Volume 1 Annex V1-7 Type A Water Licence Applications

Package P5-6

Geochemical Characterization of Madrid-Boston Project Quarries, Hope Bay Project

MAC RESOURCES

Geochemical Characterization of Madrid-Boston Project Quarries,

Hope Bay Project

Prepared for

TMAC Resources Inc.

Prepared by

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1CT022.013
November 2017

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Technical Summary

As part of the Madrid-Boston project, TMAC has identified 24 quarries between Roberts Bay (Doris) and Boston (Figure A-1) that may be utilized for use as construction rock and/or underground backfill. Both the Madrid North and Boston underground mines have a deficit of waste rock backfill and require imported sources from quarries. Construction activities include development of a 52 km all-weather road that would connect the Madrid deposit areas to the Boston deposit area, a 5 km all-weather road between Madrid North and the Doris tailings impoundment area (TIA), and additional roads and surface infrastructure at Roberts Bay and in the vicinity of the Madrid and Boston underground mines. The number of and locations of quarries to be developed will depend on further test work, final project design, execution and approvals.

The purpose of this report is to document the assessment of the 24 proposed quarries with respect to metal leaching and/or acid rock drainage (ML/ARD), and therefore suitability of the rock as construction material. Results from the 2011 quarry geochemical characterization program, which included sampling and testing of 13 of these quarries, are presented and discussed. Boundaries for seven of these quarries have been expanded and there are 11 additional quarries that were not characterized as part of the 2011 characterization program. For these additional areas, the geochemical database of quarries and infrastructure areas from Doris to Boston was used to evaluate the geochemical suitability of quarry rock within a regional belt-wide geological context.

The monitoring and management of all quarry rock would be accordance with Hope Bay quarry management plans (TMAC 2017).

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Change Log

The following table provides an overview of material changes to this report from the previous version issued as Appendix V3-3A as part of the DEIS for Phase 2 of the Hope Bay Project dated December 2016.

Changes by Section

Information Request, Technical Comment, or Other Change	Section	Comments
ECCC-4.20	4.1.1	
INAC-TRC14	4.1.2, 4.2.2	
Addition of Quarry AJ	Various including Figure A-6 and Section 4.2.	New quarry included in the assessment.

1 Introduction

The Hope Bay Project (the Project) is a gold mining and milling undertaking of TMAC Resources Inc. The Project is located 705 km northeast of Yellowknife and 153 km southwest of Cambridge Bay in Nunavut Territory, and is situated east of Bathurst Inlet. The Project comprises of three distinct areas of known mineralization plus extensive exploration potential and targets. The three areas that host mineral resources are Doris, Madrid, and Boston.

The Project consists of two phases; Phase 1 (Doris project), which is currently being carried out under an existing Water Licence, and Phase 2 (Madrid-Boston project) which is in the environmental assessment and regulatory stage. Phase 1 includes mining and infrastructure at Doris, while Phase 2 includes mining and infrastructure at Madrid and Boston located approximately 10 and 60 km due south from Doris, respectively (Figure 1.1).

As part of the Madrid-Boston Project, TMAC has identified 24 quarries potential quarries between Roberts Bay (Doris) and Boston (Table 1-1 and Figure A-1) for use as construction rock and/or underground backfill. A total of 5,022,966 m^3 of quarry material is required for the Madrid-Boston Project (Table 1-2). Both the Madrid North and Boston underground mines have a deficit of waste rock backfill and require imported sources from quarries. Construction activities include development of a 52 km all-weather road that would connect the Madrid deposit areas to the Boston deposit area, a 5 km all-weather road between Madrid North and the Doris TIA, and also additional roads and surface infrastructure at Roberts Bay and in the vicinity of the Madrid and Boston underground mines.

The purpose of this report is to document the assessment of the 24 proposed quarries with respect to metal leaching and/or acid rock drainage (ML/ARD), and therefore suitability of the rock as construction material.

A geochemical characterization program for 13 of the proposed quarries was conducted in summer 2011 (Table 1-1) by SRK on behalf of Hope Bay Mining Ltd. (HBML), a fully owned subsidiary of Newmont and the former owners of Hope Bay. Results from the 2011 geochemical characterization program are presented and discussed herein. TMAC is proposing to develop 11 additional quarries and expand the boundaries of seven of the quarries that were already characterized. For these additional areas, the geochemical database of quarries and infrastructure areas from Doris to Boston was used to assess the geochemical suitability of quarry rock within a regional belt-wide geological context.

Figure 1.1 Location of the Main Deposits, Hope Bay Project

Table 1-1: Proposed Quarries Included in FEIS Application

Quarry ID	Within Scope of 2011 Characterization Program	Proposed Infrastructure
Quarry J	✓	
Quarry L	✓	
Quarry M	✓	
Quarry N	✓	
Quarry O	✓*	
Quarry P	✓	
Quarry Q	✓*	
Quarry R	✓	
Quarry S	✓*	
Quarry T	✓*	
Quarry U	✓*	
Quarry V	✓*	
Quarry W	✓*	
Quarry X		
Quarry Z		
Quarry AA		
Quarry AB		
Quarry AD		Boston processing pad
Quarry AE		Roberts Bay cargo dock
Quarry AF		Roberts Bay tank farm
Quarry AG		
Quarry AH		Madrid North portal
Quarry AI		Madrid North vent raise
Quarry AJ		

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Notes:
* Indicates quarry boundaries for 2011 characterization program vary from proposed quarry. Refer to figures in Appendix A.

Table 1-2: Madrid-Boston Project Quarry Construction Material Volume Estimates

Quarried Material Type	Quantity (m^3)
Run-of-Quarry Material	3,120,000
Surfacing Material	147,000
Bedding Material	41,600
Finishing Material	10,100
Transitional Material	126,000
Rip Rap	5,000
Closure Cover 0.7m Minus	142,000
Closure Cover 0.3m Minus	60,800
Total Planned Volume	**3,650,000**
Contingency (40%)	1,440,000
Total Quarry Volume	**5,090,000**

Source: \\srk.ad\dfs\na\van\Projects\01_SITES\Hope.Bay\1CT022.004_Phase 2 DEIS - Engineering Support\Task 600_Permanent_Surface_Infrastructures\DEIS_Infrastructure_Quantities_REV00_KNK (002)_EMR_AKB.xlsx

2 Background

Potential construction rock from fourteen other quarries located between Roberts Bay and Madrid South were geochemically characterized as part of previous scopes of the Hope Bay project (Table 2-1 and Figure A-1). The geology of these quarries has primarily been within the mafic metavolcanics rock unit (lithology code 1, Appendix B, Figures A-2 to A-3); however, a smaller subset of other rock types have been identified during geological logging, such intermediate metavolcanics (2) and intermediate to felsic metavolcanics (3) in Quarry G and H. Construction rock has been sourced from a subset of these quarries to build infrastructure and roads associated with the Doris mine and exploration activities in the northern part of Hope Bay.

Geochemical monitoring of quarry rock is specified in Water Licence 2AM-DOH1323 – Amendment No. 1 (Nunavut Water Board 2016), Water Licence 2BE-HOP1222 (Nunavut Water Board 2012), and KIA Permits KTP307Q010 and KTP308Q010 and details of quarry rock monitoring for all approved quarries are provided in the Quarry Management and Monitoring Plan, Hope Bay, Nunavut (TMAC 2017). TMAC (2017) is the plan submitted as part of the Madrid-Boston project regulatory application and is currently under review. Geochemical monitoring of quarry rock was initiated in 2007 and includes analysis of solids samples, both of run-of-quarry rock and *in situ* construction rock, and also freshet annual seepage surveys of contact seepage of infrastructure. Results are submitted annually to the Nunavut Water Board (e.g. SRK 2015b).

The results of the aforementioned geochemical characterization studies and monitoring results for quarry rock, which includes acid-base accounting (ABA), trace element content, leach extraction tests and seepage data, all indicate that the risk of acid rock drainage and metal leaching from quarry rock is low (SRK 2009). The basis of the low ARD risk is uniformly low sulphur, high neutralization potential (NP) and high total inorganic carbon (TIC) content in the solids, and low sulphate levels in the seepage (Table 2-2). Similarly, seepage monitoring results indicated that metal levels are low.

Table 2-1: Previous Geochemical Characterization Studies of Construction Rock, Hope Bay Project

Quarry ID	Rock Used for Construction	Geochemical Characterization Program Reference
Roberts Bay Tank Farm	✓	SRK 2010a
Quarry 1	✓	AMEC 2005; SRK 2007
Quarry 2	✓	
Quarry 3		
Quarry 4	✓	AMEC 2005; SRK 2007; SRK 2010b
Quarry 5		SRK 2010c
Quarry A	✓	SRK 2008
Quarry B	✓	
Quarry C		
Quarry D	✓	
Quarry E		
Quarry G		SRK 2015a
Quarry H		
Quarry I		

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Table 2-2: Statistical Distribution of Total Sulphur, NP and TIC Content for Doris to Madrid Quarries

Statistic	Total S (%)	NP ($kgCaCO_3/t$)	TIC ($kgCaCO_3/t$)
Median	0.07	166	117
95th Percentile	0.18	236	190
Number of samples	368	313	313

Source: P:\01_SITES\Hope.Bay\1CT022.004_Phase 2 DEIS - Engineering Support\Task 260_Madrid to Boston Quarry Geochem\3. Report\Tables\[OldQuarryABAStats_LNB.xlsx]

Notes:

Data set from sites listed in Table 2-1.

3 Methods

In 2011, a drill program was conducted to geochemically characterize the proposed quarries along the Madrid to Boston all-weather road. As noted in Table 1-1, thirteen of the 24 proposed quarries were within the scope of the 2011 field program. The scope of the proposed 24 quarries that are part of the Project is greater than the spatial coverage provided by the 2011 drill program. For these expanded areas, the existing quarry rock data set is used for assess the quarries in the context of regional belt-wide geology. This section presents the field program and data set for the 2011 characterization program (Section 3.1) and the regional Hope Bay quarry sample set (Section 3.2).

3.1 2011 Geochemical Characterization Program

Figure A-1 and Table 1-1 present the 13 quarries that were within the scope the 2011 geochemical characterization program. Figures A-3 to A-6 present more detailed figures of these quarries along with the regional geology and drillhole locations. Since the 2011 program, the boundaries of seven of these quarries have been re-assessed based on engineering material requirements, e.g. Quarry O. For clarity, Quarry O refers to the quarry proposed as part of the FEIS application, whereas Quarry O' denotes the 2011 quarry boundary used as the basis of the geochemical characterization program (Table 3-1).

Table 3-1: Comparison of Proposed Quarry Names with Expanded Boundaries Relative to 2011 Drill Program IDs

Proposed Quarry Name	2011 Quarry ID for Characterization Program
Quarry O	Quarry O'
Quarry Q	Quarry Q'
Quarry S	Quarry S'
Quarry T	Quarry T'
Quarry U	Quarry U'
Quarry V	Quarry V'
Quarry W	Quarry W'

3.1.1 Field Program

In 2011, the initial locations for the thirteen quarries between the Madrid and Boston camps (Table 1-1) were selected by SRK and HBML geologists based on regional geology, engineering requirements and geological field observations with an emphasis on sulphide occurrence. Extensive reconnaissance of each quarry was conducted by HBML and SRK in June and August of 2011 with the following objectives:

- Assess drill access;
- Ensure outcrop geology was consistent with regional mapping and that geological variations were not overlooked; and
- Finalize drillhole locations.

The drill program was designed to obtain a number of shallow drill core samples (surface to 1.4 m) distributed across the strike of the geology, with the objective of determining geochemical variability according to lithology and/or sample location. At each of the thirteen quarry locations, between five and ten samples were collected, with an overall total of 76 samples.

The drill program was carried out using a track mounted drill by Rocky Mountain Soil Sampling (RMSS) from August 12 to 25, 2011 with oversight by SRK. HBML geologists performed the logging and sampling of the drill core using the standardized lithology codes for Hope Bay (Appendix B). Each sample, representing up to 1.5 m of drill core, weighed between 0.5 kg and 6.7 kg; the core size was NQ (47.6 mm diameter). The logs include rock and alteration type using HBML's standard codes and comments on the occurrence of sulphide and carbonate minerals

All drillholes were located with sufficient distance from potential archaeological sites, as determined by an archaeological field survey conducted in July 2011 by Gabriella Prager (Points West Heritage Consulting Ltd.).

3.1.2 Analytical Program

All samples were submitted to Acme Labs for sample preparation, trace element content, total sulphur and total inorganic carbon (TIC). Trace elemental content was determined by aqua regia digestion with 35-parameter ICP-MS/ES finish. Total sulphur was determined using a Leco furnace. Total inorganic carbon (TIC) was analyzed by using a Leco furnace to directly measure CO_2 gas evolved from HCl treatment of the sample.

All 76 samples were analyzed at Maxxam Laboratories for paste pH, fizz test, modified Neutralization Potential (NP) (MEND 1991) and sulphate sulphur by HCl leach method. Sulphide sulphur was determined as the difference between total sulphur and sulphate sulphur.

Laboratory work was performed according to *SRK Expectations for Laboratory Geochemical Quality* (reviewed by Maxxam, February 2011). Results were reviewed and approved by SRK for quality assurance purposes.

3.2 Hope Bay Belt-Wide Quarry Data Set

The scope of the proposed 24 quarries that are part of the Project is greater than the spatial coverage provided by the 2011 drill program. For these areas, a geochemical database of Hope Bay quarry rock samples was compiled from the 14 quarries listed in Table 2-1 and 13 quarries sampled in 2011 (Section 3.1). The geochemical database is composed of ABA and elemental analysis results for 433 rock samples and spans the Hope Bay corridor length of approximately 80 km from Roberts Bay to the Boston mine area. Details on the other characterization programs are generally the same as the 2011 program outlined in Section 3.1 and can be found in the references listed in Table 2-1.

One significant difference is that NP was determined according to the Sobek NP method (Sobek et al. 1978) for the 222 samples analyzed prior to 2010. The Sobek method was used to be consistent with previous geochemical characterization programs (eg. AMEC 2005). NP for samples analyzed during and after 2010 was determined according to the MEND (1991) Modified NP procedure. This method replaced the Sobek NP method as it was considered to more adequately represent field conditions. In this report, where NP is used without the method qualified, it refers to a data set that includes both Sobek and Modified NP. Also, 59 of the 147 samples from Roberts Bay tank farm, Quarry 4 and Quarry 5 have total sulphur data only.

4 Results and Discussion

4.1 2011 Geochemical Characterization Program

This section presents the results of the 2011 geochemical characterization program of the quarries along the Madrid to Boston corridor. Drillhole locations are presented in Appendix A-2 to A-6, geological observations of the quarries are presented in Appendix C and sample descriptions (including lithological and geological descriptions) and geochemical data are presented in Appendix D.

4.1.1 Geology

As shown in Appendix A-2 to A-6, regional mapping indicates that the 13 quarries located along the proposed Madrid to Boston road corridor are primarily located within mafic metavolcanics (unit 1), which is geologically consistent with the quarry locations spanning from Doris to Madrid (Section 2). As outlined in Table 4-1, exceptions include Quarry O', Quarry P, Quarry U' and Quarry W, for which a significant area of the quarry includes rock types regionally mapped as intermediate to felsic metavolcanics (3), felsic metavolcanics (4), early mafic and ultramafic intrusives (7), and synvolcanic granitoid rocks (8).

A field inspection of the quarries was conducted by SRK and an HBML geologist to document the geological units present. Another objective of the inspection was to confirm that the drillhole locations intersected the geological units and relevant geological features (e.g. geological contacts) present in the quarry. Observations from the geological field inspection, including sulphide and carbonate mineral occurrences are presented in Appendix C.

Table 4-1 lists the rock types present in the 2011 quarries according to regional mapping, the field survey and geological logging of drill core. A comparison between regional mapping and field mapping showed slight discrepancies for some quarries. Some rock units were identified in the regional mapping but were not in the field inspection, and vice versa. For example, the regional mapping for Quarry N indicated the presence of mafic metavolcanics (1) only whereas intermediate volcanics were also identified during the field inspection. Differences are attributed to differences spatial resolution among the two field methods. Regional mapping relies on mapping surficial outcrops over a large area and not observations of each individual outcrop.

Some rock units were identified in the field inspection but were not in the core logging, and vice versa. This is attributed to differences in spatial resolution among the two methods. Logging of the core was inherently challenging due to the small core size (47.6 mm diameter) and the lack of spatial and geological context available in the field.

The geology of Quarry W' is predominantly synvolcanic granitoids (9) with some early intrusives (7); however, of the six samples collected from that quarry, only one was identified as this rock unit. The other samples were identified as early or late gabbro samples (7a and 10a).

Geological Desktop Review

The process of selecting the 13 quarry locations included a geological desktop review by HBML geologists, which considered information such as known areas of mineralization. After the desktop review, quarry locations were finalized and then inspected in the field.

During the desktop review, Quarry Z and Quarry AC were included in the assessment with the following results:

- Quarry Z was identified as an exploration target resulting in an alternative being selected in 2011.
- Quarry AC was not recommended for use as construction rock based on this area having a high potential for mineralization.

The 2011 geochemical characterization program did not include Quarry Z and Quarry AC as they were not considered to be potential quarry locations at that time.

Table 4-1: Geology of 2011 Quarry Samples

Quarry	Stratigraphic Unit		Regional Mapping	Field Mapping[1]	Drill Core Logging[2]	No. of Samples
	Code	Description				
J	1	Ultramafic to mafic metavolcanics	✓	✓	✓	8
	7	Early mafic and ultramafic intrusives	✓	✓	✓	1
	11	Proterozoic rocks (Franklin Diabase)	✓		✓	1
L	1	Ultramafic to mafic metavolcanics	✓	✓	✓	5
	7	Early mafic and ultramafic intrusives	✓	✓*		
M	1	Ultramafic to mafic metavolcanics	✓	na	✓	5
N	1	Ultramafic to mafic metavolcanics	✓	✓*		
	2	Intermediate metavolcanics		✓	✓	5
O'	4	Felsic metavolcanics	✓	✓	✓	5
P	1	Ultramafic to mafic metavolcanics	✓			
	2	Intermediate metavolcanics		✓	✓	4
	3	Intermediate to felsic metavolcanics	✓	✓*		
	4	Felsic metavolcanics	✓			
	7 or 10	Gabbro		✓*		
	9	Late granitoid rocks (mainly post-volcanic)			✓	2
Q'	1	Ultramafic to mafic metavolcanics	✓	✓	✓	4
	2	Intermediate metavolcanics		✓	✓	2
	7	Early mafic and ultramafic intrusives	✓	✓	✓	1
R	1	Ultramafic to mafic metavolcanics	✓	✓	✓	6
	7	Early mafic and ultramafic intrusives	✓	✓*		
S'	1	Ultramafic to mafic metavolcanics	✓	✓	✓	6
T'	1	Ultramafic to mafic metavolcanics	✓	✓*		A
	2	Intermediate metavolcanics			✓*	3
U'	1	Ultramafic to mafic metavolcanics	✓			
	2	Intermediate metavolcanics			✓*	1
	3	Intermediate to felsic metavolcanics		✓	✓	4
	4	Felsic metavolcanics	✓			
V'	1	Ultramafic to mafic metavolcanics	✓	✓	✓	5
W'	7	Early mafic and ultramafic intrusives	✓	na	✓	2
	8	Synvolcanic granitoids	✓		✓	1
	10	Late mafic-ultramafic intrusives			✓	3

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Notes:

✓ = stratigraphic unit was identified

[1]Refer to Appendix C for complete field observations.

[2]Refer to Appendix D for complete sample descriptions.

*Denotes rock type identified in field mapping but not in core logging, or vice versa. See text for details.

A – Rock type for two samples unavailable.

4.1.2 Acid Base Accounting

Paste pH results were alkaline for all samples, ranging in value from 8.3 to 10.

Overall, total sulphur levels ranged from <0.02% to 1.0% and were typically low, with a 95th percentile value of 0.23%. Sulphate sulphur levels were below and near the level of analytical detection (<0.01%) with the exception of one sample from Quarry V', which contained 0.19% sulphate. Sulphide sulphur was calculated as the difference between total sulphur and sulphate sulphur. Total sulphur and sulphide sulphur levels were at near parity for almost all samples, indicating that the dominant form of sulphur is sulphide (Figure 4-1 and Figure 4-2). The two samples with the highest sulphide content were collected from Quarry R and are mafic metavolcanics (1). These two samples were observed to contain 0.5% visual pyrite (Appendix D) and Quarry R was noted as having higher levels of pyrite than other quarry locations (Appendix C).

Levels of buffering capacity varied between the different quarries and rock types. A number of samples had low to moderate levels of NP (Figure 4-3 and Figure 4-4). Low NP samples (<50 kg$CaCO_3$/t) also had low levels of TIC and tended to be geologically and spatially categorized as follows:

- More felsic rocks: intermediate to felsic metavolcanics (3)[1] and felsic metavolcanics (4)[2];
- Granitoid rocks: synvolcanic granitoids (8) and late granitoid rocks (9);
- Intrusive rocks: early gabbro (7a), late gabbro (10a) and diabase (11c);
- Mafic metavolcanics (1) proximal to or near the contact of intrusive units (7a or 10a)[3];
- Selected mafic metavolcanics (1) from spatially clustered drillholes[4]; and
- From Quarry O' and Quarry W.

Overall values of Modified NP were well correlated with TIC. Some samples reported higher NP than TIC suggesting that in addition to carbonate minerals, silicate minerals may be contributing to the NP. Selected samples of intermediate volcanics (2), intermediate to felsic metavolcanics (3) and felsic metavolcanics (4) from Quarry O' and Quarry U' had TIC levels greater than NP, suggesting the presence of iron carbonates in the sample, which results in TIC values that overestimate the amount of carbonate available for buffering. For these samples, using NP is a more conservative method in classifying the ARD potential of the samples.

[1] Spatially clustered in western extent of drilling in Quarry U'
[2] Located in Quarry O'
[3] Located in Quarry J, Quarry L and Quarry Q'.
[4] Western extent of drilling in Quarry V' and eastern extent of drilling in Quarry M'.

