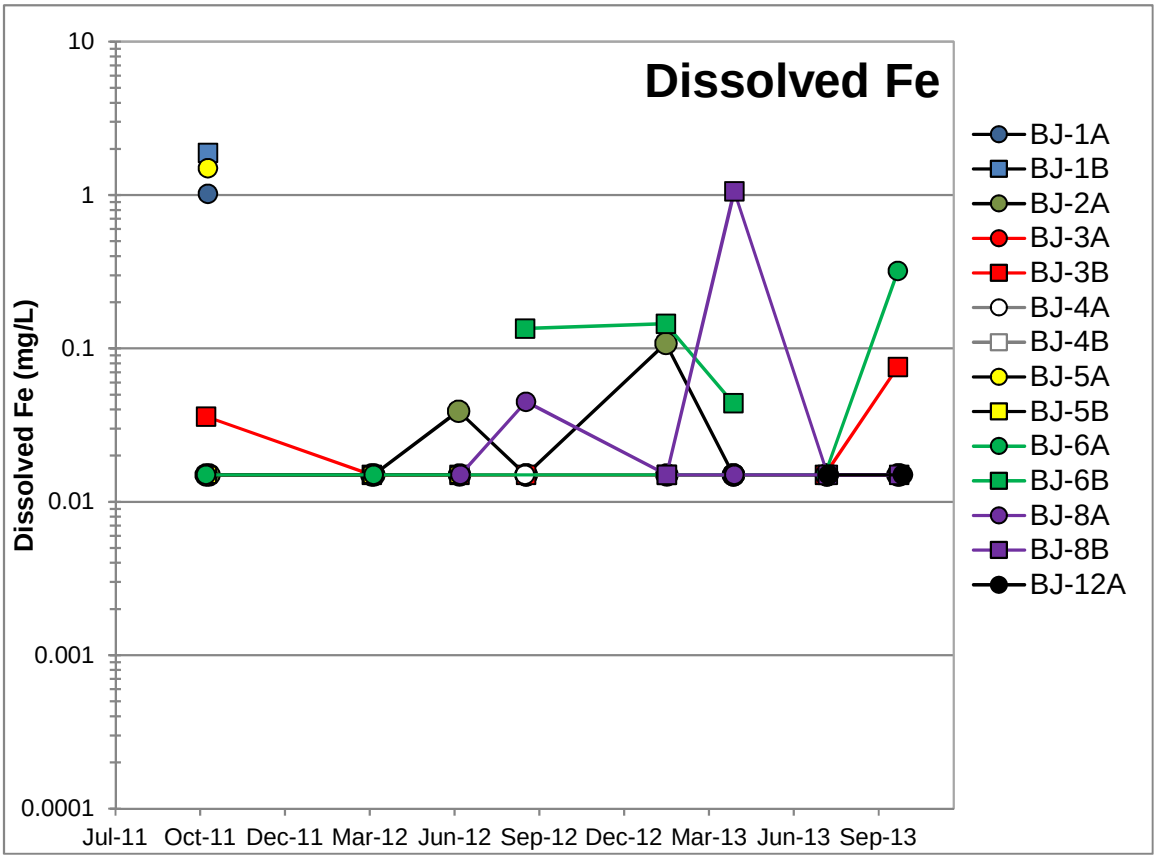
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Dissolved Fe (mg/L)
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0.1
0.01
0.001
0.0001
Jul-11
Oct-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
BJ-1A
BJ-1B
BJ-2A
BJ-3A
BJ-3B
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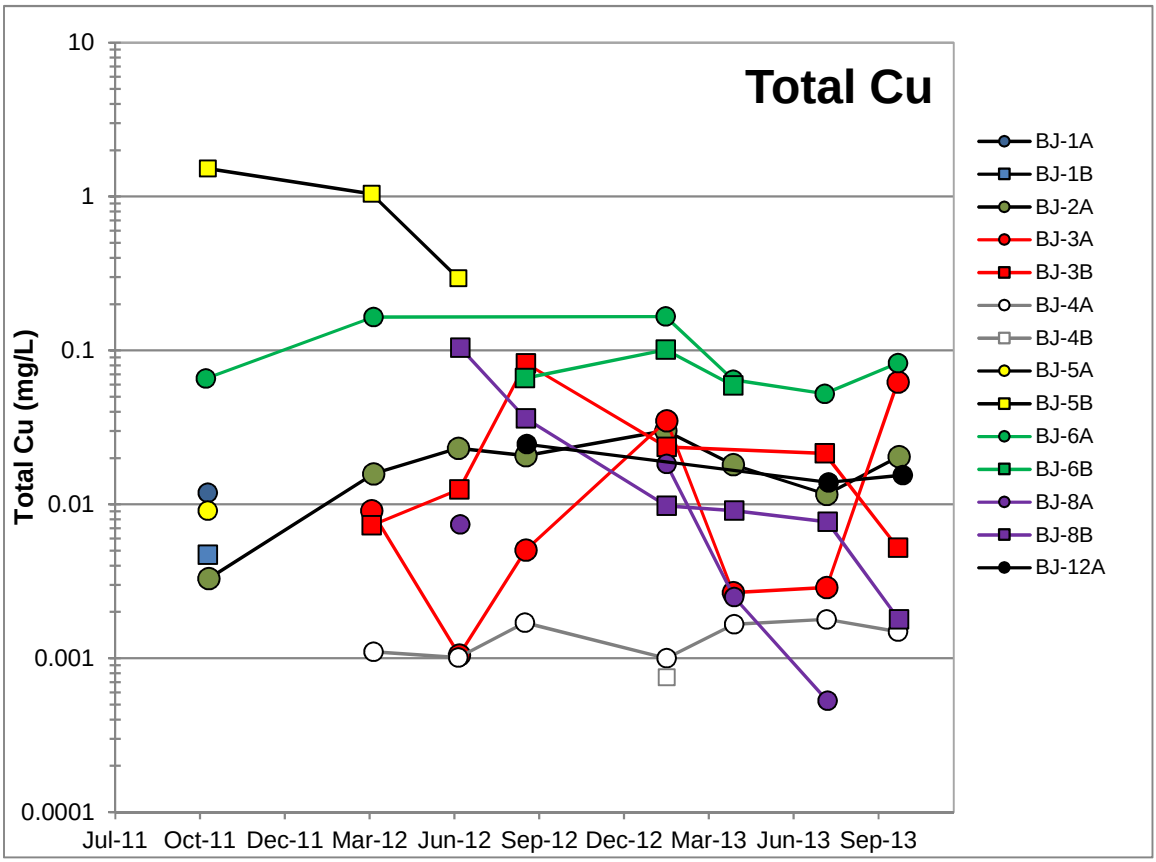
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Total Cu (mg/L)
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0.0001
Jul-11
Oct-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
BJ-1A
BJ-1B
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BJ-3A
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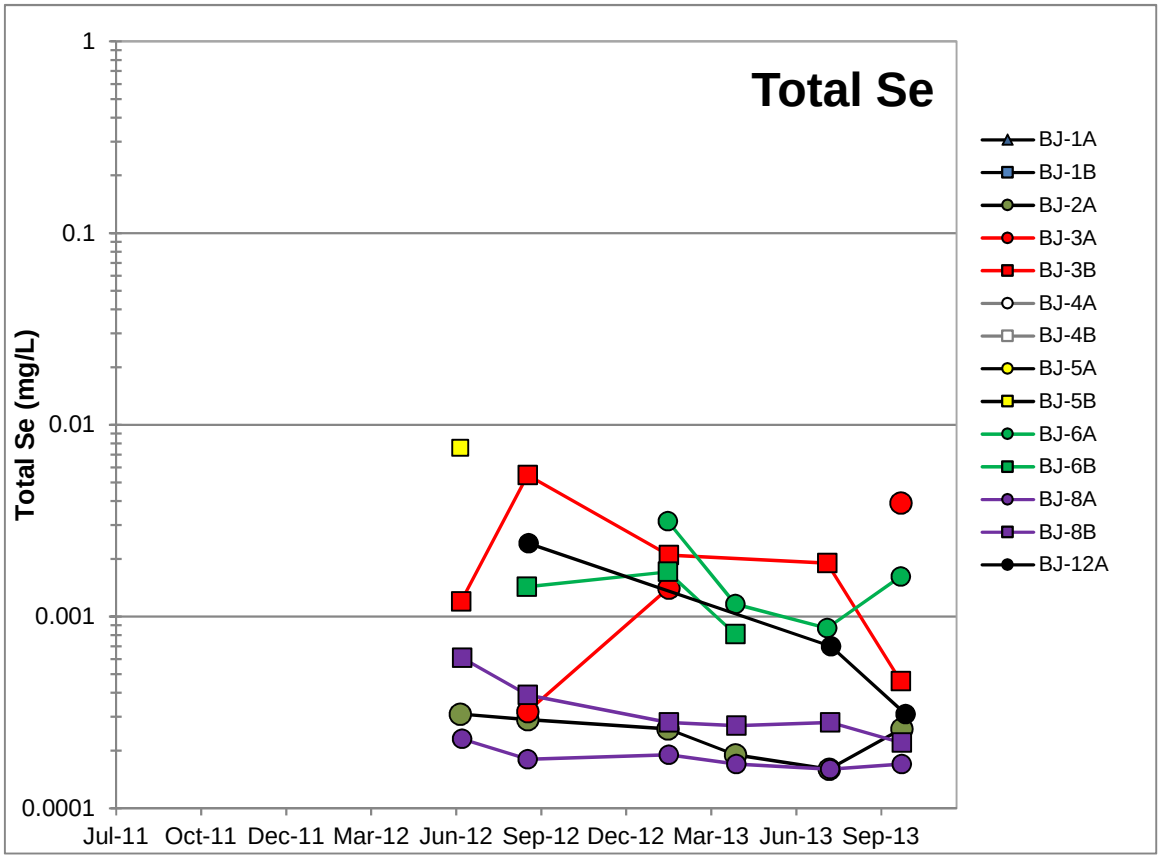
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Oct-11
Dec-11
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BJ-2A
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BJ-4A
BJ-4B
BJ-5A
BJ-5B
BJ-6A
BJ-6B
BJ-8A
BJ-8B
BJ-12A

APPENDIX F
LABORATORY REPORTS AND CERTIFICATES

BGC ENGINEERING INC.
ATTN: Katherine Johnston
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 13-OCT-11
Report Date: 27-OCT-11 15:46 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1071509

Project P.O. #:	BRUCE JACK
Job Reference:	1008-004-30
C of C Numbers:	4, 10-170928, 10-170929, 10-170930
Legal Site Desc:	

Comments: Cyanide analysis was not performed for L1071509-8 as no appropriate sample with correct preservation was submitted.

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1071509-1 H2O 10-OCT-11 11:10 4A	L1071509-2 H2O 10-OCT-11 13:30 5B	L1071509-3 H2O 10-OCT-11 14:12 5A	L1071509-4 H2O 08-OCT-11 14:50 6A	L1071509-5 H2O 08-OCT-11 15:45 3B
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (uS/cm)	453	335	249	389	339
	Hardness (as CaCO3) (mg/L)	203	171	91.5	186	167
	pH (pH)	8.08	8.12	7.96	7.99	8.14
	Total Suspended Solids (mg/L)	6.2	34400	62.2	717	<3.0
	Total Dissolved Solids (mg/L)	299	255	149	255	212
	Turbidity (NTU)	5.98	>4000	66.6	836	1.97
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.1	2.4	2.9	2.8	1.7
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	120	70.8	39.5	97.9	86.4
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	<1.0	<2.0	<2.0	<2.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<1.0	<2.0	<2.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	120	70.8	39.5	97.9	86.4
	Ammonia (as N) (mg/L)	0.269	0.393	0.102	0.0208	0.0318
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	<0.50	0.76	1.47	0.67	<0.50
	Fluoride (F) (mg/L)	0.083	0.239	0.152	0.173	0.132
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0057	0.0074	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	0.0011	0.0011	0.0011	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.294	4.4	0.294	<0.050	0.085
	Total Nitrogen (mg/L)	0.294	4.4	0.301	0.0084	0.0854
	Orthophosphate-Dissolved (as P) (mg/L)	0.0039	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0101	15.7	0.0417	0.492	<0.0020
	Sulfate (SO4) (mg/L)	118	96.3	73.6	96.1	82.5
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0088 RRV
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.35	3.68	3.13	3.63	0.74
	Total Organic Carbon (mg/L)	1.20	38.6	3.17	4.18	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.286	240	1.04	4.90	0.0168
	Antimony (Sb)-Total (mg/L)	0.0566	<0.010 DLA	0.00319	0.00750	0.00114
	Arsenic (As)-Total (mg/L)	0.0627	5.04	0.0126	0.0465	0.0159
	Barium (Ba)-Total (mg/L)	0.083	6.33	0.072	0.331	0.044
	Beryllium (Be)-Total (mg/L)	<0.0010	<0.020 DLA	<0.0010	<0.0010	<0.0010
	Bismuth (Bi)-Total (mg/L)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B)-Total (mg/L)	<0.10	0.25	<0.10	<0.10	<0.10
	Cadmium (Cd)-Total (mg/L)	0.000033	0.0109	0.000230	0.00229	<0.000017
	Calcium (Ca)-Total (mg/L)	61.0	620	32.4	75.7	61.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1071509-6	L1071509-7	L1071509-8	L1071509-9	L1071509-10
Description	H2O	GW	GW	WATER	WATER
Sampled Date	08-OCT-11	08-OCT-11	08-OCT-11		
Sampled Time	16:30	09:00	10:00		
Client ID	3A	2	7	1A	1B
Grouping / **Analyte**					
WATER					
Physical Tests Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
Conductivity (uS/cm)	358	217	<2.0	110	289
Hardness (as CaCO3) (mg/L)	135	96.8	<0.50	45.2	89.8
pH (pH)	8.22	8.14	5.72	7.96	7.99
Total Suspended Solids (mg/L)	<3.0	9.6	<3.0	31.6	86.2
Total Dissolved Solids (mg/L)	212	132	<10	59	187
Turbidity (NTU)	2.94	19.1	<0.10	34.1	99.7
Anions and Nutrients Acidity (as CaCO3) (mg/L)	1.1	1.6	1.3	1.8	2.4
Alkalinity, Bicarbonate (as CaCO3) (mg/L)	93.1	71.0	<2.0	29.2	86.1
Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, Total (as CaCO3) (mg/L)	93.1	71.0	<2.0	29.2	86.1
Ammonia (as N) (mg/L)	0.0278	0.0152	<0.0050	0.0282	0.0229
Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	0.070	<0.050
Chloride (Cl) (mg/L)	<0.50	0.94	<0.50	0.66	<0.50
Fluoride (F) (mg/L)	0.208	0.081	<0.020	0.039	0.251
Nitrate (as N) (mg/L)	<0.0050	0.0259	<0.0050	0.0137	0.0258
Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0036
Total Kjeldahl Nitrogen (mg/L)	0.064	0.062	<0.050	0.178	0.106
Total Nitrogen (mg/L)	0.0645	0.0876	<0.0025	0.192	0.135
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total (mg/L)	<0.0020	0.0127	<0.0020	0.0316	0.0721
Sulfate (SO4) (mg/L)	84.0	37.3	<0.50	19.1	60.0
Cyanides Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050		<0.0050	<0.0050
Cyanide, Total (mg/L)	<0.0050	<0.0050		<0.0050	<0.0050
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	1.16 RRV	1.17	<0.50	1.41	1.06 RRV
Total Organic Carbon (mg/L)	<0.50	0.96	<0.50	3.60	0.52
Total Metals Aluminum (Al)-Total (mg/L)	0.523	0.414	<0.0050	0.801	2.43
Antimony (Sb)-Total (mg/L)	0.00497	0.00188	<0.00050	0.00086	0.00136
Arsenic (As)-Total (mg/L)	0.0242	0.00159	<0.00050	0.00559	0.0292
Barium (Ba)-Total (mg/L)	0.040	0.065	<0.020	0.061	0.114
Beryllium (Be)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bismuth (Bi)-Total (mg/L)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)-Total (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)-Total (mg/L)	<0.000017	0.000021	<0.000017	0.000061	0.000032
Calcium (Ca)-Total (mg/L)	51.0	34.5	<0.10	16.8	29.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1071509-1 H2O 10-OCT-11 11:10 4A	L1071509-2 H2O 10-OCT-11 13:30 5B	L1071509-3 H2O 10-OCT-11 14:12 5A	L1071509-4 H2O 08-OCT-11 14:50 6A	L1071509-5 H2O 08-OCT-11 15:45 3B
WATER						
Total Metals	Chromium (Cr)-Total (mg/L)	0.0024	0.241	0.0020	0.0024	<0.0010
	Cobalt (Co)-Total (mg/L)	0.00137	0.202	0.00435	0.00423	<0.00030
	Copper (Cu)-Total (mg/L)	0.0027	1.52	0.0091	0.0658	<0.0010
	Iron (Fe)-Total (mg/L)	0.338	460	1.50	6.90	0.055
	Lead (Pb)-Total (mg/L)	0.00079	0.518	0.00245	0.130	<0.00050
	Lithium (Li)-Total (mg/L)	0.0383	0.30	0.0229	0.0058	0.0128
	Magnesium (Mg)-Total (mg/L)	13.2	118	3.60	4.90	3.87
	Manganese (Mn)-Total (mg/L)	0.135	24.4	0.654	1.15	0.419
	Mercury (Hg)-Total (mg/L)	0.000543	0.0015	<0.000010	0.00062	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.0033	0.030	0.0063	<0.0010	<0.0010
	Nickel (Ni)-Total (mg/L)	0.0061	0.357	0.0038	0.0048	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.30	12.5	<0.30	0.64	<0.30
	Potassium (K)-Total (mg/L)	2.6	74.8	3.3	4.8	<2.0
	Selenium (Se)-Total (mg/L)	<0.0010	<0.020 DLA	<0.0010	<0.0010	<0.0010
	Silicon (Si)-Total (mg/L)	3.72	228	4.92	11.1	3.57
	Silver (Ag)-Total (mg/L)	0.000047	0.244	0.000524	0.00238	<0.000020
	Sodium (Na)-Total (mg/L)	18.2	14.3	12.4	2.3	5.6
	Strontium (Sr)-Total (mg/L)	2.74	3.83	0.842	1.01	1.71
	Thallium (Tl)-Total (mg/L)	<0.00020	0.0105	<0.00020	<0.00020	<0.00020
	Tin (Sn)-Total (mg/L)	0.00065	<0.010 DLA	0.00193	0.00060	<0.00050
	Titanium (Ti)-Total (mg/L)	0.012	0.335	0.020	0.106	<0.010
	Uranium (U)-Total (mg/L)	0.00186	0.0526	0.00028	0.00055	0.00025
	Vanadium (V)-Total (mg/L)	<0.0010	0.341	0.0015	0.0074	<0.0010
	Zinc (Zn)-Total (mg/L)	0.0131	1.63	0.0317	0.550	<0.0050
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)	<0.0050	0.0868	0.0566	0.0210	0.0075
	Antimony (Sb)-Dissolved (mg/L)	0.0546	0.0113	0.00277	0.00178	0.00114
	Arsenic (As)-Dissolved (mg/L)	0.0613	0.0102	0.00641	0.00172	0.0165
	Barium (Ba)-Dissolved (mg/L)	0.069	0.042	0.027	0.036	0.042
	Beryllium (Be)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Bismuth (Bi)-Dissolved (mg/L)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)	0.000019	<0.000017	0.000112	0.000359	<0.000017
	Calcium (Ca)-Dissolved (mg/L)	59.8	58.5	31.3	68.7	60.5
	Chromium (Cr)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cobalt (Co)-Dissolved (mg/L)	0.00115	<0.00030	0.00331	<0.00030	<0.00030
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	0.0024	0.0024	<0.0010
	Iron (Fe)-Dissolved (mg/L)	<0.030	<0.030	0.072	<0.030	0.036

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1071509-6	L1071509-7	L1071509-8	L1071509-9	L1071509-10
Description	H2O	GW	GW	WATER	WATER
Sampled Date	08-OCT-11	08-OCT-11	08-OCT-11		
Sampled Time	16:30	09:00	10:00		
Client ID	3A	2	7	1A	1B
Grouping / **Analyte**					
WATER					
Total Metals Chromium (Cr)-Total (mg/L)	<0.0010	0.0018	<0.0010	0.0013	0.0012
Cobalt (Co)-Total (mg/L)	<0.00030	<0.00030	<0.00030	0.00049	0.00103
Copper (Cu)-Total (mg/L)	<0.0010	0.0033	<0.0010	0.0119	0.0047
Iron (Fe)-Total (mg/L)	0.067	0.825	<0.030	1.02	1.89
Lead (Pb)-Total (mg/L)	<0.00050	0.00053	<0.00050	0.00165	0.00186
Lithium (Li)-Total (mg/L)	0.0450	0.0088	<0.0050	0.0073	0.0817
Magnesium (Mg)-Total (mg/L)	4.18	1.89	<0.10	1.19	4.19
Manganese (Mn)-Total (mg/L)	0.224	0.0462	<0.00030	0.0797	0.129
Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	0.000011	<0.000010
Molybdenum (Mo)-Total (mg/L)	0.0030	0.0047	<0.0010	<0.0010	0.0024
Nickel (Ni)-Total (mg/L)	<0.0010	<0.0010	<0.0010	0.0012	0.0010
Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Total (mg/L)	2.1	<2.0	<2.0	<2.0	3.2
Selenium (Se)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Silicon (Si)-Total (mg/L)	4.27	2.77	<0.050	2.06	5.77
Silver (Ag)-Total (mg/L)	<0.000020	0.000064	<0.000020	0.000105	0.000073
Sodium (Na)-Total (mg/L)	21.0	5.9	<2.0	2.6	25.3
Strontium (Sr)-Total (mg/L)	1.48	1.33	<0.0050	0.205	0.896
Thallium (Tl)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)-Total (mg/L)	<0.00050	0.00104	<0.00050	0.00401	0.00169
Titanium (Ti)-Total (mg/L)	<0.010	0.013	<0.010	<0.010	0.030
Uranium (U)-Total (mg/L)	<0.00020	0.00033	<0.00020	<0.00020	<0.00020
Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	0.0011	0.0020
Zinc (Zn)-Total (mg/L)	<0.0050	0.0070	<0.0050	0.0392	0.0181
Dissolved Metals Aluminum (Al)-Dissolved (mg/L)	0.0235	0.0256	<0.0050	0.0339	0.0145
Antimony (Sb)-Dissolved (mg/L)	0.00468	0.00181	<0.00050	0.00080	0.00093
Arsenic (As)-Dissolved (mg/L)	0.0226	0.00087	<0.00050	0.00111	0.00797
Barium (Ba)-Dissolved (mg/L)	0.029	0.041	<0.020	0.028	0.022
Beryllium (Be)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bismuth (Bi)-Dissolved (mg/L)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)-Dissolved (mg/L)	0.000029	<0.000017	<0.000017	0.000027	<0.000017
Calcium (Ca)-Dissolved (mg/L)	47.4	35.7	<0.10	16.4	29.7
Chromium (Cr)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0090	<0.0010
Iron (Fe)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID: L1071509-1 Description: H2O Sampled Date: 10-OCT-11 Sampled Time: 11:10 Client ID: 4A	L1071509-2 H2O 10-OCT-11 13:30 5B	L1071509-3 H2O 10-OCT-11 14:12 5A	L1071509-4 H2O 08-OCT-11 14:50 6A	L1071509-5 H2O 08-OCT-11 15:45 3B
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Lithium (Li)-Dissolved (mg/L)	0.0345	0.0094	0.0214	<0.0050	0.0115
	Magnesium (Mg)-Dissolved (mg/L)	12.9	5.91	3.22	3.45	3.78
	Manganese (Mn)-Dissolved (mg/L)	0.116	0.134	0.569	0.0422	0.397
	Mercury (Hg)-Dissolved (mg/L)	0.000619	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.0028	0.0075	0.0058	<0.0010	<0.0010
	Nickel (Ni)-Dissolved (mg/L)	0.0054	<0.0010	0.0026	<0.0010	<0.0010
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	2.4	7.4	2.5	2.5	<2.0
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Silicon (Si)-Dissolved (mg/L)	2.89	3.78	1.94	2.26	3.49
	Silver (Ag)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Sodium (Na)-Dissolved (mg/L)	17.5	12.7	12.3	2.5	5.5
	Strontium (Sr)-Dissolved (mg/L)	2.71	0.747	0.811	0.894	1.64
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Tin (Sn)-Dissolved (mg/L)	<0.00050	0.00116	0.00091	0.00052	<0.00050
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00166	0.00146	0.00022	<0.00020	0.00024
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0091	<0.0050	0.0102	0.0548	0.0074

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1071509-6 H2O 08-OCT-11 16:30 3A	L1071509-7 GW 08-OCT-11 09:00 2	L1071509-8 GW 08-OCT-11 10:00 7	L1071509-9 WATER 1A	L1071509-10 WATER 1B
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Lithium (Li)-Dissolved (mg/L)	0.0445	0.0084	<0.0050	0.0073	0.0781
	Magnesium (Mg)-Dissolved (mg/L)	3.93	1.86	<0.10	1.01	3.80
	Manganese (Mn)-Dissolved (mg/L)	0.198	0.0353	<0.00030	0.0331	0.0306
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.0026	0.0044	<0.0010	<0.0010	0.0023
	Nickel (Ni)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	<2.0	<2.0	<2.0	<2.0	2.5
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Silicon (Si)-Dissolved (mg/L)	3.31	1.98	<0.050	0.977	2.77
	Silver (Ag)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Sodium (Na)-Dissolved (mg/L)	19.3	5.6	<2.0	2.9	25.8
	Strontium (Sr)-Dissolved (mg/L)	1.34	1.36	<0.0050	0.208	0.897
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Tin (Sn)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00161	0.00118
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	<0.00020	0.00031	<0.00020	<0.00020	<0.00020
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0310	0.0067	<0.0050	0.0167	<0.0050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
SPL	Sample was Preserved at the laboratory - samples # 1-3 - Total Metals

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L1071509-1, -2, -3, -4, -5, -6, -7, -8

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit Adjusted For required dilution
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 "Alkalinity"
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 Alkalinity
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320
This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method. OR This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0
This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.			
ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0
This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.			
ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.			
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			

Reference Information

CN-T-MID-HH-COL-VA	Water	Total Cyanide by HH Distillation	APHA 4500-CN Cyanide

This analysis is carried out using procedures adapted from APHA Method 4500-CN "Cyanide". Total or strong acid dissociable (SAD) cyanide are determined by sample distillation and analysis using the chloramine-T colourimetric method.

CN-WAD-MID-COL-VA	Water	Weak Acid Dissociable Cyanide by Dist.	APHA 4500-CN Cyanide

This analysis is carried out using procedures adapted from APHA Method 4500-CN "Cyanide". Weak acid dissociable (WAD) cyanide are determined by sample distillation and analysis using the chloramine-T colourimetric method.

COLOUR-TRUE-VA	Water	Colour (True) by Spectrometer	BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA	Water	Dissolved Mercury in Water by CVAFS(Low)	EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA	Water	Total Mercury in Water by CVAFS(Low)	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DIS-CCME-MS-VA	Water	Diss. Metals in Water by ICPMS (CCME)	EPA SW-846 3005A/6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

MET-DIS-ICP-VA	Water	Dissolved Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-TOT-CCME-MS-VA	Water	Total Metals in Water by ICPMS (CCME)	EPA SW-846 3005A/6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-MAN-VA	Water	pH by Manual Meter	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

Reference Information

It is recommended that this analysis be conducted in the field.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-COL-VA Water TKN in Water by Colour APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined using automated colourimetry.