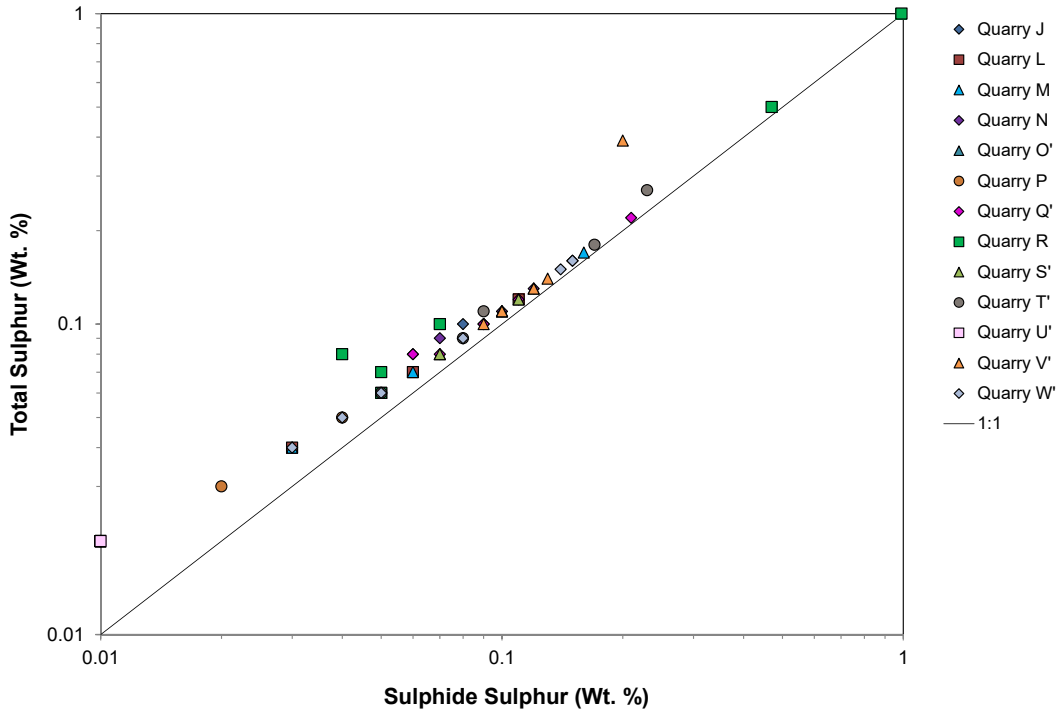

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Figure 4-1: Comparison of Total Sulphur and Sulphide by Quarry, 2011 Sample Set

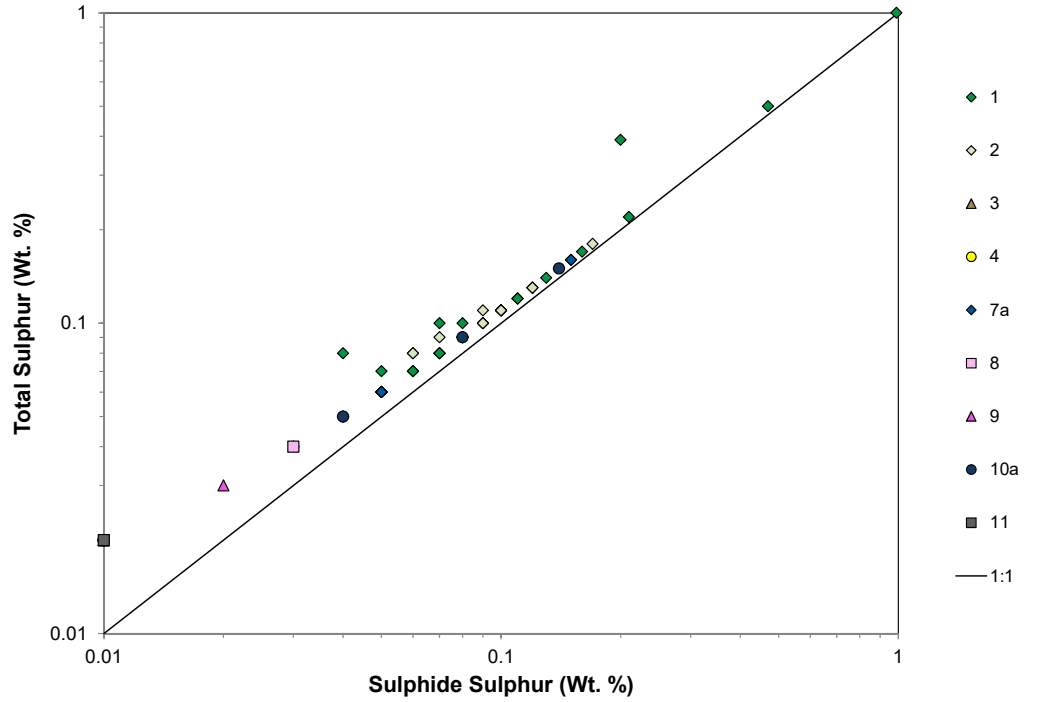

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Figure 4-2: Comparison of Total Sulphur and Sulphide by Rock Type, 2011 Sample Set

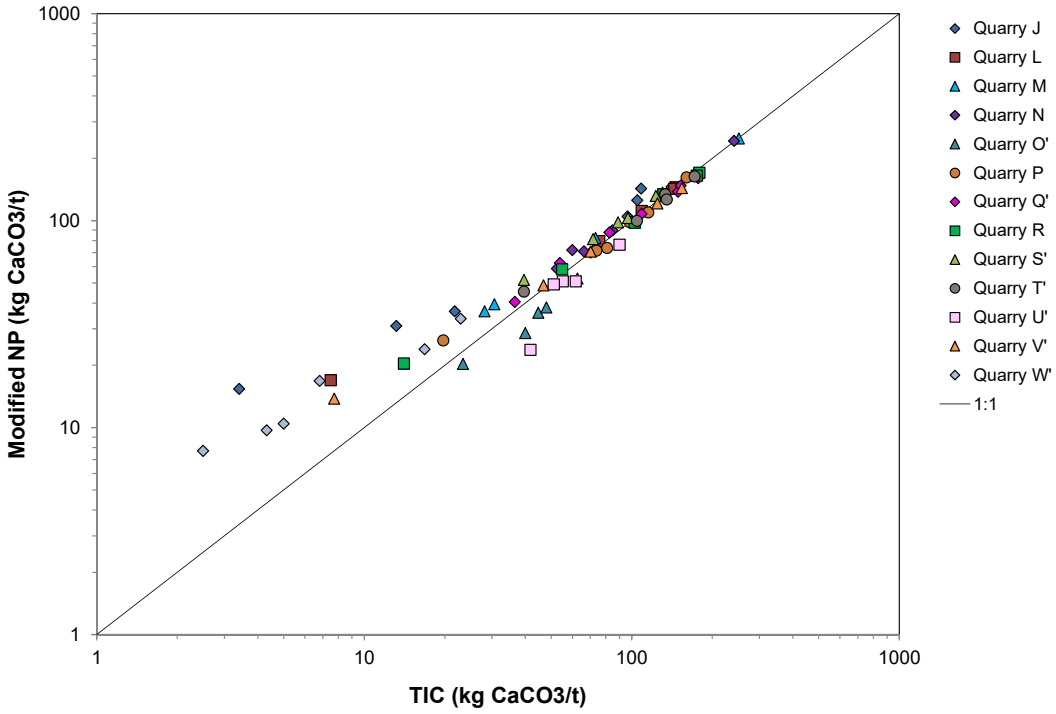

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Figure 4-3: Comparison of Modified NP and TIC by Quarry, 2011 Sample Set

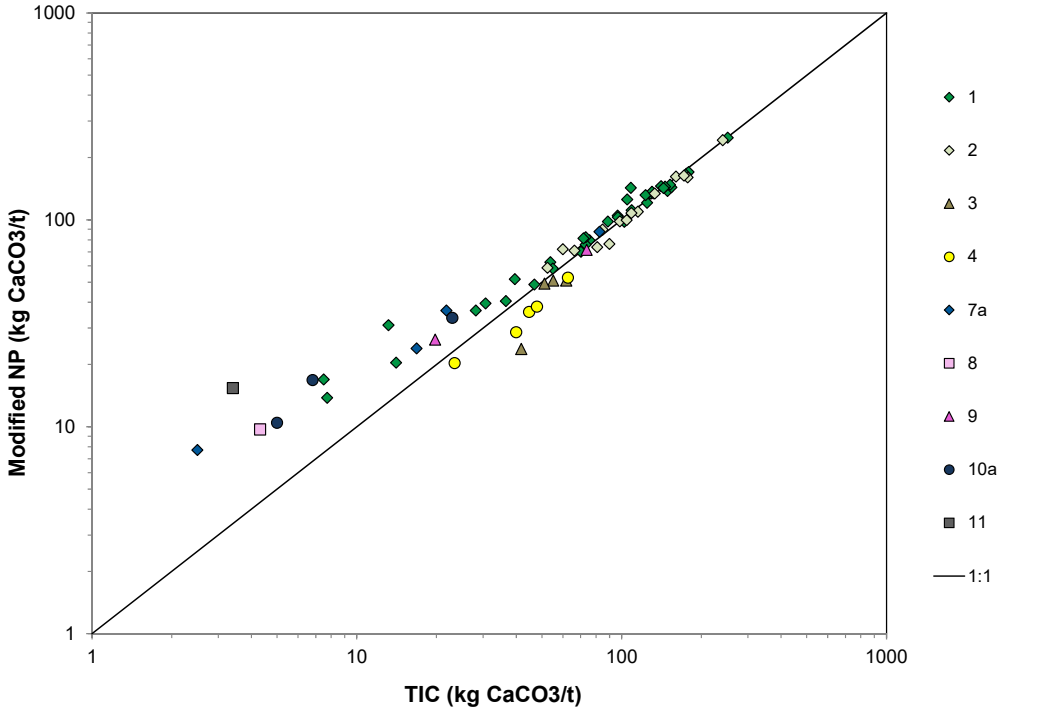

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Figure 4-4: Comparison of Modified NP and TIC by Rock Type, 2011 Sample Set

The ARD potential of samples was assessed by comparing both Modified NP and TIC to the acid potential (AP) for each sample. Due to the presence of sulphate in a small subset of samples, AP was calculated from sulphide sulphur. ARD classifications were not on the basis of total sulphur and fulfill the best practice guidelines outlined in MEND (2009). Samples with values of NP/AP<1 were classified as PAG, NP/AP>3 were classified as non-PAG and 3>NP/AP>1 were classified as uncertain.

All 76 samples were classified as non-PAG according to Modified NP/AP (Figure 4-5 and Figure 4-6). Samples were also typically classified as non-PAG according to TIC/AP (Figure 4-7 and Figure 4-8), with the exception of four samples classified as uncertain, one of which was a mafic metavolcanic (1) from Quarry V' and three samples of intrusive rocks (early gabbro, 7a and late gabbro, 10a) from Quarry W'. The implications of the samples classified as uncertain from Quarry V' and Quarry W' are discussed below.

On the basis of the geochemistry, Quarry J, Quarry L, Quarry M, Quarry N, Quarry O', Quarry P, Quarry Q', Quarry R, Quarry S', Quarry T', Quarry U', Quarry V' and Quarry W' contain rock that is suitable to use for construction. Monitoring and management recommendations are discussed in Section 5.

Quarry V'

The one uncertain sample from Quarry V' contained low sulphide (0.1%) and low TIC (8 kg $CaCO_3$/t). This sample contained anomalously low TIC compared to the overall Quarry V' sample set (average 81 kg $CaCO_3$/t). Sulphide levels for the quarry were similarly low (average and maximum levels of 0.13% and 0.19%, respectively). Therefore, the uncertain sample represents a pocket of low TIC material and it is anticipated that run-of-quarry rock from Quarry V' overall will have sufficient buffering capacity when co-mingled. On this basis, rock from Quarry V' is suitable to use for construction.

Quarry W'

Three of six samples from Quarry W' were classified as uncertain on the basis of TIC/AP. All the uncertain samples contained low sulphide (0.05% to 0.14%) and low TIC (<10 kg $CaCO_3$/t). Overall, TIC content in the Quarry W' sample set is uniformly low, ranging from 3 to 23 kg $CaCO_3$/t with an average of 10 kg $CaCO_3$/t. Modified NP levels are low, ranging from 8 to 34 kg $CaCO_3$/t with an average of 17 kg $CaCO_3$/t. Given the low sulphide content, buffering from silicate minerals may offset any acidity produced. However, further test work is recommended to evaluate the effectiveness of silicate buffering, particularly in the granitoid unit which has not been subjected to detailed characterization elsewhere in the Hope Bay Belt.

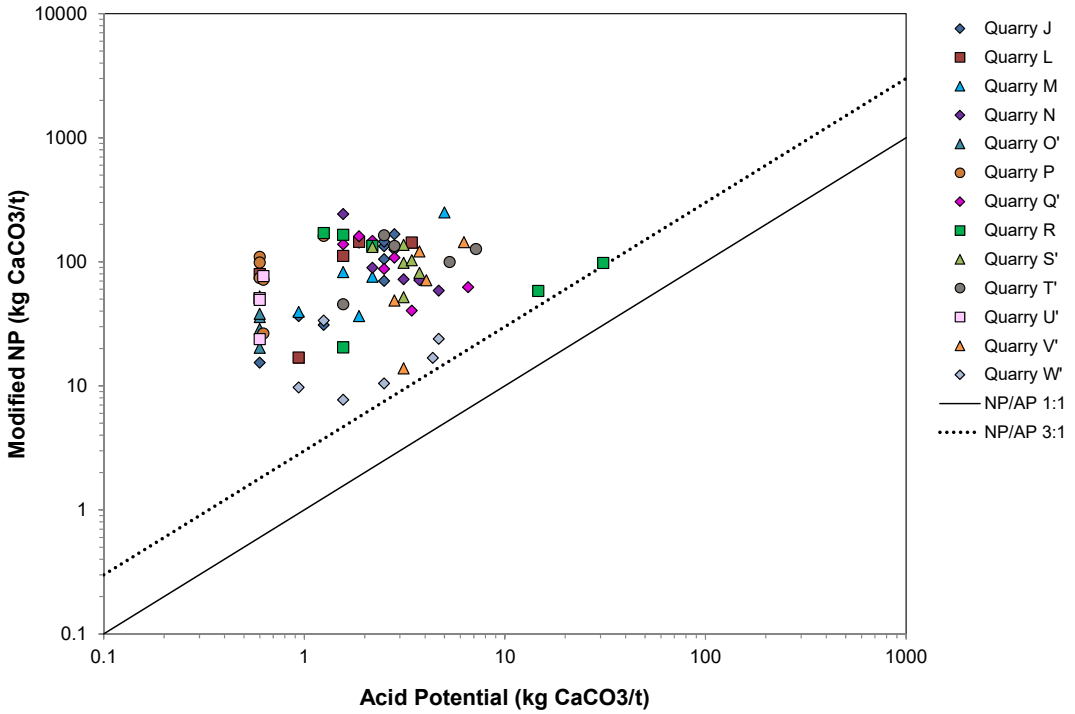

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Figure 4-5: NP/AP ARD Classifications by Quarry, 2011 Sample Set

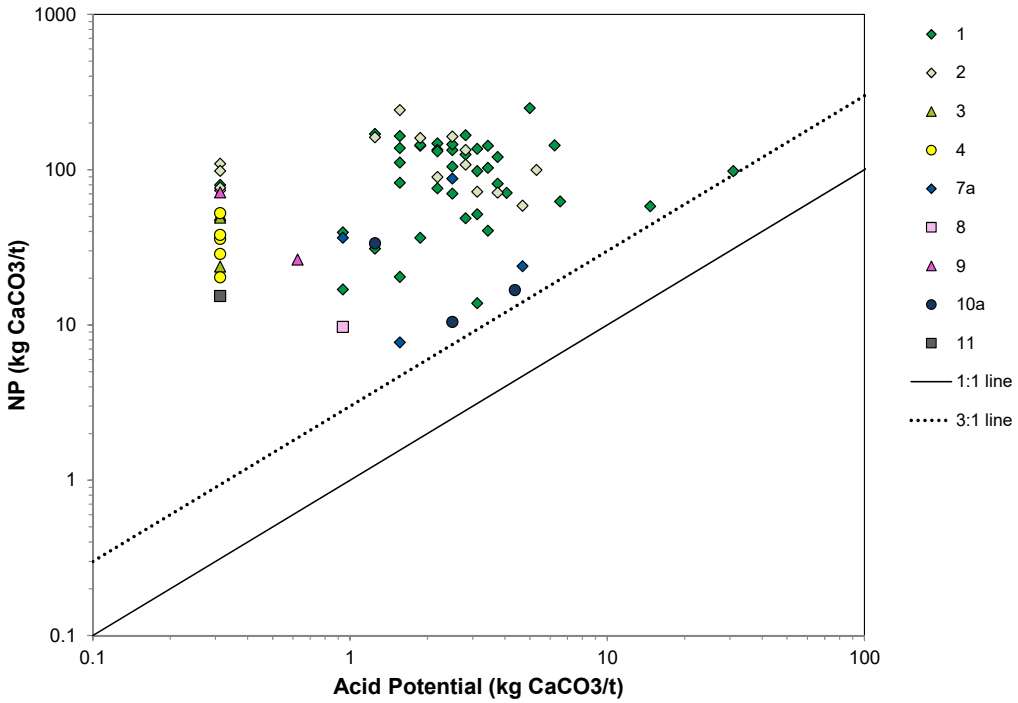

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Figure 4-6: NP/AP ARD Classifications by Rock Type, 2011 Sample Set

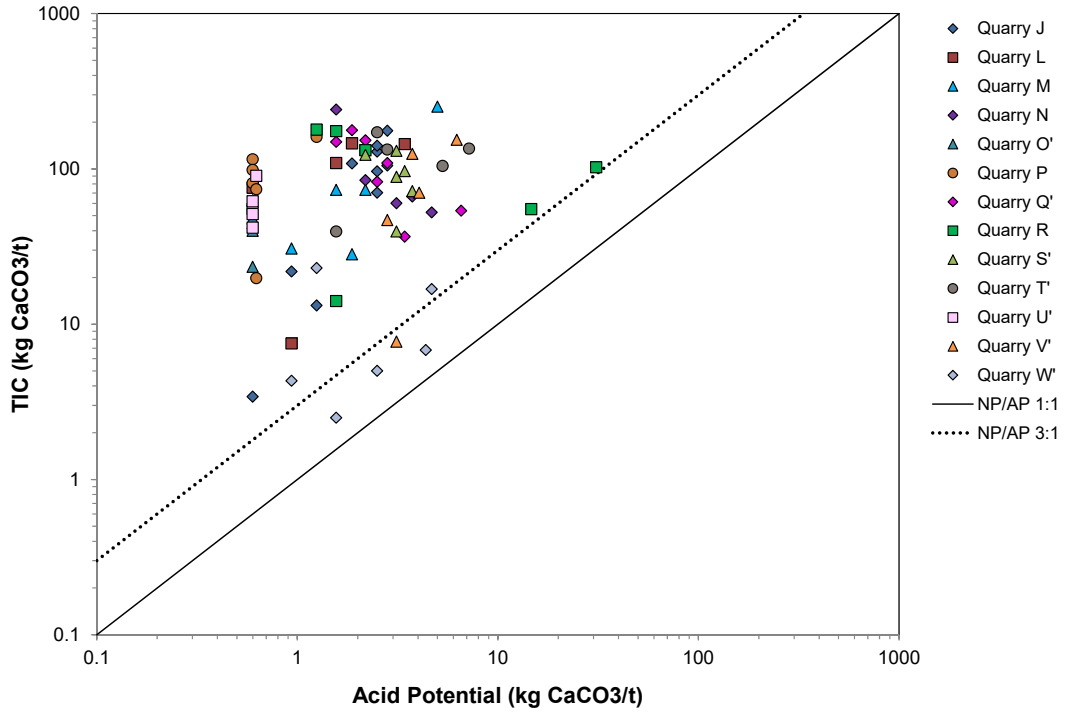

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Figure 4-7: TIC/AP ARD Classifications by Quarry, 2011 Sample Set

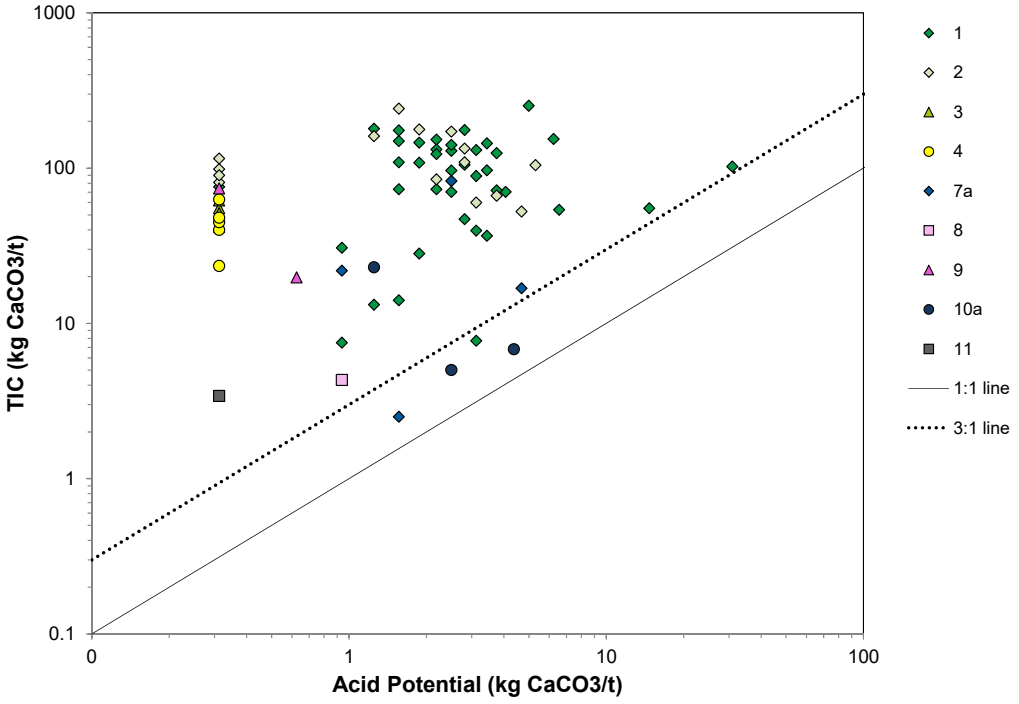

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Figure 4-8: TIC/AP ARD Classifications by Rock Type, 2011 Sample Set

4.1.3 Elemental Analysis

Data from elemental analysis for the 76 samples are presented in Appendix C. Results were compared to ten times the average crustal abundance for basaltic rocks (Price 1997) to screen for parameters that are anomalously high. Selenium and bismuth detection limits were equal to or one order of magnitude higher than their corresponding values for the average crustal abundance, respectively, and could therefore not be appropriately assessed for all samples.

One sample from Quarry D showed anomalously high elemental concentrations of gold. Sulphur was reported slightly above ten times the average crustal abundance (>0.3%) for two samples in Quarry R and one sample in Quarry V'. No enrichment was observed for other elements. The data indicate that there is a low risk for metal leaching under neutral pH conditions.

4.2 Hope Bay Belt-Wide Quarry Data Set

4.2.1 Distribution of Rock Types

Of the 18 proposed quarries from the Project that have had no samples collected for geochemical characterization or their boundaries have been expanded since 2011 (Table 1-1), the regional geology is primarily mafic metavolcanics (unit 1, refer to Appendix A-2 to A-6). Other less prevalent rock types include intermediate metavolcanics (2), felsic metavolcanics (4), early mafic and ultramafic intrusives (7), synvolcanic granitoids (8), late mafic intrusions (10), and diabase (11). Synvolcanic granitoids (8) are present in Quarry W only while late mafic intrusions (10) are present in Quarry AG only.

Table 4-2 presents the distribution of samples within the Hope Bay quarry data set according to rock type and spatial distribution. Rock types in bold in Table 4-2 are relevant to the assessment of the expanded quarry areas. All rock types in the database are presented for completeness. The dominant sample set (approximately 85%) is ultramafic to mafic metavolcanics (1) and geographically spans from Doris to Boston. Other rock types with significant sample sets are intermediate metavolcanics (2) and late gabbro (10a). All other rock types had fewer than ten samples. The one sample of synvolcanic granitoid rocks (8) is from Quarry W, which is the only quarry that has the occurrence of this rock type.

Table 4-2: Summary of Available Geochemical Data by Rock Type and Spatial Distribution of Samples

Stratigraphic Unit		No. of Samples	Areas				
Lithology Code	Description		Doris	Doris to Madrid	Madrid	Madrid to Boston	Boston
1	**Ultramafic to mafic metavolcanics**	370**	✓	✓	✓	✓	✓
1 w. sediments	Ultramafic to mafic metavolcanics with interflow chert/argillite/sandstone	1		✓			
2	**Intermediate metavolcanics**	23			✓	✓	
3	Intermediate to felsic metavolcanics	8	✓		✓	✓	
4	**Felsic metavolcanics**	5				✓	
7a	**Early gabbro***	5			✓		
8	**Syn-volcanic granitoid rocks**	1				✓	
9	Late granitoid rocks (mainly post-volcanic)	2				✓	
10a	**Late gabbro**	17***	✓			✓	
11	**Proterozoic rocks (Franklin Diabase)**	1	✓			✓	
Total		433					

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Notes:

*All samples from unit 7 identified as early gabbro or 7a.

**317 samples with complete ABA analytical suite.

***15 samples with complete ABA analytical suite.

Bolded rock types are relevant to the Madrid to Boston quarry assessment by rock type.

4.2.2 Acid-Base Accounting Data

Selected ABA results for each rock type in the Hope Bay quarry dataset are presented in Figure 4-9 to Figure 4-12.

Total sulphur in the overall sample set was typically low with levels ranging between <0.02% to 1.0%, with 95th percentile levels of 0.18%. Total sulphur content was typically low for all rock types, with 75th percentile values up to 0.11% (Figure 4-9). The highest sulphur samples were spatially isolated samples of mafic metavolcanics (1) from various quarries, including Quarry R (Section 4.1.2). Sulphate levels were typically below or near the level of detection (with the exception of one sample from Quarry V', Section 4.1.2) and accordingly, total sulphur levels were at near parity with sulphide (Figure 4-10).

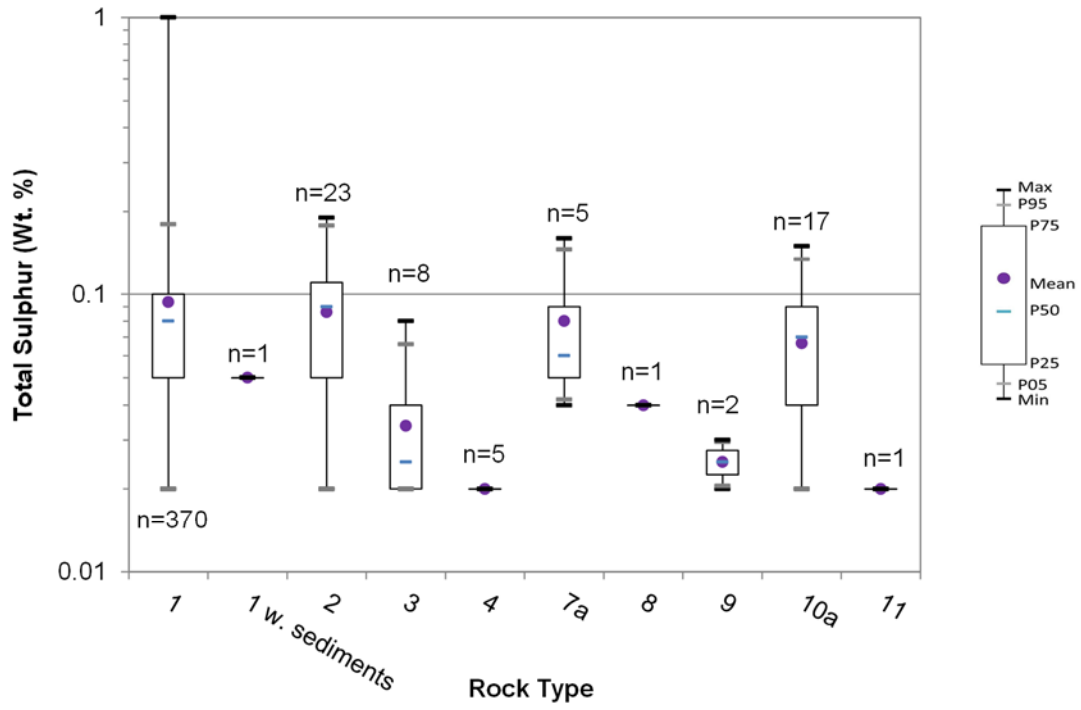

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Figure 4-9: Distribution of Total Sulphur by Rock Type, Hope Bay Quarry Database

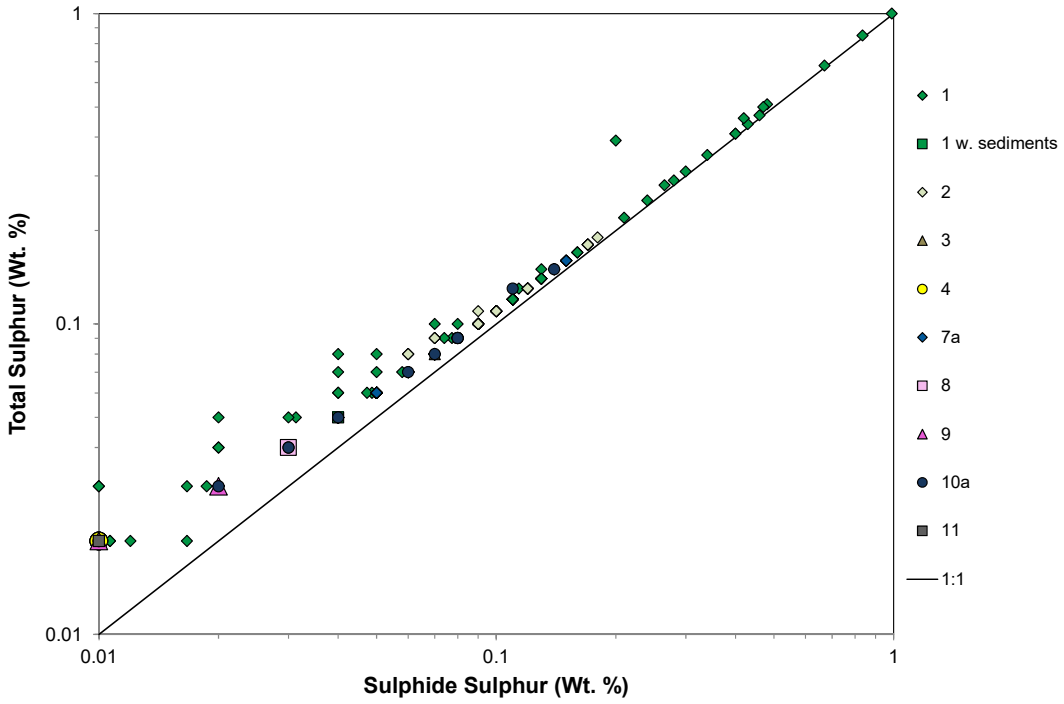

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Figure 4-10: Comparison of Total Sulphur and Sulphide by Rock Type, Hope Bay Quarry Database

The NP database was derived using both Sobek and Modified methods (Section 3.2). Median levels of NP ranged between 36 and 155 kg $CaCO_3$/t for all rock types (Figure 4-11), except synvolcanic graintoids (unit 8) and diabase (unit 11). Unit 8 and unit 11 each had one sample with NP levels of 10 and 15 kg $CaCO_3$/t, respectively.

TIC ranged from 1.5 to 350 kg $CaCO_3$/t, with 95th percentile values (P95) of up to 220 kg $CaCO_3$/t (Figure 4-12). Highest TIC levels were for intermediate metavolcanics (2, P95 of 220 kg $CaCO_3$/t and median of 100 kg $CaCO_3$/t) and mafic metavolcanics (1, P95 of 190 kg $CaCO_3$/t and median of 84 kg $CaCO_3$/t). Median TIC levels were below 40 kg $CaCO_3$/t for unit 7a (22 kg $CaCO_3$/t), unit 8 (only one sample analyzed with 4.3 kg $CaCO_3$/t), unit 10a (15 kg $CaCO_3$/t), and unit 11 (only one sample analyzed with 3.4 kg $CaCO_3$/t).

Overall values of Modified NP were well correlated with TIC (Figure 4-13 and Figure 4-14). Below Modified NP levels of 240 kg $CaCO_3$/t, samples typically reported higher Modified NP than TIC suggesting that in addition to carbonate minerals, these samples may also have analytical NP in the form of silicate minerals. Conversely, above NP levels of 240 kg $CaCO_3$/t samples had slightly higher levels of TIC suggesting the presence of iron carbonates, which results in TIC content that does not contribute to the actual amount of carbonate capable of providing acid neutralization and buffering. A comparison of Sobek NP and TIC (Figure 4-15) show that levels of Sobek NP are greater than TIC, suggesting these samples may have analytical NP in the form of silicate minerals and also measurable NP related to the Sobek method.

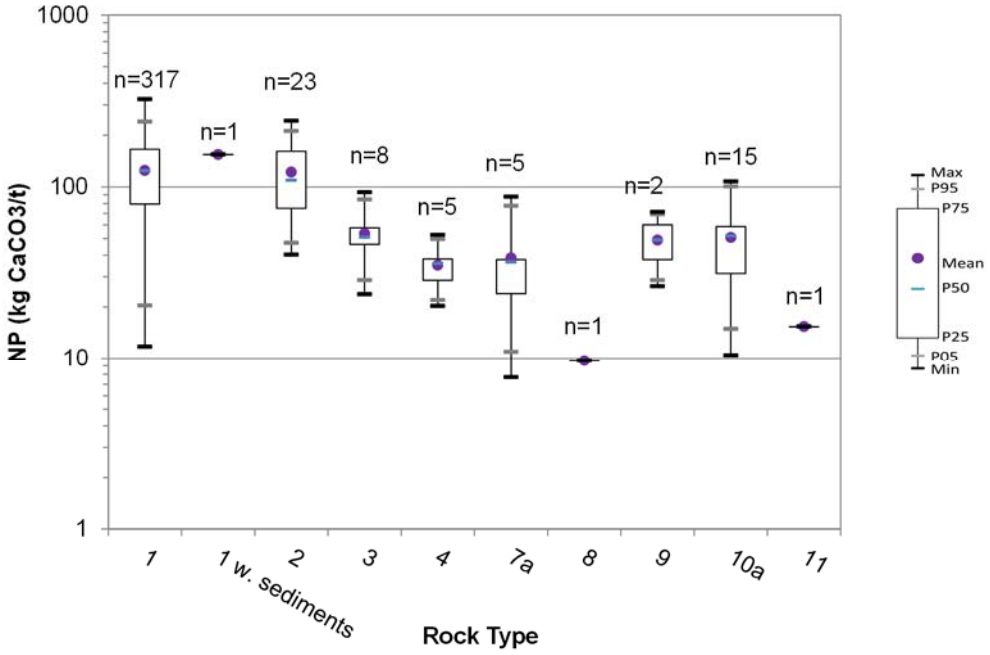

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Figure 4-11: Distribution of NP by Rock Type, Hope Bay Quarry Database. NP presented is Modified and Sobek methods

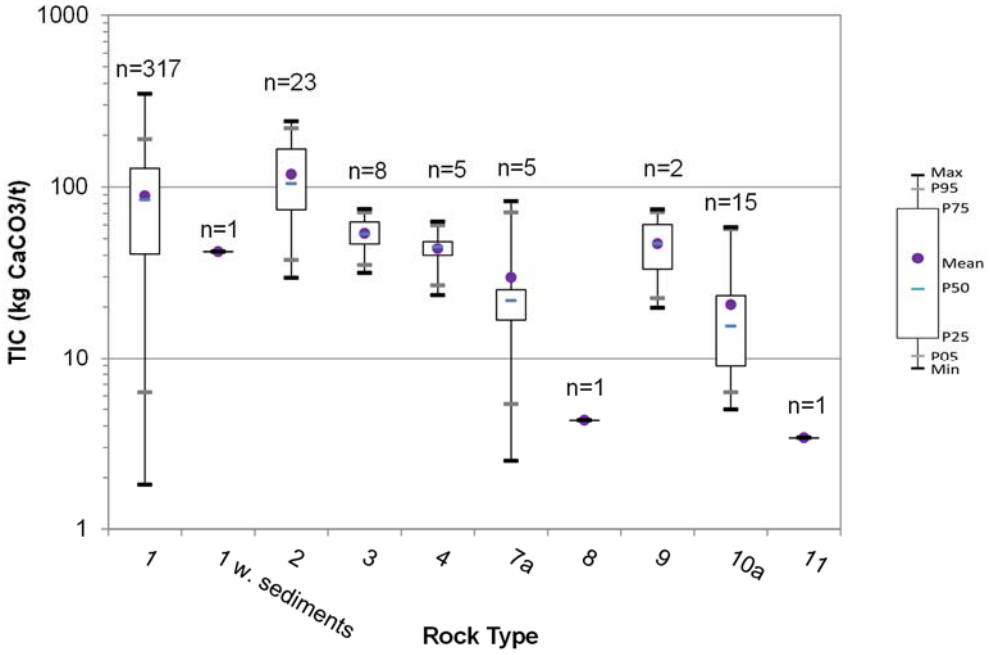

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Figure 4-12: Distribution of TIC by Rock Type, Hope Bay Quarry Database

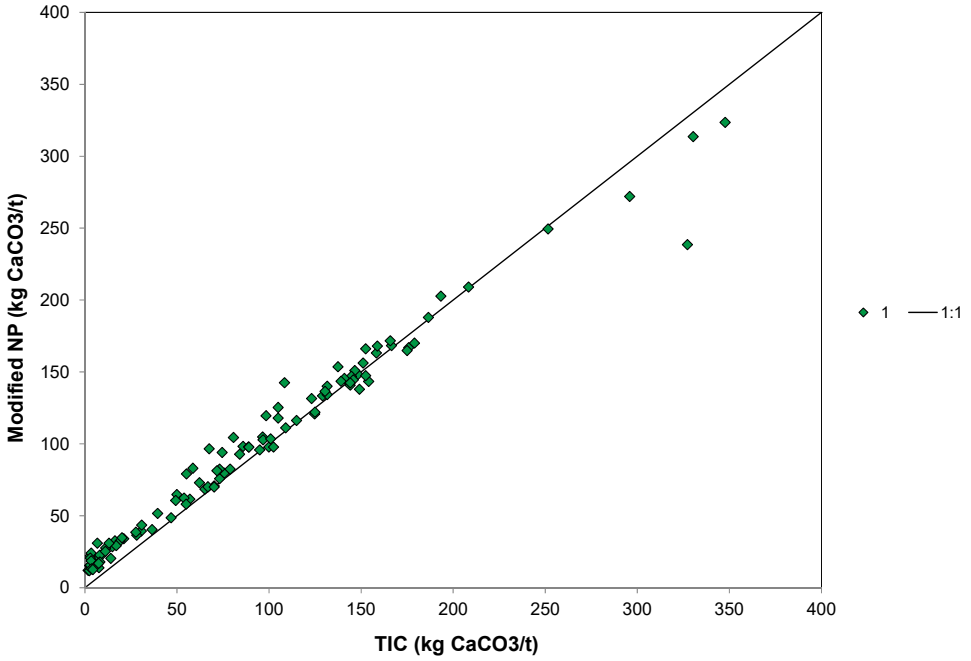

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Figure 4-13: Comparison of Modified NP and TIC for Mafic Volcanics (1), Hope Bay Quarry Database

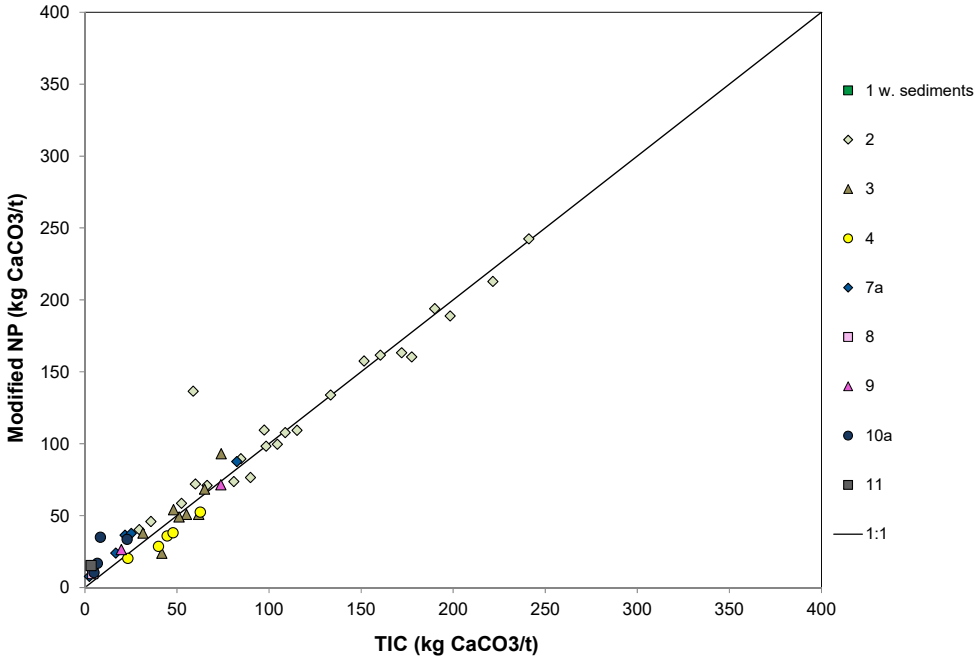

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Figure 4-14: Comparison of Modified NP and TIC for Rock Types Other than Mafic Volcanics (1), Hope Bay Quarry Database

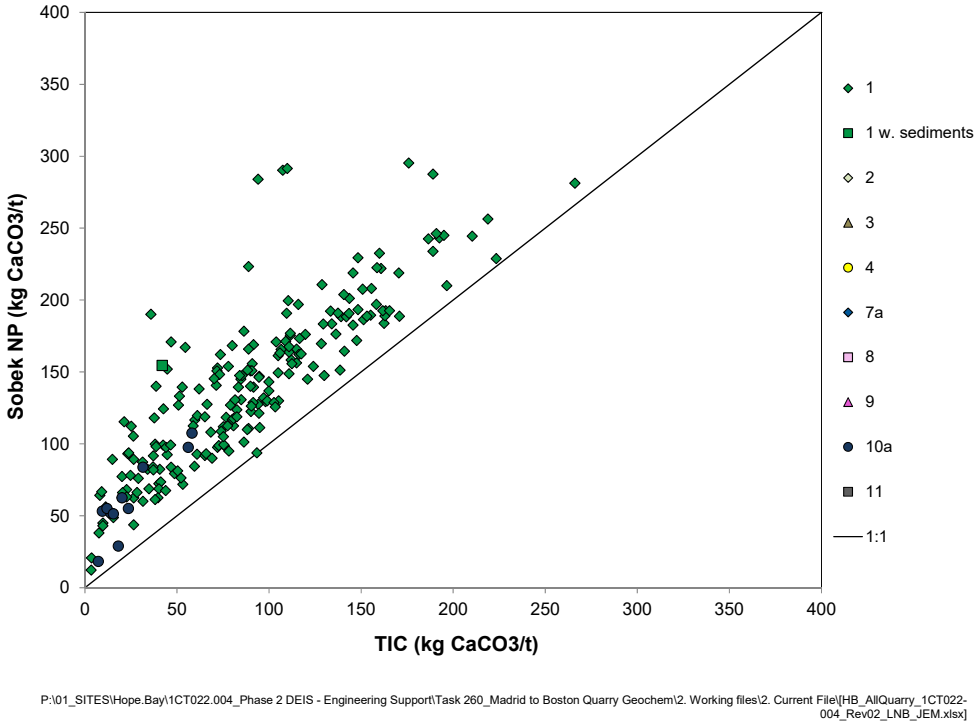

Figure 4-15: Comparison of Sobek NP and TIC by Rock Type, Hope Bay Quarry Database

The ARD potential of the sample set was classified using NP/AP and TIC/AP (Table 4-3, Figure 4-16 and Figure 4-17), where AP was calculated using sulphide. ARD classifications were not on the basis of total sulphur and fulfill the best practice guidelines outlined in MEND (2009). The majority of samples were classified as non-PAG with a small proportion classified as uncertain.