TN-CALC-VA Water Total Nitrogen (Calculation) BC MOE LABORATORY MANUAL (2005)

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

10-170928 10-170929 10-170930 4

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10-170928

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page ___ of ___

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGC ENGINEERING	Standard: X Other (specify):		X	Regular (Standard Turnaround Times - Business Days)
Contact:	CATHERINE JOHNSTON	Select: PDF X Excel Digital Fax			Priority(2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address:	500-1045 HOWE ST VANCOUVER BC	Email 1:	kjohnston@bgcengineering.ca		Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
		Email 2:	vcullen@bgcengineering.ca		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	604 684 5900 Fax: 604 684 5909			Analysis Request	
Invoice To	Same as Report ? (circle) Yes or (No) (if No, provide details)	Client / Project Information		(Indicate Filtered or Preserved, F/P)	
	Copy of Invoice with Report? (circle) (Yes) or No	Job #:	1008-004-30		
Company:	PRETIUM RESOURCES	PO / AFE:	BRULEJACK.		
Contact:	KEN MCNAUGHTON	LSD:			
Address:	570 GRANVILLE ST VANCOUVER				
Phone:	604 558 1784 Fax: 604 558 1784	Quote #:			
Lab Work Order # (lab use only)	L1071509	ALS Contact:	D. Watt.	Sampler:	K JOHNSTON

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers
	4A	10-Oct-11	11:10	H2O	
	~~KB~~ 5B	"	13:30	"	
	~~KA~~ 5A	"	14:12	"	

EMAILED INSTRUCTIONS TO DEAN / WATT

L1071509-COFC

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			BP	Oct. 13	9:14	4 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION | WHITE - LABORATORY COPY | YELLOW - CLIENT COPY | GENF 18.01 Front

10-170929

L1071509-COFC

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page ____ of ____

Report To	**Report Format / Distribution**	**Service Request:** (Rush subject to availability - Contact ALS to confirm TAT)
Company: BGC Engineering	Standard: X Other (specify):	X Regular (Standard Turnaround Times - Business Days)
Contact: Katherine Johnston	Select: PDF X Excel Digital Fax	Priority (2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address: 500-1045 Howe St Vancouver, BC V6Z 2A9	Email 1: kjohnston@bgcengineering.ca	Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
Phone: (604) 684 5900 Fax: 604 684 5909	Email 2: vcullen@bgcengineering.ca	Same Day or Weekend Emergency - Contact ALS to confirm TAT
Invoice To Same as Report ? (circle) Yes or (No) (if No, provide details)	**Client / Project Information**	**Analysis Request**
Copy of Invoice with Report? (circle) (Yes) or No	Job #: 1008-004-30 BRUCEJACK	(Indicate Filtered or Preserved, F/P)
Company: Prehum Resources Inc	PO / AFE:	
Contact: ~~PA~~ Ken McNaughton	LSD:	
Address: 1600 - 570 Granville St Vancouver BC V6C 3P1		
Phone: 604 558 1784 Fax: 604	Quote #:	
Lab Work Order # (lab use only) L1071509	**ALS Contact:**	**Sampler:**

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers
	6A	08-Oct-11	14:50	H_2O	7
	3B	"	15:45	H_2O	7
	3A	"	16:30	H_2O	7

Sample Instructions to be emailed to D. Watt

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

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By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			BP	Oct. 13	9:31	9 °C				

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10-170930

L1071509-COFC

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page ___ of ___

Report To	**Report Format / Distribution**	**Service Request:** (Rush subject to availability - Contact ALS to confirm TAT)
Company: BGC ENGINEERING	Standard: X Other (specify):	X Regular (Standard Turnaround Times - Business Days)
Contact: KATHERINE JOHNSTON	Select: PDF X Excel Digital Fax	Priority(2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address: 500-1045 HOWE ST	Email 1: kjohnston@bgcengineering.ca	Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
VANCOUVER, BC V6Z 2A9	Email 2: jcullen@bgcengineering.ca	Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone: 604 684 5900 Fax: 604 684 5909		**Analysis Request**
Invoice To Same as Report ? (circle) Yes or (No) (if No, provide details)	**Client / Project Information**	(Indicate Filtered or Preserved, F/P)
Copy of Invoice with Report? (circle) (Yes) or No	Job #: 1008-004-30	
Company: PRETIUM RESOURCES	PO / AFE: BRUCEJACK.	
Contact: KEN MCNAUGHTON	LSD:	
Address: 1600-570 GRANVILLE ST. VAN. BC		
Phone: 6045581784 Fax: 6045584784	Quote #:	
Lab Work Order # (lab use only) L1071509	**ALS Contact:**	**Sampler:**

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers
	2	11-Oct-11	09:00	GW	HOLD FOR EMAIL INSTRUCTIONS
	7	11	10:00	GW	

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			BP	Oct.13	9:31	9°C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY GENF 18.01 Front

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

: Form

COC # NOTRECD

Page ____ of ____

L1071509-COFC

Report to:		Service Requested: (rush - subject to availability)
Company: BGC Environmental	Standard: Other:	Regular (Default)
Contact:	Select: PDF ____ Excel ____ Digital ____	Priority (2-3 Business Days) - 50% Surcharge
Address:	Email 1:	Emergency (1 Business Day) - 100% Surcharge
	Email 2:	For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone: Fax:		**Analysis Request**
Invoice To: Same as Report ? Yes / No ?	**Client / Project Information:**	(Indicate Filtered or Preserved, F/P)
Company:	Job #:	
Contact:	PO / AFE:	
Address:	Legal Site Description:	
Phone: Fax:	Quote #:	
Lab Work Order # (lab use only): L1071509	**ALS Contact:** **Sampler:**	

Sample #	Sample Identification (This description will appear on the report)	Date	Time	Sample Type	Number of Containers
	1A				
	1B				

Special Instructions / Regulations / Hazardous Details

SAMPLES RECEIVED WITHOUT COC

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by: JH	Date: 13/OCT/11	Time: 18:00pm	Temperature: 9 °C	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF

GENF 18.00 Front

BGC ENGINEERING INC.
ATTN: Katherine Johnston
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 30-MAR-12
Report Date: 12-APR-12 13:05 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1129695

Project P.O. #: BRUCEJACK
Job Reference: 1008-006-50
C of C Numbers: 10-196181
Legal Site Desc:

Dean Watt
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1129695-1 H2O 28-MAR-12 13:15 BJ-3A	L1129695-2 H2O 28-MAR-12 11:00 BJ-3B	L1129695-3 H2O 28-MAR-12 09:30 BJ-5A	L1129695-4 H2O 28-MAR-12 10:10 BJ-5B	
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	
	Conductivity (uS/cm)	355	312	484	338	
	Hardness (as CaCO3) (mg/L)	167	156	100	145	
	pH (pH)	8.05	7.89	8.20	8.13	
	Total Suspended Solids (mg/L)	328	275	5380	6220	
	Total Dissolved Solids (mg/L)	247	215	323	237	
	Turbidity (NTU)	270	204	>4000	>4000	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.2	2.7	1.1	1.5	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	93.8	42.9	83.1	75.6	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	
	Alkalinity, Total (as CaCO3) (mg/L)	93.8	42.9	83.1	75.6	
	Ammonia, Total (as N) (mg/L)	0.0289	0.0145	0.283	0.121	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	
	Chloride (Cl) (mg/L)	<0.50	<0.50	1.47	2.97	
	Fluoride (F) (mg/L)	0.186	0.091	0.221	0.184	
	Nitrate (as N) (mg/L)	0.0059	0.0200	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	0.0024	0.0018	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.119	0.114	0.460	0.276	
	Total Nitrogen (mg/L)	0.127	0.136	0.460	0.276	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0021	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.113	0.0453	0.336	1.11	
	Sulfate (SO4) (mg/L)	89.4	108	155	89.2	
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	
	Cyanide, Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	3.02	0.60	
	Total Organic Carbon (mg/L)	1.00	0.77	6.13	2.21	
Total Metals	Aluminum (Al)-Total (mg/L)	7.15	6.72	52.5	158	
	Antimony (Sb)-Total (mg/L)	0.00446	0.00596	0.0029	0.013	
	Arsenic (As)-Total (mg/L)	0.0534	0.0568	0.311	3.52	
	Barium (Ba)-Total (mg/L)	0.180	0.168	0.760	3.44	
	Beryllium (Be)-Total (mg/L)	<0.0010	<0.0010	0.0091	<0.020 DLA	
	Bismuth (Bi)-Total (mg/L)	<0.20	<0.20	<0.20	<0.20	
	Boron (B)-Total (mg/L)	<0.10	<0.10	0.11	0.15	
	Cadmium (Cd)-Total (mg/L)	0.000257	0.000185	0.00210	0.00641	
	Calcium (Ca)-Total (mg/L)	59.4	58.4	164	460	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1129695-1 H2O 28-MAR-12 13:15 BJ-3A	L1129695-2 H2O 28-MAR-12 11:00 BJ-3B	L1129695-3 H2O 28-MAR-12 09:30 BJ-5A	L1129695-4 H2O 28-MAR-12 10:10 BJ-5B	
WATER						
Total Metals	Chromium (Cr)-Total (mg/L)	0.0033	0.0023	0.0264	0.146	
	Cobalt (Co)-Total (mg/L)	0.00226	0.00172	0.0239	0.152	
	Copper (Cu)-Total (mg/L)	0.0091	0.0073	0.120	1.04	
	Iron (Fe)-Total (mg/L)	7.75	5.95	54.8	344	
	Lead (Pb)-Total (mg/L)	0.00931	0.00606	0.121	0.267	
	Lithium (Li)-Total (mg/L)	0.0249	0.0104	0.111	0.22	
	Magnesium (Mg)-Total (mg/L)	5.77	4.53	24.5	94.3	
	Manganese (Mn)-Total (mg/L)	0.640	0.385	1.94	17.9	
	Mercury (Hg)-Total (mg/L)	0.000022	0.000012	0.000124	0.000351	
	Molybdenum (Mo)-Total (mg/L)	0.0019	<0.0010	0.0058	<0.020 DLA	
	Nickel (Ni)-Total (mg/L)	0.0020	0.0019	0.0422	0.251	
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	1.51	9.74	
	Potassium (K)-Total (mg/L)	3.1	2.1	13.8	48.1	
	Selenium (Se)-Total (mg/L)	<0.0010	<0.0010	<0.0050 DLA	<0.020 DLA	
	Silicon (Si)-Total (mg/L)	10.6	8.57	84.5	134	
	Silver (Ag)-Total (mg/L)	0.00108	0.000387	0.0189	0.136	
	Sodium (Na)-Total (mg/L)	9.6	3.2	62.5	11.1	
	Strontium (Sr)-Total (mg/L)	1.20	1.04	4.65	4.33	
	Thallium (Tl)-Total (mg/L)	0.00023	0.00023	0.0018	0.0091	
	Tin (Sn)-Total (mg/L)	<0.00050	<0.00050	<0.0025 DLA	<0.010 DLA	
	Titanium (Ti)-Total (mg/L)	0.105	0.066	0.075	0.228	
	Uranium (U)-Total (mg/L)	0.00033	0.00046	0.0175	0.0132	
	Vanadium (V)-Total (mg/L)	0.0113	0.0105	0.0390	0.221	
	Zinc (Zn)-Total (mg/L)	0.0291	0.0292	0.321	1.27	
Dissolved Metals	Dissolved Metals Filtration Location	LAB	LAB	LAB	LAB	
	Aluminum (Al)-Dissolved (mg/L)	0.0142	0.0158	0.148	0.0297	
	Antimony (Sb)-Dissolved (mg/L)	0.00130	0.00245	0.00501	0.00722	
	Arsenic (As)-Dissolved (mg/L)	0.00758	0.0202	0.0144	0.0120	
	Barium (Ba)-Dissolved (mg/L)	0.031	0.034	0.021	0.024	
	Beryllium (Be)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Bismuth (Bi)-Dissolved (mg/L)	<0.20	<0.20	<0.20	<0.20	
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.10	<0.10	
	Cadmium (Cd)-Dissolved (mg/L)	0.000038	0.000060	<0.000017	<0.000017	
	Calcium (Ca)-Dissolved (mg/L)	60.0	57.8	30.1	48.6	
	Chromium (Cr)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Cobalt (Co)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID: L1129695-1	L1129695-2	L1129695-3	L1129695-4	
	Description:	H2O	H2O	H2O	H2O	
	Sampled Date:	28-MAR-12	28-MAR-12	28-MAR-12	28-MAR-12	
	Sampled Time:	13:15	11:00	09:30	10:10	
	Client ID:	BJ-3A	BJ-3B	BJ-5A	BJ-5B	
WATER						
Dissolved Metals	Iron (Fe)-Dissolved (mg/L)	<0.030	<0.030	0.038	<0.030	
	Lead (Pb)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Lithium (Li)-Dissolved (mg/L)	0.0200	<0.0050	0.0865	0.0151	
	Magnesium (Mg)-Dissolved (mg/L)	4.12	2.78	6.10	5.74	
	Manganese (Mn)-Dissolved (mg/L)	0.139	0.0825	0.0576	0.262	
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Molybdenum (Mo)-Dissolved (mg/L)	0.0015	<0.0010	0.0054	0.0055	
	Nickel (Ni)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	
	Potassium (K)-Dissolved (mg/L)	<2.0	<2.0	5.0	3.7	
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Silicon (Si)-Dissolved (mg/L)	3.30	1.91	3.42	2.80	
	Silver (Ag)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	
	Sodium (Na)-Dissolved (mg/L)	9.4	3.1	65.2	9.8	
	Strontium (Sr)-Dissolved (mg/L)	1.18	1.03	2.16	1.55	
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
	Tin (Sn)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	<0.00020	0.00032	0.00167	0.00082	
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Antimony (Sb)-Total	DLA	L1129695-1, -2, -3, -4
Duplicate	Beryllium (Be)-Total	DLA	L1129695-1, -2, -3, -4
Duplicate	Cadmium (Cd)-Total	DLA	L1129695-1, -2, -3, -4
Duplicate	Copper (Cu)-Total	DLA	L1129695-1, -2, -3, -4
Duplicate	Lead (Pb)-Total	DLA	L1129695-1, -2, -3, -4
Duplicate	Lithium (Li)-Total	DLA	L1129695-1, -2, -3, -4
Duplicate	Molybdenum (Mo)-Total	DLA	L1129695-1, -2, -3, -4
Duplicate	Selenium (Se)-Total	DLA	L1129695-1, -2, -3, -4
Duplicate	Silver (Ag)-Total	DLA	L1129695-1, -2, -3, -4
Duplicate	Thallium (Tl)-Total	DLA	L1129695-1, -2, -3, -4
Duplicate	Tin (Sn)-Total	DLA	L1129695-1, -2, -3, -4
Duplicate	Uranium (U)-Total	DLA	L1129695-1, -2, -3, -4
Duplicate	Bromide (Br)	DLM	L1129695-1, -2, -3, -4
Duplicate	Nitrite (as N)	DLM	L1129695-1, -2, -3, -4
Matrix Spike	Chloride (Cl)	MS-B	L1129695-1, -2, -3, -4
Matrix Spike	Fluoride (F)	MS-B	L1129695-1, -2, -3, -4
Matrix Spike	Sulfate (SO4)	MS-B	L1129695-1, -2, -3, -4
Matrix Spike	Sulfate (SO4)	MS-B	L1129695-1, -2, -3, -4
Matrix Spike	Nitrate (as N)	MS-B	L1129695-1, -2, -3, -4
Matrix Spike	Sulfate (SO4)	MS-B	L1129695-1, -2, -3, -4
Matrix Spike	Ammonia, Total (as N)	MS-B	L1129695-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit Adjusted For required dilution
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

Reference Information

ANIONS-NO3-IC-VA Water Nitrate in Water by Ion Chromatography EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA Water Sulfate by Ion Chromatography APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-MID-HH-COL-VA Water Total Cyanide by HH Distillation APHA 4500-CN Cyanide

This analysis is carried out using procedures adapted from APHA Method 4500-CN "Cyanide". Total or strong acid dissociable (SAD) cyanide are determined by sample distillation and analysis using the chloramine-T colourimetric method.

CN-WAD-MID-COL-VA Water Weak Acid Dissociable Cyanide by Dist. APHA 4500-CN Cyanide

This analysis is carried out using procedures adapted from APHA Method 4500-CN "Cyanide". Weak acid dissociable (WAD) cyanide are determined by sample distillation and analysis using the chloramine-T colourimetric method.

COLOUR-TRUE-VA Water Colour (True) by Spectrometer BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA Water Dissolved Mercury in Water by CVAFS(Low) EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA Water Total Mercury in Water by CVAFS(Low) EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DIS-CCME-MS-VA Water Diss. Metals in Water by ICPMS (CCME) EPA SW-846 3005A/6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

MET-DIS-ICP-VA Water Dissolved Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-TOT-CCME-MS-VA Water Total Metals in Water by ICPMS (CCME) EPA SW-846 3005A/6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or

Reference Information

microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TN-CALC-VA	Water	Total Nitrogen (Calculation)	BC MOE LABORATORY MANUAL (2005)

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

10-196181

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10-196181

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1-800-668-9878
www.alsglobal.com

Page 1 of 1

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGC Engineering Inc	Standard:	X Other (specify):	Y	Regular (Standard Turnaround Times - Business Days)
Contact:	Katherine Johnston	Select: PDF	X Excel Digital Fax		Priority (2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address:	500 - 1045 Howe Street Vancouver BC V6Z 2A9	Email 1:	kjohnston@bgcengineering.ca		Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
Phone:	604 684 5900 Fax: 604 684 5909	Email 2:	vcullen@bgcengineering.ca		Same Day or Weekend Emergency - Contact ALS to confirm TAT

Invoice To	Same as Report ? (circle) Yes or (No) (if No, provide details)	Client / Project Information	
	Copy of Invoice with Report? (circle) Yes or No	Job #:	1008-006-50
Company:	Pretium Resources	PO / AFE:	Brucejack
Contact:	Ken McNaughton	LSD:	
Address:	570 Granville St Vancouver		
Phone:	604 558 1784 Fax: 604 558 4784	Quote #:	
Lab Work Order # (lab use only)	L1129695	ALS Contact: D Watt.	Sampler: BSmith

Analysis Request
(Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers
	BJ-3A	28-03-12	13:15	H_2O	
	BJ-3B	"	11:90	"	
	BJ-5A	"	09:30	"	
	BJ-5B	"	10:10	"	

AS for L1071509 - AS ID - Ask D WATT -

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			Tristan	Mar 30	12:35	2 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION | WHITE - LABORATORY COPY | YELLOW - CLIENT COPY | GENF 18.01 Front

BGC ENGINEERING INC.
ATTN: Katherine Johnston
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 02-APR-12
Report Date: 12-APR-12 17:25 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1130044

Project P.O. #: BRUCEJACK
Job Reference: 1008-006-50
C of C Numbers: 10-174709
Legal Site Desc:

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1130044-1 H2O 30-MAR-12 13:40 BJ-DUP1	L1130044-2 H2O 30-MAR-12 14:30 BJ-0A	L1130044-3 H2O 30-MAR-12 11:30 BJ-2A	L1130044-4 H2O 30-MAR-12 14:05 BJ-4A	L1130044-5 H2O 30-MAR-12 13:25 BJ-6A
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (uS/cm)	346	<2.0	262	454	347
	Hardness (as CaCO3) (mg/L)	180	<0.50	133	212	178
	pH (pH)	8.05	5.55	8.04	8.14	8.03
	Total Suspended Solids (mg/L)	3990	6.4	293	51.7	3460
	Total Dissolved Solids (mg/L)	243	<10	173	312	248
	Turbidity (NTU)	>4000	<0.10	260	20.7	>4000
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.9	1.7	1.8	1.6	2.2
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	95.3	<2.0	79.8	126	96.1
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	95.3	<2.0	79.8	126	96.1
	Ammonia, Total (as N) (mg/L)	0.0479	<0.0050	0.0067	0.239	0.0636
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	<0.50	<0.50	0.67	<0.50	<0.50
	Fluoride (F) (mg/L)	0.160	<0.020	0.045	0.079	0.152
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0077	0.0072	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	0.0035	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.254	0.143	0.174	0.346	1.20
	Total Nitrogen (mg/L)	0.254	0.143	0.182	0.357	1.20
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	0.0032	0.0010
	Phosphorus (P)-Total (mg/L)	3.22	<0.0020	0.281	0.0304	3.55
	Sulfate (SO4) (mg/L)	84.7	<0.50	58.5	122	86.0
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	1.42	<0.50	2.01	1.27	1.14
Total Metals	Aluminum (Al)-Total (mg/L)	44.7	<0.0050	7.59	0.792	44.8
	Antimony (Sb)-Total (mg/L)	0.0243	<0.00050	0.00116	0.00853	0.0207
	Arsenic (As)-Total (mg/L)	0.720	<0.00050	0.0148	0.0312	0.643
	Barium (Ba)-Total (mg/L)	34.3	<0.020	0.273	0.066	33.1
	Beryllium (Be)-Total (mg/L)	<0.010 DLA	<0.0010	<0.0010	<0.0010	<0.010 DLA
	Bismuth (Bi)-Total (mg/L)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B)-Total (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Total (mg/L)	0.00232	<0.000017	0.000138	0.000026	0.00145
	Calcium (Ca)-Total (mg/L)	80.6	<0.10	56.1	60.3	77.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1130044-1 H2O 30-MAR-12 13:40 BJ-DUP1	L1130044-2 H2O 30-MAR-12 14:30 BJ-0A	L1130044-3 H2O 30-MAR-12 11:30 BJ-2A	L1130044-4 H2O 30-MAR-12 14:05 BJ-4A	L1130044-5 H2O 30-MAR-12 13:25 BJ-6A
WATER						
Total Metals	Chromium (Cr)-Total (mg/L)	0.018	<0.0010	0.0153	0.0032	0.019
	Cobalt (Co)-Total (mg/L)	0.0337	<0.00030	0.00366	0.00069	0.0269
	Copper (Cu)-Total (mg/L)	0.185	<0.0010	0.0158	0.0011	0.165
	Iron (Fe)-Total (mg/L)	110	<0.030	14.9	0.821	95.3
	Lead (Pb)-Total (mg/L)	0.351	<0.00050	0.00467	0.00105	0.283
	Lithium (Li)-Total (mg/L)	<0.050 DLA	<0.0050	0.0146	0.0312	0.054
	Magnesium (Mg)-Total (mg/L)	20.0	<0.10	4.81	14.1	22.0
	Manganese (Mn)-Total (mg/L)	4.51	<0.00030	0.429	0.147	3.49
	Mercury (Hg)-Total (mg/L)	0.00111	<0.000010	0.000038	0.000023	0.00110
	Molybdenum (Mo)-Total (mg/L)	<0.010 DLA	<0.0010	0.0040	0.0021	<0.010 DLA
	Nickel (Ni)-Total (mg/L)	0.029	<0.0010	0.0031	0.0011	0.027
	Phosphorus (P)-Total (mg/L)	3.21	<0.30	0.31	<0.30	2.72
	Potassium (K)-Total (mg/L)	10.8	<2.0	2.6	2.2	11.6
	Selenium (Se)-Total (mg/L)	<0.010 DLA	<0.0010	<0.0010	<0.0010	<0.010 DLA
	Silicon (Si)-Total (mg/L)	51.3	<0.050	15.2	4.97	53.9
	Silver (Ag)-Total (mg/L)	0.0245	<0.000020	0.000829	<0.000020	0.0189
	Sodium (Na)-Total (mg/L)	3.2	<2.0	5.7	18.0	3.6
	Strontium (Sr)-Total (mg/L)	2.86	<0.0050	1.60	3.03	3.01
	Thallium (Tl)-Total (mg/L)	<0.0020 DLA	<0.00020	<0.00020	<0.00020	<0.0020 DLA
	Tin (Sn)-Total (mg/L)	<0.0050 DLA	<0.00050	<0.00050	<0.00050	<0.0050 DLA
	Titanium (Ti)-Total (mg/L)	0.545	<0.010	0.274	0.025	0.539
	Uranium (U)-Total (mg/L)	<0.0020 DLA	<0.00020	0.00058	0.00495	<0.0020 DLA
	Vanadium (V)-Total (mg/L)	0.078	<0.0010	0.0116	0.0011	0.078
	Zinc (Zn)-Total (mg/L)	1.26	<0.0050	0.0702	0.0067	1.19
Dissolved Metals	Dissolved Metals Filtration Location	LAB	LAB	LAB	LAB	LAB
	Aluminum (Al)-Dissolved (mg/L)	0.0145	<0.0050	0.0188	0.0055	0.0102
	Antimony (Sb)-Dissolved (mg/L)	0.00306	<0.00050	<0.00050	0.00868	0.00275
	Arsenic (As)-Dissolved (mg/L)	0.00354	<0.00050	0.00091	0.0295	0.00375
	Barium (Ba)-Dissolved (mg/L)	0.037	<0.020	0.044	0.039	0.035
	Beryllium (Be)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Bismuth (Bi)-Dissolved (mg/L)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)	0.000028	<0.000017	<0.000017	<0.000017	0.000029
	Calcium (Ca)-Dissolved (mg/L)	64.7	<0.10	49.5	61.5	64.1
	Chromium (Cr)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cobalt (Co)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	0.00037	<0.00030
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1130044-1 H2O 30-MAR-12 13:40 BJ-DUP1	L1130044-2 H2O 30-MAR-12 14:30 BJ-0A	L1130044-3 H2O 30-MAR-12 11:30 BJ-2A	L1130044-4 H2O 30-MAR-12 14:05 BJ-4A	L1130044-5 H2O 30-MAR-12 13:25 BJ-6A
WATER						
Dissolved Metals	Iron (Fe)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Lead (Pb)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Lithium (Li)-Dissolved (mg/L)	<0.0050	<0.0050	0.0070	0.0314	<0.0050
	Magnesium (Mg)-Dissolved (mg/L)	4.33	<0.10	2.38	14.1	4.34
	Manganese (Mn)-Dissolved (mg/L)	0.0617	<0.00030	0.0775	0.126	0.0617
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0010	<0.0010	0.0018	0.0018	<0.0010
	Nickel (Ni)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	2.2	<2.0	<2.0	<2.0	2.2
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Silicon (Si)-Dissolved (mg/L)	2.93	<0.050	2.03	3.23	2.93
	Silver (Ag)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Sodium (Na)-Dissolved (mg/L)	2.8	<2.0	4.8	17.9	2.9
	Strontium (Sr)-Dissolved (mg/L)	1.96	<0.0050	1.52	3.04	1.99
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Tin (Sn)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00030	<0.00020	0.00032	0.00487	0.00032
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Nitrate (as N)	DLM	L1130044-1, -2, -3, -4, -5
Matrix Spike	Sulfate (SO4)	MS-B	L1130044-1, -2, -3, -4, -5
Matrix Spike	Total Organic Carbon	MS-B	L1130044-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit Adjusted For required dilution
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320
This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method. OR This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0
This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.			
ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0
This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.			
ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.			
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
CN-T-MID-HH-COL-VA	Water	Total Cyanide by HH Distillation	APHA 4500-CN Cyanide
This analysis is carried out using procedures adapted from APHA Method 4500-CN "Cyanide". Total or strong acid dissociable (SAD) cyanide are determined by sample distillation and analysis using the chloramine-T colourimetric method.			
CN-WAD-MID-COL-VA	Water	Weak Acid Dissociable Cyanide by Dist.	APHA 4500-CN Cyanide
This analysis is carried out using procedures adapted from APHA Method 4500-CN "Cyanide". Weak acid dissociable (WAD) cyanide are determined by sample distillation and analysis using the chloramine-T colourimetric method.			
COLOUR-TRUE-VA	Water	Colour (True) by Spectrometer	BCMOE Colour Single Wavelength

Reference Information

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA Water Dissolved Mercury in Water by CVAFS(Low) EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA Water Total Mercury in Water by CVAFS(Low) EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DIS-CCME-MS-VA Water Diss. Metals in Water by ICPMS (CCME) EPA SW-846 3005A/6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

MET-DIS-ICP-VA Water Dissolved Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-TOT-CCME-MS-VA Water Total Metals in Water by ICPMS (CCME) EPA SW-846 3005A/6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TN-CALC-VA Water Total Nitrogen (Calculation) BC MOE LABORATORY MANUAL (2005)

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

10-174709

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10-174709

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1-800-668-9878
www.alsglobal.com

Page 1 of 1

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGC Engineering	Standard: X	Other (specify):	X	Regular (Standard Turnaround Times - Business Days)
Contact:	Katherine Johnston	Select: PDF X	Excel X Digital Fax		Priority (2-4 Business Days) - 50% surcharge - Contact ALS to confirm TAT
Address:	500 - 1045 Howe Street	Email 1:	Kjohnston@BGCengineering.ca		Emergency (1-2 Business Days) - 100% Surcharge - Contact ALS to confirm TAT
	Vancouver BC V6Z 2A9	Email 2:	VCullen@BGCengineering.ca		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	604 684 5900 Fax: 604 684 5909				
Invoice To	Same as Report ? (circle) Yes or (No) (if No, provide details)	**Client / Project Information**		**Analysis Request**	
	Copy of Invoice with Report? (circle) Yes or No	Job #:	1008-006-50	(Indicate Filtered or Preserved, F/P)	
Company:	Pretivm Resources	PO / AFE:	Brucejack		
Contact:	Ken McNaughton	LSD:			
Address:	570 Granville Street, Vancouver, BC				
Phone:	604 558 1784 Fax: 604 558 4784	Quote #:			
Lab Work Order # (lab use only)	VI130044	**ALS Contact:**	D Watt	**Sampler:**	B Smith

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers
	BJ-Dupl	30-03-12	13:40	H_2O	7
	BJ-0A	"	14:30	"	7
	BJ-2A	"	11:30	"	7
	BJ-4A	"	14:05	"	7
	BJ-6A	"	13:25	"	7

AS for ALS ID: L1071509 - Ak D WATT

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Dissolved metals + DOC not filtered or Preserved.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
	30/03/12		RWeeles	Apr 1, 12	10:35	0.1 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION | WHITE - LABORATORY COPY | YELLOW - CLIENT COPY | GENF 18.01 Front

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 03-JUL-12
Report Date: 13-JUL-12 12:48 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1171422

Project P.O. #: 1008-007 BRUCEJACK
Job Reference: 1008-007
C of C Numbers: 10-252137
Legal Site Desc:

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1171422-1 WATER 26-JUN-12 14:10 MW 2A	L1171422-2 WATER 27-JUN-12 09:35 MW 3A	L1171422-3 WATER 27-JUN-12 10:00 MW 3B	L1171422-4 WATER 26-JUN-12 14:45 MW 4A	L1171422-5 WATER 26-JUN-12 09:45 MW 5A
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (uS/cm)	255	343	331	402	460
	Hardness (as CaCO3) (mg/L)	80.0	88.7	157	170	198
	pH (pH)	7.84	8.18	8.07	8.11	8.10
	Total Suspended Solids (mg/L)	298	54.9	326	14.2	4980
	Total Dissolved Solids (mg/L)	166	230	229	283	328
	Turbidity (NTU)	144	40.2	288	9.19	>4000
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.9	<1.0	1.5	1.4	1.5
	Alkalinity, Total (as CaCO3) (mg/L)	81.5	89.4	85.6	108	98.8
	Ammonia, Total (as N) (mg/L)	0.0271	0.0702	0.0295	0.182	0.371
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	3.73	0.60	<0.50	<0.50	3.27
	Fluoride (F) (mg/L)	0.097	0.215	0.112	0.077	0.194
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	0.116	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	0.0023	0.0016	0.0118	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	2.54	0.133	0.138	0.283	0.685
	Total Nitrogen (mg/L)	2.54	0.136	0.139	0.410	0.685
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0030	0.0012	0.0013	<0.0010
	Phosphorus (P)-Total (mg/L)	0.238	0.0283	0.288	0.0214	3.59
	Sulfate (SO4) (mg/L)	49.5	89.7	89.6	109	130
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Total Organic Carbon (mg/L)	46.4	<0.50	<0.50	1.15	4.61
Total Metals	Aluminum (Al)-Total (mg/L)	2.93	0.977	8.47	0.620	32.1
	Antimony (Sb)-Total (mg/L)	0.00218	0.00201	0.00388	0.00474	0.0122
	Arsenic (As)-Total (mg/L)	0.0119	0.0301	0.0379	0.0214	0.798
	Barium (Ba)-Total (mg/L)	0.153	0.0426	0.339	0.0487	1.37
	Beryllium (Be)-Total (mg/L)	0.00011	<0.00010	0.00033	<0.00010	0.00345
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.0024
	Boron (B)-Total (mg/L)	0.023	0.039	0.031	0.069	0.065
	Cadmium (Cd)-Total (mg/L)	0.00424	0.000024	0.000432	0.000015	0.00809
	Calcium (Ca)-Total (mg/L)	31.1	31.8	68.1	52.2	162
	Chromium (Cr)-Total (mg/L)	0.105	0.00046	0.00266	0.00113	0.0481
	Cobalt (Co)-Total (mg/L)	0.00199	0.00022	0.00212	0.00064	0.0337
	Copper (Cu)-Total (mg/L)	0.0232	0.00105	0.0125	0.00101	0.198
	Iron (Fe)-Total (mg/L)	6.00	0.616	7.79	0.407	82.3

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1171422-6 WATER 26-JUN-12 10:20 MW 5B	L1171422-7 WATER 26-JUN-12 11:45 MW 6A	L1171422-8 WATER 27-JUN-12 09:45 DUP1	L1171422-9 WATER 27-JUN-12 11:40 FB	L1171422-10 WATER 27-JUN-12 11:00 DRW
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (uS/cm)	427	230	338	<2.0	321
	Hardness (as CaCO3) (mg/L)	168	85.3	88.1	<0.50	97.7
	pH (pH)	8.05	9.63	8.20	5.73	7.76
	Total Suspended Solids (mg/L)	3830	2580	48.9	<3.0	18000
	Total Dissolved Solids (mg/L)	290	171	222	<10	227
	Turbidity (NTU)	>4000	>4000	41.1	<0.10	>4000
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.7	<1.0	<1.0	1.7	2.6
	Alkalinity, Total (as CaCO3) (mg/L)	89.3	27.8	85.8	<2.0	45.3
	Ammonia, Total (as N) (mg/L)	0.225	0.180	0.0550	<0.0050	0.504
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	4.31	0.58	0.59	<0.50	0.85
	Fluoride (F) (mg/L)	0.256	0.438	0.214	<0.020	0.278
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0144
	Nitrite (as N) (mg/L)	<0.0010	0.0015	0.0032	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	1.54	0.290	0.144	<0.050	10.8
	Total Nitrogen (mg/L)	1.54	0.291	0.148	<0.0025	10.8
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0042	0.0028	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	2.97	1.80	0.0351	<0.0020	14.4
	Sulfate (SO4) (mg/L)	121	73.8	89.7	<0.50	104
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Total Organic Carbon (mg/L)	2.96	0.76	<0.50	<0.50	7.45
Total Metals	Aluminum (Al)-Total (mg/L)	38.3	28.1	3.23	<0.0030	338
	Antimony (Sb)-Total (mg/L)	0.0128	0.0131	0.00234	<0.00010	0.0119
	Arsenic (As)-Total (mg/L)	0.937	0.331	0.0325	<0.00010	17.1
	Barium (Ba)-Total (mg/L)	2.08	18.8	0.0897	<0.000050	2.91
	Beryllium (Be)-Total (mg/L)	0.00253	0.00254	0.00010	<0.00010	0.0330
	Bismuth (Bi)-Total (mg/L)	0.0016	<0.0010 DLA	<0.00050	<0.00050	0.015
	Boron (B)-Total (mg/L)	0.059	0.030	0.038	<0.010	<0.20 DLA
	Cadmium (Cd)-Total (mg/L)	0.0113	0.00194	0.000041	<0.000010	0.0688
	Calcium (Ca)-Total (mg/L)	171	98.2	34.7	<0.020	1960
	Chromium (Cr)-Total (mg/L)	0.0673	0.0157	0.00054	<0.00010	0.671
	Cobalt (Co)-Total (mg/L)	0.0380	0.0141	0.00031	<0.00010	0.714
	Copper (Cu)-Total (mg/L)	0.294	0.105	0.00133	<0.00050	3.20
	Iron (Fe)-Total (mg/L)	92.6	46.3	1.04	<0.030	1320

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1171422-11				
	Description	WATER				
	Sampled Date					
	Sampled Time					
	Client ID	TRAVEL BLANK				
Grouping	**Analyte**					
WATER						
Physical Tests	Colour, True (CU)	<5.0				
	Conductivity (uS/cm)	<2.0				
	Hardness (as CaCO3) (mg/L)					
	pH (pH)	6.20				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	<10				
	Turbidity (NTU)	<0.10				
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.0				
	Alkalinity, Total (as CaCO3) (mg/L)	<2.0				
	Ammonia, Total (as N) (mg/L)	<0.0050				
	Bromide (Br) (mg/L)	<0.050				
	Chloride (Cl) (mg/L)	<0.50				
	Fluoride (F) (mg/L)	<0.020				
	Nitrate (as N) (mg/L)	<0.0050				
	Nitrite (as N) (mg/L)	<0.0010				
	Total Kjeldahl Nitrogen (mg/L)	<0.050				
	Total Nitrogen (mg/L)	<0.0025				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	<0.0020				
	Sulfate (SO4) (mg/L)	<0.50				
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010				
	Cyanide, Total (mg/L)	<0.0010				
Organic / Inorganic Carbon	Total Organic Carbon (mg/L)	<0.50				
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030				
	Antimony (Sb)-Total (mg/L)	<0.00010				
	Arsenic (As)-Total (mg/L)	<0.00010				
	Barium (Ba)-Total (mg/L)	<0.000050				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	<0.010				
	Cadmium (Cd)-Total (mg/L)	<0.000010				
	Calcium (Ca)-Total (mg/L)	<0.020				
	Chromium (Cr)-Total (mg/L)	<0.00010				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	<0.00050				
	Iron (Fe)-Total (mg/L)	<0.030				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1171422-1 WATER 26-JUN-12 14:10 MW 2A	L1171422-2 WATER 27-JUN-12 09:35 MW 3A	L1171422-3 WATER 27-JUN-12 10:00 MW 3B	L1171422-4 WATER 26-JUN-12 14:45 MW 4A	L1171422-5 WATER 26-JUN-12 09:45 MW 5A
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	0.0144	0.00129	0.00614	0.000506	0.139
	Lithium (Li)-Total (mg/L)	0.0357	0.0751	0.0243	0.0343	0.100
	Magnesium (Mg)-Total (mg/L)	2.46	2.64	6.69	11.8	21.8
	Manganese (Mn)-Total (mg/L)	0.232	0.246	0.737	0.106	3.80
	Mercury (Hg)-Total (mg/L)	0.000048	<0.000010	0.000031	0.000011	<0.00010 DLM
	Molybdenum (Mo)-Total (mg/L)	0.00333	0.00244	0.000973	0.00132	0.0172
	Nickel (Ni)-Total (mg/L)	0.0256	<0.00050	0.00196	0.00067	0.0749
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	0.30	<0.30	2.22
	Potassium (K)-Total (mg/L)	1.15	1.78	2.84	1.84	15.8
	Selenium (Se)-Total (mg/L)	0.00031	<0.00010	0.00120	<0.00010	0.00594
	Silicon (Si)-Total (mg/L)	6.03	4.69	30.3	4.65	57.8
	Silver (Ag)-Total (mg/L)	0.000569	0.000092	0.00286	0.000017	0.0412
	Sodium (Na)-Total (mg/L)	20.9	36.5	5.7	18.1	29.9
	Strontium (Sr)-Total (mg/L)	1.47	1.01	1.65	2.65	3.47
	Thallium (Tl)-Total (mg/L)	0.000042	0.000025	0.000244	0.000030	0.00407
	Tin (Sn)-Total (mg/L)	0.00303	<0.00010	0.00016	0.00023	0.00066
	Titanium (Ti)-Total (mg/L)	0.072	0.014	0.280	0.025	0.143
	Uranium (U)-Total (mg/L)	0.000697	0.000242	0.000851	0.00277	0.00561
	Vanadium (V)-Total (mg/L)	0.0049	0.0013	0.0110	<0.0010	0.0478
	Zinc (Zn)-Total (mg/L)	0.113	0.0051	0.0336	0.0037	0.461
Dissolved Metals	Dissolved Metals Filtration Location	LAB	LAB	LAB	LAB	LAB
	Aluminum (Al)-Dissolved (mg/L)	0.0122	0.0159	0.0246	0.0187	5.80
	Antimony (Sb)-Dissolved (mg/L)	0.00082	0.00179	0.00331	0.00463	0.0100
	Arsenic (As)-Dissolved (mg/L)	0.00218	0.0279	0.00768	0.0190	0.0958
	Barium (Ba)-Dissolved (mg/L)	0.0688	0.0235	0.0384	0.0384	0.285
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00047
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010 DLA
	Boron (B)-Dissolved (mg/L)	0.021	0.037	0.025	0.066	0.047
	Cadmium (Cd)-Dissolved (mg/L)	0.00101	<0.000010	0.000081	0.000012	0.00120
	Calcium (Ca)-Dissolved (mg/L)	29.5	31.5	57.2	49.5	63.9
	Chromium (Cr)-Dissolved (mg/L)	0.00694	<0.00010	<0.00010	0.00014	0.00811
	Cobalt (Co)-Dissolved (mg/L)	0.00041	<0.00010	0.00018	0.00027	0.00437
	Copper (Cu)-Dissolved (mg/L)	0.00200	<0.00050	<0.00050	<0.00050	0.0165
	Iron (Fe)-Dissolved (mg/L)	0.039	<0.030	<0.030	<0.030	9.15
	Lead (Pb)-Dissolved (mg/L)	0.000080	<0.000050	<0.000050	<0.000050	0.0186
	Lithium (Li)-Dissolved (mg/L)	0.0323	0.0740	0.00940	0.0296	0.0655
	Magnesium (Mg)-Dissolved (mg/L)	1.53	2.45	3.46	11.3	9.37

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1171422-6 WATER 26-JUN-12 10:20 MW 5B	L1171422-7 WATER 26-JUN-12 11:45 MW 6A	L1171422-8 WATER 27-JUN-12 09:45 DUP1	L1171422-9 WATER 27-JUN-12 11:40 FB	L1171422-10 WATER 27-JUN-12 11:00 DRW
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	0.127	0.165	0.00149	<0.000050	0.679
	Lithium (Li)-Total (mg/L)	0.0794	0.0251	0.0861	<0.00050	0.682
	Magnesium (Mg)-Total (mg/L)	21.9	8.03	2.92	<0.0050	228
	Manganese (Mn)-Total (mg/L)	5.06	2.23	0.269	<0.000050	68.4
	Mercury (Hg)-Total (mg/L)	<0.00010 DLM	0.00057 DLM	<0.000010	<0.000010	<0.00050 DLM
	Molybdenum (Mo)-Total (mg/L)	0.0254	0.0193	0.00282	<0.000050	0.0752
	Nickel (Ni)-Total (mg/L)	0.0755	0.0141	0.00085	<0.00050	1.83
	Phosphorus (P)-Total (mg/L)	2.51	1.74	<0.30	<0.30	44.4
	Potassium (K)-Total (mg/L)	16.3	11.9	2.28	<0.050	107
	Selenium (Se)-Total (mg/L)	0.00759	0.00250	<0.00010	<0.00010	0.0292
	Silicon (Si)-Total (mg/L)	60.4	49.7	9.36	<0.050	339
	Silver (Ag)-Total (mg/L)	0.0567	0.0242	0.000154	<0.000010	0.262
	Sodium (Na)-Total (mg/L)	15.0	6.3	39.0	<2.0	<4.0 DLA
	Strontium (Sr)-Total (mg/L)	2.35	2.18	1.09	<0.00020	6.74
	Thallium (Tl)-Total (mg/L)	0.00329	0.000829	0.000054	<0.000010	0.0157
	Tin (Sn)-Total (mg/L)	0.00043	0.00060	<0.00010	<0.00010	<0.0020 DLA
	Titanium (Ti)-Total (mg/L)	0.188	0.441	0.058	<0.010	0.391
	Uranium (U)-Total (mg/L)	0.00393	0.000839	0.000293	<0.000010	0.0156
	Vanadium (V)-Total (mg/L)	0.0598	0.0490	0.0030	<0.0010	0.550
	Zinc (Zn)-Total (mg/L)	0.500	0.539	0.0058	<0.0030	4.60
Dissolved Metals	Dissolved Metals Filtration Location	LAB	LAB	LAB	LAB	LAB
	Aluminum (Al)-Dissolved (mg/L)	0.0747	0.353	0.0168	<0.0030	0.250
	Antimony (Sb)-Dissolved (mg/L)	0.00457	0.0112	0.00183	<0.00010	0.0556 DTC
	Arsenic (As)-Dissolved (mg/L)	0.00533	0.0795	0.0276	<0.00010	0.0258
	Barium (Ba)-Dissolved (mg/L)	0.0492	0.0446	0.0234	<0.000050	0.0181
	Beryllium (Be)-Dissolved (mg/L)	<0.00020 DLA	<0.00020 DLA	<0.00010	<0.00010	<0.0020 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.0010 DLA	<0.0010 DLA	<0.00050	<0.00050	<0.010 DLA
	Boron (B)-Dissolved (mg/L)	0.039	<0.020 DLA	0.037	<0.010	<0.20 DLA
	Cadmium (Cd)-Dissolved (mg/L)	0.000330	<0.000020 DLA	<0.000010	<0.000010	<0.00020 DLA
	Calcium (Ca)-Dissolved (mg/L)	56.9	33.6	31.3	<0.020	31.1
	Chromium (Cr)-Dissolved (mg/L)	<0.00020 DLA	0.00081	<0.00010	<0.00010	<0.0020 DLA
	Cobalt (Co)-Dissolved (mg/L)	0.00037	<0.00020 DLA	<0.00010	<0.00010	<0.0020 DLA
	Copper (Cu)-Dissolved (mg/L)	<0.0010 DLA	0.0013	<0.00050	<0.00050	<0.010 DLA
	Iron (Fe)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.060 DLM
	Lead (Pb)-Dissolved (mg/L)	<0.00010 DLA	<0.00010 DLA	<0.000050	<0.000050	<0.0010 DLA
	Lithium (Li)-Dissolved (mg/L)	0.0232	0.0021	0.0737	<0.00050	0.017
	Magnesium (Mg)-Dissolved (mg/L)	6.38	0.340	2.38	<0.0050	4.88

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1171422-11				
	Description	WATER				
	Sampled Date					
	Sampled Time					
	Client ID	TRAVEL BLANK				
Grouping	**Analyte**					
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	<0.00050				
	Magnesium (Mg)-Total (mg/L)	<0.0050				
	Manganese (Mn)-Total (mg/L)	<0.000050				
	Mercury (Hg)-Total (mg/L)	<0.000010				
	Molybdenum (Mo)-Total (mg/L)	<0.000050				
	Nickel (Ni)-Total (mg/L)	<0.00050				
	Phosphorus (P)-Total (mg/L)	<0.30				
	Potassium (K)-Total (mg/L)	<0.050				
	Selenium (Se)-Total (mg/L)	<0.00010				
	Silicon (Si)-Total (mg/L)	<0.050				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	<2.0				
	Strontium (Sr)-Total (mg/L)	<0.00020				
	Thallium (Tl)-Total (mg/L)	<0.000010				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	<0.000010				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Dissolved Metals	Dissolved Metals Filtration Location					
	Aluminum (Al)-Dissolved (mg/L)					
	Antimony (Sb)-Dissolved (mg/L)					
	Arsenic (As)-Dissolved (mg/L)					
	Barium (Ba)-Dissolved (mg/L)					
	Beryllium (Be)-Dissolved (mg/L)					
	Bismuth (Bi)-Dissolved (mg/L)					
	Boron (B)-Dissolved (mg/L)					
	Cadmium (Cd)-Dissolved (mg/L)					
	Calcium (Ca)-Dissolved (mg/L)					
	Chromium (Cr)-Dissolved (mg/L)					
	Cobalt (Co)-Dissolved (mg/L)					
	Copper (Cu)-Dissolved (mg/L)					
	Iron (Fe)-Dissolved (mg/L)					
	Lead (Pb)-Dissolved (mg/L)					
	Lithium (Li)-Dissolved (mg/L)					
	Magnesium (Mg)-Dissolved (mg/L)					

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1171422-1	L1171422-2	L1171422-3	L1171422-4	L1171422-5
Description	WATER	WATER	WATER	WATER	WATER
Sampled Date	26-JUN-12	27-JUN-12	27-JUN-12	26-JUN-12	26-JUN-12
Sampled Time	14:10	09:35	10:00	14:45	09:45
Client ID	MW 2A	MW 3A	MW 3B	MW 4A	MW 5A
Grouping / **Analyte**					
WATER					
Dissolved Metals Manganese (Mn)-Dissolved (mg/L)	0.129	0.192	0.250	0.0695	0.831
Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.00010 DLM
Molybdenum (Mo)-Dissolved (mg/L)	0.00252	0.00247	0.000584	0.00120	0.0141
Nickel (Ni)-Dissolved (mg/L)	0.00632	<0.00050	<0.00050	0.00052	0.0119
Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	0.35
Potassium (K)-Dissolved (mg/L)	0.810	1.55	0.976	1.62	8.49
Selenium (Se)-Dissolved (mg/L)	<0.00010	<0.00010	0.00059	<0.00010	0.00072
Silicon (Si)-Dissolved (mg/L)	2.11	2.91	2.84	3.07	19.2
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	0.00503
Sodium (Na)-Dissolved (mg/L)	20.0	36.7	5.0	17.9	29.2
Strontium (Sr)-Dissolved (mg/L)	1.39	0.991	1.58	2.56	2.54
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000044	0.000020	0.000746
Tin (Sn)-Dissolved (mg/L)	0.00021	<0.00010	<0.00010	<0.00010	<0.00020 DLA
Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	0.102
Uranium (U)-Dissolved (mg/L)	0.000323	0.000181	0.000663	0.00269	0.00156
Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0094
Zinc (Zn)-Dissolved (mg/L)	0.0188	<0.0030	<0.0030	<0.0030	0.0425
Aggregate Organics COD (mg/L)	192	<20	26	<20	204

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1171422-6	L1171422-7	L1171422-8	L1171422-9	L1171422-10
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	26-JUN-12	26-JUN-12	27-JUN-12	27-JUN-12	27-JUN-12
	Sampled Time	10:20	11:45	09:45	11:40	11:00
	Client ID	MW 5B	MW 6A	DUP1	FB	DRW
Grouping	**Analyte**					
WATER						
Dissolved Metals	Manganese (Mn)-Dissolved (mg/L)	0.554	DLA <0.00010	0.192	<0.000050	0.0382
	Mercury (Hg)-Dissolved (mg/L)	DLM <0.00010	DLM <0.00010	<0.000010	<0.000010	DLM <0.00050
	Molybdenum (Mo)-Dissolved (mg/L)	0.0158	0.0176	0.00251	<0.000050	0.0317
	Nickel (Ni)-Dissolved (mg/L)	0.0017	DLA <0.0010	<0.00050	<0.00050	DLA <0.010
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	DLM <0.60
	Potassium (K)-Dissolved (mg/L)	5.53	3.79	1.53	<0.050	41.1
	Selenium (Se)-Dissolved (mg/L)	DLA <0.00020	0.00169	<0.00010	<0.00010	DLA <0.0020
	Silicon (Si)-Dissolved (mg/L)	2.57	4.36	2.80	<0.050	2.30
	Silver (Ag)-Dissolved (mg/L)	DLA <0.000020	0.000049	<0.000010	<0.000010	DLA <0.00020
	Sodium (Na)-Dissolved (mg/L)	14.5	5.3	36.8	<2.0	DLM <4.0
	Strontium (Sr)-Dissolved (mg/L)	1.66	1.23	0.994	<0.00020	0.212
	Thallium (Tl)-Dissolved (mg/L)	0.000129	0.000051	0.000010	<0.000010	DLA <0.00020
	Tin (Sn)-Dissolved (mg/L)	DLA <0.00020	DLA <0.00020	<0.00010	<0.00010	DLA <0.0020
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	DLM <0.020
	Uranium (U)-Dissolved (mg/L)	0.00107	DLA <0.000020	0.000193	<0.000010	DLA <0.00020
	Vanadium (V)-Dissolved (mg/L)	DLA <0.0020	0.0051	<0.0010	<0.0010	DLA <0.020
	Zinc (Zn)-Dissolved (mg/L)	DLA <0.0060	DLA <0.0060	<0.0030	<0.0030	DLA <0.060
Aggregate Organics	COD (mg/L)	171	64	<20	<20	81

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1171422-11				
	Description	WATER				
	Sampled Date					
	Sampled Time					
	Client ID	TRAVEL BLANK				
Grouping	**Analyte**					
WATER						
Dissolved Metals	Manganese (Mn)-Dissolved (mg/L)					
	Mercury (Hg)-Dissolved (mg/L)					
	Molybdenum (Mo)-Dissolved (mg/L)					
	Nickel (Ni)-Dissolved (mg/L)					
	Phosphorus (P)-Dissolved (mg/L)					
	Potassium (K)-Dissolved (mg/L)					
	Selenium (Se)-Dissolved (mg/L)					
	Silicon (Si)-Dissolved (mg/L)					
	Silver (Ag)-Dissolved (mg/L)					
	Sodium (Na)-Dissolved (mg/L)					
	Strontium (Sr)-Dissolved (mg/L)					
	Thallium (Tl)-Dissolved (mg/L)					
	Tin (Sn)-Dissolved (mg/L)					
	Titanium (Ti)-Dissolved (mg/L)					
	Uranium (U)-Dissolved (mg/L)					
	Vanadium (V)-Dissolved (mg/L)					
	Zinc (Zn)-Dissolved (mg/L)					
Aggregate Organics	COD (mg/L)	<20				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Barium (Ba)-Dissolved	MB-LOR	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Method Blank	Barium (Ba)-Dissolved	MB-LOR	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1171422-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L1171422-2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L1171422-1
Matrix Spike	Phosphorus (P)-Total	MS-B	L1171422-1
Matrix Spike	Arsenic (As)-Total	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Total	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Manganese (Mn)-Total	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Total	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1171422-1, -10, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit Adjusted For required dilution
DLM	Detection Limit Adjusted For Sample Matrix Effects
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MB-LOR	Method Blank exceeds ALS DQO. LORs adjusted for samples with positive hits below 5 times blank level. Please contact ALS if re-analysis is required.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent

Reference Information

Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA	Water	Low Level Total Cyanide in water by CFA	ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA	Water	Low level WAD Cyanide in water by CFA	APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA	Water	Chemical Oxygen Demand by Colorimetric	APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA	Water	Colour (True) by Spectrometer	BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA	Water	Dissolved Mercury in Water by CVAFS(Low)	EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA	Water	Total Mercury in Water by CVAFS(Low)	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-DIS-ICP-VA	Water	Dissolved Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the

Reference Information

American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TN-CALC-VA Water Total Nitrogen (Calculation) BC MOE LABORATORY MANUAL (2005)

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

Reference Information

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

10-252137

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Short Holding Time

ALS Environm

Rush Processing

Chain of Cu
Canad

L1171422-COFC

10-252137

Page 1 of 1

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGC Engineering	Standard:	Y Other (specify):	✓	Regular (Standard Turnaround Times - Business Days)
Contact:	V. Cullen	Select: PDF	X Excel X Digital Fax		Priority(2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address:	500 - 1045 Howe Street Vancouver, BC V6Z 2A9	Email 1:	VCullen@BGCengineering.ca		Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
		Email 2:	KJohnston@BGCengineering.ca		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	604 684 5900 Fax: 604 684 5909				

Invoice To	Same as Report ? (circle) Yes or (No) (if No, provide details)	Client / Project Information	
	Copy of Invoice with Report? (circle) Yes or No	Job #:	1008-007
Company:	Pretium Resources	PO / AFE:	~~1007-008~~ 1008007 Brucejack
Contact:	Ken McNaughton	LSD:	
Address:	570 Granville St. Vancouver		
Phone:	604 558 1784 Fax: 604 558 4784	Quote #:	

Lab Work Order # (lab use only)	L1171422	ALS Contact:	D. Watt	Sampler:	BSmith / A Maduro JMcFum.