A summary of ARD potential according to rock type is summarized below. Rock types relevant to the assessment of the additional quarry areas are mafic metavolcanics (1), intermediate metavolcanics (2), felsic metavolcanics (4), early gabbro (7a), synvolcanic granitoids (8), late gabbro (10a), and diabase (11).

- Ultramafic to mafic metavolcanics (1)
  - The majority of the 317 samples were classified as non-PAG by NP/AP and TIC/AP methods. According to NP/AP, 1% of samples were classified as having an uncertain potential for ARD and none as PAG, whereas 5% were classified as uncertain or PAG according to TIC/AP. This is the only rock type with samples classified as PAG.
  - Samples classified as uncertain or PAG contained relatively low levels of NP and TIC (1^{s} and $^{1}0^{th}$ percentile, respectively). Sulphide content in these samples was typically low, with levels up to 0.15%, with the exception of one sample that contained 0.4% (or $^{9}8^{th}$ percentile levels). Furthermore, approximately 70% of samples classified as uncertain or PAG were collected from the proposed Quarry 5 at Doris. All other samples were from different quarries at Doris, Madrid and near Boston (Quarry V'). Therefore, a small proportion of the overall mafic metavolcanics (1) sample set contains relatively low

levels of buffering and high (but still relatively low) levels of sulphide. Any acidity produced will be offset by the high levels of buffering capacity from the overall mixture of the metavolcanics.

  - Infrastructure and pads at Doris and along the Doris to Madrid road have been monitored extensively and according to permit requirements since 2007 (Section 2). Results of monitoring are submitted annually to the Nunavut Water Board and indicate that for existing quarry rock, which is primarily mafic metavolcanics (1), there is a low risk for metal leaching and acid rock drainage (e.g. SRK 2009, SRK 2015b).

- Ultramafic to mafic metavolcanics with sediments (1 with sediments)
  - One sample was classified as non-PAG on the basis of NP/AP and TIC/AP.
- Intermediate metavolcanics (2)
  - All 23 samples were classified as non-PAG on the basis of NP/AP and TIC/AP.
- Intermediate to felsic metavolcanics (3)
  - All eight samples were classified as non-PAG on the basis of NP/AP and TIC/AP.
- Felsic metavolcanics (4)
  - All five samples were classified as non-PAG on the basis of NP/AP and TIC/AP.
- Early gabbro (7a)
  - All five samples were classified as non-PAG on the basis of NP/AP. According to TIC/AP, four samples were classified as non-PAG and one as uncertain.
  - The one sample classified as uncertain contained low levels of TIC (2.5 kg $CaCO_3$/t) and sufficiently low levels of sulphide (0.05%) that any acidity produced would be buffered by silicate NP and the surrounding rocks. This is supported by the average NP/AP and TIC/AP values for the sample set (15 and 12, respectively), which classify the material as non-PAG. On this basis, early gabbro (7a) is considered to have a low ARD risk.
- Synvolcanic granitoids (8)
  - The one sample was classified as non-PAG on the basis of NP/AP and TIC/AP.
- Late grainitoid rocks (9)
  - Both samples were classified as non-PAG on the basis of NP/AP and TIC/AP.
- Late gabbro (10a)
  - All 15 samples were classified as non-PAG on the basis of NP/AP. According to TIC/AP, 87% of samples were classified as non-PAG and 13% as uncertain. The uncertain samples contained low levels of TIC (<8 kg $CaCO_3$/t) and sufficiently low levels of sulphide (maximum 0.15%) that any acidity produced would be buffered NP from surrounding rocks. This is supported by the average NP/AP and TIC/AP values for the sample set (23 and 9, respectively), which classify the overall sample set as non-PAG.

- Diabase (11)
  - The one sample was classified as non-PAG on the basis of NP/AP and TIC/AP. The low sulphur content of this sample was consistent with diabase from the Doris underground.
  - Geochemical studies of diabase from the Doris underground decline indicate that diabase geochemistry is uniform and has low potential for metal leaching and acid rock drainage due to low sulphur content (SRK 2010e).

Table 4-3: ARD Classifications According to Rock Type, Hope Bay Quarry Database

Lithology	Number of Samples		ARD Classification (% of samples)					
	NP/AP	TIC/AP	non-PAG (NP or TIC) / AP >3		Uncertain 1 < (NP or TIC) / AP <3		PAG (NP or TIC) / AP <1	
			NP/AP	TIC/AP	NP/AP	TIC/AP	NP/AP	TIC/AP
1	317	317	99%	95%	1%	3%	0%	2%
1 w. sediments	1	1	100%	100%	0%	0%	0%	0%
2	23	23	100%	100%	0%	0%	0%	0%
3	8	8	100%	100%	0%	0%	0%	0%
4	5	5	100%	100%	0%	0%	0%	0%
7a	5	5	100%	80%	0%	20%	0%	0%
8	1	1	100%	100%	0%	0%	0%	0%
9	2	2	100%	100%	0%	0%	0%	0%
10a	15	15	100%	87%	0%	13%	0%	0%
11	1	1	100%	100%	0%	0%	0%	0%

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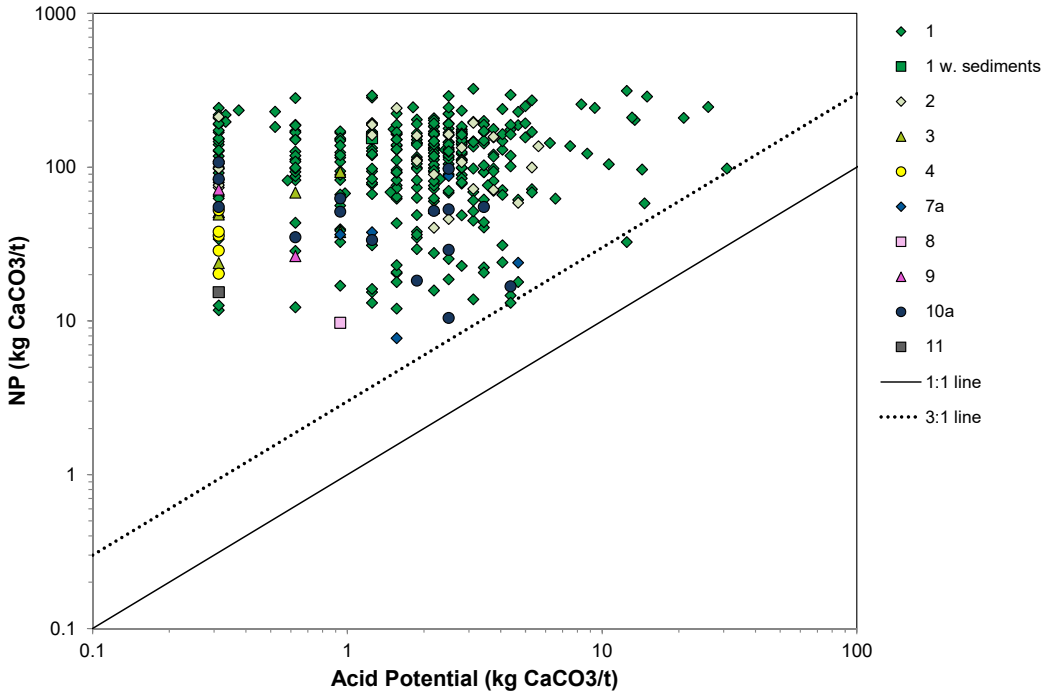

Figure 4-16: NP/AP ARD Classifications by Rock Type, Hope Bay Quarry Database

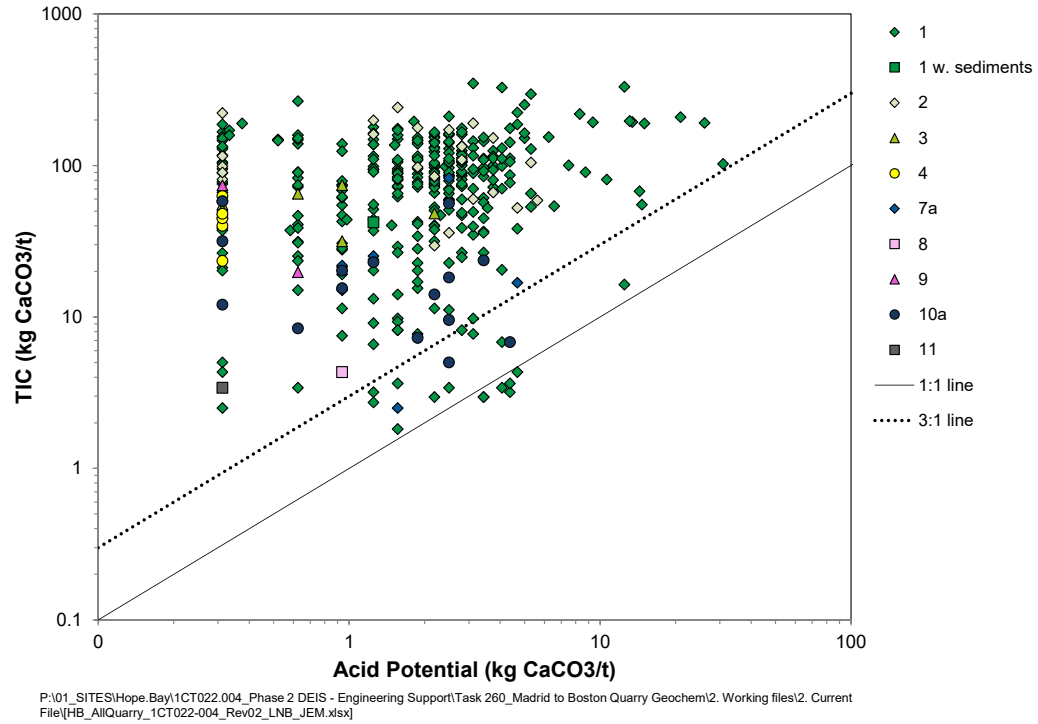

Figure 4-17: TIC/AP ARD Classifications by Rock Type, Hope Bay Quarry Database

4.2.3 Elemental Analysis

Results from elemental analysis for all the samples in the Hope Bay quarry dataset were compared to ten times the average crustal abundance for basaltic rocks (Price 1997) to screen for parameters that are anomalously high. Selenium and bismuth detection limits were equal to or an order of magnitude higher than their corresponding values for the average crustal abundance, respectively, and could therefore not be appropriately assessed for all samples.

The following elements were reported in concentrations above ten times the average crustal abundance: gold (one sample from unit 1), silver (nine samples from unit 1, two samples from unit 2), arsenic (three samples from unit 1, one sample from unit 2), boron (19 samples from unit 1, one sample from unit 3), and sulphur (eight samples from unit 1). Overall there is a low risk for metal leaching under neutral pH conditions.

5 Conclusions

Table 5-1 presents a summary of the geochemical assessment for the 24 proposed quarries from Roberts Bay to Boston, including the data sets used, an assessment related to the suitability of the rock for construction and recommendations for additional test work. An overview of Table 5-1 is presented as follows:

- With the exception of Quarry W, Quarry Z and Quarry AD, rock from all quarries is suitable for use as construction rock on the basis of a low risk of ARD and low risk of ML under neutral pH conditions. This conclusion is based on the results from a 2011 geochemical characterization program for 13 quarries and a regional belt-wide geological assessment for newer or expanded quarries. A geochemical characterization program prior to development is recommended for all quarry areas outside the scope of the 2011 program. Relevant geochemical findings according to quarry are summarized as follows:
  - Quarry R contains a localized area of high sulphide rock.
  - A number of quarries have localized areas of low NP (<50 $kgCaCO_3/t$) including Quarry J, Quarry L, Quarry M, Quarry O, Quarry Q, Quarry U, and Quarry V. With the exception of one sample from Quarry V, all of these low NP samples were classified as non-PAG.
  - One sample with low TIC from Quarry V was classified as uncertain on the basis of TIC/AP. Overall the Quarry V has sufficiently high TIC and it is anticipated that the run-of-quarry rock will overall have sufficient buffering capacity when co-mingled.
- Based on samples with low NP and TIC classified as uncertain or PAG, Quarry W rock is recommended for use as mine backfill at Boston, which has a backfill deficit. If Quarry W is to be considered as construction rock, mineralogical characterization is required prior to development to understand if silicate minerals will provide sufficient buffering in these low TIC, low sulphur rocks.
- Quarry Z was identified as an exploration target and accordingly, a geological inspection of the quarry is required prior to its consideration as a source of construction rock and subsequent geochemical characterization program.
- Quarry AD is located in a mineralized area; therefore, it is recommended for use as mine backfill only. Quarry AD is the proposed location of the Boston processing plant and a cut of 196,000 m^3 in rock is required for the sole purpose of pad construction. The detailed engineering design will consider minimizing the rock cut volume. The cut rock would be placed on the Boston waste rock stockpile until it can be placed underground as backfill.
- All quarry rock would be monitored and managed in accordance with Hope Bay quarry management plans, e.g. TMAC (2017).

Table 5-1: Summary of Geochemical Assessment of Madrid-Boston Project Quarries

Quarry ID	2011 Characterization **Program Quarry ID**	Rock Types **Within Expanded Quarry Boundary**	**Quarry Rock Suitable for Construction?**	**Confirmatory Test Work Recommended*?**
J	J	--	✓	
L	L	--	✓	
M	M	--	✓	
N	N	--	✓	
O	O'	1, 2, 4, 11	✓	✓
P	P	--	✓	
Q	Q'	1, 7	✓	✓
R	R	--	✓	
S	S'	1, 2, 7	✓	✓
T	T'	1, 7	✓	✓
U	U'	1, 4	✓	✓
V	V'	1	✓	✓
W	W'	1, 8	Suitable as mine backfill. Silicate mineralogical characterization recommended to assess suitability for construction.	✓
X	--	1	✓	✓
Z	**	1, 2, 7	Possible	✓
AA	--	1	✓	✓
AB	--	1, 7	✓	✓
AD	**	1	Suitable as mine backfill only.	
AE	--	1	✓	✓
AF	--	1, 7	✓	✓
AG	--	1, 7, 10	✓	✓
AH	--	1, 4, 11	✓	✓
AI	--	1	✓	✓
AJ	--	1	✓	✓

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Notes:
✓ confirms column heading.
*Geochemical characterization program in expansion area only.
**Quarry Z and AD were included in a desktop geological assessment by HBML geologists.

This report, “Geochemical Characterization of Madrid-Boston Quarries Hope Bay Project, Nunavut”, was prepared by SRK Consulting (Canada) Inc.

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All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

6 References

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Appendix A – Maps of Quarry and Sample Locations

419700
429700
439700
449700
459700
7560000
7550000
7540000
7530000
7520000
7510000
7500000

See Drawing 1-2
See Drawing 1-3
See Drawing 1-4
See Drawing 1-5
See Drawing 1-6

Quarry AE
Quarry 1
Roberts Bay Tank Farm
Quarry AF
Quarry 5
Quarry 4
Doris Portal
Quarry 2
Quarry I
Quarry 3
Quarry A
Quarry B
Quarry AG
Quarry C
Quarry D
Quarry J
Quarry E
Quarry AI
Quarry AH
Madrid North Portal
Madrid South Portal
Quarry G
Quarry H
Quarry X
Quarry L
Quarry M
Quarry Z
Quarry O
Quarry O'
Quarry N'
Quarry N
Quarry P
Quarry Q'
Quarry Q
Quarry AA
Quarry R
Quarry S
Quarry S'
Quarry T
Quarry T'
Quarry U
Quarry U'
Quarry AB
Quarry V'
Quarry V
Quarry W
Quarry AD
Quarry W'
Quarry AJ
Boston Portal

Melville Sound
Roberts Lake
Hope Bay
Doris Lake
Ogama Lake
Windy Lake
Patch Lake
Aimaokatalok Lake

N

Legend

- Existing Infrastructure
- Future Infrastructure
- Proposed Quarry Location
- 2011 Characterization Program Quarry Boundary
- Previously Geochemically Characterized Quarry

0 2 4 6 8 10
Kilometers

Notes:
1. Coordinate System: NAD 1983 UTM Zone 13N
2. Base Topo Data: CanVec, Natural Resources Canada