Analysis Request (Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	F Total Metals	F Diss. Metals	F Cyanides	F TOC	F COD / NH3 / TKN							Number of Containers
	MW 2A	26-06-12	14:10	H_2O	✓	✓	✓	✓	✓	✓							
	MW 3A	27-06-12	9:35	"	✓	✓	✓	✓	✓	✓							
	MW 3B	27-06-12	10:00	"	✓	✓	✓	✓	✓	✓							
	MW 4A	26-06-12	14:45	"	✓	✓	✓	✓	✓	✓							
	MW 5A	26-06-12	9:45	"	✓	✓	✓	✓	✓	✓							
	MW 5B	26-06-12	10:20	"	✓	✓	✓	✓	✓	✓							
	MW 6A	26-06-12	11:45	"	✓	✓	✓	✓	✓	✓							
	Dup1	27-06-12	9:45.	"	✓	✓	✓	✓	✓	✓							
	FB	27-06-12	11:40	"	✓	✓	✓	✓	✓	✓							
	DRW	27-06-12	11:00	"	✓	✓	✓	✓	✓	✓							
	Travel Blank			"	✓	✓	✓	✓	✓	✓							

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Hold Samples MW 5A, MW 5B and MW 6A until instructed to process. Diss Metals Not Filtered or Preserved

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
	21 June 12		HD	21/06/12	10:38	12 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

GENF 18.01 Front

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 06-JUL-12
Report Date: 18-JUL-12 18:14 (MT)
Version: FINAL REV. 2

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1174115

Project P.O. #: BRUCEJACK
Job Reference: 1008.007
C of C Numbers: 10-252136
Legal Site Desc:

Comments: ADDITIONAL 18-JUL-12 13:05

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1174115-1	L1174115-2			
	Description	WATER	WATER			
	Sampled Date	28-JUN-12	28-JUN-12			
	Sampled Time	14:30	15:30			
	Client ID	MW-8A	MW-8B			
Grouping	**Analyte**					
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0			
	Conductivity (uS/cm)	203	187			
	Hardness (as CaCO3) (mg/L)	90.0	64.1			
	pH (pH)	8.22	8.26			
	Total Suspended Solids (mg/L)	212	5340			
	Total Dissolved Solids (mg/L)	145	142			
	Turbidity (NTU)	118	>4000			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	75.9	55.2			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	75.9	55.2			
	Ammonia, Total (as N) (mg/L)	<0.0050	0.0080			
	Bromide (Br) (mg/L)	<0.050	<0.050			
	Chloride (Cl) (mg/L)	<0.50	<0.50			
	Fluoride (F) (mg/L)	0.030	0.061			
	Nitrate (as N) (mg/L)	0.0268	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.570			
	Total Nitrogen (mg/L)	0.0268	0.570			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0082			
	Phosphorus (P)-Total (mg/L)	0.104	1.26			
	Sulfate (SO4) (mg/L)	33.9	40.3			
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010			
	Cyanide, Total (mg/L)	<0.0010	<0.0010			
Organic / Inorganic Carbon	Total Organic Carbon (mg/L)	0.58	8.07			
Total Metals	Aluminum (Al)-Total (mg/L)	5.14	50.4			
	Antimony (Sb)-Total (mg/L)	0.00156	0.00251			
	Arsenic (As)-Total (mg/L)	0.0315	0.525			
	Barium (Ba)-Total (mg/L)	0.101	0.910			
	Beryllium (Be)-Total (mg/L)	0.00044	0.00732			
	Bismuth (Bi)-Total (mg/L)	<0.00050	0.0016			
	Boron (B)-Total (mg/L)	0.014	0.044			
	Cadmium (Cd)-Total (mg/L)	0.000235	0.000601			
	Calcium (Ca)-Total (mg/L)	41.4	118			
	Chromium (Cr)-Total (mg/L)	0.00459	0.0281			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1174115-1	L1174115-2			
	Description	WATER	WATER			
	Sampled Date	28-JUN-12	28-JUN-12			
	Sampled Time	14:30	15:30			
	Client ID	MW-8A	MW-8B			
Grouping	**Analyte**					
WATER						
Total Metals	Cobalt (Co)-Total (mg/L)	0.00155	0.0334			
	Copper (Cu)-Total (mg/L)	0.00741	0.104			
	Iron (Fe)-Total (mg/L)	4.97	52.2			
	Lead (Pb)-Total (mg/L)	0.00752	0.0699			
	Lithium (Li)-Total (mg/L)	0.0114	0.0531			
	Magnesium (Mg)-Total (mg/L)	6.89	19.4			
	Manganese (Mn)-Total (mg/L)	0.282	3.22			
	Mercury (Hg)-Total (mg/L)	<0.000010	0.000480 DLM			
	Molybdenum (Mo)-Total (mg/L)	0.00261	0.00150			
	Nickel (Ni)-Total (mg/L)	0.00116	0.0212			
	Phosphorus (P)-Total (mg/L)	<0.30	0.88			
	Potassium (K)-Total (mg/L)	1.88	7.90			
	Selenium (Se)-Total (mg/L)	0.00023	0.00061			
	Silicon (Si)-Total (mg/L)	13.6	84.7			
	Silver (Ag)-Total (mg/L)	0.000223	0.00161			
	Sodium (Na)-Total (mg/L)	6.0	13.2			
	Strontium (Sr)-Total (mg/L)	0.762	0.960			
	Thallium (Tl)-Total (mg/L)	0.000132	0.000912			
	Tin (Sn)-Total (mg/L)	0.00047	0.00134			
	Titanium (Ti)-Total (mg/L)	0.051	0.093			
	Uranium (U)-Total (mg/L)	0.00119	0.0116			
	Vanadium (V)-Total (mg/L)	0.0048	0.0490			
	Zinc (Zn)-Total (mg/L)	0.0337	0.358			
Dissolved Metals	Dissolved Metals Filtration Location	LAB	LAB			
	Aluminum (Al)-Dissolved (mg/L)	0.0200	2.12			
	Antimony (Sb)-Dissolved (mg/L)	0.00137	0.00148			
	Arsenic (As)-Dissolved (mg/L)	0.00691	0.0492			
	Barium (Ba)-Dissolved (mg/L)	0.0223	0.0575			
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010			
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050			
	Boron (B)-Dissolved (mg/L)	0.013	0.017			
	Cadmium (Cd)-Dissolved (mg/L)	0.000012	<0.000010			
	Calcium (Ca)-Dissolved (mg/L)	27.7	21.5			
	Chromium (Cr)-Dissolved (mg/L)	0.00019	0.00152			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00029			
	Copper (Cu)-Dissolved (mg/L)	<0.00050	0.00108			
	Iron (Fe)-Dissolved (mg/L)	<0.030	0.768			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1174115-1	L1174115-2			
	Description	WATER	WATER			
	Sampled Date	28-JUN-12	28-JUN-12			
	Sampled Time	14:30	15:30			
	Client ID	MW-8A	MW-8B			
Grouping	**Analyte**					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000639			
	Lithium (Li)-Dissolved (mg/L)	0.00913	0.00739			
	Magnesium (Mg)-Dissolved (mg/L)	5.06	2.52			
	Manganese (Mn)-Dissolved (mg/L)	0.0118	0.0242			
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00246	0.00301 DTC			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30			
	Potassium (K)-Dissolved (mg/L)	0.858	1.86			
	Selenium (Se)-Dissolved (mg/L)	0.00019	0.00039			
	Silicon (Si)-Dissolved (mg/L)	2.03	10.8			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	0.000015			
	Sodium (Na)-Dissolved (mg/L)	5.9	12.4			
	Strontium (Sr)-Dissolved (mg/L)	0.655	0.328			
	Thallium (Tl)-Dissolved (mg/L)	0.000011	0.000050			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00016			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	0.040			
	Uranium (U)-Dissolved (mg/L)	0.000249	0.00111			
	Vanadium (V)-Dissolved (mg/L)	<0.0010	0.0045			
	Zinc (Zn)-Dissolved (mg/L)	<0.0030	0.0044			
Aggregate Organics	COD (mg/L)	<20	38			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bromide (Br)	DLM	L1174115-1, -2
Duplicate	Chloride (Cl)	DLM	L1174115-1, -2
Duplicate	Fluoride (F)	DLM	L1174115-1, -2
Duplicate	Nitrite (as N)	DLM	L1174115-1, -2
Matrix Spike	Nitrate (as N)	MS-B	L1174115-1, -2
Matrix Spike	Phosphorus (P)-Total	MS-B	L1174115-1, -2
Matrix Spike	Aluminum (Al)-Total	MS-B	L1174115-1
Matrix Spike	Arsenic (As)-Total	MS-B	L1174115-1
Matrix Spike	Barium (Ba)-Total	MS-B	L1174115-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L1174115-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1174115-1
Matrix Spike	Manganese (Mn)-Total	MS-B	L1174115-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L1174115-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 "Alkalinity"

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

Reference Information

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA	Water	Low Level Total Cyanide in water by CFA	ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA	Water	Low level WAD Cyanide in water by CFA	APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA	Water	Chemical Oxygen Demand by Colorimetric	APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA	Water	Colour (True) by Spectrometer	BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA	Water	Dissolved Mercury in Water by CVAFS(Low)	EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA	Water	Total Mercury in Water by CVAFS(Low)	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-DIS-ICP-VA	Water	Dissolved Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or

Reference Information

microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TN-CALC-VA Water Total Nitrogen (Calculation) BC MOE LABORATORY MANUAL (2005)

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

Reference Information

10-252136

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10-252136

ALS Environmental

L1174115-COFC Form

Page 1 of 1

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGC Engineering Inc.	Standard:	X Other (specify):	✓	Regular (Standard Turnaround Times - Business Days)
Contact:	V. Cullen	Select: PDF	X Excel X Digital Fax		Priority(2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address:	500 - 1045 Howe St.	Email 1:	VCullen@BGCengineering.ca		Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
	Vancouver, BC V6Z 2A9	Email 2:	KJohnston@BGCengineering.ca		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	604 684 5900 Fax: 604 684 4909			Analysis Request	
Invoice To	Same as Report ? (circle) Yes or (No) (if No, provide details)	Client / Project Information		(Indicate Filtered or Preserved, F/P)	
	Copy of Invoice with Report? (circle) Yes or No	Job #:	1008 007		
Company:	Pretium Resources	PO / AFE:	Brucejack		
Contact:	Ken Mc Naughton	LSD:			
Address:	570 Granville St. Vancaver				
Phone:	604 558 1784 Fax: 604 558 4784	Quote #:			
Lab Work Order # (lab use only)	L1174115	ALS Contact:	D Wath	Sampler:	BSmith / T Beebe.

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	F Total Metals	F Diss Metals	F Cyanides	F TOC	F COD/TKN/NH_3	Number of Containers
	MW-8A	28-06-12	14:30	H_2O	✓	✓	✓	✓	✓	✓	6
	MW-8B	28-06-12	15:30	"	✓	✓	✓	✓	✓	✓	6

Short Holding Time

Rush Processing

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Diss Metals not Filtered or Preserved

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Brett Smith	28/06/12		Brittany	July 6	10:20	17.7 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY GENF 18.01 Front

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 06-SEP-12
Report Date: 17-SEP-12 17:20 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1205274

Project P.O. #: 1008007
Job Reference: BRUCEJACK
C of C Numbers: 10-239827
Legal Site Desc:

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1205274-1 H2O 03-SEP-12 BJ-4A	L1205274-2 H2O 03-SEP-12 BJ-4B	L1205274-3 H2O 03-SEP-12 BJ-6A	L1205274-4 H2O 03-SEP-12 BJ-6B	L1205274-5 H2O 03-SEP-12 BJ-DUP1
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (uS/cm)	425	389	212	331	560
	Hardness (as CaCO3) (mg/L)	177	67.2	93.1	9.83	8.76
	pH (pH)	7.26	8.57	8.71	9.92	9.87
	Total Suspended Solids (mg/L)	18.8	66.8	3050	886	10.8
	Total Dissolved Solids (mg/L)	292	253	172	426	359
	Turbidity (NTU)	9.60	73.9	>4000 TMV	1900	35.2
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	9.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	106	93.4	22.7	36.2	74.5
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	2.3	<1.0	56.1	97.5
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	106	95.6	22.7	92.3	172
	Ammonia, Total (as N) (mg/L)	0.163	0.0869	0.156	0.192	0.162
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	1.16	<0.50	<0.50	1.27	<0.50
	Fluoride (F) (mg/L)	0.086	0.126	0.319	0.243	0.153
	Nitrate (as N) (mg/L)	0.114	<0.0050	0.0071	0.0101	<0.0050
	Nitrite (as N) (mg/L)	0.0037	0.0017	0.0014	0.0034	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.237	0.179	1.27	0.86	0.202
	Total Nitrogen (mg/L)	0.355	0.181	1.28	0.88	0.202
	Orthophosphate-Dissolved (as P) (mg/L)	0.0014	0.0013	0.0061	0.0018	0.0025
	Phosphorus (P)-Total (mg/L)	0.0214	0.0196	1.70	0.264	0.0078
	Sulfate (SO4) (mg/L)	123	104	75.6	68.4	109
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.22	0.56	0.82	1.04	<0.50
	Total Organic Carbon (mg/L)	2.35	1.18	0.94	1.62	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.243	1.12	29.6	16.7	0.802
	Antimony (Sb)-Total (mg/L)	0.00354	0.00374	0.0137	0.00706	0.00396
	Arsenic (As)-Total (mg/L)	0.0225	0.0143	0.360	0.0457	0.0134
	Barium (Ba)-Total (mg/L)	0.0574	0.0623	20.9	0.557	0.0578
	Beryllium (Be)-Total (mg/L)	<0.00010	0.00011	0.00359	0.00227	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.0010 DLA	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	0.070	0.054	0.034	0.155	0.046
	Cadmium (Cd)-Total (mg/L)	0.000040	0.000011	0.00140	0.000230	0.000012
	Calcium (Ca)-Total (mg/L)	51.5	22.8	86.4	6.66	29.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1205274-1	L1205274-2	L1205274-3	L1205274-4	L1205274-5
	Description	H2O	H2O	H2O	H2O	H2O
	Sampled Date	03-SEP-12	03-SEP-12	03-SEP-12	03-SEP-12	03-SEP-12
	Sampled Time					
	Client ID	BJ-4A	BJ-4B	BJ-6A	BJ-6B	BJ-DUP1
Grouping	**Analyte**					
WATER						
Total Metals	Chromium (Cr)-Total (mg/L)	0.00075	0.0122	0.0184	0.00826	0.0110
	Cobalt (Co)-Total (mg/L)	0.00070	0.00022	0.0154	0.00841	0.00026
	Copper (Cu)-Total (mg/L)	0.00170	0.00489	0.113	0.0662	0.00666
	Iron (Fe)-Total (mg/L)	0.386	0.570	55.6	25.1	0.517
	Lead (Pb)-Total (mg/L)	0.000528	0.00117	0.188	0.179	0.00155
	Lithium (Li)-Total (mg/L)	0.0298	0.176	0.0380	0.175	0.156
	Magnesium (Mg)-Total (mg/L)	11.6	2.21	12.6	7.93	2.90
	Manganese (Mn)-Total (mg/L)	0.114	0.0467	2.10	0.840	0.0591
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	0.00046	0.000099	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.00135	0.00155	0.0108	0.00508	0.00170
	Nickel (Ni)-Total (mg/L)	0.00084	0.00592	0.0176	0.00924	0.00567
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	1.81	<0.30	<0.30
	Potassium (K)-Total (mg/L)	1.62	1.71	8.96	6.74	1.62
	Selenium (Se)-Total (mg/L)	<0.00010	<0.00010	0.00248	0.00143	0.00010
	Silicon (Si)-Total (mg/L)	3.33	6.15	63.0	43.0	5.06
	Silver (Ag)-Total (mg/L)	0.000031	0.000073	0.0211	0.00764	0.000095
	Sodium (Na)-Total (mg/L)	21.0	86.2	6.7	67.8 DTC	72.0 DTC
	Strontium (Sr)-Total (mg/L)	2.59	0.437	2.62	0.348	0.491
	Thallium (Tl)-Total (mg/L)	0.000021	0.000044	0.000697	0.000350	0.000040
	Tin (Sn)-Total (mg/L)	0.00033	0.00035	0.00072	0.00015	0.00043
	Titanium (Ti)-Total (mg/L)	0.014	0.014	0.515	0.223	<0.010
	Uranium (U)-Total (mg/L)	0.00292	0.00121	0.00110	0.000504	0.00156
	Vanadium (V)-Total (mg/L)	<0.0010	0.0019	0.0496	0.0304	0.0014
	Zinc (Zn)-Total (mg/L)	0.0071	0.0077	0.651	0.384	0.0098
Dissolved Metals	Dissolved Metals Filtration Location	LAB	LAB	LAB	LAB	LAB
	Aluminum (Al)-Dissolved (mg/L)	0.0080	0.0587	0.0967	0.504 DTC	0.327 DTC
	Antimony (Sb)-Dissolved (mg/L)	0.00349	0.00316	0.00975	0.0108	0.00381
	Arsenic (As)-Dissolved (mg/L)	0.0192	0.00985	0.0844	0.0294	0.0186
	Barium (Ba)-Dissolved (mg/L)	0.0338	0.0353	0.0427	0.0390	0.0386
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0010 DLA	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	0.072	0.035	0.021	0.145	0.069 DTC
	Cadmium (Cd)-Dissolved (mg/L)	0.000024	<0.000010	<0.000020 DLA	<0.000010	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	51.5	21.3	34.5	3.68	3.16
	Chromium (Cr)-Dissolved (mg/L)	0.00015	0.00047	<0.00020 DLA	0.00019	0.00043
	Cobalt (Co)-Dissolved (mg/L)	0.00026	<0.00010	<0.00020 DLA	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00050	0.00086	<0.0010 DLA	0.00092	<0.00050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1205274-1 H2O 03-SEP-12 BJ-4A	L1205274-2 H2O 03-SEP-12 BJ-4B	L1205274-3 H2O 03-SEP-12 BJ-6A	L1205274-4 H2O 03-SEP-12 BJ-6B	L1205274-5 H2O 03-SEP-12 BJ-DUP1
WATER						
Dissolved Metals	Iron (Fe)-Dissolved (mg/L)	<0.030	<0.030	<0.030	0.135	<0.030
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.00024	0.00144	0.000087
	Lithium (Li)-Dissolved (mg/L)	0.0306	0.109 DTC	0.0038	0.141	0.284 DTC
	Magnesium (Mg)-Dissolved (mg/L)	11.6	3.38	1.71	0.153	0.212
	Manganese (Mn)-Dissolved (mg/L)	0.0860	0.00456	0.00236	0.00664	0.00290
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00134	0.00149	0.00940 DLA	0.00644 DTC	0.000843
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	1.59	1.42	2.79	2.67	1.58
	Selenium (Se)-Dissolved (mg/L)	<0.00010	0.00011	0.00106	0.00075	<0.00010
	Silicon (Si)-Dissolved (mg/L)	2.90	3.59	3.51	5.49	4.16
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	0.000021	0.000089	<0.000010
	Sodium (Na)-Dissolved (mg/L)	21.0	57.6	5.0	67.9	120 DTC
	Strontium (Sr)-Dissolved (mg/L)	2.63	0.474	1.70	0.214	0.234
	Thallium (Tl)-Dissolved (mg/L)	0.000018	0.000015	0.000056	0.000037	0.000029
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.00010	0.00013
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00307	0.00213 DTC	0.000231	0.000135	0.000173
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	0.0020	0.0023	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0031	<0.0030	<0.0060 DLA	<0.0030	<0.0030
Aggregate Organics	COD (mg/L)	<20	<20	45	<20	<20

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Arsenic (As)-Dissolved	DLA	L1205274-1, -2, -3, -4, -5
Duplicate	Beryllium (Be)-Dissolved	DLA	L1205274-1, -2, -3, -4, -5
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1205274-1, -2, -3, -4, -5
Duplicate	Lead (Pb)-Dissolved	DLA	L1205274-1, -2, -3, -4, -5
Duplicate	Silver (Ag)-Dissolved	DLA	L1205274-1, -2, -3, -4, -5
Duplicate	Tin (Sn)-Dissolved	DLA	L1205274-1, -2, -3, -4, -5
Duplicate	Vanadium (V)-Dissolved	DLA	L1205274-1, -2, -3, -4, -5
Matrix Spike	Phosphorus (P)-Total	MS-B	L1205274-2, -3, -4, -5
Matrix Spike	Phosphorus (P)-Total	MS-B	L1205274-2, -3, -4, -5
Matrix Spike	Total Organic Carbon	MS-B	L1205274-1, -2, -3, -4, -5
Matrix Spike	Phosphorus (P)-Total	MS-B	L1205274-1
Matrix Spike	Sulfate (SO4)	MS-B	L1205274-1, -2, -3, -4, -5
Matrix Spike	Mercury (Hg)-Total	MS-B	L1205274-4
Matrix Spike	Mercury (Hg)-Total	MS-B	L1205274-4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit Adjusted For required dilution
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TMV	Turbidity exceeded upper limit of the nephelometric method. Minimum value reported.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 "Alkalinity"

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

Reference Information

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA Water Sulfate by Ion Chromatography APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA Water Low level WAD Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA Water Chemical Oxygen Demand by Colorimetric APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA Water Colour (True) by Spectrometer BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA Water Dissolved Mercury in Water by CVAFS(Low) EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA Water Total Mercury in Water by CVAFS(Low) EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-DIS-ICP-VA Water Dissolved Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or

Reference Information

filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TN-CALC-VA Water Total Nitrogen (Calculation) BC MOE LABORATORY MANUAL (2005)

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

10-239827

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10-239827

ALS E

L1205274-COFC

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page 1 of 1

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)
Company:	BGC Engineering.	Standard: ✓ Other (specify):		✓ Regular (Standard Turnaround Times - Business Days)
Contact:	Virginia Cullen	Select: PDF ✓ Excel ✓ Digital Fax		Priority (2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address:	508 - 1045 Howe Street. Vancouver, BC V6Z 2A9	Email 1: V Cullen@BGCEngineering.ca		Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
		Email 2: K Johnston@BGCEngineering.ca		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	604 684 5900 Fax: 604 684 5909			

Invoice To	Same as Report ? (circle) Yes or (No) (if No, provide details)	Client / Project Information	
	Copy of Invoice with Report? (circle) Yes or No	Job #:	Bruejack
Company:	Pretium Resources.	PO / AFE:	1008007
Contact:	K. McNaughton.	LSD:	
Address:	1600 - 570 Granville Street, Vancouver, V6C3P1		
Phone:	Fax:	Quote #:	

Lab Work Order # (lab use only)	L1205274	ALS Contact:	D Watt.	Sampler:	BSmith AMarden.

Analysis Request (Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	Cyanides	Total metals	Diss. Metals	DOC	TOC	NH_4/TKN/Cond	Number of Containers
	BJ-4A	03-09-12		H_2O	✓	✓	✓	✓	✓	✓	✓	
	BJ-4B	03-09-12		"	✓	✓	✓	✓	✓	✓	✓	
	BJ-6A	03-09-12		"	✓	✓	✓	✓	✓	✓	✓	
	BJ-6B	03-09-12		"	✓	✓	✓	✓	✓	✓	✓	
	BJ-Dupl	03-09-12		"	✓	✓	✓	✓	✓	✓	✓	

Short Holding Time

Rush Processing

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Diss Metals + DOC Not Filtered or Preserved.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
	07/09/12	10:00.	Brittany	Sept. 6	10:10	6.5 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY — GENF 18.01 Front

WHITE PAPER CO. 604-951-3900

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 10-SEP-12
Report Date: 19-SEP-12 15:38 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1206550

Project P.O. #: BRUCEJACK
Job Reference: 1008007
C of C Numbers: 10-239823
Legal Site Desc:

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1206550-1	L1206550-2	L1206550-3		
	Description	WATER	WATER	WATER		
	Sampled Date	05-SEP-12	05-SEP-12	05-SEP-12		
	Sampled Time	12:40	16:00			
	Client ID	BJ-12A	BJ-FB	TRAVEL BLANK		
Grouping	**Analyte**					
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0			
	Conductivity (uS/cm)	455	<2.0			
	Hardness (as CaCO3) (mg/L)	220	<0.50	<0.50		
	pH (pH)	8.14	5.81			
	Total Suspended Solids (mg/L)	842	<3.0			
	Total Dissolved Solids (mg/L)	330	<10			
	Turbidity (NTU)	272	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.3	2.4			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	81.8	<2.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	<2.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<2.0			
	Alkalinity, Total (as CaCO3) (mg/L)	81.8	<2.0			
	Ammonia, Total (as N) (mg/L)	0.125	<0.0050	<0.0050		
	Bromide (Br) (mg/L)	<0.050	<0.050			
	Chloride (Cl) (mg/L)	1.07	<0.50			
	Fluoride (F) (mg/L)	0.204	<0.020			
	Nitrate (as N) (mg/L)	<0.0050	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.180	<0.050	<0.050		
	Total Nitrogen (mg/L)	0.180	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.465	<0.0020			
	Sulfate (SO4) (mg/L)	153	<0.50			
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010		
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.57	<0.50	<0.50		
	Total Organic Carbon (mg/L)	4.50	<0.50	<0.50		
Total Metals	Aluminum (Al)-Total (mg/L)	5.93	<0.0030	<0.0030		
	Antimony (Sb)-Total (mg/L)	0.00716	<0.00010	<0.00010		
	Arsenic (As)-Total (mg/L)	0.326	<0.00010	<0.00010		
	Barium (Ba)-Total (mg/L)	0.641	<0.000050	<0.000050		
	Beryllium (Be)-Total (mg/L)	0.00057	<0.00010	<0.00010		
	Bismuth (Bi)-Total (mg/L)	0.00056	<0.00050	<0.00050		
	Boron (B)-Total (mg/L)	0.020	<0.010	<0.010		
	Cadmium (Cd)-Total (mg/L)	0.00108	<0.000010	<0.000010		
	Calcium (Ca)-Total (mg/L)	87.7	<0.020	<0.020		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1206550-1 WATER 05-SEP-12 12:40 BJ-12A	L1206550-2 WATER 05-SEP-12 16:00 BJ-FB	L1206550-3 WATER 05-SEP-12 TRAVEL BLANK		
WATER						
Total Metals	Chromium (Cr)-Total (mg/L)	0.00853	<0.00010	<0.00010		
	Cobalt (Co)-Total (mg/L)	0.00662	<0.00010	<0.00010		
	Copper (Cu)-Total (mg/L)	0.0246	<0.00050	<0.00050		
	Iron (Fe)-Total (mg/L)	23.7	<0.030	<0.030		
	Lead (Pb)-Total (mg/L)	0.0458	<0.000050	<0.000050		
	Lithium (Li)-Total (mg/L)	0.00837	0.00065	0.00060		
	Magnesium (Mg)-Total (mg/L)	11.5	<0.0050	<0.0050		
	Manganese (Mn)-Total (mg/L)	0.554	<0.000050	<0.000050		
	Mercury (Hg)-Total (mg/L)	0.000011	<0.000010	<0.000010		
	Molybdenum (Mo)-Total (mg/L)	0.00385	<0.000050	<0.000050		
	Nickel (Ni)-Total (mg/L)	0.00419	<0.00050	<0.00050		
	Phosphorus (P)-Total (mg/L)	0.46	<0.30	<0.30		
	Potassium (K)-Total (mg/L)	7.68	<0.050	<0.050		
	Selenium (Se)-Total (mg/L)	0.00241	<0.00010	<0.00010		
	Silicon (Si)-Total (mg/L)	15.2	<0.050	<0.050		
	Silver (Ag)-Total (mg/L)	0.00464	<0.000010	<0.000010		
	Sodium (Na)-Total (mg/L)	5.7	<2.0	<2.0		
	Strontium (Sr)-Total (mg/L)	1.24	<0.00020	<0.00020		
	Thallium (Tl)-Total (mg/L)	0.000782	<0.000010	<0.000010		
	Tin (Sn)-Total (mg/L)	0.00046	<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)	0.041	<0.010	<0.010		
	Uranium (U)-Total (mg/L)	0.00449	<0.000010	<0.000010		
	Vanadium (V)-Total (mg/L)	0.0042	<0.0010	<0.0010		
	Zinc (Zn)-Total (mg/L)	0.171	<0.0030	<0.0030		
Dissolved Metals	Dissolved Metals Filtration Location	LAB	LAB			
	Aluminum (Al)-Dissolved (mg/L)	0.0281	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00289	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.0609	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0412	<0.000050			
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010			
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050			
	Boron (B)-Dissolved (mg/L)	0.015	<0.010			
	Cadmium (Cd)-Dissolved (mg/L)	0.000156	<0.000010			
	Calcium (Ca)-Dissolved (mg/L)	72.1	<0.020			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	0.00067	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	0.00097	<0.00050			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1206550-1 WATER 05-SEP-12 12:40 BJ-12A	L1206550-2 WATER 05-SEP-12 16:00 BJ-FB	L1206550-3 WATER 05-SEP-12 TRAVEL BLANK		
WATER						
Dissolved Metals	Iron (Fe)-Dissolved (mg/L)	<0.030	<0.030			
	Lead (Pb)-Dissolved (mg/L)	0.000053	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.00638	<0.00050			
	Magnesium (Mg)-Dissolved (mg/L)	9.83	<0.0050			
	Manganese (Mn)-Dissolved (mg/L)	0.361	<0.000050			
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00230	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	0.00091	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30			
	Potassium (K)-Dissolved (mg/L)	4.88	<0.050			
	Selenium (Se)-Dissolved (mg/L)	<0.00010	<0.00010			
	Silicon (Si)-Dissolved (mg/L)	3.36	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	5.5	<2.0			
	Strontium (Sr)-Dissolved (mg/L)	1.08	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	0.000075	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00245	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010			
	Zinc (Zn)-Dissolved (mg/L)	0.0059	<0.0030			
Aggregate Organics	COD (mg/L)	49	<20	<20		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bromide (Br)	DLM	L1206550-1, -2
Duplicate	Fluoride (F)	DLM	L1206550-1, -2
Duplicate	Nitrite (as N)	DLM	L1206550-1, -2
Duplicate	Nitrate (as N)	DLM	L1206550-1, -2
Duplicate	Bromide (Br)	DLM	L1206550-1, -2
Duplicate	Bromide (Br)	DLM	L1206550-1, -2
Duplicate	Fluoride (F)	DLM	L1206550-1, -2
Matrix Spike	Phosphorus (P)-Total	MS-B	L1206550-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA	Water	Low Level Total Cyanide in water by CFA	ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there

Reference Information

could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA Water Low level WAD Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA Water Chemical Oxygen Demand by Colorimetric APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA Water Colour (True) by Spectrometer BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA Water Dissolved Mercury in Water by CVAFS(Low) EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA Water Total Mercury in Water by CVAFS(Low) EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-DIS-ICP-VA Water Dissolved Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

N-TOT-COMBUST-VA Water Total Nitrogen in Water by Combustion BC: TN by Combustion/Chemiluminescence

This analysis is carried out, on hydrochloric acid preserved samples, following Method BC MOE "Total and Dissolved Nitrogen (TN) by Combustion with Chemiluminescence Detection". Total Nitrogen is determined directly by pyrolysis with chemiluminescence detection using automated instrumentation.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et

Reference Information

al.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TN-CALC-VA Water Total Nitrogen (Calculation) BC MOE LABORATORY MANUAL (2005)

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

10-239823

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 31-JAN-13
Report Date: 12-FEB-13 13:36 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1263921

Project P.O. #: NOT SUBMITTED
Job Reference: 1008 007
C of C Numbers: 10-296455
Legal Site Desc:

Dean Watt
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1263921-1 water 27-JAN-13 BJ-2A	L1263921-2 water 28-JAN-13 BJ-3A	L1263921-3 water 28-JAN-13 BJ-3B	L1263921-4 water 28-JAN-13 BJ-4A	L1263921-5 water 28-JAN-13 BJ-4B
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (uS/cm)	256	349	382	423	397
	Hardness (as CaCO3) (mg/L)	132	167	188	203	204
	pH (pH)	8.04	8.12	7.86	8.16	8.19
	Total Suspended Solids (mg/L)	655	520	675	25.3	<3.0
	Total Dissolved Solids (mg/L)	166	238	267	282	264
	Turbidity (NTU)	581	199	777	11.5	1.99
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.3	2.9	5.0	2.5	2.2
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	79.4	102	76.2	115	121
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	79.4	102	76.2	115	121
	Ammonia, Total (as N) (mg/L)	<0.0050	0.0312	0.0316	0.197	0.0558
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	1.44	<0.50	1.19	0.74	<0.50
	Fluoride (F) (mg/L)	0.041	0.188	0.109	0.078	0.114
	Nitrate (as N) (mg/L)	0.0142	<0.0050	<0.0050	0.0747	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.0013	0.0045	0.0011
	Total Kjeldahl Nitrogen (mg/L)	0.212	0.169	0.231	0.233	0.093
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.352	0.293	0.506	0.0183	<0.0020
	Sulfate (SO4) (mg/L)	54.6	89.1	125	116	98.2
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.53	0.53	2.05	1.02	0.60
	Total Organic Carbon (mg/L)	2.60	0.77	3.12	1.36	0.55
Total Metals	Aluminum (Al)-Total (mg/L)	14.2	11.2	10.0	0.592	0.0555
	Antimony (Sb)-Total (mg/L)	0.00134	0.0211	0.0186	0.00170	0.00061
	Arsenic (As)-Total (mg/L)	0.0237	0.0873	0.0637	0.0209	0.00372
	Barium (Ba)-Total (mg/L)	0.356	0.440	0.397	0.0473	0.0221
	Beryllium (Be)-Total (mg/L)	0.00095	0.00069	0.00056	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	0.016	0.054	0.040	0.069	0.021
	Cadmium (Cd)-Total (mg/L)	0.000258	0.000550	0.000490	0.000025	<0.000010
	Calcium (Ca)-Total (mg/L)	60.2	65.4	73.7	62.4	74.2
	Chromium (Cr)-Total (mg/L)	0.0968	0.0185	0.00354	0.00070	0.00073