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Project No: 1CT022.013

Filename: 1CT022.013_Figure_A-1_Quarries_rev10

HOPE BAY PROJECT

Quarry Locations, Hope Bay Project

Date:	Approved:	Drawing:
Dec 2017	LB/EM	A-1

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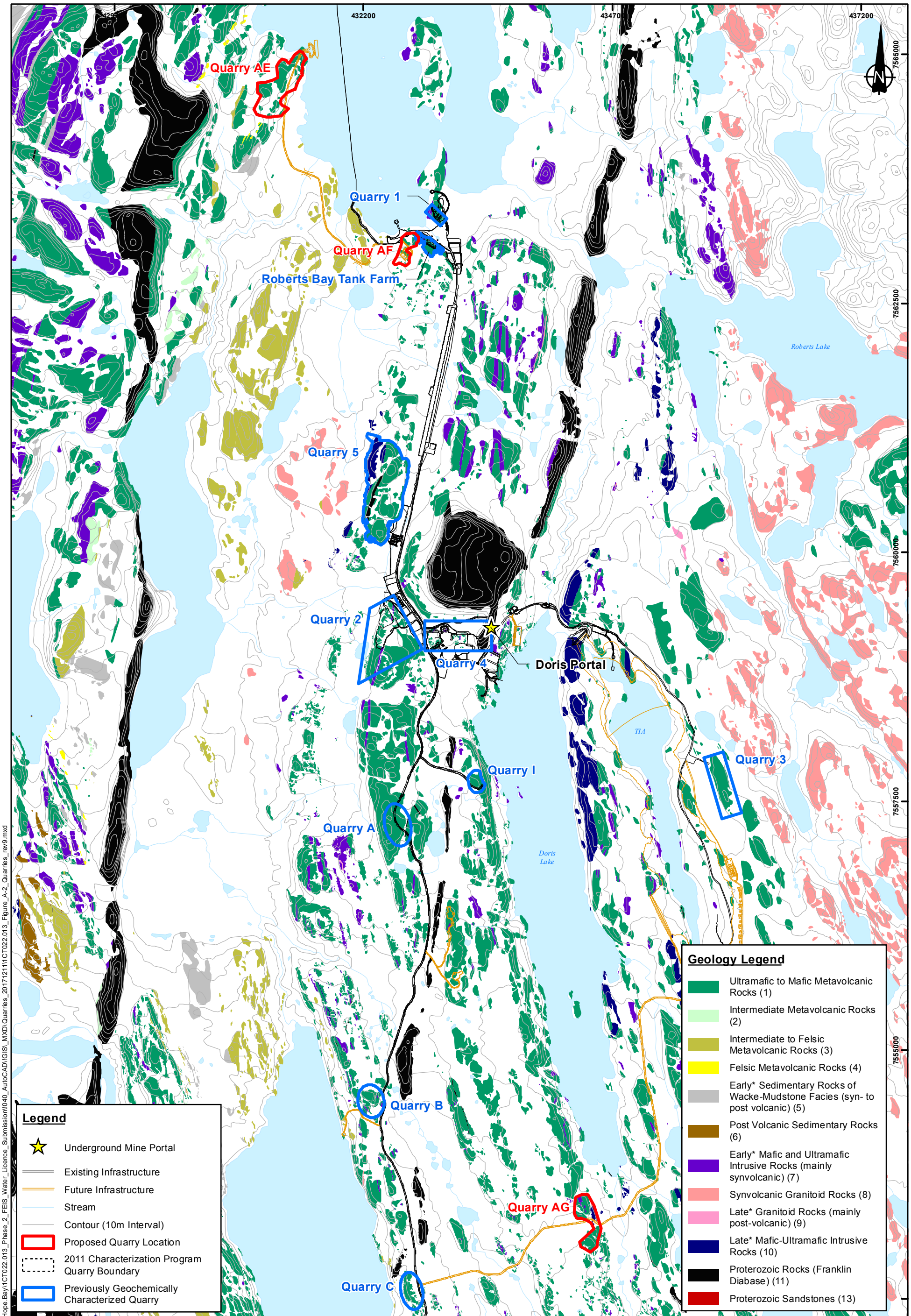
432200
437200
7565000
7562500
7560000
7557500
7555000
Quarry AE
Quarry 1
Quarry AF
Roberts Bay Tank Farm
Roberts Lake
Quarry 5
Quarry 2
Quarry 4
Doris Portal
TIA
Quarry 3
Quarry I
Quarry A
Doris Lake
Quarry B
Quarry AG
Quarry C
Legend
Underground Mine Portal
Existing Infrastructure
Future Infrastructure
Stream
Contour (10m Interval)
Proposed Quarry Location
2011 Characterization Program Quarry Boundary
Previously Geochemically Characterized Quarry
Geology Legend
Ultramafic to Mafic Metavolcanic Rocks (1)
Intermediate Metavolcanic Rocks (2)
Intermediate to Felsic Metavolcanic Rocks (3)
Felsic Metavolcanic Rocks (4)
Early* Sedimentary Rocks of Wacke-Mudstone Facies (syn- to post volcanic) (5)
Post Volcanic Sedimentary Rocks (6)
Early* Mafic and Ultramafic Intrusive Rocks (mainly synvolcanic) (7)
Synvolcanic Granitoid Rocks (8)
Late* Granitoid Rocks (mainly post-volcanic) (9)
Late* Mafic-Ultramafic Intrusive Rocks (10)
Proterozoic Rocks (Franklin Diabase) (11)
Proterozoic Sandstones (13)
0 250 500 750 1,000 1,250
Meters
Notes:
1. *early and late used in a relative sense only.
2. Coordinate System: NAD 1983 UTM Zone 13N
3. Base Topo Data: CanVec, Natural Resources Canada
srk consulting
TMAC RESOURCES
Project No: 1CT022.013
Filename: 1CT022.013_Figure_A-2_Quarries_rev9
HOPE BAY PROJECT
Quarry Locations, Hope Bay Project
Date: Dec 2017
Approved: LB/EM
Drawing: A-2
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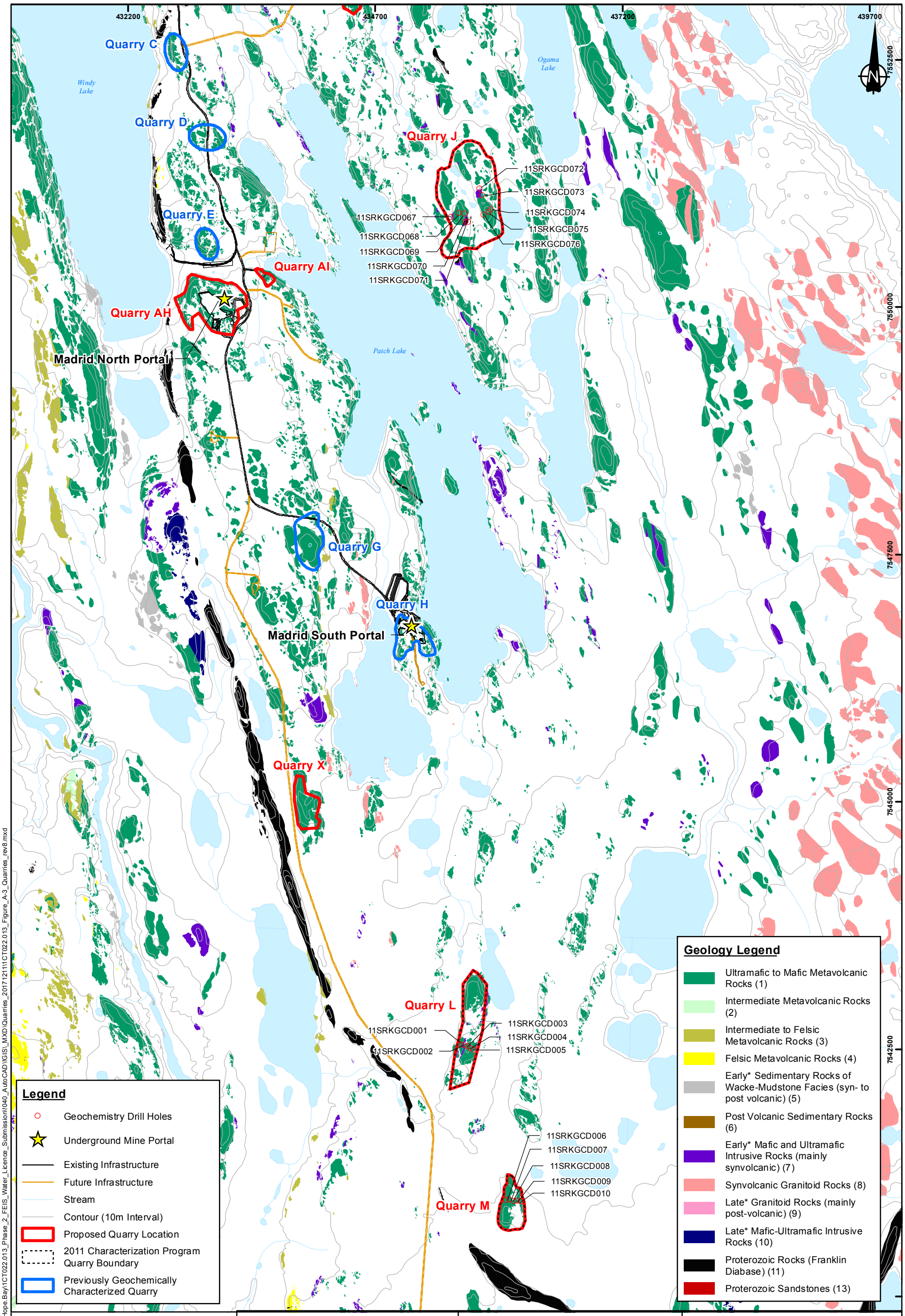
432200
434700
437200
439700
7552500
7550000
7547500
7545000
7542500
Windy Lake
Ogama Lake
Patch Lake
Quarry C
Quarry D
Quarry E
Quarry AI
Quarry AH
Madrid North Portal
Quarry J
11SRKGCD072
11SRKGCD073
11SRKGCD074
11SRKGCD075
11SRKGCD076
11SRKGCD067
11SRKGCD068
11SRKGCD069
11SRKGCD070
11SRKGCD071
Quarry G
Quarry H
Madrid South Portal
Quarry X
Quarry L
11SRKGCD001
11SRKGCD002
11SRKGCD003
11SRKGCD004
11SRKGCD005
Quarry M
11SRKGCD006
11SRKGCD007
11SRKGCD008
11SRKGCD009
11SRKGCD010
Legend
Geochemistry Drill Holes
Underground Mine Portal
Existing Infrastructure
Future Infrastructure
Stream
Contour (10m Interval)
Proposed Quarry Location
2011 Characterization Program Quarry Boundary
Previously Geochemically Characterized Quarry
Geology Legend
Ultramafic to Mafic Metavolcanic Rocks (1)
Intermediate Metavolcanic Rocks (2)
Intermediate to Felsic Metavolcanic Rocks (3)
Felsic Metavolcanic Rocks (4)
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Late* Granitoid Rocks (mainly post-volcanic) (9)
Late* Mafic-Ultramafic Intrusive Rocks (10)
Proterozoic Rocks (Franklin Diabase) (11)
Proterozoic Sandstones (13)
0 250 500 750 1,000 1,250
Meters
Notes:
1. *early and late used in a relative sense only.
2. Coordinate System: NAD 1983 UTM Zone 13N
3. Base Topo Data: CanVec, Natural Resources Canada
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Project No: 1CT022.013
Filename: 1CT022.013_Figure_A-3_Quarries_rev8
HOPE BAY PROJECT
Quarry Locations, Hope Bay Project
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Drawing: A-3
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434700
437200
439700
7535000
7532500
7530000
7527500
7525000

Quarry Z
Quarry O
11SRKGCD062
11SRKGCD063
11SRKGCD064
11SRKGCD065
11SRKGCD066
Quarry O'
Quarry N
11SRKGCD057
11SRKGCD058
11SRKGCD059
11SRKGCD060
11SRKGCD061
11SRKGCD051
11SRKGCD050
11SRKGCD053
11SRKGCD052
11SRKGCD054
11SRKGCD055
11SRKGCD049
11SRKGCD047
11SRKGCD043
11SRKGCD044
11SRKGCD045
11SRKGCD046
Quarry P
11SRKGCD048
Quarry Q'
Quarry Q
Quarry R
Quarry AA
11SRKGCD041
11SRKGCD040
11SRKGCD042
11SRKGCD039
11SRKGCD038
11SRKGCD037

Legend

- Geochemistry Drill Holes
- Existing Infrastructure
- Future Infrastructure
- Stream
- Contour (10m Interval)
- Proposed Quarry Location
- 2011 Characterization Program Quarry Boundary
- Previously Geochemically Characterized Quarry

Geology Legend

- Ultramafic to Mafic Metavolcanic Rocks (1)
- Intermediate Metavolcanic Rocks (2)
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- Proterozoic Rocks (Franklin Diabase) (11)
- Proterozoic Sandstones (13)

0 250 500 750 1,000 1,250
Meters

Notes:
1. *early and late used in a relative sense only.
2. Coordinate System: NAD 1983 UTM Zone 13N
3. Base Topo Data: CanVec, Natural Resources Canada

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Filename: 1CT022.013_Figure_A-4_Quarries_rev9

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Hope Bay Project

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Drawing: A-4

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437200
439700
442200
7522500
7520000
7517500
7515000
7512500
7510000

Quarry S'
11SRKGCD036
11SRKGCD035
11SRKGCD034
11SRKGCD031
11SRKGCD032
11SRKGCD033
Quarry S
Quarry T
Quarry T'
11SRKGCD027
11SRKGCD026
11SRKGCD028
11SRKGCD030
11SRKGCD029
Quarry U
11SRKGCD021
11SRKGCD022
11SRKGCD023
11SRKGCD024
11SRKGCD025
Quarry U'
GT-D

Legend

- Geochemistry Drill Holes
- Existing Infrastructure
- Future Infrastructure
- Stream
- Contour (10m Interval)
- Proposed Quarry Location
- 2011 Characterization Program Quarry Boundary
- Previously Geochemically Characterized Quarry

Geology Legend

- Ultramafic to Mafic Metavolcanic Rocks (1)
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- Proterozoic Sandstones (13)

0 250 500 750 1,000 1,250
Meters

Notes:
1. *early and late used in a relative sense only.
2. Coordinate System: NAD 1983 UTM Zone 13N
3. Base Topo Data: CanVec, Natural Resources Canada

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Project No: 1CT022.013

Filename: 1CT022.013_Figure_A-5_Quarries_rev8

HOPE BAY PROJECT

Quarry Locations, Hope Bay Project

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439700
442200
444700
447200
7510000
7507500
7505000
7502500
7500000

Aimaokatalok Lake

Quarry AB
Quarry V'
11SRKGCD016
11SRKGCD017
11SRKGCD018
11SRKGCD019
11SRKGCD020
Quarry V
Boston Portal
Quarry W
Quarry AD
Quarry AJ
Quarry W'
11SRKGCD015
11SRKGCD011
11SRKGCD014
11SRKGCD056
11SRKGCD011
11SRKGCD013

Legend

- Geochemistry Drill Holes
- Underground Mine Portal
- Existing Infrastructure
- Future Infrastructure
- Stream
- Contour (10m Interval)
- Proposed Quarry Location
- 2011 Characterization Program Quarry Boundary
- Previously Geochemically Characterized Quarry

Geology Legend

- Ultramafic to Mafic Metavolcanic Rocks (1)
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- Intermediate to Felsic Metavolcanic Rocks (3)
- Felsic Metavolcanic Rocks (4)
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- Late* Mafic-Ultramafic Intrusive Rocks (10)
- Proterozoic Rocks (Franklin Diabase) (11)
- Proterozoic Sandstones (13)

0 250 500 750 1,000 1,250
Meters

Notes:
1. *early and late used in a relative sense only.
2. Coordinate System: NAD 1983 UTM Zone 13N
3. Base Topo Data: CanVec, Natural Resources Canada

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Project No: 1CT022.013

Filename: 1CT022.013_Figure_A-6_Quarries_rev9

HOPE BAY PROJECT

Rock Quarry Locations, Hope Bay Project

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Appendix B – Hope Bay Lithology Codes

Hope Bay Mining Lithology Codes (2008 lithology coding standard)

CODE	CODEDESC	MOD1	MOD1DESC	MOD2	MOD2DESC
1	Ultramafic Volcanic	u	Ultramafic	x	Spinifex Texture
1	Mafic Volcanic	a	Flow	d	Breccia
1	Mafic Volcanic	i	Massive	f	Feldspar phyric (? Should be used for Boston "Gabbro")
1	Mafic Volcanic	o	Fragmental	h	Harrisitic (Type example should be displayed)
1	Mafic Volcanic	p	Pillow	j	<30cm and <50% intercalated / Interflow Chert/Argillite/Sandstone
1	Mafic Volcanic			r	Polysutured
1	Mafic Volcanic			v	Variolitic
1	Mafic Volcanic			y	Amigdaloidal / Vesicular
2	Intermediate Volcanic	a	Flow	d	Breccia
2	Intermediate Volcanic	i	Massive	f	Feldspar phyric (? Should be used for Boston "Gabbro")
2	Intermediate Volcanic	o	Fragmental	g	PGP - Madrid Deposit
2	Intermediate Volcanic	p	Pillow	h	Harrisitic (Type example should be displayed)
2	Intermediate Volcanic			j	<30cm and <50% intercalated / Interflow Chert/Argillite/Sandstone
2	Intermediate Volcanic			r	Polysutured
2	Intermediate Volcanic			v	Variolitic
2	Intermediate Volcanic			y	Amigdaloidal / Vesicular flow
3	Intermediate to Felsic Volcanic	a	Flow	c	Lapilli
3	Intermediate to Felsic Volcanic	b	Tuff	d	Breccia (Flow Top, Autoclastic)
3	Intermediate to Felsic Volcanic			f	Porphyritic
3	Intermediate to Felsic Volcanic			w	Flow banded
3	Intermediate to Felsic Volcanic			y	Amigdaloidal / Vesicular
3	Intermediate to Felsic Volcanic			o	Heterolithic
4	Felsic Metavolcanic rocks	a	Flow	c	Lapilli
4	Felsic Metavolcanic rocks	b	Tuff	d	Breccia (Flow Top, Autoclastic)
4	Felsic Metavolcanic rocks			f	Porphyritic
4	Felsic Metavolcanic rocks			w	Flow banded
4	Felsic Metavolcanic rocks			y	Amigdaloidal / Vesicular
4	Felsic Metavolcanic rocks			o	Heterolithic
5	Sedimentary Rocks	a	Argillite	f	Feldspathic
5	Sedimentary Rocks	b	Siltstone	i	Graphitic
5	Sedimentary Rocks	c	Wacke	j	<30cm and <50% Mafic Fragments
5	Sedimentary Rocks	d	Conglomerate	l	Lithic
5	Sedimentary Rocks	g	Iron Formation	m	Magnetite
5	Sedimentary Rocks	h	Chert	o	Polymict
5	Sedimentary Rocks	v	Sandstone	q	Quartz
5	Sedimentary Rocks			u	Argillitic Interbeds
5	Sedimentary Rocks			w	Wacke Interbeds
6	Post Volcanic Sedimentary Rocks	a	Argillite	f	Feldspathic
6	Post Volcanic Sedimentary Rocks	b	Siltstone	i	Graphitic
6	Post Volcanic Sedimentary Rocks	c	Wacke	j	<30cm and <50% Mafic Fragments
6	Post Volcanic Sedimentary Rocks	d	Conglomerate	l	Lithic
6	Post Volcanic Sedimentary Rocks	g	Iron Formation	m	Magnetite
6	Post Volcanic Sedimentary Rocks	h	Chert	o	Polymict
6	Post Volcanic Sedimentary Rocks	v	Sandstone	q	Quartz
6	Post Volcanic Sedimentary Rocks	r	Limestone/Marble	u	Argillitic Interbeds
6	Post Volcanic Sedimentary Rocks			w	Wacke Interbeds
7	Early Mafic / UM Intrusions	a	Gabbro	b	Leucogabbro
7	Early Mafic / UM Intrusions			c	Melanogabbro
8	Synvolcanic Granitoid Rocks	a	Tonalite	f	Feldspar Phyric
8	Synvolcanic Granitoid Rocks	b	Trondjhemite	q	Quartz Phyric
8	Synvolcanic Granitoid Rocks	c	Granodiorite		
8	Synvolcanic Granitoid Rocks	d	Diorite/Quartz Diorite		
9	Late Felsic Intrusive	k	Felsic Dyke	f	Feldspar
9	Late Felsic Intrusive	n	Intermediate Dyke	q	Quartz
9	Late Felsic Intrusive	p	Porphyry		
10	Late Mafic Intrusion	a	Gabbro		
10	Late Mafic Intrusion	b	Mafic Dyke - Fine to Medium Grained		
11	Diabase	c	Diabase	m	Magnetic
11	Diabase			n	Non-Magnetic
12	Vein >30cm or Zone of >70% Single Vein E	c	Carbonate Dominated		
12	Vein >30cm or Zone of >70% Single Vein E	q	Quartz Dominated		
13	Significant Structure	a	Madrid Deformation Zone (DEFZ	f	Felsic
13	Significant Structure			m	Mafic
13	Significant Structure			s	Sedimentary
14	Missing Core	a	Ground		
14	Missing Core	b	Void		
14	Missing Core	d	Wedge		
14	Missing Core	l	Lost		
15	Casing	a	Ice		
15	Casing	b	Lake		
15	Casing	c	Overburden		

Appendix C – 2011 Quarry Geological Field Observations

Quarry ID	HBML Geological Field Survey
J	The rock at quarry location J was primarily pillow basalts and flow breccias (0.5% Py). There was finely disseminated calcite and calcite veinlets throughout. At the contact of gabbros and basalt, there is generally a shear zone that is more mineralized than surrounding host rock (primarily dolomite alteration). Shear zones were noted in the west and eastern prominences of outcrop. The shear zone in the eastern outcrop (13W 0435750, 7551192) was approximately 3m wide and striked NE-SW. The shear zone in the western outcrop striked in the same direction and was located at 13W 0435557, 7550889.
L	The rock at location L was pillowed basalt and flow-top breccias with late-stage dolomite alteration. There was pervasive disseminated calcite and calcite veinlets. The basalt adjacent to the gabbro body has been frost wedged and has slightly higher pyrite content.
M	NA
N	Quarry N primarily comprises pillowed and brecciated flow basalts. The western edge is more felsic. The felsic material has less carbonate than mafics. The western borehole location is approximately located in this felsic material.
O	The rock at location O is sodic altered felsic metavolcanic. There are calcite veinlets and patches of disseminated calcite. There was trace concentrations of pyrite, but not much evidence of weathering. There was a small shear zone which hosted epidote. The area was to the south of DH-27 and DH-28. The epidote is a result of reaction of felsic host rock with mineralizing fluid – it is equivalent to dolomitizing fluid in mafic hosts (M. Bardeaux, pers. comm.). As with other felsic rocks that have been selected as potential quarries, Quarry O did not have much relief from tundra and had more overburden than typical mafic locations.
P	The rock at location P formed a ridge with basalts, gabbro and intermediate felsic volcanic rocks. The gabbro to the south of location P is better described as massive basalt (or “gabbroic”), with less calcite than pillowed or brecciated basalts. The material weathered to a reddish colour, likely due to the oxidation of pyrite (rather than weathering of ferroan dolomite). Where pillowed basalt contacts massive basalt, the pillowed basalts are sheared and the sheared zones tend to host calcite. The Western half of outcrop was intermediate felsic rock +/- feldspar phenocrysts. The most Western material (classified as felsic) was intermediate without feldspar phenocrysts and the central material was intermediate with feldspar phenocrysts. There is trace pyrite in felsic material and calcite is present disseminated and as veinlets. The intermediate rock does not have as much relief as the basalts. The basalt is pillowed and flow brecciated and is sheared and mineralized at the contact with intermediate material. The basalt is consistent with other basalt in the area, pyrite ~0.5% and calcite disseminated and as veinlets.
Q	The rock at location Q was pillowed basalt and flow-top breccias with late-stage dolomite alteration. There was pervasive disseminated calcite and calcite veinlets. The basalt near gabbro tubes tends to be sheared and more mineralized. Pyrite content is <0.5% throughout the outcrop. The most SW outcrop was weakly dolomite-altered with approximately 10-15 m relief from the surrounding tundra.
R	Proposed Quarry location R was predominantly flow-brecciated basalts similar to those in Northern end of Quarry T. • Flow breciatted basalt with late stage dolomitization • Higher concentration of pyrite than previous locations (0.5-1%) – weathered rind (oxidized) approximately 3 mm thick on surface of rocks • Extensive calcite – disseminated and as veinlets • The breccias tend to sequester a lot of calcite; the calcite preferentially weathers out giving the outcrop a pitted appearance • Eastern side of outcrop has some gabbro “pods” approximately 3m in diameter • There is a sheared zone (<1 m thick) with dolomite and sericite alteration. Shear zone material is platy (13W 0437731, 7526466)
S	Proposed Quarry location S had pillowed and flow-brecciated basalts similar to Quarry T. • Finely disseminated pyrite • Disseminated calcite and calcite veinlets • Epidote (indicative of calcite) • Outcrop generally more altered to the North

Quarry ID	HBML Geological Field Survey
T	The outcrop at the proposed location was at the top of crest was generally blocky, with 1-3m relief between adjacent blocks. General observations for proposed Quarry T: • Pillowed basalts – the interpillow selvage tends to accumulate pyrite (e.g. 13W 0438955, 7516798) • Outcrop weathered brown indicating ferroan-dolomite fulid alteration has occurred – may locally increase pyrite at pillow margins • Outcrop uniformly altered, fine-grained finely disseminated pyrite throughout (~0.5%), especially at pillow margins.
U	General observations for proposed Quarry U: • Felsic volcaniclastics • Mildly altered, not much pyrite or other mineralization (e.g. dolomite), no veining • Finely disseminated calcite throughout • Fine-grained chert-like volcaniclastic observed in northwest zone (but not in location where potential boreholes located) • Fuchsite was observed in north central portion of outcrop – often observed associated with Boston deposit
V	• The location was basalt with traces of fine-grained disseminated pyrite and extensive dolomite alteration. • Extensive small-scale quartz veins • High potential for mineralization associated with dolomite alteration (e.g. 13W 0445086, 7506660).
W	NA

P:\01_SITES\Hope.Bay\1CT022.004_Phase 2 DEIS - Engineering Support\Task 260_Madrid to Boston Quarry Geochem\3. Report\Tables\[2011 HBML Quarry Geological Review.xlsx]