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1263921-6 water 27-JAN-13 BJ-6A	L1263921-7 water 27-JAN-13 BJ-6B	L1263921-8 water 28-JAN-13 BJ-8A	L1263921-9 water 28-JAN-13 BJ-8B	L1263921-10 water 28-JAN-13 BJ-DUP1
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (uS/cm)	280	333	209	200	209
	Hardness (as CaCO3) (mg/L)	138	7.70	98.2	97.5	96.1
	pH (pH)	8.20	9.63	8.24	8.21	8.22
	Total Suspended Solids (mg/L)	3410	1780	114	193	118
	Total Dissolved Solids (mg/L)	196	276	131	128	132
	Turbidity (NTU)	>4000 TMV	3940	43.6	174	43.3
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.8	<1.0	1.4	1.6	1.5
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	58.7	42.7	74.3	73.2	79.7
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	42.8	<2.0	<2.0	<2.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<1.0	<2.0	<2.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	58.7	85.5	74.3	73.2	79.7
	Ammonia, Total (as N) (mg/L)	0.0902	0.156	<0.0050	<0.0050	<0.0050
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	<0.50	1.37	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.169	0.252	0.029	0.023	0.030
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0072	0.0151	0.0084
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	1.26	0.219	<0.050	0.082	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0043	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.161	0.382	0.0222	0.091	0.0189
	Sulfate (SO4) (mg/L)	81.7	72.9	36.0	35.7	36.0
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.52	1.72	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	2.94	3.22	0.72	0.71	0.56
Total Metals	Aluminum (Al)-Total (mg/L)	40.2	23.9	3.91	7.02	3.51
	Antimony (Sb)-Total (mg/L)	0.0166	0.00628	0.00074	0.00176	0.00070
	Arsenic (As)-Total (mg/L)	0.437	0.0592	0.00843	0.0692	0.00823
	Barium (Ba)-Total (mg/L)	24.8	0.809	0.0420	0.160	0.0411
	Beryllium (Be)-Total (mg/L)	0.00462	0.00295	0.00073	0.00031	0.00059
	Bismuth (Bi)-Total (mg/L)	<0.0025 DLA	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	<0.050 DLA	0.162	0.014	0.012	0.014
	Cadmium (Cd)-Total (mg/L)	0.00216	0.000335	0.000037	0.000040	0.000035
	Calcium (Ca)-Total (mg/L)	114	8.93	34.1	39.0	34.8
	Chromium (Cr)-Total (mg/L)	0.0235	0.0143	0.00672	0.0156	0.00664

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1263921-1	L1263921-2	L1263921-3	L1263921-4	L1263921-5
	Description	water	water	water	water	water
	Sampled Date	27-JAN-13	28-JAN-13	28-JAN-13	28-JAN-13	28-JAN-13
	Sampled Time					
	Client ID	BJ-2A	BJ-3A	BJ-3B	BJ-4A	BJ-4B
Grouping	**Analyte**					
WATER						
Total Metals	Cobalt (Co)-Total (mg/L)	0.00759	0.00603	0.00304	0.00096	0.00013
	Copper (Cu)-Total (mg/L)	0.0301	0.0349	0.0236	0.00100	0.00075
	Iron (Fe)-Total (mg/L)	21.5	16.4	7.96	0.363	<0.030
	Lead (Pb)-Total (mg/L)	0.0115	0.0272	0.0123	0.000716	0.000085
	Lithium (Li)-Total (mg/L)	0.0207	0.0313	0.0199	0.0280	0.0198
	Magnesium (Mg)-Total (mg/L)	5.91	6.80	7.43	13.3	7.77
	Manganese (Mn)-Total (mg/L)	0.647	1.60	0.646	0.171	0.0599
	Mercury (Hg)-Total (mg/L)	0.000035	0.000053	0.000046	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.0125	0.00395	0.00218	0.00102	0.000490
	Nickel (Ni)-Total (mg/L)	0.0493	0.0114	0.00262	0.00063	0.00080
	Phosphorus (P)-Total (mg/L)	0.39	0.45	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	3.00	5.96	5.26	1.94	0.967
	Selenium (Se)-Total (mg/L)	0.00026	0.00141	0.00209	<0.00010	<0.00010
	Silicon (Si)-Total (mg/L)	31.0	25.9	25.4	4.42	2.48
	Silver (Ag)-Total (mg/L)	0.00185	0.00524	0.00426	0.000018	0.000074
	Sodium (Na)-Total (mg/L)	5.4	10.0	5.0	18.4	7.9
	Strontium (Sr)-Total (mg/L)	2.18	1.30	3.03	3.05	1.05
	Thallium (Tl)-Total (mg/L)	0.000204	0.000666	0.000418	0.000028	0.000013
	Tin (Sn)-Total (mg/L)	0.00089	0.00031	0.00032	0.00018	0.00020
	Titanium (Ti)-Total (mg/L)	0.270	0.256	0.239	0.021	<0.010
	Uranium (U)-Total (mg/L)	0.00178	0.000532	0.000953	0.00235	0.000800
	Vanadium (V)-Total (mg/L)	0.0181	0.0173	0.0147	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	0.174	0.0683	0.0407	0.0058	0.0264
Dissolved Metals	Dissolved Metals Filtration Location	LAB	LAB	LAB	LAB	LAB
	Aluminum (Al)-Dissolved (mg/L)	0.201	0.0210	0.0146	0.0036	0.0074
	Antimony (Sb)-Dissolved (mg/L)	0.00048	0.0118	0.0190	0.00155	0.00052
	Arsenic (As)-Dissolved (mg/L)	0.00058	0.00599	0.0281	0.0159	0.00300
	Barium (Ba)-Dissolved (mg/L)	0.0430	0.0300	0.0521	0.0339	0.0195
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	0.010	0.049	0.032	0.063	0.018
	Cadmium (Cd)-Dissolved (mg/L)	0.000021	<0.000010	0.000057	0.000011	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	49.2	59.9	66.6	60.7	69.8
	Chromium (Cr)-Dissolved (mg/L)	0.00047	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00041	0.00038	0.00050	0.00065	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	0.00089	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)	0.108	<0.030	<0.030	<0.030	<0.030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1263921-6 water 27-JAN-13 BJ-6A	L1263921-7 water 27-JAN-13 BJ-6B	L1263921-8 water 28-JAN-13 BJ-8A	L1263921-9 water 28-JAN-13 BJ-8B	L1263921-10 water 28-JAN-13 BJ-DUP1
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
WATER						
Total Metals	Cobalt (Co)-Total (mg/L)	0.0211	0.0122	0.00057	0.00328	0.00054
	Copper (Cu)-Total (mg/L)	0.166	0.101	0.0183	0.00979	0.0131
	Iron (Fe)-Total (mg/L)	74.7	36.4	1.30	5.06	1.12
	Lead (Pb)-Total (mg/L)	0.224	0.228	0.00299	0.00419	0.00248
	Lithium (Li)-Total (mg/L)	0.0483	0.188	0.0103	0.00959	0.0104
	Magnesium (Mg)-Total (mg/L)	16.8	10.2	6.42	5.28	6.25
	Manganese (Mn)-Total (mg/L)	2.78	1.24	0.0421	0.290	0.0394
	Mercury (Hg)-Total (mg/L)	0.00087	0.00025	<0.000010	0.000040	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.00741	0.00450	0.00197	0.00306	0.00203
	Nickel (Ni)-Total (mg/L)	0.0222	0.0143	0.00423	0.00866	0.00418
	Phosphorus (P)-Total (mg/L)	2.42	0.48	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	11.9	8.43	0.990	3.07	0.946
	Selenium (Se)-Total (mg/L)	0.00314	0.00171	0.00019	0.00028	0.00020
	Silicon (Si)-Total (mg/L)	61.2	40.6	12.8	15.6	11.3
	Silver (Ag)-Total (mg/L)	0.0256	0.0107	0.000209	0.000772	0.000296
	Sodium (Na)-Total (mg/L)	6.4	67.6	6.8	2.6	6.6
	Strontium (Sr)-Total (mg/L)	3.34	0.394	0.724	0.492	0.715
	Thallium (Tl)-Total (mg/L)	0.000936	0.000480	0.000059	0.000170	0.000048
	Tin (Sn)-Total (mg/L)	0.00142	0.00062	0.00039	0.00065	0.00034
	Titanium (Ti)-Total (mg/L)	0.522	0.198	0.049	0.121	0.043
	Uranium (U)-Total (mg/L)	0.00180	0.000670	0.00111	0.000516	0.000972
	Vanadium (V)-Total (mg/L)	0.0656	0.0429	0.0023	0.0112	0.0021
	Zinc (Zn)-Total (mg/L)	0.905	0.549	0.0140	0.0311	0.0195
Dissolved Metals	Dissolved Metals Filtration Location	LAB	LAB	LAB	LAB	LAB
	Aluminum (Al)-Dissolved (mg/L)	0.0538	0.534	0.0160	0.0173	0.0098
	Antimony (Sb)-Dissolved (mg/L)	0.00677	0.00518	0.00081	0.00072	0.00084
	Arsenic (As)-Dissolved (mg/L)	0.0293	0.0263	0.00689	0.0159	0.00701
	Barium (Ba)-Dissolved (mg/L)	0.0499	0.0391	0.0213	0.0171	0.0208
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	0.027	0.149	0.011	<0.010	0.011
	Cadmium (Cd)-Dissolved (mg/L)	<0.000010	0.000066	<0.000010	<0.000010	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	49.2	2.86	30.6	33.2	29.6
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00016	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00050	0.00117	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)	<0.030	0.145	<0.030	<0.030	<0.030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1263921-1 water 27-JAN-13 BJ-2A	L1263921-2 water 28-JAN-13 BJ-3A	L1263921-3 water 28-JAN-13 BJ-3B	L1263921-4 water 28-JAN-13 BJ-4A	L1263921-5 water 28-JAN-13 BJ-4B
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	0.000071	0.000065	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.00751	0.0224	0.0113	0.0267	0.0158
	Magnesium (Mg)-Dissolved (mg/L)	2.26	4.34	5.32	12.5	7.33
	Manganese (Mn)-Dissolved (mg/L)	0.0952	0.220	0.317	0.143	0.0565
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00376	0.00180	0.00118	0.000939	0.000441
	Nickel (Ni)-Dissolved (mg/L)	0.00434	0.00177	0.00083	<0.00050	0.00061
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	0.419	1.51	1.76	1.59	0.915
	Selenium (Se)-Dissolved (mg/L)	0.00012	0.00018	0.00118	<0.00010	<0.00010
	Silicon (Si)-Dissolved (mg/L)	2.32	3.51	3.05	3.00	2.27
	Silver (Ag)-Dissolved (mg/L)	0.000011	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	4.3	9.9	4.7	17.3	6.6
	Strontium (Sr)-Dissolved (mg/L)	1.97	1.26	2.90	2.93	0.980
	Thallium (Tl)-Dissolved (mg/L)	0.000016	0.000147	0.000055	0.000017	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000427	0.000168	0.000634	0.00224	0.000728
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0122	<0.0030	<0.0030	<0.0030	0.0173
Aggregate Organics	COD (mg/L)	24	<20	<20	<20	<20

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1263921-6 water 27-JAN-13 BJ-6A	L1263921-7 water 27-JAN-13 BJ-6B	L1263921-8 water 28-JAN-13 BJ-8A	L1263921-9 water 28-JAN-13 BJ-8B	L1263921-10 water 28-JAN-13 BJ-DUP1
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	0.000222	0.00160	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.00664	0.144	0.00949	0.00545	0.00940
	Magnesium (Mg)-Dissolved (mg/L)	3.80	0.137	5.32	3.53	5.41
	Manganese (Mn)-Dissolved (mg/L)	0.0423	0.00805	0.00341	0.00822	0.00330
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00350	0.00539	0.00173	0.00224	0.00164
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00084	0.00132	0.00063
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	2.66	2.42	0.519	0.631	0.520
	Selenium (Se)-Dissolved (mg/L)	0.00064	0.00051	0.00019	0.00024	0.00019
	Silicon (Si)-Dissolved (mg/L)	3.65	4.83	1.99	1.97	1.95
	Silver (Ag)-Dissolved (mg/L)	0.000019	0.000112	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	4.5	66.3	6.5	2.3	6.1
	Strontium (Sr)-Dissolved (mg/L)	2.22	0.182	0.696	0.451	0.706
	Thallium (Tl)-Dissolved (mg/L)	0.000068	0.000035	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000617	0.000127	0.000298	0.000156	0.000284
	Vanadium (V)-Dissolved (mg/L)	<0.0010	0.0021	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	<0.0030	<0.0030	0.0063	<0.0030	0.0044
Aggregate Organics	COD (mg/L)	29	<20	<20	<20	<20

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Beryllium (Be)-Dissolved	DLA	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cadmium (Cd)-Dissolved	DLA	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Chromium (Cr)-Dissolved	DLA	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cobalt (Co)-Dissolved	DLA	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)-Dissolved	DLA	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Silver (Ag)-Dissolved	DLA	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tin (Sn)-Dissolved	DLA	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Vanadium (V)-Dissolved	DLA	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Zinc (Zn)-Dissolved	DLA	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Bromide (Br)	DLM	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nitrite (as N)	DLM	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1263921-1, -10, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit Adjusted For required dilution
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TMV	Turbidity exceeded upper limit of the nephelometric method. Minimum value reported.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 "Alkalinity"

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

Reference Information

ANIONS-NO2-IC-VA Water Nitrite in Water by Ion Chromatography EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA Water Nitrate in Water by Ion Chromatography EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA Water Sulfate by Ion Chromatography APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA Water Low level WAD Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA Water Chemical Oxygen Demand by Colorimetric APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA Water Colour (True) by Spectrometer BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA Water Dissolved Mercury in Water by CVAFS(Low) EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA Water Total Mercury in Water by CVAFS(Low) EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-DIS-ICP-VA Water Dissolved Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Reference Information

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

10-296455

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Short Holding Time

ALS Rush Processing

10-296455

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page 1 of 1

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGC Engineering Inc.	Standard: ✓ Other (specify):		✓	Regular (Standard Turnaround Times - Business Days)
Contact:	V Cullen.	Select: PDF ✓ Excel ✓ Digital ✓ Fax			Priority (2-4 Business Days) - 50% surcharge - Contact ALS to confirm TAT
Address:	800 - 1045 Howe Street, Vancouver, BC V6Z 2A9.	Email 1: VCullen@BGCEngineering.ca			Emergency (1-2 Business Days) - 100% Surcharge - Contact ALS to confirm TAT
		Email 2: KJohnston@BGCEngineering.ca			Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	604 684-5900 Fax:				

Invoice To	Same as Report ? (circle) Yes or (No) (if No, provide details)	Client / Project Information	
	Copy of Invoice with Report? (circle) Yes or No	Job #:	1008007
Company:	Pretium Resources.	PO / AFE:	
Contact:	K. Mc Naughton	LSD:	
Address:	1600 - 570 Granville St, Vancouver V6C 3P1		
Phone:	604 558 1784 Fax: 604 558 4784	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: D. Watt.	Sampler: B Smith, T Beebe.

Analysis Request (Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	Total Metals	Diss. Metals	DOC	TOC	COD/TKN/NH3	Cyanides.					Number of Containers
						P			P	P	P					
	BJ-2A	27-01-13		H_2O	✓	✓	✓	✓	✓	✓	✓					7
	BJ-3A	28-01-13		"	✓	✓	✓	✓	✓	✓	✓					7
	BJ-3B	28-01-13		"	✓	✓	✓	✓	✓	✓	✓					7
	BJ-4A	28-01-13		"	✓	✓	✓	✓	✓	✓	✓					7
	BJ-4B	28-01-13		"	✓	✓	✓	✓	✓	✓	✓					7
	BJ-6A	27-01-13		"	✓	✓	✓	✓	✓	✓	✓					7
	BJ-6B	27-01-13		"	✓	✓	✓	✓	✓	✓	✓					7
	BJ-8A	28-01-13		"	✓	✓	✓	✓	✓	✓	✓					7
	BJ-8B	28-01-13		"	✓	✓	✓	✓	✓	✓	✓					7
	BJ-Dupl.	28-01-13		"	✓	✓	✓	✓	✓	✓	✓					7

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AE

Diss Metals and DOC not filtered or preserved.

L1263921-COFC

Failure to complete all portions of this form may delay analysis. Please fill in this fo

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
B. Smith	28/01/13	19:00		Jan 31	12:20	#1: 6.0°C #2: 3.3				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION | WHITE - LABORATORY COPY | YELLOW - CLIENT COPY | GENF 18.01 Front

WHITE PAPER CO. 604 951-3900

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 02-FEB-13
Report Date: 14-FEB-13 14:27 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1264492

Project P.O. #: NOT SUBMITTED
Job Reference: 1008 007
C of C Numbers: 10-296699
Legal Site Desc:

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1264492-1	L1264492-2			
	Description	water	water			
	Sampled Date	30-JAN-13	30-JAN-13			
	Sampled Time					
	Client ID	BJ-FB	TRAVEL BLANK			
Grouping	**Analyte**					
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0			
	Conductivity (uS/cm)	<2.0	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50	<0.50			
	pH (pH)	5.73	5.77			
	Total Suspended Solids (mg/L)	<3.0	<3.0			
	Total Dissolved Solids (mg/L)	<10	<10			
	Turbidity (NTU)	<0.10	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.7	2.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<2.0	<2.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	<2.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<2.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<2.0	<2.0			
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050			
	Bromide (Br) (mg/L)	<0.050	<0.050			
	Chloride (Cl) (mg/L)	<0.50	<0.50			
	Fluoride (F) (mg/L)	<1.0 DLM	<0.020			
	Nitrate (as N) (mg/L)	<0.0050	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020			
	Sulfate (SO4) (mg/L)	<0.50	<0.50			
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010			
	Cyanide, Total (mg/L)	<0.0010	<0.0010			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50			
	Total Organic Carbon (mg/L)	<0.50	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010	<0.00010			
	Barium (Ba)-Total (mg/L)	<0.000050	<0.000050			
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010			
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050			
	Boron (B)-Total (mg/L)	<0.010	<0.010			
	Cadmium (Cd)-Total (mg/L)	<0.000010	<0.000010			
	Calcium (Ca)-Total (mg/L)	<0.020	<0.020			
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1264492-1	L1264492-2			
	Description	water	water			
	Sampled Date	30-JAN-13	30-JAN-13			
	Sampled Time					
	Client ID	BJ-FB	TRAVEL BLANK			
Grouping	**Analyte**					
WATER						
Total Metals	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010			
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.030	<0.030			
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Total (mg/L)	<0.00050	<0.00050			
	Magnesium (Mg)-Total (mg/L)	<0.0050	<0.0050			
	Manganese (Mn)-Total (mg/L)	<0.000050	<0.000050			
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010			
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050			
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050			
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30			
	Potassium (K)-Total (mg/L)	<0.050	<0.050			
	Selenium (Se)-Total (mg/L)	<0.00010	<0.00010			
	Silicon (Si)-Total (mg/L)	<0.050	<0.050			
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Total (mg/L)	<2.0	<2.0			
	Strontium (Sr)-Total (mg/L)	<0.00020	<0.00020			
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010			
	Uranium (U)-Total (mg/L)	<0.000010	<0.000010			
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010			
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030			
Dissolved Metals	Dissolved Metals Filtration Location	LAB				
	Aluminum (Al)-Dissolved (mg/L)	<0.0030				
	Antimony (Sb)-Dissolved (mg/L)	<0.00010				
	Arsenic (As)-Dissolved (mg/L)	<0.00010				
	Barium (Ba)-Dissolved (mg/L)	<0.000050				
	Beryllium (Be)-Dissolved (mg/L)	<0.00010				
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050				
	Boron (B)-Dissolved (mg/L)	<0.010				
	Cadmium (Cd)-Dissolved (mg/L)	<0.000010				
	Calcium (Ca)-Dissolved (mg/L)	<0.020				
	Chromium (Cr)-Dissolved (mg/L)	<0.00010				
	Cobalt (Co)-Dissolved (mg/L)	<0.00010				
	Copper (Cu)-Dissolved (mg/L)	<0.00050				
	Iron (Fe)-Dissolved (mg/L)	<0.030				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1264492-1	L1264492-2			
	Description	water	water			
	Sampled Date	30-JAN-13	30-JAN-13			
	Sampled Time					
	Client ID	BJ-FB	TRAVEL BLANK			
Grouping	**Analyte**					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.000050				
	Lithium (Li)-Dissolved (mg/L)	<0.00050				
	Magnesium (Mg)-Dissolved (mg/L)	<0.0050				
	Manganese (Mn)-Dissolved (mg/L)	<0.000050				
	Mercury (Hg)-Dissolved (mg/L)	<0.000010				
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050				
	Nickel (Ni)-Dissolved (mg/L)	<0.00050				
	Phosphorus (P)-Dissolved (mg/L)	<0.30				
	Potassium (K)-Dissolved (mg/L)	<0.050				
	Selenium (Se)-Dissolved (mg/L)	<0.00010				
	Silicon (Si)-Dissolved (mg/L)	<0.050				
	Silver (Ag)-Dissolved (mg/L)	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	<2.0				
	Strontium (Sr)-Dissolved (mg/L)	<0.00020				
	Thallium (Tl)-Dissolved (mg/L)	<0.000010				
	Tin (Sn)-Dissolved (mg/L)	<0.00010				
	Titanium (Ti)-Dissolved (mg/L)	<0.010				
	Uranium (U)-Dissolved (mg/L)	<0.000010				
	Vanadium (V)-Dissolved (mg/L)	<0.0010				
	Zinc (Zn)-Dissolved (mg/L)	<0.0030				
Aggregate Organics	COD (mg/L)	<20	<20			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bromide (Br)	DLM	L1264492-1, -2
Duplicate	Fluoride (F)	DLM	L1264492-1
Matrix Spike	Phosphorus (P)-Total	MS-B	L1264492-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA	Water	Low Level Total Cyanide in water by CFA	ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA	Water	Low level WAD Cyanide in water by CFA	APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA	Water	Chemical Oxygen Demand by Colorimetric	APHA 5220 D. CHEMICAL OXYGEN DEMAND

Reference Information

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA	Water	Colour (True) by Spectrometer	BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA	Water	Dissolved Mercury in Water by CVAFS(Low)	EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA	Water	Total Mercury in Water by CVAFS(Low)	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-DIS-ICP-VA	Water	Dissolved Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-MAN-VA	Water	pH by Manual Meter	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-MAN-VA	Water	pH by Manual Meter	APHA 4500-H pH Value

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

10-296699

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10-296699

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page 1 of 1

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGC Engineering Inc.	Standard: ✓	Other (specify):	✓	Regular (Standard Turnaround Times - Business Days)
Contact:	V Cullen	Select: PDF ✓	Excel ✓ Digital Fax		Priority(2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address:	800 - 1045 Howe Street, Vancouver BC V6Z 2A9	Email 1:	VCullen@BGCengineering.ca		Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
		Email 2:	KJohnston@BGCengineering.ca		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	604 684 5900 Fax: 604 684 5909				

Invoice To		Client / Project Information	
	Same as Report ? (circle) Yes or (No) (if No, provide details)		
	Copy of Invoice with Report? (circle) Yes or No	Job #:	1008 007
Company:	Pretium Resources Ltd.	PO / AFE:	
Contact:	K. McNaughton	LSD:	
Address:	1600 - 570 Granville St, Vancouver, BC V6C 3P1		
Phone:	604 558 1984 Fax: 604 558 4784	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: D. Watt	Sampler: B Smith T Boehm

Analysis Request (Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	F/P	Total Metals	F/P	Dissolved Metals	Cyanides	F/P	TOC	DOC	F/P	COD / TKN / NH4	Number of Containers
	BJ - FB	30-01-13		H_2O	✓		✓		✓	✓		✓	✓		✓	
	Travel Blank	30-01-13		H_2O	✓		✓		✓	✓		✓	✓		✓	

Short Holding Time

Rush Processing

L1264492-COFC

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
B Smith	30/01/13	09:30		Feb02	11:30	1.8 °C				

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 09-APR-13
Report Date: 18-APR-13 13:49 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1287525

Project P.O. #: NOT SUBMITTED
Job Reference: 1008-007
C of C Numbers: 10-293380
Legal Site Desc:

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1287525-1 WATER 07-APR-13 02A	L1287525-2 WATER 07-APR-13 03A	L1287525-3 WATER 07-APR-13 06A	L1287525-4 WATER 07-APR-13 06B	L1287525-5 WATER 07-APR-13 DUP 1
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (uS/cm)	274	348	258	309	271
	Hardness (as CaCO3) (mg/L)	133	156	120	9.01	130
	pH (pH)	8.13	8.11	8.18	9.53	8.12
	Total Suspended Solids (mg/L)	341	10.5	1340	805	167
	Total Dissolved Solids (mg/L)	176	230	184	342	185
	Turbidity (NTU)	228	30.5	2160	2380	138
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.9	1.8	1.1	<1.0	1.6
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	80.5	96.5	68.6	57.5	79.1
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	<2.0	<1.0	29.4	<2.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<2.0	<1.0	<1.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	80.5	96.5	68.6	86.9	79.1
	Ammonia, Total (as N) (mg/L)	<0.0050	0.0325	0.084	0.135	<0.0050
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	1.29	<0.50	0.51	1.30	1.20
	Fluoride (F) (mg/L)	0.037	0.197	0.184	0.233	0.036
	Nitrate (as N) (mg/L)	0.0216	<0.0050	<0.0050	<0.0050	0.0220
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.089	0.057	0.66	0.82	0.084
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	0.0028	0.0017	<0.0010
	Phosphorus (P)-Total (mg/L)	0.272	0.0273	1.33	0.327	0.167
	Sulfate (SO4) (mg/L)	63.3	89.8	69.2	67.9	63.5
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	0.0013	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	0.0029	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	1.02	<0.50
	Total Organic Carbon (mg/L)	1.02	<0.50	0.86	1.71	0.78
Total Metals	Aluminum (Al)-Total (mg/L)	8.77	1.36	24.3	22.9	6.91
	Antimony (Sb)-Total (mg/L)	0.00099	0.00590	0.0122	0.00559	0.00090
	Arsenic (As)-Total (mg/L)	0.0116	0.0131	0.173	0.0420	0.00956
	Barium (Ba)-Total (mg/L)	0.219	0.0571	13.3	0.707	0.247
	Beryllium (Be)-Total (mg/L)	0.00051	<0.00010	0.00188	0.00197	0.00031
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.0010 DLA	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	0.013	0.047	0.039	0.152	0.014
	Cadmium (Cd)-Total (mg/L)	0.000138	0.000037	0.000874	0.000215	0.000097
	Calcium (Ca)-Total (mg/L)	54.2	55.9	63.4	6.77	51.2
	Chromium (Cr)-Total (mg/L)	0.0334	0.00156	0.0106	0.00940	0.0236