Appendix D - 2011 Quarry Sample Descriptions and Geochemical Results

Sample ID	Drill Hole ID	Quarry	Easting	Northing	From (m)	To (m)	Length (m)	Lith Code	Lithological Description	Geological Description
12830	11SRKGCD067	Quarry J	435465.88	7550906.18	0.58	1.08	0.5	1p	Mafic Volcanic Pillow	Dark Green Weakly strained pillow basalt. Broken up so unable to determine angle of thin quartz calcite veins. ACODE 0 and no sulphides observed. No Reaction to HCl.
12831	11SRKGCD068	Quarry J	435542.74	7550947.56	0	1.2	1.2	1p	Mafic Volcanic Pillow	Green weakly strained fine grain Pillow Basalt. ACODE 0, no reaction with HCl, no sulphides.
12832	11SRKGCD069	Quarry J	435605.74	7550945.61	0	1.11	1.11	1p	Mafic Volcanic Pillow	Green Fine Grain Pillow basalt. Weak Strain. 8% quartz-calcite veining. No Sulphides, No reaction to HCl.
12833	11SRKGCD070	Quarry J	435610.50	7550861.10	0.22	1.12	0.9	7a	Early Mafic / UM Intrusions Gabbro	Dark Green Moderate Grain Gabbro. Weak Strain, 3% Quartz-Calcite veining. ACODE 0. No Reaction to HCl, No sulphides.
12834	11SRKGCD071	Quarry J	435640.21	7550862.22	0	1.1	1.1	11cm	Diabase Diabase Magnetic	Dark Grey, Coarse Grain Magnetic Diabase. No Veining, No Alteration, no sulphides, no reaction to HCl.
12835	11SRKGCD072	Quarry J	435752.40	7551193.83	0	1.28	1.28	1p	Mafic Volcanic Pillow	Light Green fine grain Pillow Basalt. Weak Strain. 4% calcite veining. ACODE 0. no pyrite, no reaction to HCl.
12836	11SRKGCD073	Quarry J	435780.18	7551131.79	0	1.14	1.14	1p	Mafic Volcanic Pillow	Green Weakly Strained fine grain pillow Basalt. 4% calcite veins. ACODE 0. No Pyrite, no reaction to HCl.
12837	11SRKGCD074	Quarry J	435867.57	7550985.36	0	1.1	1.1	1p	Mafic Volcanic Pillow	Green Weakly strained fine grain pillow basalt. 4% calcite veining. no pyrite, no reaction with HCl, ACODE 0.
12838	11SRKGCD075	Quarry J	435853.49	7550964.34	0	1.1	1.1	1p	Mafic Volcanic Pillow	Light Green Unstrained Pillow Basalt. 2% calcite veining. ACODE 0, 0.5% fine grain pyrite. no reaction to HCl.
12839	11SRKGCD076	Quarry J	435799.18	7550935.02	0	1.28	1.28	1p	Mafic Volcanic Pillow	Green Weakly strained pillow basalt. Black Chlorite altered clasts, possibly Primary Glass that has been altered to Chlorite. 0.5% Calcite veining. ACODE 0, no sulphides, no reaction with HCl.
12820	11SRKGCD001	Quarry L	435559.82	7542546.73	0	0.95	0.95	1pv	Mafic Volcanic Pillow Variolitic (varioles < 2 cm)	Green Variolitic Pillow basalt. 3% quartz-calcite veins. 0.5% fine grain subeuhedral pyrite. very weak reaction to HCl.
12821	11SRKGCD002	Quarry L	435596.30	7542536.16	0	1.23	1.23	1p	Mafic Volcanic Pillow	Green pillow basalt. 3% quartz-calcite veining. 0.5% fine grain disseminated pyrite. slight reaction to HCl.
12822	11SRKGCD003	Quarry L	435637.46	7542525.65	0	1.28	1.28	1pv	Mafic Volcanic Pillow Variolitic (varioles < 2 cm)	Green variolitic pillow basalt. 8% quartz-calcite veining. Acode 0, 0.5% fine grain disseminated subeuhedral pyrite. slight reaction to HCl.
12823	11SRKGCD004	Quarry L	435664.30	7542505.84	0	1.23	1.23	1p	Mafic Volcanic Pillow	Green Pillow Basalt. no veining. Acode 0. 0.5% fine grain disseminated subeuhedral pyrite. slight reaction to HCl.
12824	11SRKGCD005	Quarry L	435691.96	7542490.65	0	1.25	1.25	1pv	Mafic Volcanic Pillow Variolitic (varioles < 2 cm)	Green variolitic pillow basalt. 5% quartz-calcite veining. 0.5% fine grain disseminated pyrite. vigorous reaction to HCl.
12825	11SRKGCD006	Quarry M	436025.10	7540970.40	0	1.16	1.16	1p	Mafic Volcanic Pillow	Green Pillow basalt. 5% quartz-calcite veining. 0.5% fine grain disseminated pyrite. slight reaction to HCl.
12826	11SRKGCD007	Quarry M	436052.57	7540975.30	0	1.17	1.17	1p	Mafic Volcanic Pillow	Green Pillow basalt. 5% quartz-calcite veining. 0.5% fine grain disseminated pyrite. vigorous reaction to HCl.
12827	11SRKGCD008	Quarry M	436102.07	7540956.60	0	1.13	1.13	1p	Mafic Volcanic Pillow	Green Pillow basalt. 5% quartz-calcite veining. 0.5% fine grain disseminated subeuhedral pyrite. moderate reaction to HCl.
12828	11SRKGCD009	Quarry M	436131.26	7540966.29	0	1.19	1.19	1p	Mafic Volcanic Pillow	Green Pillow basalt. 2% quartz-calcite veining. Acode 0, 0.5% fine grain disseminated subeuhedral pyrite. slight reaction to HCl.
12829	11SRKGCD010	Quarry M	436176.80	7540956.98	0.24	1.04	0.8	1p	Mafic Volcanic Pillow	Green Pillow basalt with black altered fractures. 2% quartz-calcite veining. 0.5% fine grain disseminated subeuhedral pyrite. slight reaction to HCl.
12786	11SRKGCD059	Quarry N	436850.87	7530766.79	0	1.26	1.26	2p	Intermediate Volcanic Pillow	Green unstrained pillow basalt. 3% very fine quartz-calcite veining. Chlorite alteration. no visible sulphides. weak reaction to HCl.
12787	11SRKGCD058	Quarry N	436789.58	7530786.86	0.06	1.19	1.13	2p	Intermediate Volcanic Pillow	Unstrained intermediate pillow basalt. 3% quartz-calcite veining. Chlorite alteration. No visible sulphides. Weak reaction to HCl.
12795	11SRKGCD057	Quarry N	436734.90	7530813.66	0	1.24	1.24	2p	Intermediate Volcanic Pillow	Green weakly strained pillow basalt. 1% fine grain disseminated subeuhedral pyrite. no reaction to HCl.
12796	11SRKGCD060	Quarry N	436914.41	7530747.03	0	1.19	1.19	2p	Intermediate Volcanic Pillow	Green intermediate pillow basalt, weakly strained. 0.5% fine grain disseminated subeuhedral pyrite. 8% quartz calcite veining. weak reaction to HCl.
12797	11SRKGCD061	Quarry N	436971.84	7530809.95	0	1	1	2p	Intermediate Volcanic Pillow	Green unstrained pillow basalt. 3% quartz-calcite veining. 0.5% fine grain disseminated subeuhedral pyrite. weak reaction to HCl.
12798	11SRKGCD063	Quarry O	435388.75	7533063.83	0	1	1	4a	Felsic Volcanic Flow	Red Unstrained fine grain Felsic Volcanic. no veining. no reaction to HCl. unsure alteration, probably Acode 0. no visible sulphides.
12799	11SRKGCD062	Quarry O	435344.61	7533075.71	0	0.95	0.95	4b	Felsic Volcanic Tuff	Weakly strained light brown rhyolite tuff. sericite alteration. no veining. No visible sulphides. No reaction to HCl.
12800	11SRKGCD064	Quarry O	435424.83	7533051.22	0	1.24	1.24	4b	Felsic Volcanic Tuff	Weakly strained light brown Rhyolite tuff. tan lith fragments and >3% quartz grains. no veining. no visible sulphides. unknown alteration, probably Acode 0. No reaction to HCl.
12801	11SRKGCD065	Quarry O	435474.06	7533038.47	0	0.92	0.92	4b	Felsic Volcanic Tuff	Weakly strained light brown Rhyolite tuff. no veining. Unknown alteration, Probably Acode 0 or 1. Leucoxene grains. no mineralization.
12802	11SRKGCD066	Quarry O	435512.04	7533034.55	0	1.03	1.03	4a	Felsic Volcanic Flow	Light brown, weakly strained Felsic Fragmental Flow. >3% quartz grains. and 2% feldspar phenocrysts. no veining. Unknown alteration, probably Acode 0 or 1. Leucoxene grains. No visible sulphides.
12785	11SRKGCD050	Quarry P	436140.18	7529767.00	0	1.06	1.06	9p	Late Felsic Intrusive Porphyry	Dark Grey Porphyry with white plagioclase phenocrysts. 'flower' agglomerations rare but present. Weak Strain. no veining. Unknown alteration. possibly Acode 0 or unaltered. no visible mineralization.
12790	11SRKGCD052	Quarry P	436431.97	7529754.85	0	1.11	1.11	2p	Intermediate Volcanic Pillow	Strongly strained pillow or flow basalt. no visible sulphides. 1% quartz-calcite veining. vigorous reaction with HCl.
12791	11SRKGCD051	Quarry P	436257.25	7529868.05	0	1.07	1.07	9p	Late Felsic Intrusive Porphyry	Sparse Feldspar phenos up to 2mmx4mm in size. Brown fine grain groundmass. Significant quartz veining. No visible sulphides. No reaction to HCl.
12792	11SRKGCD053	Quarry P	436373.94	7529814.45	0	1	1	2p	Intermediate Volcanic Pillow	Strained intermediate pillow basalt. 1% disseminated fine grain subeuhedral pyrite. 3% quartz-calcite vein. no reaction to HCl.
12793	11SRKGCD054	Quarry P	436463.89	7529762.24	0	1.13	1.13	2p	Intermediate Volcanic Pillow	Brecciated green pillow basalt healed by fine grain black groundmass. 1% quartz calcite vein. no visible sulphides. No reaction to HCl.
12794	11SRKGCD055	Quarry P	436566.00	7529644.88	0	1.19	1.19	2p	Intermediate Volcanic Pillow	Intermediate Pillow basalt. 1% fine fracture fill quartz-calcite veins. 1% fine grain disseminated subeuhedral pyrite. No reaction to HCl.
12788	11SRKGCD048	Quarry Q	437235.31	7528948.86	0	1.03	1.03	2p	Intermediate Volcanic Pillow	Green Pillow basalt. 3% fracture fill veining. Slight reaction to HCl. No visible sulphides.
12789	11SRKGCD049	Quarry Q	437486.59	7528902.11	0	0.98	0.98	2p	Intermediate Volcanic Pillow	weakly strained pillow basalt. 5% quartz-calcite veining. weak reaction to HCl. 1% disseminated fine grain subeuhedral pyrite.
12815	11SRKGCD044	Quarry Q	437622.75	7528599.94	0	1.24	1.24	7a	Early Mafic / UM Intrusions Gabbro	Dark Grey Medium grain gabbro. 3% quartz-calcite veining. 0.5% disseminated subeuhedral pyrite. weak reaction to HCl.
12816	11SRKGCD045	Quarry Q	437666.14	7528605.59	0	1.3	1.3	1p	Mafic Volcanic Pillow	Green unstrained pillow basalt. 2% quartz-calcite veining. 0.5% fine grain disseminated subeuhedral pyrite. moderate reaction to HCl.
12817	11SRKGCD046	Quarry Q	437704.43	7528606.35	0	1.17	1.17	1ay	Mafic Volcanic Flow Amigdaloidal / Vesicular	Green unstrained basalt flow with vesicles. 2% quartz-calcite veining. 0.5% fine grain disseminated pyrite. no reaction to HCl.
12818	11SRKGCD043	Quarry Q	437574.73	7528611.50	0	1.1	1.1	1a	Mafic Volcanic Flow	Green Unstrained Basalt Flow. 3% quartz-calcite veining. 0.5% fine grain pyrite. vigorous reaction to HCl.
12819	11SRKGCD047	Quarry Q	437535.88	7528625.63	0	1.08	1.08	1p	Mafic Volcanic Pillow	Green Unstrained Pillow Basalt. 3% quartz-calcite veining. 0.5% fine grain pyrite. strong reaction to HCl.
12809	11SRKGCD039	Quarry R	437710.30	7526397.06	0	1.21	1.21	1p	Mafic Volcanic Pillow	Unstrained Pillow Basalt. 5% calcite-quartz veining. 0.5% fine grain disseminated subeuhedral pyrite. Vigorous reaction to HCl.
12810	11SRKGCD042	Quarry R	437744.20	7526418.18	0	0.92	0.92	1p	Mafic Volcanic Pillow	Unstrained Pillow Basalt. 2% quartz-calcite veins. 0.5% fine grain disseminated subeuhedral pillow basalt. weak reaction to HCl.
12811	11SRKGCD040	Quarry R	437769.94	7526438.38	0	0.81	0.81	1p	Mafic Volcanic Pillow	Green Unstrained pillow basalt. 5% quartz-calcite veining. 0.5% fine grain disseminated subeuhedral pyrite. no reaction to HCl.
12812	11SRKGCD041	Quarry R	437841.84	7526478.67	0	1.22	1.22	1pd	Mafic Volcanic Pillow Breccia	Green Unstrained Pillow Breccia. 2% quartz-calcite veining, 0.5% disseminated subeuhedral pyrite. weak reaction to HCl.
12813	11SRKGCD037	Quarry R	437574.44	7526317.04	0	1.21	1.21	1p	Mafic Volcanic Pillow	Green Unstrained pillow basalt. 5% quartz-calcite veining. 0.5% fine grain disseminated subeuhedral pyrite. vigorous reaction to HCl.
12814	11SRKGCD038	Quarry R	437635.78	7526352.93	0	0.92	0.92	1a	Mafic Volcanic Flow	Grey fine grain massive basalt flow. very thin calcite veining. 0.5% fine grain disseminated pyrite. no reaction to HCl.
12803	11SRKGCD032	Quarry S	438758.24	7521138.52	0	0.89	0.89	1p	Mafic Volcanic Pillow	Unstrained pillow basalt. 1% quartz-calcite veining. 0.5% fine grain disseminated subeuhedral pyrite. moderate reaction to HCl.
12804	11SRKGCD031	Quarry S	438715.73	7521073.54	0	1.06	1.06	1p	Mafic Volcanic Pillow	Unstrained green pillow basalt. 1% quartz-calcite veining. 0.5% fine grain disseminated subeuhedral pyrite. moderate reaction to HCl.
12805	11SRKGCD035	Quarry S	438935.74	7521237.15	0	1.06	1.06	1p	Mafic Volcanic Pillow	Unstrained Green Pillow Basalt. 2% quartz-calcite veins. 0.5% disseminated subeuhedral pyrite. weak reaction to HCl.
12806	11SRKGCD034	Quarry S	438881.87	7521200.12	0	1.4	1.4	1p	Mafic Volcanic Pillow	Unstrained pillow basalt. 2% quartz-calcite veins. 0.5% fine grain disseminated subeuhedral pyrite. no reaction to HCl.
12807	11SRKGCD033	Quarry S	438816.52	7521168.57	0	1.11	1.11	1p	Mafic Volcanic Pillow	Green unstrained pillow basalt. 1% Quartz-calcite veins. 0.5% fine grain disseminated pyrite. weak reaction to HCl.
12808	11SRKGCD036	Quarry S	438791.62	7521602.24	0	1.27	1.27	1p	Mafic Volcanic Pillow	Unstrained Green Pillow basalt. 1% quartz-calcite veining. 0.5% fine grain disseminated pyrite. moderate reaction to HCl.
12764	11SRKGCD029	Quarry T	439053.33	7516678.29	0	1.1	1.1	#N/A	#N/A	#N/A
12765	11SRKGCD030	Quarry T	439076.75	7516709.90	0	1.17	1.17	#N/A	#N/A	#N/A
12778	11SRKGCD028	Quarry T	439008.26	7516647.93	0	0.94	0.94	2p	Intermediate Volcanic Pillow	UNstrained intermediate volcanic pillow basalt. fine grain disseminated sulphides. slight reaction to HCl. 1% thin quartz-calcite veining.
12779	11SRKGCD027	Quarry T	438975.39	7516627.70	0	0.93	0.93	2p	Intermediate Volcanic Pillow	Unstrained intermediate pillow basalt. Weakly Chlorite altered. fine grain disseminated sulphides. 1% thin quartz-calcite veins. weak reaction to HCl.
12780	11SRKGCD026	Quarry T	438938.36	7516603.84	0.1	0.96	0.86	2p	Intermediate Volcanic Pillow	Unstrained intermediate pillow Basalt. weakly chlorite altered. 1% quartz-Calcite veins. weak reaction to HCl.
12774	11SRKGCD022	Quarry U	439928.84	7511662.41	0	1.02	1.02	3aq	Intermediate to Felsic Volcanic Flow Quartz phyric	Felsic with quartz eyes. Chlorite-Sericite-Dolomite alteration. Slight fizzing with HCl. Quartz eyes up to 2mm in size. fine pyrite in veinlets
12775	11SRKGCD021	Quarry U	439958.25	7511708.45	0	0.93	0.93	3aq	Intermediate to Felsic Volcanic Flow Quartz phyric	Chlorite altered felsic with quartz eyes. Quartz eyes up to 2mm in size. Sericite-Dolomite-Chlorite alteration. fine pyrite veinlets. slight fizzing with HCl.
12776	11SRKGCD024	Quarry U	439854.70	7511638.27	0	0.75	0.75	3aq	Intermediate to Felsic Volcanic Flow Quartz phyric	Felsic with Quartz eyes. Chlorite-Sericite-Dolomite alteration. Slight reaction to HCl. Quartz eyes to 2mm. no visible sulphides.
12777	11SRKGCD025	Quarry U	439805.19	7511611.53	0.25	0.78	0.53	3aq	Intermediate to Felsic Volcanic Flow Quartz phyric	Felsic with quartz eyes. quartz eyes up to 2mm in size. Chlorite-Sericite-Dolomtie alteration. slight fizzing with HCl. no pyrite observed.
12784	11SRKGCD023	Quarry U	439881.74	7511651.22	0.31	0.48	0.17	2p	Intermediate Volcanic Pillow	Very Fragile Core, ground the rest of the interval. Chlorite-Carbonate-Sericite alteration. 1% fine grained disseminated subeuhedral pyrite.
12766	11SRKGCD018	Quarry V	445115.21	7506719.63	0	1.1	1.1	1a	Mafic Volcanic Flow	Dark Green weakly strained flow basalt. 3% fine quartz veining. sulphides along fractures and associated with fine veining.. Weak reaction with HCl.
12767	11SRKGCD017	Quarry V	445074.38	7506784.80	0	1.14	1.14	1a	Mafic Volcanic Flow	Black weakly strained flow basalt. Chlorite alteration. Vigorous reaction with HCl. 5% quartz-Carbonate fracture fill veining. 1%coarse grain pyrite Along veining
12768	11SRKGCD016	Quarry V	445025.34	7506835.82	0.67	1.02	0.35	1a	Mafic Volcanic Flow	Amphibolite grade basalt flow. No visible sulphides. No veining. no reaction to HCl.
12769	11SRKGCD019	Quarry V	445182.95	7506680.30	0.5	0.93	0.43	1a	Mafic Volcanic Flow	Dark Green flow basalt. 3% quartz-calcite veining. vigorous reaction to HCl. 1% fine grain anhedral disseminated pyrite. Chlorite alteration.
12770	11SRKGCD020	Quarry V	445231.72	7506628.16	0.16	1.02	0.86	1a	Mafic Volcanic Flow	Moderately strained basalt flow. 2 quartz veins. no visible sulphides. vigorous reaction to HCl.
12771	11SRKGCD011	Quarry W	444110.44	7503400.19	0	1.13	1.13	7a	Early Mafic / UM Intrusions Gabbro	trace very fine grain disseminated pyrite. Aphibolite grade alteration.
12772	11SRKGCD056	Quarry W	444195.09	7503430.54	0	1.02	1.02	7a	Early Mafic / UM Intrusions Gabbro	Amphibolite facies. 1-2mm pyroxenes. trace fine grain pyrite. No reactivity to HCl. 3% quartz veining. 3mm Garnets in quartz vein at 0.10m.
12773	11SRKGCD012	Quarry W	444208.40	7503400.71	0.14	0.95	0.81	8b	Synvolcanic Granitoid Rocks Granodiorite	Granitoid. Fabric of Micas. no sulphides observed. No reactivity to HCl.
12781	11SRKGCD015	Quarry W	444355.27	7503394.99	0	1.27	1.27	10a	Late Mafic Intrusion Gabbro	Unstrained Coarse Grain Black Gabbro with white plagioclase. 0.5% fine grain subeuhedral pyrite. no reaction to HCl. fine thread Calcite veins.
12782	11SRKGCD014	Quarry W	444306.82	7503392.68	0	1.1	1.1	10a	Late Mafic Intrusion Gabbro	Black Unstrained medium grain Gabbro. No visible sulphides. Biotite book 1cm in size at 0.23. No veining. no reaction to HCl.
12783	11SRKGCD013	Quarry W	444280.77	7503399.17	0	1.2	1.2	10a	Late Mafic Intrusion Gabbro	Black Gabbro with biotite on fracture surface. No reaction to HCl. No veining. unknown alteration. Unstrained.
Detection Limits										
Maxxam SOP No:										
Average Crustal Abundances of Basaltic Rocks										
Average Crustal Abundances x10										

Notes:

Total sulphur and carbonate carbon (CO2; HCl direct method) done by Leco at Acme Labs.

CO2 Analysis: A 0.2g of pulp sample is digested with 6 ml of 1.8N HCl in a hot water bath of 70 ˚C for 30 minutes. The CO2 that evolves is trapped in a gas chamber that is controlled with a stopcock, once the stopcock is opened the CO2 gas is swept into the Leco analyser with an oxygen carrier gas. Leco then determines the CO2 as total-carbon which is calculated to total CO2.

Calculations:

*CaCO3 equivalents is based on carbonate carbon.

**Sulphide sulphur is based on difference between total sulphur and sulphate sulphur.

***MPA (Maximum Potential Acidity) is based on sulphide sulphur .

****NNP (Net Neutralization Potential) is based on difference between neutralization potential (NP) and MPA.

*****NPR (Neutralization Potential Ratio) is NP divided by MPA.

References:

Reference for Mod ABA NP method (SOP No. 7150): MEND Acid Rock Drainage Prediction Manual, MEND Project 1.16.1b (pages 6.2-11 to 17), March 1991.

Acid Base Accounting

Sample ID	Drill Hole ID	Quarry	Paste pH	Acme CO2 (Wt.%)	Calc. CO2 %C	CaCO3 Equiv.* (kg CaCO3/Tonne)	Acme Total Sulphur (Wt.%)	Sulphate Sulphur (Wt.%)	Sulphide Sulphur** (Wt.%)	Acid Potential AP (kg CaCO3/Tonne)	Mod. ABA NP Neutralization Potential (kg CaCO3/Tonne)	Net Neutralization Potential**** (kg CaCO3/Tonne)	NP/AP	TIC/AP	Fizz Rating
12830	11SRKGCD067	Quarry J	8.7	3.09	0.84	70.2	0.09	0.01	0.08	2.5	70.0	67.5	28.0	28.1	Moderate
12831	11SRKGCD068	Quarry J	8.6	7.74	2.11	175.9	0.10	0.01	0.09	2.8	166.8	164.0	59.3	62.5	Strong
12832	11SRKGCD069	Quarry J	8.6	4.25	1.16	96.6	0.10	0.02	0.08	2.5	104.7	102.2	41.9	38.6	Strong
12833	11SRKGCD070	Quarry J	8.8	0.96	0.26	21.8	0.04	0.01	0.04	1.3	36.4	35.2	29.2	17.5	Strong
12834	11SRKGCD071	Quarry J	9.2	0.15	0.04	3.4	0.02	0.01	0.02	0.6	15.4	15.4	25.6	5.7	None
12835	11SRKGCD072	Quarry J	8.6	5.68	1.55	129.1	0.09	0.01	0.08	2.5	133.5	131.0	53.4	51.6	Strong
12836	11SRKGCD073	Quarry J	8.7	6.20	1.69	140.9	0.09	0.01	0.08	2.5	145.4	142.9	58.2	56.4	Strong
12837	11SRKGCD074	Quarry J	8.7	4.62	1.26	105.0	0.10	0.01	0.09	2.8	125.2	122.4	44.5	37.3	Strong
12838	11SRKGCD075	Quarry J	8.6	4.77	1.30	108.4	0.08	0.02	0.06	1.9	142.5	140.7	76.0	57.8	Strong
12839	11SRKGCD076	Quarry J	8.9	0.58	0.16	13.2	0.05	0.01	0.05	1.6	31.0	29.4	19.8	8.4	Strong
12820	11SRKGCD001	Quarry L	8.9	4.80	1.31	109.1	0.06	0.01	0.05	1.6	111.2	109.6	71.2	69.8	Strong
12821	11SRKGCD002	Quarry L	8.7	0.33	0.09	7.5	0.04	0.01	0.04	1.3	16.9	15.7	13.5	6.0	None
12822	11SRKGCD003	Quarry L	8.8	6.42	1.75	145.9	0.07	0.01	0.07	2.2	144.4	142.2	66.0	66.7	Strong
12823	11SRKGCD004	Quarry L	8.6	3.33	0.91	75.7	0.02	0.03	0.02	0.6	79.5	79.5	132.6	126.1	Strong
12824	11SRKGCD005	Quarry L	8.8	6.34	1.73	144.1	0.12	0.01	0.11	3.4	142.4	139.0	41.4	41.9	Strong
12825	11SRKGCD006	Quarry M	8.8	3.22	0.88	73.2	0.08	0.01	0.08	2.5	75.7	73.2	30.3	29.3	Strong
12826	11SRKGCD007	Quarry M	8.7	3.22	0.88	73.2	0.06	0.01	0.06	1.9	82.4	80.5	43.9	39.0	Strong
12827	11SRKGCD008	Quarry M	8.5	11.07	3.02	251.6	0.17	0.01	0.16	5.0	249.4	244.4	49.9	50.3	Strong
12828	11SRKGCD009	Quarry M	8.9	1.35	0.37	30.7	0.04	0.01	0.04	1.3	39.4	38.2	31.5	24.5	Strong
12829	11SRKGCD010	Quarry M	8.9	1.24	0.34	28.2	0.07	0.01	0.07	2.2	36.4	34.3	16.7	12.9	Strong
12786	11SRKGCD059	Quarry N	8.9	3.73	1.02	84.8	0.09	0.02	0.07	2.2	89.6	87.4	40.9	38.8	Strong
12787	11SRKGCD058	Quarry N	9.0	2.64	0.72	60.0	0.11	0.01	0.11	3.4	72.0	68.6	20.9	17.5	Strong
12795	11SRKGCD057	Quarry N	8.9	2.31	0.63	52.5	0.16	0.01	0.15	4.7	58.6	53.9	12.5	11.2	Strong
12796	11SRKGCD060	Quarry N	8.7	10.61	2.89	241.1	0.06	0.01	0.06	1.9	242.3	240.5	129.2	128.6	Strong
12797	11SRKGCD061	Quarry N	9.0	2.92	0.80	66.4	0.13	0.01	0.12	3.8	71.0	67.3	18.9	17.7	Strong
12798	11SRKGCD063	Quarry O	9.9	1.03	0.28	23.4	0.02	0.01	0.02	0.6	20.3	20.3	33.8	39.0	Slight
12799	11SRKGCD062	Quarry O	9.8	1.76	0.48	40.0	0.02	0.01	0.02	0.6	28.6	28.6	47.7	66.7	Slight
12800	11SRKGCD064	Quarry O	10.0	1.97	0.54	44.8	0.02	0.01	0.02	0.6	35.8	35.8	59.7	74.6	Slight
12801	11SRKGCD065	Quarry O	9.9	2.11	0.58	48.0	0.02	0.01	0.02	0.6	38.1	38.1	63.4	79.9	Slight
12802	11SRKGCD066	Quarry O	10.0	2.76	0.75	62.7	0.02	0.01	0.02	0.6	52.5	52.5	87.5	104.5	Slight
12785	11SRKGCD050	Quarry P	9.5	0.87	0.24	19.8	0.03	0.01	0.03	0.9	26.4	25.4	28.1	21.1	Moderate
12790	11SRKGCD052	Quarry P	9.8	5.07	1.38	115.2	0.02	0.01	0.02	0.6	109.3	109.3	182.2	192.0	Strong
12791	11SRKGCD051	Quarry P	9.5	3.25	0.89	73.9	0.02	0.01	0.02	0.6	71.5	70.9	114.4	118.2	Strong
12792	11SRKGCD053	Quarry P	9.9	4.33	1.18	98.4	0.02	0.01	0.02	0.6	98.3	98.3	163.8	164.0	Strong
12793	11SRKGCD054	Quarry P	9.3	3.56	0.97	80.9	0.02	0.01	0.02	0.6	73.8	73.8	122.9	134.8	Slight
12794	11SRKGCD055	Quarry P	8.8	7.06	1.93	160.5	0.05	0.01	0.05	1.6	161.6	160.0	103.4	102.7	Strong
12788	11SRKGCD048	Quarry Q	8.8	4.79	1.31	108.9	0.10	0.01	0.09	2.8	107.7	104.9	38.3	38.7	Strong
12789	11SRKGCD049	Quarry Q	8.5	7.81	2.13	177.5	0.08	0.02	0.06	1.9	160.3	158.4	85.5	94.7	Strong
12815	11SRKGCD044	Quarry Q	8.8	3.63	0.99	82.5	0.09	0.01	0.08	2.5	87.6	85.1	35.0	33.0	Strong
12816	11SRKGCD045	Quarry Q	8.7	1.61	0.44	36.6	0.12	0.01	0.12	3.8	40.4	36.7	10.8	9.8	Strong
12817	11SRKGCD046	Quarry Q	8.9	2.37	0.65	53.9	0.22	0.01	0.21	6.6	62.3	55.8	9.5	8.2	Strong
12818	11SRKGCD043	Quarry Q	8.6	6.56	1.79	149.1	0.06	0.01	0.05	1.6	137.9	136.4	88.3	95.4	Strong
12819	11SRKGCD047	Quarry Q	8.6	6.71	1.83	152.5	0.08	0.01	0.07	2.2	147.4	145.2	67.4	69.7	Strong
12809	11SRKGCD039	Quarry R	8.5	5.79	1.58	131.6	0.10	0.03	0.07	2.2	134.2	132.0	61.4	60.2	Strong
12810	11SRKGCD042	Quarry R	9.1	7.88	2.15	179.1	0.08	0.04	0.04	1.3	170.0	168.8	136.0	143.3	Strong
12811	11SRKGCD040	Quarry R	8.8	4.51	1.23	102.5	1.00	0.01	0.99	30.9	97.8	66.8	3.2	3.3	Strong
12812	11SRKGCD041	Quarry R	8.3	2.42	0.66	55.0	0.50	0.03	0.47	14.7	58.1	43.4	4.0	3.7	Strong
12813	11SRKGCD037	Quarry R	8.6	7.70	2.10	175.0	0.07	0.02	0.05	1.6	164.8	163.3	105.5	112.0	Strong
12814	11SRKGCD038	Quarry R	8.7	0.62	0.17	14.1	0.06	0.01	0.05	1.6	20.4	18.8	13.1	9.0	Moderate
12803	11SRKGCD032	Quarry S	8.9	3.91	1.07	88.9	0.11	0.01	0.11	3.4	97.9	94.4	28.5	25.9	Slight
12804	11SRKGCD031	Quarry S	8.8	5.74	1.57	130.5	0.11	0.01	0.10	3.1	136.4	133.3	43.7	41.7	Strong
12805	11SRKGCD035	Quarry S	8.9	4.26	1.16	96.8	0.12	0.01	0.11	3.4	102.8	99.4	29.9	28.2	Strong
12806	11SRKGCD034	Quarry S	8.9	1.74	0.47	39.5	0.11	0.01	0.11	3.4	51.6	48.2	15.0	11.5	Strong
12807	11SRKGCD033	Quarry S	8.9	3.16	0.86	71.8	0.13	0.01	0.12	3.8	81.3	77.5	21.7	19.2	Strong
12808	11SRKGCD036	Quarry S	8.9	5.42	1.48	123.2	0.08	0.01	0.08	2.5	131.5	129.0	52.6	49.3	Strong
12764	11SRKGCD029	Quarry T	8.7	1.74	0.47	39.5	0.06	0.01	0.05	1.6	45.4	43.8	29.1	25.3	Strong
12765	11SRKGCD030	Quarry T	8.8	5.95	1.62	135.2	0.27	0.04	0.23	7.2	126.2	119.1	17.6	18.8	Strong
12778	11SRKGCD028	Quarry T	10.0	5.87	1.60	133.4	0.11	0.02	0.09	2.8	134.0	131.1	47.6	47.4	Slight
12779	11SRKGCD027	Quarry T	9.1	4.60	1.25	104.5	0.18	0.01	0.18	5.6	99.6	93.9	17.7	18.6	Strong
12780	11SRKGCD026	Quarry T	9.2	7.57	2.06	172.0	0.09	0.01	0.08	2.5	163.3	160.8	65.3	68.8	Strong
12774	11SRKGCD022	Quarry U	9.9	2.43	0.66	55.2	0.02	0.01	0.02	0.6	50.9	50.9	84.8	92.0	Strong
12775	11SRKGCD021	Quarry U	10.0	2.72	0.74	61.8	0.02	0.01	0.02	0.6	50.9	50.9	84.8	103.0	Strong
12776	11SRKGCD024	Quarry U	9.9	2.25	0.61	51.1	0.02	0.01	0.02	0.6	49.1	49.1	81.9	85.2	Strong
12777	11SRKGCD025	Quarry U	9.9	1.84	0.50	41.8	0.02	0.01	0.02	0.6	23.8	23.8	39.6	69.7	Slight
12784	11SRKGCD023	Quarry U	9.8	3.96	1.08	90.0	0.02	0.01	0.02	0.6	76.5	75.9	122.4	144.0	Moderate
12766	11SRKGCD018	Quarry V	8.9	2.06	0.56	46.8	0.10	0.01	0.10	3.1	48.6	45.5	15.6	15.0	Strong
12767	11SRKGCD017	Quarry V	8.6	6.78	1.85	154.1	0.39	0.19	0.20	6.3	143.4	137.2	22.9	24.7	Strong
12768	11SRKGCD016	Quarry V	9.2	0.34	0.09	7.7	0.11	0.01	0.11	3.4	13.8	10.4	4.0	2.2	Slight
12769	11SRKGCD019	Quarry V	8.9	5.49	1.50	124.8	0.13	0.01	0.12	3.8	120.8	117.0	32.2	33.3	Strong
12770	11SRKGCD020	Quarry V	8.8	3.09	0.84	70.2	0.14	0.01	0.13	4.1	70.8	66.7	17.4	17.3	Strong
12771	11SRKGCD011	Quarry W	9.7	0.11	0.03	2.5	0.06	0.01	0.06	1.9	7.7	5.8	4.1	1.3	None
12772	11SRKGCD056	Quarry W	9.4	0.74	0.20	16.8	0.16	0.01	0.16	5.0	23.9	18.9	4.8	3.4	Moderate
12773	11SRKGCD012	Quarry W	9.9	0.19	0.05	4.3	0.04	0.01	0.03	0.9	9.7	8.8	10.3	4.6	None
12781	11SRKGCD015	Quarry W	9.5	0.22	0.06	5.0	0.09	0.01	0.09	2.8	10.4	7.6	3.7	1.8	None
12782	11SRKGCD014	Quarry W	9.6	1.01	0.28	23.0	0.05	0.01	0.05	1.6	33.6	32.0	21.5	14.7	Moderate
12783	11SRKGCD013	Quarry W	9.3	0.30	0.08	6.8	0.15	0.01	0.15	4.7	16.8	12.1	3.6	1.5	Slight
Detection Limits			*0.01*	*0.02*		*0.5*	*0.02*	*0.01*	*0.02*	*0.6*					
Maxxam SOP No:			*7160*	*LECO*		*Calculation*	*LECO*	*7410*	*Calculation*	*Calculation*	*7150*	*Calculation*	*Calculation*		*7150*
Average Crustal Abundances of Basaltic Rock															
Average Crustal Abundances x10															