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1287525-6				
	Description	WATER				
	Sampled Date	07-APR-13				
	Sampled Time					
	Client ID	TRAVEL BLANK				
Grouping	**Analyte**					
WATER						
Physical Tests	Colour, True (CU)	<5.0				
	Conductivity (uS/cm)	<2.0				
	Hardness (as CaCO3) (mg/L)					
	pH (pH)	5.59				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	<10				
	Turbidity (NTU)	<0.10				
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.7				
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<2.0				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0				
	Alkalinity, Total (as CaCO3) (mg/L)	<2.0				
	Ammonia, Total (as N) (mg/L)	<0.0050				
	Bromide (Br) (mg/L)	<0.050				
	Chloride (Cl) (mg/L)	<0.50				
	Fluoride (F) (mg/L)	<0.020				
	Nitrate (as N) (mg/L)	<0.0050				
	Nitrite (as N) (mg/L)	<0.0010				
	Total Kjeldahl Nitrogen (mg/L)	<0.050				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	<0.0020				
	Sulfate (SO4) (mg/L)	<0.50				
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010				
	Cyanide, Total (mg/L)	<0.0010				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)					
	Total Organic Carbon (mg/L)	<0.50				
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030				
	Antimony (Sb)-Total (mg/L)	<0.00010				
	Arsenic (As)-Total (mg/L)	<0.00010				
	Barium (Ba)-Total (mg/L)	<0.000050				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	<0.010				
	Cadmium (Cd)-Total (mg/L)	<0.000010				
	Calcium (Ca)-Total (mg/L)	<0.020				
	Chromium (Cr)-Total (mg/L)	<0.00010				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1287525-1 WATER 07-APR-13 02A	L1287525-2 WATER 07-APR-13 03A	L1287525-3 WATER 07-APR-13 06A	L1287525-4 WATER 07-APR-13 06B	L1287525-5 WATER 07-APR-13 DUP 1
WATER						
Total Metals	Cobalt (Co)-Total (mg/L)	0.00432	0.00043	0.00865	0.00835	0.00299
	Copper (Cu)-Total (mg/L)	0.0181	0.00267	0.0646	0.0592	0.0116
	Iron (Fe)-Total (mg/L)	10.9	0.979	30.1	24.6	7.89
	Lead (Pb)-Total (mg/L)	0.00621	0.00373	0.0896	0.147	0.00373
	Lithium (Li)-Total (mg/L)	0.0120	0.0195	0.0236	0.159	0.0114
	Magnesium (Mg)-Total (mg/L)	4.38	4.51	9.00	7.17	3.42
	Manganese (Mn)-Total (mg/L)	0.363	0.215	1.07	0.822	0.267
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	0.000240	0.000123	0.000025
	Molybdenum (Mo)-Total (mg/L)	0.00509	0.00132	0.00407	0.00380	0.00400
	Nickel (Ni)-Total (mg/L)	0.0176	0.00109	0.0090	0.00953	0.0123
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	0.96	0.32	<0.30
	Potassium (K)-Total (mg/L)	2.28	1.99	9.80	8.98	2.33
	Selenium (Se)-Total (mg/L)	0.00019	<0.00010	0.00116	0.00081	0.00016
	Silicon (Si)-Total (mg/L)	22.2	6.39	76.8	77.8	20.0
	Silver (Ag)-Total (mg/L)	0.00104	0.000337	0.0117	0.00677	0.000855
	Sodium (Na)-Total (mg/L)	5.2	9.4	6.9	67.7	5.3
	Strontium (Sr)-Total (mg/L)	1.41	1.14	2.42	0.315	1.14
	Thallium (Tl)-Total (mg/L)	0.000136	0.000089	0.000573	0.000520	0.000112
	Tin (Sn)-Total (mg/L)	0.00050	<0.00010	0.00075	0.00039	0.00039
	Titanium (Ti)-Total (mg/L)	0.237	0.033	0.841	0.689	0.270
	Uranium (U)-Total (mg/L)	0.00118	0.000186	0.00105	0.000532	0.000681
	Vanadium (V)-Total (mg/L)	0.0120	0.0021	0.0384	0.0406	0.0110
	Zinc (Zn)-Total (mg/L)	0.0401	0.0115	0.354	0.349	0.0291
Dissolved Metals	Dissolved Metals Filtration Location	LAB	LAB	LAB	LAB	LAB
	Aluminum (Al)-Dissolved (mg/L)	0.0143	0.0065	0.0252	0.150	0.0121
	Antimony (Sb)-Dissolved (mg/L)	0.00036	0.00334	0.00339	0.00261	0.00033
	Arsenic (As)-Dissolved (mg/L)	0.00050	0.00691	0.0281	0.0192	0.00052
	Barium (Ba)-Dissolved (mg/L)	0.0370	0.0252	0.0501	0.0334	0.0376
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0010 DLA	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	0.012	0.047	0.032	0.140	0.012
	Cadmium (Cd)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000020 DLA	<0.000010	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	49.6	55.4	42.3	3.36	48.2
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	0.00011	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00022	<0.00010	<0.00020 DLA	<0.00010	0.00022
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050 DLA	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)	<0.030	<0.030	<0.030	0.044	<0.030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1287525-6				
	Description	WATER				
	Sampled Date	07-APR-13				
	Sampled Time					
	Client ID	TRAVEL BLANK				
Grouping	**Analyte**					
WATER						
Total Metals	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	<0.00050				
	Iron (Fe)-Total (mg/L)	<0.030				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	<0.00050				
	Magnesium (Mg)-Total (mg/L)	<0.0050				
	Manganese (Mn)-Total (mg/L)	<0.000050				
	Mercury (Hg)-Total (mg/L)	<0.000010				
	Molybdenum (Mo)-Total (mg/L)	<0.000050				
	Nickel (Ni)-Total (mg/L)	<0.00050				
	Phosphorus (P)-Total (mg/L)	<0.30				
	Potassium (K)-Total (mg/L)	<0.050				
	Selenium (Se)-Total (mg/L)	<0.00010				
	Silicon (Si)-Total (mg/L)	<0.050				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	<2.0				
	Strontium (Sr)-Total (mg/L)	<0.00020				
	Thallium (Tl)-Total (mg/L)	<0.000010				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	<0.000010				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Dissolved Metals	Dissolved Metals Filtration Location					
	Aluminum (Al)-Dissolved (mg/L)					
	Antimony (Sb)-Dissolved (mg/L)					
	Arsenic (As)-Dissolved (mg/L)					
	Barium (Ba)-Dissolved (mg/L)					
	Beryllium (Be)-Dissolved (mg/L)					
	Bismuth (Bi)-Dissolved (mg/L)					
	Boron (B)-Dissolved (mg/L)					
	Cadmium (Cd)-Dissolved (mg/L)					
	Calcium (Ca)-Dissolved (mg/L)					
	Chromium (Cr)-Dissolved (mg/L)					
	Cobalt (Co)-Dissolved (mg/L)					
	Copper (Cu)-Dissolved (mg/L)					
	Iron (Fe)-Dissolved (mg/L)					

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID: L1287525-1	L1287525-2	L1287525-3	L1287525-4	L1287525-5
	Description:	WATER	WATER	WATER	WATER	WATER
	Sampled Date:	07-APR-13	07-APR-13	07-APR-13	07-APR-13	07-APR-13
	Sampled Time:					
	Client ID:	02A	03A	06A	06B	DUP 1
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00010 DLA	0.000607	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.00601	0.0190	0.0066	0.128	0.00541
	Magnesium (Mg)-Dissolved (mg/L)	2.28	4.25	3.57	0.147	2.26
	Manganese (Mn)-Dissolved (mg/L)	0.0657	0.176	0.0465	0.00801	0.0513
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00155	0.00123	0.00232	0.00371	0.00126
	Nickel (Ni)-Dissolved (mg/L)	0.00137	<0.00050	0.0031	<0.00050	0.00128
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	0.343	1.47	2.52	2.19	0.320
	Selenium (Se)-Dissolved (mg/L)	0.00012	<0.00010	0.00023	0.00021	0.00012
	Silicon (Si)-Dissolved (mg/L)	1.81	3.48	3.66	3.91	1.82
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000020 DLA	0.000028	<0.000010
	Sodium (Na)-Dissolved (mg/L)	4.4	9.3	4.8	66.6	4.5
	Strontium (Sr)-Dissolved (mg/L)	1.41	1.15	2.00	0.190	1.08
	Thallium (Tl)-Dissolved (mg/L)	0.000011	0.000027	0.000053	0.000023	0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000348	0.000136	0.000531	0.000073	0.000309
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0020 DLA	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030 DLA	<0.0030	<0.0030
Aggregate Organics	COD (mg/L)	<20	<20	<20	<20	<20

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1287525-6				
	Description	WATER				
	Sampled Date	07-APR-13				
	Sampled Time					
	Client ID	TRAVEL BLANK				
Grouping	**Analyte**					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)					
	Lithium (Li)-Dissolved (mg/L)					
	Magnesium (Mg)-Dissolved (mg/L)					
	Manganese (Mn)-Dissolved (mg/L)					
	Mercury (Hg)-Dissolved (mg/L)					
	Molybdenum (Mo)-Dissolved (mg/L)					
	Nickel (Ni)-Dissolved (mg/L)					
	Phosphorus (P)-Dissolved (mg/L)					
	Potassium (K)-Dissolved (mg/L)					
	Selenium (Se)-Dissolved (mg/L)					
	Silicon (Si)-Dissolved (mg/L)					
	Silver (Ag)-Dissolved (mg/L)					
	Sodium (Na)-Dissolved (mg/L)					
	Strontium (Sr)-Dissolved (mg/L)					
	Thallium (Tl)-Dissolved (mg/L)					
	Tin (Sn)-Dissolved (mg/L)					
	Titanium (Ti)-Dissolved (mg/L)					
	Uranium (U)-Dissolved (mg/L)					
	Vanadium (V)-Dissolved (mg/L)					
	Zinc (Zn)-Dissolved (mg/L)					
Aggregate Organics	COD (mg/L)	<20				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Bicarbonate (as CaCO3)	B	L1287525-3, -4
Method Blank	Alkalinity, Total (as CaCO3)	B	L1287525-3, -4
Method Blank	Alkalinity, Bicarbonate (as CaCO3)	B	L1287525-3, -4
Method Blank	Alkalinity, Total (as CaCO3)	B	L1287525-3, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1287525-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1287525-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1287525-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1287525-1, -2, -3, -4, -5
Matrix Spike	Ammonia, Total (as N)	MS-B	L1287525-3, -4, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1287525-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1287525-1, -2, -3, -4, -5
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L1287525-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1287525-1, -2, -3, -4, -5
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1287525-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and are considered reliable.
DLA	Detection Limit Adjusted For required dilution
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 "Alkalinity"

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

Reference Information

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA Water Sulfate by Ion Chromatography APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA Water Low level WAD Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA Water Chemical Oxygen Demand by Colorimetric APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA Water Colour (True) by Spectrometer BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA Water Dissolved Mercury in Water by CVAFS(Low) EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA Water Total Mercury in Water by CVAFS(Low) EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-DIS-ICP-VA Water Dissolved Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or

Reference Information

filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Reference Information

Chain of Custody Numbers:

10-293380

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10- 293880

ALS Environmental

L1287525-COFC

Page 1 of 1

Report To		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)
Company: BGC Engineering Inc.	Standard: ✓ Other (specify):	✓ Regular (Standard Turnaround Times - Business Days)
Contact: V. Cullen	Select: PDF ✓ Excel ✓ Digital ✓ Fax	Priority (2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address: 800 - 1045 Howe Street, Vancouver BC.	Email 1: VCullen@BGCEngineering.ca	Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
Phone: 604 684 5900 Fax: 604 684 5909	Email 2: KJohnston@BGCEngineering.ca	Same Day or Weekend Emergency - Contact ALS to confirm TAT
Invoice To Same as Report ? (circle) Yes or (No) (if No, provide details)	**Client / Project Information**	**Analysis Request**
Copy of Invoice with Report? (circle) Yes or No	Job #: 1008 007	(Indicate Filtered or Preserved, F/P)
Company: Pretium Resources.	PO / AFE:	
Contact: K Mc Naughton	LSD:	
Address: 1600 - 570 Granville Street, Vancouver, BC		
Phone: 604 558 1784 Fax: 604 558 4784	Quote #:	
Lab Work Order # (lab use only) L1287825	**ALS Contact:** D. Watt. **Sampler:** B Smith, T Beebe	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	P Total Metals	Dissolved Metals	DOC	P TOC	P TKN/NH3/COD	P Cyanides					Number of Containers
	02A	7-04-13		H_2O	✓	✓	✓	✓	✓	✓	✓					6
	03A	"		"	✓	✓	✓	✓	✓	✓	✓					6
	06A	"		"	✓	✓	✓	✓	✓	✓	✓					6
	06B	"		"	✓	✓	✓	✓	✓	✓	✓					6
	Dup1	"		"	✓	✓	✓	✓	✓	✓	✓					6
	Travel Blank	"		"	✓	✓			✓	✓	✓					4

Short Holding Time

Rush Processing

Special Instructions / Regulation with water or land use (CCME-Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

--DOC-- and --Dissolved Metals NOT -Filtered and not Preserved.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
B Smith	07/04/13	17:00	TV	Apr 9	11:55	10 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION | WHITE - LABORATORY COPY | YELLOW - CLIENT COPY | GENF 18.01 Front

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 10-APR-13
Report Date: 18-APR-13 16:56 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1288325

Project P.O. #: NOT SUBMITTED
Job Reference: 1008007
C of C Numbers: 10-293879
Legal Site Desc:

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1288325-1 WATER 08-APR-13 08A	L1288325-2 WATER 08-APR-13 08B	L1288325-3 WATER 08-APR-13 04A	L1288325-4 WATER 08-APR-13 04B	L1288325-5 WATER 08-APR-13 FB
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (uS/cm)	213	201	430	489	<2.0
	Hardness (as CaCO3) (mg/L)	99.9	99.6	190	13.7	<0.50
	pH (pH)	8.18	8.23	8.15	9.37	5.74
	Total Suspended Solids (mg/L)	15.7	281	18.6	3.2	<3.0
	Total Dissolved Solids (mg/L)	130	133	285	308	<10
	Turbidity (NTU)	10.8	281	11.2	6.87	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.2	<1.0	1.4	<1.0	1.1
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	76.0	67.6	115	96.7	<2.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	35.5	<2.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<1.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	76.0	67.6	115	132	<2.0
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	0.131	0.152	<0.0050
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	<0.50	<0.50	0.55	<0.50	<0.50
	Fluoride (F) (mg/L)	0.030	0.030	0.081	0.140	<0.020
	Nitrate (as N) (mg/L)	0.0092	0.0176	0.191	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.0058	0.0034	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.068	0.155	0.181	<0.050
	Total Nitrogen (mg/L)	<0.050	0.086	0.352	0.184	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0058	0.152	0.0128	0.0022	<0.0020
	Sulfate (SO4) (mg/L)	36.6	37.1	120	114	<0.50
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	0.54	1.15	0.53	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.868	12.7	0.419	0.571	<0.0030
	Antimony (Sb)-Total (mg/L)	0.00081	0.00170	0.00332	0.00115	<0.00010
	Arsenic (As)-Total (mg/L)	0.00736	0.0671	0.0164	0.0169	<0.00010
	Barium (Ba)-Total (mg/L)	0.0264	0.186	0.0978	0.0222	<0.000050
	Beryllium (Be)-Total (mg/L)	<0.00010	0.00028	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	0.012	0.014	0.064	0.057	<0.010
	Cadmium (Cd)-Total (mg/L)	0.000015	0.000042	0.000043	<0.000010	<0.000010
	Calcium (Ca)-Total (mg/L)	32.0	33.6	58.1	7.06	<0.020

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1288325-1	L1288325-2	L1288325-3	L1288325-4	L1288325-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	08-APR-13	08-APR-13	08-APR-13	08-APR-13	08-APR-13
	Sampled Time					
	Client ID	08A	08B	04A	04B	FB
Grouping	**Analyte**					
WATER						
Total Metals	Chromium (Cr)-Total (mg/L)	0.00112	0.0138	0.00113	0.00179	<0.00010
	Cobalt (Co)-Total (mg/L)	0.00016	0.00333	0.00082	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	0.00250	0.00909	0.00166	0.00081	<0.00050
	Iron (Fe)-Total (mg/L)	0.330	5.32	0.383	0.073	<0.030
	Lead (Pb)-Total (mg/L)	0.000485	0.00389	0.000753	0.000164	<0.000050
	Lithium (Li)-Total (mg/L)	0.0114	0.00846	0.0281	0.221	<0.00050
	Magnesium (Mg)-Total (mg/L)	5.63	5.69	11.5	0.932	<0.0050
	Manganese (Mn)-Total (mg/L)	0.0246	0.290	0.102	0.00665	<0.000050
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.00169	0.00311	0.000983	0.000956	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00077	0.00888	0.00074	0.00086	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	0.586	3.14	1.70	0.969	<0.050
	Selenium (Se)-Total (mg/L)	0.00017	0.00027	<0.00010	<0.00010	<0.00010
	Silicon (Si)-Total (mg/L)	4.88	22.1	4.02	4.41	<0.050
	Silver (Ag)-Total (mg/L)	0.000075	0.000890	0.000019	0.000188	<0.000010
	Sodium (Na)-Total (mg/L)	5.2	2.7	17.9	111	<2.0
	Strontium (Sr)-Total (mg/L)	0.747	0.564	2.87	0.146	<0.00020
	Thallium (Tl)-Total (mg/L)	0.000014	0.000158	0.000027	0.000020	<0.000010
	Tin (Sn)-Total (mg/L)	0.00012	0.00029	0.00023	0.00024	<0.00010
	Titanium (Ti)-Total (mg/L)	0.018	0.175	0.017	<0.010	<0.010
	Uranium (U)-Total (mg/L)	0.000360	0.000399	0.00209	0.000152	<0.000010
	Vanadium (V)-Total (mg/L)	<0.0010	0.0117	<0.0010	0.0011	<0.0010
	Zinc (Zn)-Total (mg/L)	0.0041	0.0267	0.0072	<0.0030	<0.0030
Dissolved Metals	Dissolved Metals Filtration Location	LAB	LAB	LAB	LAB	LAB
	Aluminum (Al)-Dissolved (mg/L)	0.0142	3.59	0.0075	0.387	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00085	0.00092	0.00293	0.00109	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00705	0.0235	0.0140	0.0161	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0218	0.0785	0.0338	0.0160	<0.000050
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	0.012	0.012	0.064	0.055	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.000011	0.000012	0.000033	<0.000010	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	31.1	32.5	57.1	4.13	<0.020
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00287	<0.00010	0.00073	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00069	0.00012	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00050	0.00164	<0.00050	<0.00050	<0.00050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1288325-1	L1288325-2	L1288325-3	L1288325-4	L1288325-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	08-APR-13	08-APR-13	08-APR-13	08-APR-13	08-APR-13
	Sampled Time					
	Client ID	08A	08B	04A	04B	FB
Grouping	**Analyte**					
WATER						
Dissolved Metals	Iron (Fe)-Dissolved (mg/L)	<0.030	1.06	<0.030	0.039	<0.030
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000739	<0.000050	0.000065	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0106	0.00557	0.0274	0.210	<0.00050
	Magnesium (Mg)-Dissolved (mg/L)	5.40	4.45	11.5	0.832	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.00417	0.0929	0.0521	0.00159	<0.000050
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00163	0.00218	0.000893	0.000855	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00055	0.00226	0.00058	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	0.484	1.59	1.61	0.794	<0.050
	Selenium (Se)-Dissolved (mg/L)	0.00018	0.00026	<0.00010	<0.00010	<0.00010
	Silicon (Si)-Dissolved (mg/L)	2.06	7.96	3.00	3.90	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	0.000085	<0.000010	0.000060	<0.000010
	Sodium (Na)-Dissolved (mg/L)	5.2	2.4	17.7	107	<2.0
	Strontium (Sr)-Dissolved (mg/L)	0.737	0.541	2.81	0.127	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000060	0.000017	0.000013	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00019	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	0.056	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000231	0.000270	0.00201	0.000138	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.0010	0.0040	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	<0.0030	0.0063	0.0036	<0.0030	<0.0030
Aggregate Organics	COD (mg/L)	<20	<20	<20	<20	<20

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Calcium (Ca)-Total	MB-LOR	L1288325-1, -2, -3, -4, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1288325-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1288325-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1288325-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1288325-1, -2, -3, -4, -5
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1288325-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1288325-1, -2, -3, -4, -5
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1288325-1, -2, -3, -4, -5
Matrix Spike	Ammonia, Total (as N)	MS-B	L1288325-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. LORs adjusted for samples with positive hits below 5 times blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 "Alkalinity"

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are

Reference Information

determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA Water Low level WAD Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA Water Chemical Oxygen Demand by Colorimetric APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA Water Colour (True) by Spectrometer BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA Water Dissolved Mercury in Water by CVAFS(Low) EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA Water Total Mercury in Water by CVAFS(Low) EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-DIS-ICP-VA Water Dissolved Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method

Reference Information

6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-MAN-VA	Water	pH by Manual Meter	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-MAN-VA	Water	pH by Manual Meter	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TN-CALC-VA	Water	Total Nitrogen (Calculation)	BC MOE LABORATORY MANUAL (2005)

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

10-293879

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10-293879

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGC Engineering Inc.	Standard: ✓	Other (specify):	✓	Regular (Standard Turnaround Times - Business Days)
Contact:	V. Cullen.	Select: PDF ✓	Excel ✓ Digital ✓ Fax		Priority (2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address:	800 - 1045 Howe street, Vancouver, V6Z 2A9	Email 1:	VCullen@BGCEngineering.ca		Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
		Email 2:	KJohnston@BGCengineering.ca		Same Day or Weekend Emergency - Contact ALS to confirm TAT - ...
Phone:	604 684 5900 Fax: 604 684 5909			Analysis Request	

Invoice To	Same as Report ? (circle) Yes or (No) (if No, provide details)	Client / Project Information			
	Copy of Invoice with Report? (circle) Yes or No	Job #:	1008007	(Indicate Filtered or Preserved, F/P)	
Company:	Pretium Resources.	PO / AFE:			
Contact:	K. McNaughton.	LSD:			
Address:	1600 - 570 Granville st. Vancouver, V6C 3P1				
Phone:	604 558 1784 Fax: 604 558 4786.	Quote #:			
Lab Work Order # (lab use only)	L1288325	ALS Contact:	D. Watt.	Sampler:	B Smith / T Beebe.

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	F/P	Total Metals	F/P	Dissolved Metals	F/P	DOC	F/P	TOC	COD / TKN / NH3	Cyanides	Number of Containers
	08A	08-04-13		H_2O	✓		✓		✓		✓		✓	✓	✓	6
	08B	"		"	✓		✓		✓		✓		✓	✓	✓	6
	04A	"		"	✓		✓		✓		✓		✓	✓	✓	6
	04B	"		"	✓		✓		✓		✓		✓	✓	✓	6
	FB	"		"	✓		✓		✓		✓		✓	✓	✓	6

Short Holding Time

Rush Processing

L1288325-COFC

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquati... ...commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Dissolved Metals and DOC not filtered or preserved.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
B. Smith	08/04/13	17:00		Apr 10	12:36	3.8 °C				

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 13-JUL-13
Report Date: 01-AUG-13 16:36 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1331947

Project P.O. #: NOT SUBMITTED
Job Reference: 1008007
C of C Numbers: 10-268554
Legal Site Desc:

Comments: ADDITIONAL 30-JUL-13 16:09

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1331947-1	L1331947-2	L1331947-3	L1331947-4	L1331947-5
	Description	water	water	water	water	water
	Sampled Date	11-JUL-13	11-JUL-13	11-JUL-13	11-JUL-13	11-JUL-13
	Sampled Time					
	Client ID	BJ-4B	BJ-6A	BJ-3B	DUP1	BJ-FB
Grouping	**Analyte**					
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (uS/cm)	529	284	352	526	<2.0
	Hardness (as CaCO3) (mg/L)	8.10	126	164	7.71	<0.50
	pH (pH)	9.46	8.22	8.22	9.43	5.69
	Total Suspended Solids (mg/L)	6.9	1010	493	7.6	<3.0
	Total Dissolved Solids (mg/L)	337	198	223	329	<10
	Turbidity (NTU)	19.7	1350	346	21.2	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	89.8	68.3	94.6	97.0	<2.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	43.5	<2.0	<2.0	46.4	<2.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<2.0	<2.0	<1.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	133	68.3	94.6	143	<2.0
	Ammonia, Total (as N) (mg/L)	0.169	0.0793	0.0271	0.174	<0.0050
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	1.48	0.50	<0.50	1.31	<0.50
	Fluoride (F) (mg/L)	0.137	0.169	0.163	0.133	<0.020
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0052	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.192	0.838	0.670	0.250	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0038	0.0026	<0.0010	0.0035	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0061	0.573	0.225	0.0068	<0.0020
	Sulfate (SO4) (mg/L)	111	74.4	87.2	111	<0.50
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.71	<0.50	<0.50	0.66	<0.50
	Total Organic Carbon (mg/L)	0.60	1.11	0.53	1.16	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	1.49	15.8	9.32	1.25	<0.0030
	Antimony (Sb)-Total (mg/L)	0.00070	0.00870	0.0114	0.00066	<0.00010
	Arsenic (As)-Total (mg/L)	0.0129	0.120	0.113	0.0127	<0.00010
	Barium (Ba)-Total (mg/L)	0.0423	4.10	0.408	0.0369	<0.000050
	Beryllium (Be)-Total (mg/L)	<0.00010	0.00136	0.00088	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	0.069	0.028	0.040	0.062	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.000010	0.000702	0.000588	<0.000010	<0.000010
	Calcium (Ca)-Total (mg/L)	2.94	60.0	75.9	2.74	<0.020
	Chromium (Cr)-Total (mg/L)	0.00216	0.00831	0.00450	0.00189	<0.00010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1331947-1	L1331947-2	L1331947-3	L1331947-4	L1331947-5
	Description	water	water	water	water	water
	Sampled Date	11-JUL-13	11-JUL-13	11-JUL-13	11-JUL-13	11-JUL-13
	Sampled Time					
	Client ID	BJ-4B	BJ-6A	BJ-3B	DUP1	BJ-FB
Grouping	**Analyte**					
WATER						
Total Metals	Cobalt (Co)-Total (mg/L)	<0.00010	0.00602	0.00518	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	0.00090	0.0523	0.0214	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.150	18.9	15.7	0.146	<0.030
	Lead (Pb)-Total (mg/L)	0.000279	0.0672	0.0198	0.000232	<0.000050
	Lithium (Li)-Total (mg/L)	0.230	0.0178	0.0281	0.227	<0.00050
	Magnesium (Mg)-Total (mg/L)	0.511	7.35	7.25	0.466	<0.0050
	Manganese (Mn)-Total (mg/L)	0.0120	0.731	1.14	0.0112	<0.000050
	Mercury (Hg)-Total (mg/L)	<0.000010	0.000130	0.000072	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.00102	0.00316	0.00187	0.000946	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00079	0.00702	0.00333	0.00065	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.30	0.74	0.54	<0.30	<0.30
	Potassium (K)-Total (mg/L)	1.35	5.80	3.60	1.21	<0.050
	Selenium (Se)-Total (mg/L)	<0.00010	0.00087	0.00190	<0.00010	<0.00010
	Silicon (Si)-Total (mg/L)	6.13	59.8	24.2	6.29	<0.050
	Silver (Ag)-Total (mg/L)	0.000037	0.00574	0.00225	0.000031	<0.000010
	Sodium (Na)-Total (mg/L)	116	6.7	6.6	115	<2.0
	Strontium (Sr)-Total (mg/L)	0.112	2.28	1.59	0.0971	<0.00020
	Thallium (Tl)-Total (mg/L)	0.000042	0.000377	0.000383	0.000036	<0.000010
	Tin (Sn)-Total (mg/L)	0.00014	0.00072	0.00032	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.011	0.660	0.145	0.010	<0.010
	Uranium (U)-Total (mg/L)	0.000140	0.00118	0.000975	0.000128	<0.000010
	Vanadium (V)-Total (mg/L)	0.0024	0.0211	0.0157	0.0022	<0.0010
	Zinc (Zn)-Total (mg/L)	0.0041	0.302	0.0545	0.0032	<0.0030
Dissolved Metals	Dissolved Metals Filtration Location	LAB	LAB	LAB	LAB	LAB
	Aluminum (Al)-Dissolved (mg/L)	0.120	0.0898	0.0474	0.174	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00068	0.00370	0.00284	0.00065	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.0129	0.0260	0.0128	0.0128	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0204	0.0471	0.0525	0.0220	<0.000050
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	0.060	0.024	0.036	0.058	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.000010	0.000016	0.000030	<0.000010	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	2.68	44.4	59.5	2.56	<0.020
	Chromium (Cr)-Dissolved (mg/L)	0.00039	<0.00010	0.00010	0.00046	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1331947-1 water 11-JUL-13 BJ-4B	L1331947-2 water 11-JUL-13 BJ-6A	L1331947-3 water 11-JUL-13 BJ-3B	L1331947-4 water 11-JUL-13 DUP1	L1331947-5 water 11-JUL-13 BJ-FB
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000142	<0.000050	0.000051	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.226	0.00655	0.0152	0.227	<0.00050
	Magnesium (Mg)-Dissolved (mg/L)	0.341	3.74	3.82	0.319	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.00602	0.0482	0.0412	0.00610	<0.000050
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.000877	0.00246	0.000882	0.000882	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	0.822	2.48	1.15	0.808	<0.050
	Selenium (Se)-Dissolved (mg/L)	<0.00010	0.00030	0.00029	<0.00010	<0.00010
	Silicon (Si)-Dissolved (mg/L)	3.58	3.81	3.19	3.71	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	0.000014	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	113	5.1	6.4	113	<2.0
	Strontium (Sr)-Dissolved (mg/L)	0.0953	1.98	1.48	0.0913	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000060	0.000040	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000099	0.000689	0.000425	0.000098	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Aggregate Organics	COD (mg/L)	<20	<20	<20	<20	<20

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bromide (Br)	DLM	L1331947-1, -2, -3, -4, -5
Duplicate	Nitrite (as N)	DLM	L1331947-1, -2, -3, -4, -5
Duplicate	Bromide (Br)	DLM	L1331947-1, -2, -3, -4, -5
Duplicate	Fluoride (F)	DLM	L1331947-1, -2, -3, -4, -5
Duplicate	Nitrite (as N)	DLM	L1331947-1, -2, -3, -4, -5
Duplicate	Nitrite (as N)	DLM	L1331947-1, -2, -3, -4, -5
Matrix Spike	Phosphorus (P)-Total	MS-B	L1331947-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1331947-1, -2, -3, -4, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1331947-1, -2, -3, -4, -5
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L1331947-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1331947-1, -2, -3, -4, -5
Matrix Spike	Barium (Ba)-Total	MS-B	L1331947-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Total	MS-B	L1331947-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1331947-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Total	MS-B	L1331947-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 "Alkalinity"

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

Reference Information

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA Water Sulfate by Ion Chromatography APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA Water Low level WAD Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA Water Chemical Oxygen Demand by Colorimetric APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA Water Colour (True) by Spectrometer BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA Water Dissolved Mercury in Water by CVAFS(Low) EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA Water Total Mercury in Water by CVAFS(Low) EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-DIS-ICP-VA Water Dissolved Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United

Reference Information

States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-MAN-VA	Water	pH by Manual Meter	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-MAN-VA	Water	pH by Manual Meter	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Reference Information

VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

10-268554

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10-268554

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGC Engineering	Standard: ✓	Other (specify):	✓	Regular (Standard Turnaround Times - Business Days)
Contact:	V. Cullen.	Select: PDF ✓	Excel ✓ Digital Fax		Priority (2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address:	800 - 1045 Howe Street. Vancouver, V6Z 2A9	Email 1:	VCullen@BGCengineering.ca		Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
		Email 2:	KJohnston@BGCengineering.ca.		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	604 684 5900 Fax: 604 684 5909			Analysis Request	
Invoice To	Same as Report ? (circle) Yes or (No) (if No, provide details)	**Client / Project Information**		(Indicate Filtered or Preserved, F/P)	
	Copy of Invoice with Report? (circle) Yes or No	Job #:	1008007		
Company:	Pretium Resources	PO / AFE:			
Contact:	K Mc Naughton	LSD:			
Address:	1600 - 570 Granville Street, Vancouver, V6C 3P1				
Phone:	604 558 1784 Fax: 604 558 4786	Quote #:			
Lab Work Order # (lab use only)		**ALS Contact:**	D Watt.	**Sampler:**	BSmith, S Blackmore.

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	Total metals (P)	Dissolved Metals (P)	Cyanides (P)	DOC (P)	TOC / COD / TKN / NH_3 (P)	Number of Containers
	BJ-4B	11-07-13		H_2O	✓	✓	✓	✓	✓	✓	6
	BJ-6A	"		"	✓	✓	✓	✓	✓	✓	6
	BJ-3B	"		"	✓	✓	✓	✓	✓	✓	6
	Dupl.	"		"	✓	✓	✓	✓	✓	✓	6
	BJ-FB	"		"	✓	✓	✓	✓	✓	✓	6

Short Holding Time

Rush Processing

L1331947-COFC

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

DOC and Dissolved metals not filtered or Preserved.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
BJ	11/07/13	19:00	TN	July 13	14:00	13 °C				

WHITE PAPER CO. 604 951-3900

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 16-JUL-13
Report Date: 30-JUL-13 18:04 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1333226

Project P.O. #: NOT SUBMITTED
Job Reference: 1008 007
C of C Numbers: 10-268555
Legal Site Desc:

Dean Watt
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1333226-1 H2O 13-JUL-13 BJ-2A	L1333226-2 H2O 13-JUL-13 BJ-3A	L1333226-3 H2O 13-JUL-13 BJ-4A	L1333226-4 H2O 14-JUL-13 BJ-8A	L1333226-5 H2O 14-JUL-13 BJ-8B
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (uS/cm)	189	329	490	200	200
	Hardness (as CaCO3) (mg/L)	88.3	150	195	91.1	94.3
	pH (pH)	7.13	7.97	7.94	8.14	8.12
	Total Suspended Solids (mg/L)	280	48.5	30.1	21.7	182
	Total Dissolved Solids (mg/L)	124	220	335	127	131
	Turbidity (NTU)	160	39.6	16.3	8.22	266
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	6.2	4.0	5.1	1.8	2.4
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	63.3	93.7	117	72.5	68.2
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	63.3	93.7	117	72.5	68.2
	Ammonia, Total (as N) (mg/L)	<0.0050	0.0291	0.114	<0.0050	<0.0050
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	1.15	<0.50	1.89	<0.50	<0.50
	Fluoride (F) (mg/L)	0.030	0.188	0.078	0.027	0.021
	Nitrate (as N) (mg/L)	0.0680	<0.0050	0.178	0.0191	0.0215
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.0135	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.162	0.073	0.238	<0.050	0.143
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0011	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.307	0.0587	0.0488	0.0058	0.093
	Sulfate (SO4) (mg/L)	34.7	80.9	140	32.0	35.1
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0018
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	1.87	<0.50	<0.50
	Total Organic Carbon (mg/L)	1.06	0.69	2.33	<0.50	0.66
Total Metals	Aluminum (Al)-Total (mg/L)	12.8	1.64	0.332	0.910	12.2
	Antimony (Sb)-Total (mg/L)	0.00123	0.0180	0.00411	0.00088	0.00181
	Arsenic (As)-Total (mg/L)	0.0294	0.0156	0.0189	0.00868	0.0818
	Barium (Ba)-Total (mg/L)	0.358	0.0643	0.0547	0.0265	0.282
	Beryllium (Be)-Total (mg/L)	0.00035	<0.00010	<0.00010	<0.00010	0.00017
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	0.014	0.039	0.070	0.011	<0.010
	Cadmium (Cd)-Total (mg/L)	0.000066	0.000097	0.000054	0.000018	0.000033
	Calcium (Ca)-Total (mg/L)	34.9	53.1	56.5	28.9	32.3
	Chromium (Cr)-Total (mg/L)	0.0177	0.00859	0.00118	0.00068	0.00230

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1333226-1	L1333226-2	L1333226-3	L1333226-4	L1333226-5
	Description	H2O	H2O	H2O	H2O	H2O
	Sampled Date	13-JUL-13	13-JUL-13	13-JUL-13	14-JUL-13	14-JUL-13
	Sampled Time					
	Client ID	BJ-2A	BJ-3A	BJ-4A	BJ-8A	BJ-8B
Grouping	**Analyte**					
WATER						
Total Metals	Cobalt (Co)-Total (mg/L)	0.00334	0.00071	0.00123	0.00016	0.00298
	Copper (Cu)-Total (mg/L)	0.0121	0.00288	0.00179	0.00053	0.00771
	Iron (Fe)-Total (mg/L)	11.2	1.88	0.630	0.339	6.82
	Lead (Pb)-Total (mg/L)	0.00477	0.0110	0.00118	0.000614	0.00573
	Lithium (Li)-Total (mg/L)	0.0147	0.0158	0.0292	0.00901	0.00958
	Magnesium (Mg)-Total (mg/L)	3.90	4.13	11.8	5.51	4.81
	Manganese (Mn)-Total (mg/L)	0.533	0.216	0.141	0.0171	0.334
	Mercury (Hg)-Total (mg/L)	0.000120	<0.000010	0.000014	<0.000010	0.000056
	Molybdenum (Mo)-Total (mg/L)	0.00329	0.00310	0.00206	0.00143	0.00185
	Nickel (Ni)-Total (mg/L)	0.00896	0.00176	0.00085	<0.00050	0.00246
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	4.15	1.86	1.66	0.558	2.09
	Selenium (Se)-Total (mg/L)	0.00017	<0.00010	<0.00010	0.00016	0.00028
	Silicon (Si)-Total (mg/L)	30.7	7.36	3.59	5.22	23.4
	Silver (Ag)-Total (mg/L)	0.00110	0.000523	0.000074	0.000022	0.000231
	Sodium (Na)-Total (mg/L)	4.0	8.2	27.6	4.2	2.8
	Strontium (Sr)-Total (mg/L)	0.982	1.12	2.84	0.745	0.462
	Thallium (Tl)-Total (mg/L)	0.000169	0.000249	0.000027	0.000014	0.000120
	Tin (Sn)-Total (mg/L)	0.00023	<0.00010	0.00033	<0.00010	0.00034
	Titanium (Ti)-Total (mg/L)	0.369	0.052	0.016	0.023	0.189
	Uranium (U)-Total (mg/L)	0.000627	0.000203	0.00485	0.000323	0.000234
	Vanadium (V)-Total (mg/L)	0.0207	0.0033	<0.0010	<0.0010	0.0081
	Zinc (Zn)-Total (mg/L)	0.0354	0.0443	0.0084	0.0041	0.0339
Dissolved Metals	Dissolved Metals Filtration Location	LAB	LAB	LAB	LAB	LAB
	Aluminum (Al)-Dissolved (mg/L)	0.0166	0.0088	0.0089	0.0138	0.0352
	Antimony (Sb)-Dissolved (mg/L)	0.00023	0.00940	0.00354	0.00086	0.00067
	Arsenic (As)-Dissolved (mg/L)	0.00107	0.00552	0.0150	0.00775	0.0167
	Barium (Ba)-Dissolved (mg/L)	0.0271	0.0223	0.0444	0.0203	0.0156
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	<0.010	0.037	0.070	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.000010	<0.000010	0.000034	<0.000010	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	32.9	53.4	58.2	27.8	32.2
	Chromium (Cr)-Dissolved (mg/L)	0.00010	<0.00010	0.00014	<0.00010	0.00013
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00015	0.00023	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1333226-1	L1333226-2	L1333226-3	L1333226-4	L1333226-5
Description	H2O	H2O	H2O	H2O	H2O
Sampled Date	13-JUL-13	13-JUL-13	13-JUL-13	14-JUL-13	14-JUL-13
Sampled Time					
Client ID	BJ-2A	BJ-3A	BJ-4A	BJ-8A	BJ-8B
Grouping / **Analyte**					
WATER					
Dissolved Metals Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000107	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	0.00479	0.0156	0.0305	0.00901	0.00501
Magnesium (Mg)-Dissolved (mg/L)	1.50	3.93	12.1	5.28	3.39
Manganese (Mn)-Dissolved (mg/L)	0.00124	0.132	0.0709	0.00432	0.000513
Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Dissolved (mg/L)	0.00130	0.00114	0.00203	0.00142	0.00166
Nickel (Ni)-Dissolved (mg/L)	0.00071	0.00072	0.00053	<0.00050	<0.00050
Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Dissolved (mg/L)	0.318	1.35	1.61	0.454	0.598
Selenium (Se)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00017	0.00023
Silicon (Si)-Dissolved (mg/L)	1.66	3.50	3.04	2.04	2.04
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	2.6	7.9	27.7	4.0	2.3
Strontium (Sr)-Dissolved (mg/L)	0.912	1.10	2.88	0.701	0.440
Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000076	0.000018	<0.000010	<0.000010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved (mg/L)	0.000153	0.000142	0.00471	0.000189	0.000160
Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Dissolved (mg/L)	<0.0030	<0.0030	0.0033	<0.0030	<0.0030
Aggregate Organics COD (mg/L)	<20	<20	<20	<20	92

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bromide (Br)	DLM	L1333226-1, -2, -3, -4, -5
Duplicate	Chloride (Cl)	DLM	L1333226-1, -2, -3, -4, -5
Duplicate	Nitrite (as N)	DLM	L1333226-1, -2, -3, -4, -5
Matrix Spike	Phosphorus (P)-Total	MS-B	L1333226-1, -2, -4, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1333226-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1333226-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1333226-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1333226-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1333226-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA	Water	Low Level Total Cyanide in water by CFA	ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by

Reference Information

colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA	Water	Low level WAD Cyanide in water by CFA	APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA	Water	Chemical Oxygen Demand by Colorimetric	APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA	Water	Colour (True) by Spectrometer	BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA	Water	Dissolved Mercury in Water by CVAFS(Low)	EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA	Water	Total Mercury in Water by CVAFS(Low)	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-DIS-ICP-VA	Water	Dissolved Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

10-268555

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10-268555

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page 1 of 1

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGC Engineering.	Standard: ✓	Other (specify):	✓	Regular (Standard Turnaround Times - Business Days)
Contact:	V. Cullen	Select: PDF ✓	Excel ✓ Digital ✓ Fax		Priority (2-4 Business Days) - 50% surcharge - Contact ALS to confirm TAT
Address:	800 - 1045 Howe Street	Email 1:	VCullen@BGCengineering.ca		Emergency (1-2 Business Days) - 100% Surcharge - Contact ALS to confirm TAT
	Vancouver V6Z 2A9	Email 2:	KJohnston@BGCengineering.ca.		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	604 684 5900 Fax: 604 684 5909				

Invoice To	Same as Report ? (circle) Yes or (No) (if No, provide details)	Client / Project Information	
	Copy of Invoice with Report? (circle) Yes or No	Job #:	1008 007
Company:	Pretium Resources	PO / AFE:	
Contact:	K Mc Naughton	LSD:	
Address:	1600 - 570 Granville Street Vancouver, V6C 3P1		
Phone:	604 558 1784 Fax: 604 558 4786.	Quote #:	

Lab Work Order # (lab use only): L1333226.
ALS Contact: D. Watt. **Sampler:** BSmith BTait

Analysis Request (Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	F/P	Total Metals	F/P	Diss Metals	F/P	DOC	F/P	TOC / Cond TKN / NH_3	F/P	Cyanide	F/P	Number of Containers
	BJ - 2A	13-07-13		H_2O	✓		✓		✓		✓		✓		✓		6
	BJ - 3A	13-07-13		"	✓		✓		✓		✓		✓		✓		6
	BJ - 4A	13-07-13		"	✓		✓		✓		✓		✓		✓		6
	BJ - 8A	14-07-13		"	✓		✓		✓		✓		✓		✓		6
	BJ - 8B	14-07-13		"	✓		✓		✓		✓		✓		✓		6

Short Holding Time
Rush Processing

L1333226-COFC

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

DOC and Dissolved Metals Not filtered / Not Preserved.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
B. Smith	14/07/13	17:00.	IN	July/16	6:10	16 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY — GENF 18.01 Front

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 20-JUL-13
Report Date: 31-JUL-13 18:02 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1335562

Project P.O. #: NOT SUBMITTED
Job Reference: R008007
C of C Numbers: 10-297711
Legal Site Desc:

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1335562-1				
	Description	water				
	Sampled Date	15-JUL-13				
	Sampled Time					
	Client ID	BJ-12A				
Grouping	**Analyte**					
WATER						
Physical Tests	Colour, True (CU)	<5.0				
	Conductivity (uS/cm)	485				
	Hardness (as CaCO3) (mg/L)	224				
	pH (pH)	8.06				
	Total Suspended Solids (mg/L)	183				
	Total Dissolved Solids (mg/L)	338				
	Turbidity (NTU)	2.40				
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.1				
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	98.8				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0				
	Alkalinity, Total (as CaCO3) (mg/L)	98.8				
	Ammonia, Total (as N) (mg/L)	0.169				
	Bromide (Br) (mg/L)	<0.050				
	Chloride (Cl) (mg/L)	1.05				
	Fluoride (F) (mg/L)	0.160				
	Nitrate (as N) (mg/L)	<0.0050				
	Nitrite (as N) (mg/L)	<0.0010				
	Total Kjeldahl Nitrogen (mg/L)	0.671				
	Total Nitrogen (mg/L)	0.671				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.265				
	Sulfate (SO4) (mg/L)	159				
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010				
	Cyanide, Total (mg/L)	<0.0010				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.05				
	Total Organic Carbon (mg/L)	12.3				
Total Metals	Aluminum (Al)-Total (mg/L)	1.48				
	Antimony (Sb)-Total (mg/L)	0.00501				
	Arsenic (As)-Total (mg/L)	0.192				
	Barium (Ba)-Total (mg/L)	0.300				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.021				
	Cadmium (Cd)-Total (mg/L)	0.000290				
	Calcium (Ca)-Total (mg/L)	74.5				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1335562-1				
	Description	water				
	Sampled Date	15-JUL-13				
	Sampled Time					
	Client ID	BJ-12A				
Grouping	**Analyte**					
WATER						
Total Metals	Chromium (Cr)-Total (mg/L)	0.158				
	Cobalt (Co)-Total (mg/L)	0.00220				
	Copper (Cu)-Total (mg/L)	0.0139				
	Iron (Fe)-Total (mg/L)	8.02				
	Lead (Pb)-Total (mg/L)	0.0470				
	Lithium (Li)-Total (mg/L)	0.0107				
	Magnesium (Mg)-Total (mg/L)	10.5				
	Manganese (Mn)-Total (mg/L)	0.366				
	Mercury (Hg)-Total (mg/L)	<0.000010				
	Molybdenum (Mo)-Total (mg/L)	0.00524				
	Nickel (Ni)-Total (mg/L)	0.0592				
	Phosphorus (P)-Total (mg/L)	<0.30				
	Potassium (K)-Total (mg/L)	5.33				
	Selenium (Se)-Total (mg/L)	0.00070				
	Silicon (Si)-Total (mg/L)	6.08				
	Silver (Ag)-Total (mg/L)	0.00165				
	Sodium (Na)-Total (mg/L)	6.4				
	Strontium (Sr)-Total (mg/L)	1.41				
	Thallium (Tl)-Total (mg/L)	0.000146				
	Tin (Sn)-Total (mg/L)	0.00283				
	Titanium (Ti)-Total (mg/L)	0.041				
	Uranium (U)-Total (mg/L)	0.000545				
	Vanadium (V)-Total (mg/L)	0.0024				
	Zinc (Zn)-Total (mg/L)	0.0474				
Dissolved Metals	Dissolved Metals Filtration Location	LAB				
	Aluminum (Al)-Dissolved (mg/L)	0.0119				
	Antimony (Sb)-Dissolved (mg/L)	0.00055				
	Arsenic (As)-Dissolved (mg/L)	0.00433				
	Barium (Ba)-Dissolved (mg/L)	0.0706				
	Beryllium (Be)-Dissolved (mg/L)	<0.00010				
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050				
	Boron (B)-Dissolved (mg/L)	0.020				
	Cadmium (Cd)-Dissolved (mg/L)	0.000039				
	Calcium (Ca)-Dissolved (mg/L)	73.1				
	Chromium (Cr)-Dissolved (mg/L)	0.00186				
	Cobalt (Co)-Dissolved (mg/L)	0.00072				
	Copper (Cu)-Dissolved (mg/L)	<0.00050				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1335562-1				
	Description	water				
	Sampled Date	15-JUL-13				
	Sampled Time					
	Client ID	BJ-12A				
Grouping	**Analyte**					
WATER						
Dissolved Metals	Iron (Fe)-Dissolved (mg/L)	<0.030				
	Lead (Pb)-Dissolved (mg/L)	<0.000050				
	Lithium (Li)-Dissolved (mg/L)	0.0100				
	Magnesium (Mg)-Dissolved (mg/L)	10.1				
	Manganese (Mn)-Dissolved (mg/L)	0.314				
	Mercury (Hg)-Dissolved (mg/L)	<0.000010				
	Molybdenum (Mo)-Dissolved (mg/L)	0.00297				
	Nickel (Ni)-Dissolved (mg/L)	0.00716				
	Phosphorus (P)-Dissolved (mg/L)	<0.30				
	Potassium (K)-Dissolved (mg/L)	4.53				
	Selenium (Se)-Dissolved (mg/L)	0.00010				
	Silicon (Si)-Dissolved (mg/L)	3.63				
	Silver (Ag)-Dissolved (mg/L)	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	6.2				
	Strontium (Sr)-Dissolved (mg/L)	1.37				
	Thallium (Tl)-Dissolved (mg/L)	0.000024				
	Tin (Sn)-Dissolved (mg/L)	0.00018				
	Titanium (Ti)-Dissolved (mg/L)	<0.010				
	Uranium (U)-Dissolved (mg/L)	0.000257				
	Vanadium (V)-Dissolved (mg/L)	<0.0010				
	Zinc (Zn)-Dissolved (mg/L)	0.0057				
Aggregate Organics	COD (mg/L)	45				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bromide (Br)	DLM	L1335562-1
Duplicate	Chloride (Cl)	DLM	L1335562-1
Duplicate	Nitrite (as N)	DLM	L1335562-1
Duplicate	Bromide (Br)	DLM	L1335562-1
Duplicate	Chloride (Cl)	DLM	L1335562-1
Duplicate	Nitrite (as N)	DLM	L1335562-1
Duplicate	Bromide (Br)	DLM	L1335562-1
Duplicate	Chloride (Cl)	DLM	L1335562-1
Duplicate	Nitrite (as N)	DLM	L1335562-1
Method Blank	Barium (Ba)-Dissolved	MB-LOR	L1335562-1
Method Blank	Copper (Cu)-Dissolved	MB-LOR	L1335562-1
Matrix Spike	Total Organic Carbon	MS-B	L1335562-1
Matrix Spike	Total Organic Carbon	MS-B	L1335562-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1335562-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L1335562-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1335562-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1335562-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1335562-1
Matrix Spike	Aluminum (Al)-Total	MS-B	L1335562-1
Matrix Spike	Arsenic (As)-Total	MS-B	L1335562-1
Matrix Spike	Barium (Ba)-Total	MS-B	L1335562-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L1335562-1
Matrix Spike	Chromium (Cr)-Total	MS-B	L1335562-1
Matrix Spike	Lead (Pb)-Total	MS-B	L1335562-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1335562-1
Matrix Spike	Manganese (Mn)-Total	MS-B	L1335562-1
Matrix Spike	Nickel (Ni)-Total	MS-B	L1335562-1
Matrix Spike	Potassium (K)-Total	MS-B	L1335562-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L1335562-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA Water Fluoride by Ion Chromatography APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA Water Nitrite in Water by Ion Chromatography EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA Water Nitrate in Water by Ion Chromatography EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA Water Sulfate by Ion Chromatography APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA Water Low level WAD Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA Water Chemical Oxygen Demand by Colorimetric APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA Water Colour (True) by Spectrometer BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA Water Dissolved Mercury in Water by CVAFS(Low) EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA Water Total Mercury in Water by CVAFS(Low) EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or

Reference Information

filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-DIS-ICP-VA Water Dissolved Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TN-CALC-VA Water Total Nitrogen (Calculation) BC MOE LABORATORY MANUAL (2005)

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Reference Information

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

10-297711

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10- 297711

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page 1 of 1

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGC Engineering.	Standard: ✓	Other (specify):	✓	Regular (Standard Turnaround Times - Business Days)
Contact:	V Cullen.	Select: PDF ✓	Excel ✓ Digital ✓ Fax		Priority(2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address:	800- 1045 Howe Street	Email 1:	VCullen@BGCengineering.ca		Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
	Vancouver, BC V6Z 2A9	Email 2:	KJohnston@BGCengineering.ca.		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	604 684 5900 Fax: 604 684 5909.				

Invoice To	Same as Report ? (circle) Yes or (No) (If No, provide details)	Client / Project Information	
	Copy of Invoice with Report? (circle) Yes or No	Job #:	1008007
Company:	Pretium Resources.	PO / AFE:	
Contact:	K Mc Naughton.	LSD:	
Address:	1600 - 570 Granville Street, Vancouver V6C 3P1		
Phone:	604 558 1784 Fax: 604 558 4786.	Quote #:	

Lab Work Order # (lab use only) L1335562-COFC **ALS Contact:** D Watt. **Sampler:** BSmith BTait

Sample # (TI)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	Total metals	Diss Metals	DOC.	Cyanides.	TOC/COD/TKN/NH3							Number of Containers
BJ-12A	15-07-13		H_2O	✓	✓	✓	✓	✓	✓							6

Short Holding Time
Rush Processing

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Diss metals and DOC Not Filtered Not Preserved.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
	@ 15/07/13	17h00	TW	July 20 2013	13:10	21 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION | WHITE - LABORATORY COPY | YELLOW - CLIENT COPY | GENF 18.01 Front

WHITE PAPER CO. 604 951-3900

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 27-SEP-13
Report Date: 03-OCT-13 13:48 (MT)
Version: FINAL REV. 2

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1370058

Project P.O. #: NOT SUBMITTED
Job Reference: 1008010
C of C Numbers: 10-334654
Legal Site Desc:

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1370058-1	L1370058-2	L1370058-3	L1370058-4	L1370058-5
	Description	water	water	water	water	water
	Sampled Date	25-SEP-13	25-SEP-13	25-SEP-13	25-SEP-13	25-SEP-13
	Sampled Time					
	Client ID	BJ-3A	BJ-3B	BJ-4A	BJ-4B	TRAVEL BLANK
Grouping	**Analyte**					
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (uS/cm)	345	386	452	511	<2.0
	Hardness (as CaCO3) (mg/L)	155	182	185	7.15	
	pH (pH)	8.06	8.07	8.12	9.71	6.17
	Total Suspended Solids (mg/L)	1550	189	19.5	4.7	<3.0
	Total Dissolved Solids (mg/L)	235	276	311	336	<10
	Turbidity (NTU)	2130	156	11.8	13.1	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.5	1.4	1.3	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	99.5	92.9	112	106	<2.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	47.4	<2.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<1.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	99.5	92.9	112	154	<2.0
	Ammonia, Total (as N) (mg/L)	0.0344	0.0239	0.144	0.162	<0.0050
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	<0.50	2.36	0.91	<0.50	<0.50
	Fluoride (F) (mg/L)	0.196	0.113	0.075	0.130	<0.020
	Nitrate (as N) (mg/L)	0.0068	0.205	0.142	0.0107	<0.0050
	Nitrite (as N) (mg/L)	0.0019	0.0438	0.0379	0.0064	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.668	0.259	0.225	0.225	<0.050
	Total Nitrogen (mg/L)	0.676	0.508	0.405	0.242	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0017	0.0013	0.0014	0.0048	<0.0010
	Phosphorus (P)-Total (mg/L)	1.64	0.179	0.0194	0.0099	<0.0020
	Sulfate (SO4) (mg/L)	89.3	112	131	113	<0.50
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.55	0.74	1.21	0.93	
	Total Organic Carbon (mg/L)	4.60	1.01	1.83	1.28	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	22.4	2.79	0.297	0.578	<0.0030
	Antimony (Sb)-Total (mg/L)	0.0467	0.00478	0.00314	0.00059	<0.00010
	Arsenic (As)-Total (mg/L)	0.128	0.0338	0.0155	0.0115	<0.00010
	Barium (Ba)-Total (mg/L)	0.795	0.197	0.0467	0.0289	<0.000050
	Beryllium (Be)-Total (mg/L)	0.00117	0.00023	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	0.00053	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	0.055	0.029	0.066	0.065	<0.010
	Cadmium (Cd)-Total (mg/L)	0.00195	0.000164	0.000019	<0.000010	<0.000010
	Calcium (Ca)-Total (mg/L)	67.7	69.6	50.3	2.58	<0.020

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1370058-6
		Description	water
		Sampled Date	25-SEP-13
		Sampled Time	
		Client ID	BJ-6A
Grouping	**Analyte**		
WATER			
Physical Tests	Colour, True (CU)		<5.0
	Conductivity (uS/cm)		293
	Hardness (as CaCO3) (mg/L)		137
	pH (pH)		8.14
	Total Suspended Solids (mg/L)		2770
	Total Dissolved Solids (mg/L)		221
	Turbidity (NTU)		4190
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		67.8
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<2.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<2.0
	Alkalinity, Total (as CaCO3) (mg/L)		67.8
	Ammonia, Total (as N) (mg/L)		0.0806
	Bromide (Br) (mg/L)		<0.050
	Chloride (Cl) (mg/L)		<0.50
	Fluoride (F) (mg/L)		0.149
	Nitrate (as N) (mg/L)		<0.0050
	Nitrite (as N) (mg/L)		<0.0010
	Total Kjeldahl Nitrogen (mg/L)		1.50
	Total Nitrogen (mg/L)		1.50
	Orthophosphate-Dissolved (as P) (mg/L)		0.0030
	Phosphorus (P)-Total (mg/L)		2.58
	Sulfate (SO4) (mg/L)		85.0
Cyanides	Cyanide, Weak Acid Diss (mg/L)		<0.0010
	Cyanide, Total (mg/L)		<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		0.80
	Total Organic Carbon (mg/L)		2.34
Total Metals	Aluminum (Al)-Total (mg/L)		28.2
	Antimony (Sb)-Total (mg/L)		0.0119
	Arsenic (As)-Total (mg/L)		0.210
	Barium (Ba)-Total (mg/L)		13.8
	Beryllium (Be)-Total (mg/L)		0.00307
	Bismuth (Bi)-Total (mg/L)		<0.0010 DLA
	Boron (B)-Total (mg/L)		0.031
	Cadmium (Cd)-Total (mg/L)		0.000546
	Calcium (Ca)-Total (mg/L)		67.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1370058-1 water 25-SEP-13 BJ-3A	L1370058-2 water 25-SEP-13 BJ-3B	L1370058-3 water 25-SEP-13 BJ-4A	L1370058-4 water 25-SEP-13 BJ-4B	L1370058-5 water 25-SEP-13 TRAVEL BLANK
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
WATER						
Total Metals	Chromium (Cr)-Total (mg/L)	0.0199	0.00130	0.00100	0.00218	<0.00010
	Cobalt (Co)-Total (mg/L)	0.0149	0.00120	0.00078	0.00016	<0.00010
	Copper (Cu)-Total (mg/L)	0.0625	0.00523	0.00149	0.00054	<0.00050
	Iron (Fe)-Total (mg/L)	43.1	3.74	0.486	0.124	<0.030
	Lead (Pb)-Total (mg/L)	0.120	0.00518	0.000710	0.000188	<0.000050
	Lithium (Li)-Total (mg/L)	0.0466	0.0132	0.0325	0.219	<0.00050
	Magnesium (Mg)-Total (mg/L)	11.2	4.90	11.4	0.342	<0.0050
	Manganese (Mn)-Total (mg/L)	1.29	0.422	0.0990	0.0109	<0.000050
	Mercury (Hg)-Total (mg/L)	0.000119	0.000020	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.00499	0.000749	0.00104	0.000993	<0.000050
	Nickel (Ni)-Total (mg/L)	0.0118	0.00109	0.00057	0.00096	<0.00050
	Phosphorus (P)-Total (mg/L)	1.25	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	8.49	1.82	1.62	0.934	<0.050
	Selenium (Se)-Total (mg/L)	0.00391	0.00046	<0.00010	<0.00010	<0.00010
	Silicon (Si)-Total (mg/L)	65.3	13.8	3.45	5.66	<0.050
	Silver (Ag)-Total (mg/L)	0.0149	0.000405	0.000032	0.000092	<0.000010
	Sodium (Na)-Total (mg/L)	10.4	5.7	21.8	113	<2.0
	Strontium (Sr)-Total (mg/L)	1.22	1.84	2.58	0.103	<0.00020
	Thallium (Tl)-Total (mg/L)	0.00196	0.000126	0.000021	0.000019	<0.000010
	Tin (Sn)-Total (mg/L)	0.00044	0.00018	0.00036	0.00011	<0.00010
	Titanium (Ti)-Total (mg/L)	0.566	0.100	0.011	<0.010	<0.010
	Uranium (U)-Total (mg/L)	0.000860	0.000724	0.00217	0.000128	<0.000010
	Vanadium (V)-Total (mg/L)	0.0341	0.0048	<0.0010	0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	0.319	0.0167	0.0070	<0.0030	<0.0030
Dissolved Metals	Dissolved Mercury Filtration Location	LAB	LAB	LAB	LAB	
	Dissolved Metals Filtration Location	LAB	LAB	LAB	LAB	
	Aluminum (Al)-Dissolved (mg/L)	0.0154	0.0134	0.0126	0.0637	
	Antimony (Sb)-Dissolved (mg/L)	0.0319	0.00190	0.00270	0.00054	
	Arsenic (As)-Dissolved (mg/L)	0.00404	0.00963	0.0132	0.0117	
	Barium (Ba)-Dissolved (mg/L)	0.0320	0.0431	0.0330	0.0211	
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Boron (B)-Dissolved (mg/L)	0.048	0.028	0.070	0.062	
	Cadmium (Cd)-Dissolved (mg/L)	<0.000010	0.000046	0.000011	<0.000010	
	Calcium (Ca)-Dissolved (mg/L)	54.8	66.4	54.3	2.44	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00065	
	Cobalt (Co)-Dissolved (mg/L)	0.00059	<0.00010	0.00011	<0.00010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1370058-6				
		Description	water				
		Sampled Date	25-SEP-13				
		Sampled Time					
		Client ID	BJ-6A				
Grouping	**Analyte**						
WATER							
Total Metals	Chromium (Cr)-Total (mg/L)		0.0144				
	Cobalt (Co)-Total (mg/L)		0.0117				
	Copper (Cu)-Total (mg/L)		0.0828				
	Iron (Fe)-Total (mg/L)		40.1				
	Lead (Pb)-Total (mg/L)		0.132				
	Lithium (Li)-Total (mg/L)		0.0348				
	Magnesium (Mg)-Total (mg/L)		14.0				
	Manganese (Mn)-Total (mg/L)		1.08				
	Mercury (Hg)-Total (mg/L)		0.000338				
	Molybdenum (Mo)-Total (mg/L)		0.00366				
	Nickel (Ni)-Total (mg/L)		0.0140				
	Phosphorus (P)-Total (mg/L)		1.05				
	Potassium (K)-Total (mg/L)		8.92				
	Selenium (Se)-Total (mg/L)		0.00162				
	Silicon (Si)-Total (mg/L)		86.6				
	Silver (Ag)-Total (mg/L)		0.00935				
	Sodium (Na)-Total (mg/L)		6.0				
	Strontium (Sr)-Total (mg/L)		2.76				
	Thallium (Tl)-Total (mg/L)		0.000683				
	Tin (Sn)-Total (mg/L)		0.00056				
	Titanium (Ti)-Total (mg/L)		0.871				
	Uranium (U)-Total (mg/L)		0.00108				
	Vanadium (V)-Total (mg/L)		0.0470				
	Zinc (Zn)-Total (mg/L)		0.502				
Dissolved Metals	Dissolved Mercury Filtration Location		LAB				
	Dissolved Metals Filtration Location		LAB				
	Aluminum (Al)-Dissolved (mg/L)		0.827				
	Antimony (Sb)-Dissolved (mg/L)		0.00483				
	Arsenic (As)-Dissolved (mg/L)		0.0222				
	Barium (Ba)-Dissolved (mg/L)		0.136				
	Beryllium (Be)-Dissolved (mg/L)		<0.00020 DLA				
	Bismuth (Bi)-Dissolved (mg/L)		<0.0010 DLA				
	Boron (B)-Dissolved (mg/L)		<0.020 DLA				
	Cadmium (Cd)-Dissolved (mg/L)		<0.000020 DLA				
	Calcium (Ca)-Dissolved (mg/L)		47.7				
	Chromium (Cr)-Dissolved (mg/L)		<0.00020 DLA				
	Cobalt (Co)-Dissolved (mg/L)		<0.00020 DLA				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1370058-1	L1370058-2	L1370058-3	L1370058-4	L1370058-5
	Description	water	water	water	water	water
	Sampled Date	25-SEP-13	25-SEP-13	25-SEP-13	25-SEP-13	25-SEP-13
	Sampled Time					
	Client ID	BJ-3A	BJ-3B	BJ-4A	BJ-4B	TRAVEL BLANK
Grouping	**Analyte**					
WATER						
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Iron (Fe)-Dissolved (mg/L)	<0.030	0.076	<0.030	<0.030	
	Lead (Pb)-Dissolved (mg/L)	0.000108	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0203	0.00946	0.0346	0.219	
	Magnesium (Mg)-Dissolved (mg/L)	4.41	4.01	12.0	0.256	
	Manganese (Mn)-Dissolved (mg/L)	0.149	0.133	0.0534	0.00676	
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00117	0.000607	0.000996	0.000902	
	Nickel (Ni)-Dissolved (mg/L)	0.00096	<0.00050	0.00064	<0.00050	
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	
	Potassium (K)-Dissolved (mg/L)	1.46	1.08	1.62	0.795	
	Selenium (Se)-Dissolved (mg/L)	0.00028	0.00017	<0.00010	<0.00010	
	Silicon (Si)-Dissolved (mg/L)	3.47	2.91	2.94	3.50	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	9.1	5.2	22.6	107	
	Strontium (Sr)-Dissolved (mg/L)	1.12	1.84	2.73	0.0958	
	Thallium (Tl)-Dissolved (mg/L)	0.000254	0.000032	0.000017	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.000179	0.000637	0.00220	0.000099	
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Dissolved (mg/L)	0.0032	<0.0030	0.0037	<0.0030	
Aggregate Organics	COD (mg/L)	84	<20	<20	<20	<20

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1370058-6				
		Description	water				
		Sampled Date	25-SEP-13				
		Sampled Time					
		Client ID	BJ-6A				
Grouping	**Analyte**						
WATER							
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)		0.00089				
	Iron (Fe)-Dissolved (mg/L)		0.320				
	Lead (Pb)-Dissolved (mg/L)		0.00103				
	Lithium (Li)-Dissolved (mg/L)		0.0056				
	Magnesium (Mg)-Dissolved (mg/L)		4.45				
	Manganese (Mn)-Dissolved (mg/L)		0.0364				
	Mercury (Hg)-Dissolved (mg/L)		<0.000010				
	Molybdenum (Mo)-Dissolved (mg/L)		0.00234				
	Nickel (Ni)-Dissolved (mg/L)		<0.0010 DLA				
	Phosphorus (P)-Dissolved (mg/L)		<0.30				
	Potassium (K)-Dissolved (mg/L)		2.67				
	Selenium (Se)-Dissolved (mg/L)		0.00031				
	Silicon (Si)-Dissolved (mg/L)		5.49				
	Silver (Ag)-Dissolved (mg/L)		0.000048				
	Sodium (Na)-Dissolved (mg/L)		3.6				
	Strontium (Sr)-Dissolved (mg/L)		2.18				
	Thallium (Tl)-Dissolved (mg/L)		0.000085				
	Tin (Sn)-Dissolved (mg/L)		<0.00020 DLA				
	Titanium (Ti)-Dissolved (mg/L)		0.023				
	Uranium (U)-Dissolved (mg/L)		0.000390				
	Vanadium (V)-Dissolved (mg/L)		<0.0020 DLA				
	Zinc (Zn)-Dissolved (mg/L)		0.0051				
Aggregate Organics	COD (mg/L)		27				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Nitrite (as N)	DLM	L1370058-1, -2, -3, -4, -5, -6
Duplicate	Nitrate (as N)	DLM	L1370058-1, -2, -3, -4, -5, -6
Method Blank	Chromium (Cr)-Total	MB-LOR	L1370058-1, -2, -3, -4, -6
Matrix Spike	Total Organic Carbon	MS-B	L1370058-1, -2, -3, -4, -5, -6
Matrix Spike	Phosphorus (P)-Total	MS-B	L1370058-1, -2, -3, -4, -5, -6
Matrix Spike	Total Kjeldahl Nitrogen	MSTN	L1370058-1, -2, -3, -4, -5, -6

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit Adjusted For required dilution
DLM	Detection Limit Adjusted For Sample Matrix Effects
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 "Alkalinity"

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are

Reference Information

determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA Water Low level WAD Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA Water Chemical Oxygen Demand by Colorimetric APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA Water Colour (True) by Spectrometer BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA Water Dissolved Mercury in Water by CVAFS(Low) EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA Water Total Mercury in Water by CVAFS(Low) EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-DIS-ICP-VA Water Dissolved Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or

Reference Information

microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TN-CALC-VA	Water	Total Nitrogen (Calculation)	BC MOE LABORATORY MANUAL (2005)

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

10-334654

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10- 334654

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page 1 of 1

Report To		**Report Format / Distribution**		**Service Request:** (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGE Engineering Inc.	Standard: ✓ Other (specify):			Regular (Standard Turnaround Times - Business Days)
Contact:	V. Cullen	Select: PDF ✓ Excel ✓ Digital ✓ Fax		✓	Priority(2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address:	Suite 800 - 1045 Howe Street. Vancouver, V6Z 2A9	Email 1: VCullen@BGEngineering.ca			Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
		Email 2: KJones@BGEngineering.ca			Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	604 684 5900 Fax: 604 684 5909.			**Analysis Request**	
Invoice To	Same as Report ? (circle) Yes or No (if No, provide details)	**Client / Project Information**		(Indicate Filtered or Preserved, F/P)	
	Copy of Invoice with Report? (circle) Yes or No	Job #: 1008 010			
Company:	Petrum Resources Ltd.	PO / AFE:			
Contact:	K. Mc Naughton.	LSD:			
Address:	1600 - 570 Granville Street, Vancouver, V6C 3P1				
Phone:	604 558 1784 Fax: 604 558 4786.	Quote #:			
Lab Work Order # (lab use only)		**ALS Contact:** D Wah.	**Sampler:** BSmith/SBlackmo.		

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	Total Metals	Diss Metals	TOC / Nutrients	DOC	Cyanides						Number of Containers
	BJ-3A	25-09-13		H_2O	✓	✓	✓	✓	✓	✓						6
	BJ-3B	"		"	✓	✓	✓	✓	✓	✓						6
	BJ-4A	"		"	✓	✓	✓	✓	✓	✓						6
	BJ-4B	"		"	✓	✓	✓	✓	✓	✓						6
	Travel Blank.	"		"	✓	✓	✓	✓		✓						5
	BJ-6A	"		"	✓	✓	✓	✓	✓	✓						6

RUSH

Priority processing

L1370058-COFC

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Diss Metals and DOC Not Filtered or preserved.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
B Wah.	25/09/13	19:45	TINA	27 SEPT	13:25	12.6°C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION | WHITE - LABORATORY COPY | YELLOW - CLIENT COPY | GENF 18.01 Front

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 28-SEP-13
Report Date: 03-OCT-13 17:57 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1370207

Project P.O. #: NOT SUBMITTED
Job Reference: 1008010
C of C Numbers: 10-334653
Legal Site Desc:

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1370207-1 water 26-SEP-13 BJ-2A	L1370207-2 water 26-SEP-13 BJ-8A	L1370207-3 water 26-SEP-13 BJ-8B	L1370207-4 water 26-SEP-13 BJ-DUP1	L1370207-5 water 26-SEP-13 BJ-FB
WATER						
Physical Tests	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (uS/cm)	209	196	194	196	<2.0
	Hardness (as CaCO3) (mg/L)	98.9	90.8	91.4	91.5	<0.50
	pH (pH)	7.73	7.02	8.02	8.09	6.14
	Total Suspended Solids (mg/L)	507	7.9	17.2	8.4	<3.0
	Total Dissolved Solids (mg/L)	144	117	121	117	<10
	Turbidity (NTU)	527	3.29	53.1	3.11	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.5	11.0	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	64.5	74.1	69.9	74.8	<2.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	64.5	74.1	69.9	74.8	<2.0
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	0.0061	<0.0050
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	1.10	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.031	0.027	0.023	0.028	<0.020
	Nitrate (as N) (mg/L)	0.0927	0.0182	0.0196	0.0180	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.273	<0.050	<0.050	<0.050	<0.050
	Total Nitrogen (mg/L)	0.366	<0.050	<0.050	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.544	0.0021	0.0096	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	41.6	30.1	32.0	30.2	<0.50
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.63	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	1.19	<0.50	0.54	0.56	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	14.2	0.298	2.83	0.369	<0.0030
	Antimony (Sb)-Total (mg/L)	0.00127	0.00082	0.00097	0.00088	<0.00010
	Arsenic (As)-Total (mg/L)	0.0474	0.00887	0.0301	0.00873	<0.00010
	Barium (Ba)-Total (mg/L)	0.417	0.0212	0.0789	0.0223	<0.000050
	Beryllium (Be)-Total (mg/L)	0.00046	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	0.013	0.011	<0.010	0.011	<0.010
	Cadmium (Cd)-Total (mg/L)	0.000089	0.000012	<0.000010	0.000012	<0.000010
	Calcium (Ca)-Total (mg/L)	38.1	26.3	30.3	27.8	<0.020

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1370207-1 water 26-SEP-13 BJ-2A	L1370207-2 water 26-SEP-13 BJ-8A	L1370207-3 water 26-SEP-13 BJ-8B	L1370207-4 water 26-SEP-13 BJ-DUP1	L1370207-5 water 26-SEP-13 BJ-FB
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
WATER						
Total Metals	Chromium (Cr)-Total (mg/L)	0.00803	0.00019	0.00080	0.00024	<0.00010
	Cobalt (Co)-Total (mg/L)	0.00543	<0.00010	0.00056	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	0.0204	<0.00050	0.00179	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	19.4	0.092	1.41	0.153	<0.030
	Lead (Pb)-Total (mg/L)	0.00792	0.000127	0.00104	0.000263	<0.000050
	Lithium (Li)-Total (mg/L)	0.0207	0.00903	0.00663	0.00937	<0.00050
	Magnesium (Mg)-Total (mg/L)	5.54	5.86	4.08	5.74	<0.0050
	Manganese (Mn)-Total (mg/L)	0.826	0.00490	0.0608	0.00746	<0.000050
	Mercury (Hg)-Total (mg/L)	0.000172	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.00238	0.00131	0.00161	0.00143	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00351	<0.00050	0.00051	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	0.49	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	2.11	0.494	1.28	0.493	<0.050
	Selenium (Se)-Total (mg/L)	0.00026	0.00017	0.00022	0.00015	<0.00010
	Silicon (Si)-Total (mg/L)	33.1	3.24	6.86	3.67	<0.050
	Silver (Ag)-Total (mg/L)	0.00162	<0.000010	0.000036	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	3.9	4.2	2.5	4.0	<2.0
	Strontium (Sr)-Total (mg/L)	0.872	0.632	0.432	0.695	<0.00020
	Thallium (Tl)-Total (mg/L)	0.000103	<0.000010	0.000045	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	0.00018	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.471	0.010	0.047	0.012	<0.010
	Uranium (U)-Total (mg/L)	0.000566	0.000202	0.000180	0.000240	<0.000010
	Vanadium (V)-Total (mg/L)	0.0162	<0.0010	0.0033	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	0.0550	<0.0030	0.0082	0.0033	<0.0030
Dissolved Metals	Dissolved Mercury Filtration Location	LAB	LAB	LAB	LAB	LAB
	Dissolved Metals Filtration Location	LAB	LAB	LAB	LAB	LAB
	Aluminum (Al)-Dissolved (mg/L)	0.0124	0.0130	0.0312	0.0153	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00020	0.00086	0.00067	0.00084	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00136	0.00825	0.0166	0.00804	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0291	0.0191	0.0152	0.0191	<0.000050
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	<0.010	0.011	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	0.000013	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	36.8	27.2	30.4	27.5	<0.020
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1370207-1	L1370207-2	L1370207-3	L1370207-4	L1370207-5
	Description	water	water	water	water	water
	Sampled Date	26-SEP-13	26-SEP-13	26-SEP-13	26-SEP-13	26-SEP-13
	Sampled Time					
	Client ID	BJ-2A	BJ-8A	BJ-8B	BJ-DUP1	BJ-FB
Grouping	**Analyte**					
WATER						
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.00470	0.00892	0.00525	0.00903	<0.00050
	Magnesium (Mg)-Dissolved (mg/L)	1.72	5.53	3.75	5.55	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.000431	0.00251	0.000660	0.00239	<0.000050
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.000855	0.00139	0.00161	0.00141	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	0.239	0.441	0.544	0.442	<0.050
	Selenium (Se)-Dissolved (mg/L)	0.00016	0.00017	0.00021	0.00015	<0.00010
	Silicon (Si)-Dissolved (mg/L)	1.63	1.99	1.92	2.04	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.5	3.9	2.4	4.0	<2.0
	Strontium (Sr)-Dissolved (mg/L)	0.852	0.679	0.446	0.685	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000178	0.000181	0.000156	0.000186	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Aggregate Organics	COD (mg/L)	27	<20	<20	<20	<20

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Total Organic Carbon	MS-B	L1370207-1, -2, -3, -4, -5
Matrix Spike	Dissolved Organic Carbon	MS-B	L1370207-3, -4, -5
Matrix Spike	Phosphorus (P)-Total	MS-B	L1370207-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1370207-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1370207-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1370207-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Total	MS-B	L1370207-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA	Water	Low Level Total Cyanide in water by CFA	ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA	Water	Low level WAD Cyanide in water by CFA	APHA 4500-CN CYANIDE

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA	Water	Chemical Oxygen Demand by Colorimetric	APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA	Water	Colour (True) by Spectrometer	BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA	Water	Dissolved Mercury in Water by CVAFS(Low)	EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA	Water	Total Mercury in Water by CVAFS(Low)	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-DIS-ICP-VA	Water	Dissolved Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TN-CALC-VA Water Total Nitrogen (Calculation) BC MOE LABORATORY MANUAL (2005)

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

10-334653

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10 - 334653

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page 1 of 1

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGC Engineering Inc.	Standard: ✓	Other (specify):		Regular (Standard Turnaround Times - Business Days)
Contact:	V. Cullen.	Select: PDF ✓	Excel ✓ Digital ✓ Fax	✓	Priority (2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address:	800 - 1045 Howe Street, Vancouver. BC. V6Z 2A9.	Email 1:	VCullen@BGCengineering.ca		Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
		Email 2:	KJones@BGCengineering.ca.		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	(604 684 5900 Fax: (604 684 5909.			Analysis Request	
Invoice To	Same as Report ? (circle) Yes or (No) (if No, provide details)	Client / Project Information		(Indicate Filtered or Preserved, F/P)	
	Copy of Invoice with Report? (circle) Yes or No	Job #:	1008010.		
Company:	Pretium Resources Ltd.	PO / AFE:			
Contact:	K Mc Naughton	LSD:			
Address:	1600 - 570 Granville Street Vancouver V6C 3P1				
Phone:	604 558 1784 Fax: 604 558 4786.	Quote #:			
Lab Work Order # (lab use only)		ALS Contact:	D. Wah.	Sampler:	B Smith / S Blackmore.

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	Cyanide	Total Metals	Diss Metals	TOC / Nutrients	DOC							Number of Containers
	BJ - 2A	26/09/13		H_2O	✓	✓	✓	✓	✓	✓							6
	BJ - 8A	"		"	✓	✓	✓	✓	✓	✓							6
	BJ - 8B	"		"	✓	✓	✓	✓	✓	✓							6
	BJ - Dup1	"		"	✓	✓	✓	✓	✓	✓							6
	BJ - FB	"		"	✓	✓	✓	✓	✓	✓							6

RUSH

Priority processing

L1370207-COFC

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Diss Metals and DOC NOT Filtered or Preserved.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
	26/09/13	19:15.	TINA	26 Sept	14:30	8.6 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION | WHITE - LABORATORY COPY | YELLOW - CLIENT COPY | GENF 18.01 Front

BGC ENGINEERING INC.
ATTN: Virginia Cullen
500 - 1045 Howe Street
Vancouver BC V6Z 2A9

Date Received: 02-OCT-13
Report Date: 07-OCT-13 15:57 (MT)
Version: FINAL

Client Phone: 604-684-5900

Certificate of Analysis

Lab Work Order #: L1372080

Project P.O. #: NOT SUBMITTED
Job Reference: 1008010
C of C Numbers: 10-334376
Legal Site Desc:

Dean Watt
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1372080-1				
	Description	water				
	Sampled Date	30-SEP-13				
	Sampled Time					
	Client ID	BJ-12A				
Grouping	**Analyte**					
WATER						
Physical Tests	Colour, True (CU)	<5.0				
	Conductivity (uS/cm)	557				
	Hardness (as CaCO3) (mg/L)	267				
	pH (pH)	7.69				
	Total Suspended Solids (mg/L)	488				
	Total Dissolved Solids (mg/L)	400				
	Turbidity (NTU)	164				
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	8.0				
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	109				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0				
	Alkalinity, Total (as CaCO3) (mg/L)	109				
	Ammonia, Total (as N) (mg/L)	0.152				
	Bromide (Br) (mg/L)	<0.050				
	Chloride (Cl) (mg/L)	0.71				
	Fluoride (F) (mg/L)	0.149				
	Nitrate (as N) (mg/L)	0.0088				
	Nitrite (as N) (mg/L)	<0.0010				
	Total Kjeldahl Nitrogen (mg/L)	0.592				
	Total Nitrogen (mg/L)	0.601				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.212				
	Sulfate (SO4) (mg/L)	195				
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010				
	Cyanide, Total (mg/L)	<0.0010				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.63				
	Total Organic Carbon (mg/L)	8.30				
Total Metals	Aluminum (Al)-Total (mg/L)	4.39				
	Antimony (Sb)-Total (mg/L)	0.00318				
	Arsenic (As)-Total (mg/L)	0.0825				
	Barium (Ba)-Total (mg/L)	0.234				
	Beryllium (Be)-Total (mg/L)	0.00050				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.026				
	Cadmium (Cd)-Total (mg/L)	0.000521				
	Calcium (Ca)-Total (mg/L)	95.3				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1372080-1				
	Description	water				
	Sampled Date	30-SEP-13				
	Sampled Time					
	Client ID	BJ-12A				
Grouping	**Analyte**					
WATER						
Total Metals	Chromium (Cr)-Total (mg/L)	0.0285				
	Cobalt (Co)-Total (mg/L)	0.00255				
	Copper (Cu)-Total (mg/L)	0.0155				
	Iron (Fe)-Total (mg/L)	5.36				
	Lead (Pb)-Total (mg/L)	0.0213				
	Lithium (Li)-Total (mg/L)	0.0156				
	Magnesium (Mg)-Total (mg/L)	14.0				
	Manganese (Mn)-Total (mg/L)	0.434				
	Mercury (Hg)-Total (mg/L)	0.000012				
	Molybdenum (Mo)-Total (mg/L)	0.00279				
	Nickel (Ni)-Total (mg/L)	0.0130				
	Phosphorus (P)-Total (mg/L)	<0.30				
	Potassium (K)-Total (mg/L)	5.28				
	Selenium (Se)-Total (mg/L)	0.00031				
	Silicon (Si)-Total (mg/L)	13.8				
	Silver (Ag)-Total (mg/L)	0.000871				
	Sodium (Na)-Total (mg/L)	9.2				
	Strontium (Sr)-Total (mg/L)	1.87				
	Thallium (Tl)-Total (mg/L)	0.000236				
	Tin (Sn)-Total (mg/L)	0.00140				
	Titanium (Ti)-Total (mg/L)	0.054				
	Uranium (U)-Total (mg/L)	0.00164				
	Vanadium (V)-Total (mg/L)	0.0029				
	Zinc (Zn)-Total (mg/L)	0.0608				
Dissolved Metals	Dissolved Mercury Filtration Location	LAB				
	Dissolved Metals Filtration Location	LAB				
	Aluminum (Al)-Dissolved (mg/L)	0.0050				
	Antimony (Sb)-Dissolved (mg/L)	0.00130				
	Arsenic (As)-Dissolved (mg/L)	0.0252				
	Barium (Ba)-Dissolved (mg/L)	0.0398				
	Beryllium (Be)-Dissolved (mg/L)	<0.00010				
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050				
	Boron (B)-Dissolved (mg/L)	0.022				
	Cadmium (Cd)-Dissolved (mg/L)	<0.000010				
	Calcium (Ca)-Dissolved (mg/L)	85.4				
	Chromium (Cr)-Dissolved (mg/L)	0.00012				
	Cobalt (Co)-Dissolved (mg/L)	0.00033				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1372080-1				
	Description	water				
	Sampled Date	30-SEP-13				
	Sampled Time					
	Client ID	BJ-12A				
Grouping	**Analyte**					
WATER						
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)	<0.00050				
	Iron (Fe)-Dissolved (mg/L)	<0.030				
	Lead (Pb)-Dissolved (mg/L)	<0.000050				
	Lithium (Li)-Dissolved (mg/L)	0.0131				
	Magnesium (Mg)-Dissolved (mg/L)	13.0				
	Manganese (Mn)-Dissolved (mg/L)	0.344				
	Mercury (Hg)-Dissolved (mg/L)	<0.000010				
	Molybdenum (Mo)-Dissolved (mg/L)	0.00212				
	Nickel (Ni)-Dissolved (mg/L)	0.00213				
	Phosphorus (P)-Dissolved (mg/L)	<0.30				
	Potassium (K)-Dissolved (mg/L)	4.47				
	Selenium (Se)-Dissolved (mg/L)	<0.00010				
	Silicon (Si)-Dissolved (mg/L)	3.69				
	Silver (Ag)-Dissolved (mg/L)	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	9.2				
	Strontium (Sr)-Dissolved (mg/L)	1.78				
	Thallium (Tl)-Dissolved (mg/L)	0.000018				
	Tin (Sn)-Dissolved (mg/L)	<0.00010				
	Titanium (Ti)-Dissolved (mg/L)	0.010				
	Uranium (U)-Dissolved (mg/L)	0.000364				
	Vanadium (V)-Dissolved (mg/L)	<0.0010				
	Zinc (Zn)-Dissolved (mg/L)	0.0030				
Aggregate Organics	COD (mg/L)	60				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bromide (Br)	DLM	L1372080-1
Duplicate	Fluoride (F)	DLM	L1372080-1
Duplicate	Nitrite (as N)	DLM	L1372080-1
Matrix Spike	Phosphorus (P)-Total	MS-B	L1372080-1
Matrix Spike	Phosphorus (P)-Total	MS-B	L1372080-1
Matrix Spike	Phosphorus (P)-Total	MS-B	L1372080-1
Matrix Spike	Dissolved Organic Carbon	MS-B	L1372080-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-T-L-CFA-VA	Water	Low Level Total Cyanide in water by CFA	ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

Reference Information

CN-WAD-L-CFA-VA	Water	Low level WAD Cyanide in water by CFA	APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

COD-COL-VA	Water	Chemical Oxygen Demand by Colorimetric	APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

COLOUR-TRUE-VA	Water	Colour (True) by Spectrometer	BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA	Water	Dissolved Mercury in Water by CVAFS(Low)	EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA	Water	Total Mercury in Water by CVAFS(Low)	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-DIS-ICP-VA	Water	Dissolved Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-F-VA Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TN-CALC-VA Water Total Nitrogen (Calculation) BC MOE LABORATORY MANUAL (2005)

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

10-334376

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10- 334376

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page 1 of 1

Report To		**Report Format / Distribution**		**Service Request:** (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	BGC Engineering Inc.	Standard: ✓	Other (specify):		Regular (Standard Turnaround Times - Business Days)
Contact:	V Cullen.	Select: PDF ✓	Excel ✓ Digital ✓ Fax	✓	Priority(2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address:	800 - 1045 Howe Street. Vancouver, BC V6Z 2A9	Email 1:	VCullen@BGCengineering.ca		Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
		Email 2:	KJones@BGCengineering.ca.		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	604 684 5900 Fax: 604 684 5909			**Analysis Request**	
Invoice To	Same as Report ? (circle) Yes or (No) (if No, provide details)	**Client / Project Information**		(Indicate Filtered or Preserved, F/P)	
	Copy of Invoice with Report? (circle) Yes or No	Job #:	100801.0		
Company:	Pretivm Resources.	PO / AFE:			
Contact:	K McNaughton.	LSD:			
Address:	1600-570 Granville Street, Vancouver, V6C 3P1				
Phone:	604 558 7784 Fax: 604 558 4786.	Quote #:			
Lab Work Order # (lab use only)		**ALS Contact:**	D Watt.	**Sampler:**	BSmith SBlackmore.

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General	Total Metals	Diss Metals	Cyanides	TOC / Nutrients	DOC							Number of Containers
	BJ-12A	30-Sep-13		H_2O	✓	✓	✓	✓	✓	✓							6

Priority processing

RUSH

L1372080-COFC

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Diss Metals + DOC Not Filtered, Not Preserved.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
	30 Sept 13	20:00	Joyce	Oct 2	13:15	4.9 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION | WHITE - LABORATORY COPY | YELLOW - CLIENT COPY | GENF 18.01 Front

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