				Elemental Analysis																	
				Method	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B
			Acme	Analyte	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ni	Sc	LOI	Sum	Ba
			Total C	Unit	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	%	%	ppm
Sample ID	Drill Hole ID	Quarry	%C	MDL	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	20	1	-5.1	0.01	1
				MUL	0	0	0	0	0	0	0	0	0	0	0	10000	10000	50000	0	50000
12830	11SRKGCD067	Quarry J	0.88	Drill Core	46.56	14.93	12.39	7.92	6.46	2.6	0.69	0.99	0.07	0.17	0.033	131	39	7	99.8	22
12831	11SRKGCD068	Quarry J	2.22	Drill Core	42.17	12.99	11.22	4.43	16.45	1.35	0.14	0.81	0.07	0.22	0.032	115	35	10	99.86	35
12832	11SRKGCD069	Quarry J	1.24	Drill Core	44.9	14	12.91	7.62	9.52	0.8	0.04	0.88	0.06	0.19	0.036	122	38	8.8	99.8	4
12833	11SRKGCD070	Quarry J	0.34	Drill Core	45.8	14.43	12.99	9.16	8.91	2.14	0.3	0.8	0.06	0.18	0.039	148	35	4.9	99.77	48
12834	11SRKGCD071	Quarry J	0.05	Drill Core	48.27	14.71	14.42	5.07	10.05	2.33	0.74	2.21	0.19	0.18	0.01	71	28	1.6	99.74	97
12835	11SRKGCD072	Quarry J	1.7	Drill Core	45.71	14.01	10.82	3.83	14.13	1.22	0.07	0.9	0.06	0.21	0.038	105	39	8.9	99.86	14
12836	11SRKGCD073	Quarry J	1.83	Drill Core	44	13.67	11.52	5.1	12.82	2.08	0.14	0.86	0.06	0.22	0.032	99	37	9.3	99.85	44
12837	11SRKGCD074	Quarry J	1.54	Drill Core	44.85	14.1	11.4	5.25	13.06	1.34	0.11	0.86	0.06	0.2	0.037	107	38	8.6	99.84	34
12838	11SRKGCD075	Quarry J	1.75	Drill Core	45	13.9	11.33	4.66	13.18	1.26	0.04	0.87	0.06	0.2	0.033	95	38	9.3	99.85	11
12839	11SRKGCD076	Quarry J	0.23	Drill Core	46.91	14.55	12.63	8.59	8.48	2.83	0.7	0.89	0.07	0.18	0.036	114	37	3.9	99.76	147
12820	11SRKGCD001	Quarry L	1.34	Drill Core	48.91	13.53	10.88	5.62	9.9	2.25	0.06	0.87	0.06	0.22	0.024	69	37	7.5	99.83	30
12821	11SRKGCD002	Quarry L	0.09	Drill Core	43.34	9.34	13.66	19.07	7.02	0.08	0.02	0.52	0.04	0.21	0.283	668	30	6	99.66	5
12822	11SRKGCD003	Quarry L	1.88	Drill Core	44.3	11.27	10.97	7.45	14.12	2.18	0.14	0.64	0.05	0.24	0.135	279	35	8.3	99.82	70
12823	11SRKGCD004	Quarry L	0.94	Drill Core	48.3	13.06	12.68	6.67	10.76	0.09	0.24	0.74	0.06	0.27	0.129	256	40	6.8	99.81	53
12824	11SRKGCD005	Quarry L	1.82	Drill Core	47.6	12.91	10.5	4.86	11.87	2.4	0.1	0.74	0.06	0.22	0.064	126	40	8.5	99.86	47
12825	11SRKGCD006	Quarry M	0.93	Drill Core	47.93	13.13	11.79	7.11	10.1	2.02	0.19	0.82	0.06	0.19	0.046	80	39	6.4	99.81	56
12826	11SRKGCD007	Quarry M	0.98	Drill Core	47.44	12.75	12.94	7.46	9.67	1.16	0.13	0.81	0.06	0.21	0.052	97	39	7.1	99.8	69
12827	11SRKGCD008	Quarry M	3.25	Drill Core	39.35	9.57	13.21	6.62	14.63	0.02	0.41	0.54	0.04	0.24	0.113	224	30	15.1	99.84	102
12828	11SRKGCD009	Quarry M	0.39	Drill Core	46.45	11.38	12.06	11.67	10.85	1.34	0.12	0.64	0.06	0.2	0.135	300	36	4.8	99.75	21
12829	11SRKGCD010	Quarry M	0.35	Drill Core	47.73	11.56	11.49	11.15	10.19	1.95	0.1	0.65	0.05	0.2	0.127	283	36	4.5	99.75	30
12786	11SRKGCD059	Quarry N	1	Drill Core	46.23	15.34	11.54	4.69	11.73	2.21	0.16	0.87	0.11	0.22	0.034	130	35	6.7	99.81	39
12787	11SRKGCD058	Quarry N	0.79	Drill Core	46.54	15.54	11.48	4.93	11.06	2.64	0.19	0.9	0.17	0.21	0.034	119	38	6.1	99.8	51
12795	11SRKGCD057	Quarry N	0.6	Drill Core	45.05	16.06	12.61	5.53	10.76	2.88	0.25	0.92	0.3	0.22	0.039	126	41	5.1	99.74	194
12796	11SRKGCD060	Quarry N	2.9	Drill Core	36.2	12.58	10.51	4.21	19.66	1.99	0.19	0.75	0.19	0.26	0.028	98	31	13.3	99.85	43
12797	11SRKGCD061	Quarry N	0.77	Drill Core	45.48	15.16	12.21	5.3	12.51	2.18	0.2	0.88	0.2	0.21	0.034	111	38	5.5	99.82	56
12798	11SRKGCD063	Quarry O	0.28	Drill Core	75.87	12.9	0.86	0.6	0.74	2.64	4.11	0.09	0.04	0.03	0.003	<20	1	2.1	99.97	552
12799	11SRKGCD062	Quarry O	0.47	Drill Core	71.19	14.89	1.45	0.87	1.24	2.35	4.04	0.13	0.05	0.04	<0.002	<20	3	3.7	99.91	772
12800	11SRKGCD064	Quarry O	0.51	Drill Core	72.68	13.76	1.63	0.89	1.37	3.2	2.96	0.17	0.05	0.05	0.003	<20	3	3.2	99.97	471
12801	11SRKGCD065	Quarry O	0.57	Drill Core	68.97	14.76	2.9	0.69	1.78	3.28	3.3	0.41	0.13	0.06	0.003	<20	7	3.7	99.95	457
12802	11SRKGCD066	Quarry O	0.75	Drill Core	70.32	13.61	1.64	1.25	1.97	3.99	2.9	0.14	0.05	0.09	<0.002	<20	2	4	99.96	424
12785	11SRKGCD050	Quarry P	0.24	Drill Core	60.72	15.19	6.45	3.73	5.45	3.56	0.95	0.62	0.09	0.09	0.018	80	13	3	99.83	137
12790	11SRKGCD052	Quarry P	1.38	Drill Core	56.5	15.48	6.19	2.51	5.46	3.8	1.37	0.69	0.18	0.09	0.002	36	14	7.6	99.85	247
12791	11SRKGCD051	Quarry P	0.86	Drill Core	61.72	14.23	5.68	2.45	4.49	3.65	1.39	0.46	0.07	0.11	0.016	68	15	5.6	99.88	296
12792	11SRKGCD053	Quarry P	1.14	Drill Core	60.37	14.82	3.67	2.56	6.18	4.73	0.48	0.49	0.14	0.07	0.013	72	13	6.4	99.86	115
12793	11SRKGCD054	Quarry P	0.92	Drill Core	53.9	16.41	9.15	4.61	2.54	4.06	1.56	0.77	0.17	0.08	0.004	49	17	6.5	99.81	409
12794	11SRKGCD055	Quarry P	1.93	Drill Core	43.29	14.31	11.39	5.46	11.07	1.97	0.55	0.8	0.12	0.22	0.031	115	34	10.6	99.81	134
12788	11SRKGCD048	Quarry Q	1.25	Drill Core	46.07	14.58	12.04	5.11	10.79	2.09	0.07	0.91	0.06	0.19	0.034	103	40	7.9	99.82	24
12789	11SRKGCD049	Quarry Q	1.99	Drill Core	42.28	13.29	15.13	5.47	9.48	1.47	0.24	0.85	0.06	0.34	0.031	96	36	11.2	99.81	86
12815	11SRKGCD044	Quarry Q	1.03	Drill Core	45.79	14.22	12.26	7.67	9.9	1.72	0.33	0.8	0.06	0.17	0.03	124	38	6.8	99.79	131
12816	11SRKGCD045	Quarry Q	0.42	Drill Core	47.89	13.96	13.23	7.38	10.13	1.75	0.27	0.92	0.07	0.2	0.033	92	41	3.9	99.8	29
12817	11SRKGCD046	Quarry Q	0.72	Drill Core	47.07	13.8	12.83	7.13	9.99	1.83	0.14	0.92	0.07	0.21	0.032	97	41	5.8	99.81	41
12818	11SRKGCD043	Quarry Q	1.74	Drill Core	43.76	13.64	12.11	6.8	11.32	1.39	0.02	0.84	0.07	0.25	0.033	97	38	9.6	99.81	20
12819	11SRKGCD047	Quarry Q	1.88	Drill Core	43.53	13.19	11.74	6.66	12.14	1.58	0.05	0.85	0.06	0.24	0.031	96	37	9.7	99.81	21
12809	11SRKGCD039	Quarry R	1.51	Drill Core	45.97	13.84	11.91	5.58	11.59	0.84	0.18	0.83	0.06	0.22	0.03	106	40	8.8	99.83	57
12810	11SRKGCD042	Quarry R	2.21	Drill Core	46.42	13.9	11.12	5.37	9.7	0.78	0.4	0.83	0.07	0.16	0.028	97	38	11.1	99.83	87
12811	11SRKGCD040	Quarry R	1.21	Drill Core	49.79	14.55	10.14	5.23	9.88	2.29	0.17	0.82	0.09	0.19	0.024	81	36	6.7	99.84	48
12812	11SRKGCD041	Quarry R	0.63	Drill Core	48.23	14.16	14.7	7.93	7.09	0.1	0.05	0.82	0.07	0.26	0.029	113	39	6.4	99.8	3
12813	11SRKGCD037	Quarry R	2.08	Drill Core	45.25	13.33	11.36	5.76	10.9	1.54	0.39	0.8	0.07	0.21	0.026	102	38	10.2	99.83	115
12814	11SRKGCD038	Quarry R	0.19	Drill Core	49.03	14.2	12.69	7.7	9.79	1.64	0.04	0.86	0.07	0.2	0.029	86	40	3.5	99.81	18
12803	11SRKGCD032	Quarry S	1.08	Drill Core	44.12	14.03	12.08	5.36	13.88	2.11	0.14	1.02	0.32	0.2	0.041	141	34	6.5	99.8	66
12804	11SRKGCD031	Quarry S	1.57	Drill Core	43.38	14.17	11.83	5.22	11.96	2.84	0.09	0.97	0.31	0.2	0.045	150	37	8.7	99.8	52
12805	11SRKGCD035	Quarry S	1.15	Drill Core	45.02	14.53	11.98	4.44	13.22	2.01	0.18	1.16	0.28	0.2	0.043	152	33	6.7	99.8	57
12806	11SRKGCD034	Quarry S	0.49	Drill Core	44.85	14.19	13.47	6.78	11.83	1.63	0.42	1.13	0.3	0.22	0.039	128	33	4.9	99.75	208
12807	11SRKGCD033	Quarry S	0.88	Drill Core	44.33	14.19	13.2	6.25	11.65	2.35	0.07	1.18	0.31	0.2	0.034	116	34	6	99.81	44
12808	11SRKGCD036	Quarry S	1.46	Drill Core	42.69	13.74	12.42	5.23	13.32	1.87	0.27	1.17	0.31	0.21	0.034	116	33	8.5	99.8	215
12764	11SRKGCD029	Quarry T	0.44	Drill Core	45.23	14.69	11.64	7.11	12.33	0.77	0.03	0.72	0.04	0.19	0.046	149	38	7	99.8	8
12765	11SRKGCD030	Quarry T	1.5	Drill Core	45.8	15.51	10.89	4.13	12.56	1.33	0.12	0.77	0.03	0.19	0.049	158	40	8.4	99.85	31
12778	11SRKGCD028	Quarry T	1.6	Drill Core	45.33	15.78	10.57	4.09	11.9	2.16	0.08	0.76	0.04	0.2	0.049	153	39	8.9	99.85	17
12779	11SRKGCD027	Quarry T	1.2	Drill Core	46.94	15.71	10.03	4.48	11.47	3.39	0.03	0.77	0.05	0.18	0.049	161	40	6.7	99.84	26
12780	11SRKGCD026	Quarry T	1.93	Drill Core	44.86	15.3	9.91	4.36	10.53	3.33	0.27	0.75	0.04	0.18	0.048	170	38	10.2	99.84	45
12774	11SRKGCD022	Quarry U	0.63	Drill Core	65.59	16.08	2.97	0.89	2.72	4.92	1.79	0.44	0.14	0.03	0.005	24	6	4.3	99.89	386
12775	11SRKGCD021	Quarry U	0.68	Drill Core	69.34	14.46	2.42	0.75	2.58	3.91	1.66	0.3	0.07	0.03	<0.002	<20	4	4.4	99.9	358
12776	11SRKGCD024	Quarry U	0.59	Drill Core	71.49	13.19	2.36	0.8	2.65	4.29	1.23	0.24	0.04	0.03	<0.002	<20	3	3.6	99.91	294
12777	11SRKGCD025	Quarry U	0.46	Drill Core	74.07	13.88	1.38	0.46	1.17	3.92	2.3	0.14	0.04	0.02	<0.002	<20	2	2.5	99.91	505
12784	11SRKGCD023	Quarry U	1.07	Drill Core	59.88	16.39	5.83	1.94	3.07	4.03	1.68	0.62	0.24	0.08	<0.002	<20	8	6.1	99.85	385
12766	11SRKGCD018	Quarry V	0.51	Drill Core	49.06	14.23	13.29	5.3	10.16	2.38	0.54	1.16	0.09	0.26	0.016	64	45	3.3	99.79	119
12767	11SRKGCD017	Quarry V	1.71	Drill Core	42.58	13.47	15.66	5.2	8.82	2.61	0.29	1.46	0.12	0.26	0.007	35	48	9.3	99.77	62
12768	11SRKGCD016	Quarry V	0.09	Drill Core	50.3	13.16	15.61	6.16	9.44	2.11	0.2	1.28	0.12	0.21	0.01	70	44	1.2	99.77	33
12769	11SRKGCD019	Quarry V	1.36	Drill Core	45.2	12.51	14.02	5.46	11.17	2.53	0.32	1.23	0.1	0.25	0.007	46	42	7	99.78	68
12770	11SRKGCD020	Quarry V	0.82	Drill Core	50.42	13.18	13.24	4.47	10.14	1.99	0.25	1.08	0.07	0.23	0.015	58	42	4.7	99.81	77
12771	11SRKGCD011	Quarry W	0.03	Drill Core	68.11	15.64	3.61	1.34	3.76	4.34	1.33	0.38	0.11	0.05	0.004	<20	6	1.2	99.85	471
12772	11SRKGCD056	Quarry W	0.19	Drill Core	47.17	14.37	15.68	7.31	8.97	1.98	0.83	0.95	0.05	0.21	0.011	86	42	2.2	99.74	80
12773	11SRKGCD012	Quarry W	0.06	Drill Core	66.37	17	3.59	1.21	4.05	4.88	1.23	0.42	0.11	0.03	<0.002	<20	5	1	99.85	408
12781	11SRKGCD015	Quarry W	0.07	Drill Core	52.39	15.33	11.59	6.02	7.86	3.07	0.8	1.02	0.02	0.16	0.024	133	17	1.5	99.81	93
12782	11SRKGCD014	Quarry W	0.29	Drill Core	51.24	14.76	11.3	5.72	8.35	3.23	1.09	1.3	0.07	0.15	0.012	107	19	2.5	99.78	135
12783	11SRKGCD013	Quarry W	0.1	Drill Core	53.26	14.85	11.8	5.43	7.84	2.93	0.71	1.06	0.04	0.16	0.017	100	17	1.7	99.82	80
Detection Limits																				
Maxxam SOP No:																				
Average Crustal Abundances of Basaltic Rock																130	30			330
Average Crustal Abundances x10																1300	300			3300

Sample ID	Drill Hole ID	Quarry	4A-4B Be ppm 1 10000	4A-4B Co ppm 0.2 10000	4A-4B Cs ppm 0.1 10000	4A-4B Ga ppm 0.5 10000	4A-4B Hf ppm 0.1 10000	4A-4B Nb ppm 0.1 50000	4A-4B Rb ppm 0.1 10000	4A-4B Sn ppm 1 10000	4A-4B Sr ppm 0.5 50000	4A-4B Ta ppm 0.1 50000	4A-4B Th ppm 0.2 10000	4A-4B U ppm 0.1 10000	4A-4B V ppm 8 10000	4A-4B W ppm 0.5 10000	4A-4B Zr ppm 0.1 50000
12830	11SRKGCD067	Quarry J	<1	49	0.1	16	1.6	2.4	3.7	<1	71.1	0.2	0.3	<0.1	289	<0.5	52
12831	11SRKGCD068	Quarry J	<1	45.2	<0.1	13.6	1.4	2	2.6	<1	121.3	0.1	0.2	<0.1	248	<0.5	43.6
12832	11SRKGCD069	Quarry J	<1	48.8	<0.1	15.1	1.5	2.2	0.5	<1	103.5	0.1	0.2	<0.1	272	<0.5	47.6
12833	11SRKGCD070	Quarry J	<1	54.1	0.3	14.2	1.3	1.9	7.6	<1	100.1	0.1	<0.2	<0.1	248	<0.5	42.4
12834	11SRKGCD071	Quarry J	<1	45.4	0.2	21.7	3.6	9.1	9.9	1	441	0.6	0.9	0.3	449	<0.5	133.6
12835	11SRKGCD072	Quarry J	<1	44.1	<0.1	15.5	1.4	1.9	1.3	<1	126.2	0.1	0.2	<0.1	282	<0.5	47.2
12836	11SRKGCD073	Quarry J	<1	44.9	0.4	14.8	1.4	1.9	4.2	<1	130.8	0.2	<0.2	<0.1	270	<0.5	46.1
12837	11SRKGCD074	Quarry J	<1	45	0.1	14.7	1.3	2	2.3	<1	95.9	0.1	0.2	<0.1	269	<0.5	47.2
12838	11SRKGCD075	Quarry J	<1	46.2	<0.1	14.7	1.7	2.2	0.4	<1	133.2	0.1	0.2	<0.1	274	<0.5	46.1
12839	11SRKGCD076	Quarry J	<1	48.3	0.4	15.9	1.4	2.1	11.4	<1	143.2	0.1	0.2	0.1	285	<0.5	49.5
12820	11SRKGCD001	Quarry L	<1	43.4	<0.1	14.7	1.7	2.6	0.6	<1	122.9	0.1	0.2	<0.1	268	<0.5	54
12821	11SRKGCD002	Quarry L	<1	86.7	0.1	9.7	0.8	1.3	0.4	<1	4.3	<0.1	<0.2	<0.1	184	<0.5	30.7
12822	11SRKGCD003	Quarry L	<1	56.9	<0.1	11.3	1	1.7	2.5	<1	74.7	<0.1	<0.2	<0.1	220	<0.5	37.3
12823	11SRKGCD004	Quarry L	<1	61.4	0.1	14	1.5	1.8	7.3	<1	243.5	0.1	0.2	<0.1	258	<0.5	45.7
12824	11SRKGCD005	Quarry L	<1	49.2	<0.1	14	1.2	2	1.5	<1	82.7	<0.1	0.3	<0.1	251	<0.5	47.4
12825	11SRKGCD006	Quarry M	<1	44.7	<0.1	14.4	1.7	2.4	3.3	<1	125.9	0.2	0.2	<0.1	264	<0.5	51
12826	11SRKGCD007	Quarry M	<1	45.8	<0.1	15	1.3	2.4	2.3	<1	117.3	0.2	0.3	<0.1	248	<0.5	49.4
12827	11SRKGCD008	Quarry M	<1	58	0.2	10.4	1.1	1.4	12.5	<1	37.2	0.1	<0.2	<0.1	194	<0.5	33.7
12828	11SRKGCD009	Quarry M	<1	59.8	<0.1	12.9	1	1.7	1.9	<1	71.5	<0.1	0.2	<0.1	229	<0.5	39.8
12829	11SRKGCD010	Quarry M	<1	60.9	0.1	11.8	1.4	1.7	1.8	<1	80.3	<0.1	<0.2	<0.1	238	<0.5	40.1
12786	11SRKGCD059	Quarry N	<1	53	<0.1	16	1.3	2.8	3.8	<1	247.2	0.1	0.7	0.1	262	<0.5	50.6
12787	11SRKGCD058	Quarry N	<1	49.9	<0.1	15.3	1.2	2.7	2.4	<1	198.8	<0.1	0.6	0.2	247	<0.5	50.3
12795	11SRKGCD057	Quarry N	<1	53.6	<0.1	15	1.5	5.1	2.2	<1	445.5	0.2	1.1	0.2	267	1.4	66.6
12796	11SRKGCD060	Quarry N	1	43	0.1	14	1.3	3	2.7	<1	227.3	0.2	0.9	0.2	208	<0.5	49.2
12797	11SRKGCD061	Quarry N	2	51	0.2	16.4	1.6	3.8	4	<1	292.8	0.2	0.6	0.2	257	<0.5	57.1
12798	11SRKGCD063	Quarry O	2	1	0.9	14.6	2.6	8.4	59.1	<1	66.7	0.7	6.5	1.1	<8	<0.5	64.2
12799	11SRKGCD062	Quarry O	1	2.9	1.6	20.4	2.7	11.2	91.5	1	108.6	1.1	3.9	2.4	16	<0.5	61.6
12800	11SRKGCD064	Quarry O	2	2.7	2.7	18.2	2.2	9.4	80.2	<1	77.5	1	4.1	1.5	16	<0.5	66.6
12801	11SRKGCD065	Quarry O	2	5.6	3.1	18.2	3.3	7.6	96	<1	115.5	0.8	4.3	1.6	49	<0.5	99.2
12802	11SRKGCD066	Quarry O	3	2.8	3.3	16.8	2.4	8.4	82.7	1	149.4	0.9	4.9	2	15	<0.5	69.8
12785	11SRKGCD050	Quarry P	<1	22.2	1.3	17.6	2.6	3.9	23	<1	446	0.3	2.1	0.7	116	<0.5	103.4
12790	11SRKGCD052	Quarry P	1	18.1	1.3	17.6	3.2	6	42.2	<1	214.8	0.4	2.2	0.6	129	<0.5	119
12791	11SRKGCD051	Quarry P	<1	16.9	1.3	15.7	2.4	3.6	35.8	<1	145.5	0.4	2.6	0.6	116	<0.5	92.1
12792	11SRKGCD053	Quarry P	<1	15.6	0.4	17.1	2.8	4.5	12.1	<1	382.8	0.3	2.2	0.5	97	<0.5	109.4
12793	11SRKGCD054	Quarry P	<1	25.4	0.7	19.5	3.6	5.5	27.3	<1	82.4	0.4	2.4	0.7	151	<0.5	127.2
12794	11SRKGCD055	Quarry P	<1	45.9	0.2	13.5	1.5	2.5	14.7	<1	117.1	<0.1	0.7	0.1	216	<0.5	48.6
12788	11SRKGCD048	Quarry Q	<1	46.2	<0.1	15.2	1.2	2.1	1.2	<1	94.7	0.1	0.2	<0.1	295	0.7	44.1
12789	11SRKGCD049	Quarry Q	<1	43.6	0.1	13.8	1.2	1.7	7	<1	66.2	0.2	<0.2	<0.1	268	<0.5	41.8
12815	11SRKGCD044	Quarry Q	<1	51	0.4	14.7	1.2	1.9	7.7	<1	155.1	0.1	0.2	<0.1	272	<0.5	45.1
12816	11SRKGCD045	Quarry Q	<1	46.3	0.2	15.5	1.7	2	4.4	<1	103.4	0.1	0.3	<0.1	299	<0.5	48
12817	11SRKGCD046	Quarry Q	<1	48.8	<0.1	14.8	1.5	2.1	2.7	<1	89.5	0.2	0.2	<0.1	285	<0.5	48.4
12818	11SRKGCD043	Quarry Q	<1	41.4	0.2	14.2	1.4	1.9	0.5	<1	111.8	0.1	0.3	<0.1	279	<0.5	44.5
12819	11SRKGCD047	Quarry Q	<1	42.8	0.1	13.8	1.4	2	1.4	1	126.5	<0.1	0.2	<0.1	267	<0.5	43.2
12809	11SRKGCD039	Quarry R	<1	50.4	0.2	15.3	1.4	2.3	4.6	1	113.3	0.2	0.3	0.1	278	<0.5	49.8
12810	11SRKGCD042	Quarry R	<1	54.3	0.5	14.7	1.3	2.1	12.5	<1	78	0.1	0.3	<0.1	268	<0.5	49.5
12811	11SRKGCD040	Quarry R	<1	48.1	0.3	15.8	1.7	3.7	4.5	<1	148.6	0.3	0.7	0.2	258	<0.5	72
12812	11SRKGCD041	Quarry R	<1	47.1	0.1	14.4	1.5	2.4	0.5	2	49	0.2	0.3	<0.1	264	<0.5	50.5
12813	11SRKGCD037	Quarry R	<1	50.7	0.3	14.7	1.5	2.2	12.6	<1	84.6	<0.1	0.3	<0.1	266	<0.5	48.3
12814	11SRKGCD038	Quarry R	<1	47.9	0.1	14.8	1.4	2.2	0.4	<1	108.5	0.2	0.3	<0.1	281	<0.5	51.7
12803	11SRKGCD032	Quarry S	1	50.9	0.1	15.1	1.5	5.3	2.2	<1	353.4	0.3	1.2	0.3	274	4.2	71.5
12804	11SRKGCD031	Quarry S	<1	54.5	0.2	15.2	2	5.2	1.9	<1	297	0.2	0.8	0.2	300	<0.5	67.7
12805	11SRKGCD035	Quarry S	<1	55	0.1	16.2	2.1	6.5	3.3	<1	401.1	0.3	1.2	0.2	272	<0.5	79.7
12806	11SRKGCD034	Quarry S	2	50.5	0.1	15.6	1.7	6.4	8.6	<1	414.3	0.3	1.1	0.2	260	<0.5	77.9
12807	11SRKGCD033	Quarry S	1	49.6	0.1	16	2.1	6.5	1.2	<1	280	0.3	0.7	0.2	272	<0.5	72.8
12808	11SRKGCD036	Quarry S	1	48	0.2	14.9	2	7	5.6	<1	315.1	0.3	0.6	0.2	272	<0.5	73.9
12764	11SRKGCD029	Quarry T	<1	42.7	<0.1	13.7	1.1	1.5	2.5	<1	143.4	0.3	0.3	<0.1	248	<0.5	36.1
12765	11SRKGCD030	Quarry T	<1	45.7	0.1	13.7	1	1.8	3	<1	119.6	0.2	0.2	<0.1	256	<0.5	36.3
12778	11SRKGCD028	Quarry T	<1	52.7	<0.1	15.1	1.1	1.9	1.6	<1	92.6	<0.1	0.2	<0.1	274	<0.5	37.7
12779	11SRKGCD027	Quarry T	<1	56.6	<0.1	14.3	1.5	1.7	0.4	<1	88.6	<0.1	0.2	<0.1	287	<0.5	39.7
12780	11SRKGCD026	Quarry T	<1	50.6	0.3	15.1	1.2	1.7	6.6	<1	65.7	0.1	<0.2	<0.1	280	<0.5	38.7
12774	11SRKGCD022	Quarry U	<1	8.2	0.7	19.7	3.7	4.5	38.4	<1	248.2	0.6	3.7	1	49	<0.5	129.4
12775	11SRKGCD021	Quarry U	<1	4.9	0.7	18.2	2.8	3.1	30.1	<1	293.6	0.4	3.2	0.9	46	<0.5	111
12776	11SRKGCD024	Quarry U	<1	5	0.6	15.2	2.4	3.1	25.2	<1	238.9	0.3	3	0.9	35	<0.5	90.8
12777	11SRKGCD025	Quarry U	<1	1	0.8	18.8	2.5	4.9	54.3	<1	134.8	0.5	5	0.9	12	<0.5	75.5
12784	11SRKGCD023	Quarry U	<1	8.9	1	20.3	3.7	6	35.3	<1	253.4	0.4	3.5	2.7	31	<0.5	142.1
12766	11SRKGCD018	Quarry V	<1	47.8	0.3	16.9	2.1	3.3	11.2	<1	146.4	0.3	0.5	0.1	353	<0.5	62.2
12767	11SRKGCD017	Quarry V	<1	45.3	3.1	17.2	2.4	3.4	15.6	<1	135.1	0.3	0.4	0.1	393	<0.5	76.8
12768	11SRKGCD016	Quarry V	<1	47	<0.1	17.1	2.5	3.3	3.1	1	155.3	0.3	0.7	0.1	390	<0.5	78
12769	11SRKGCD019	Quarry V	<1	41	1.1	16.7	2.2	2.9	8.1	<1	114.9	0.2	0.3	<0.1	349	3.2	67.5
12770	11SRKGCD020	Quarry V	<1	50.9	0.4	16.7	1.7	2.9	5	<1	125.8	0.3	0.5	0.1	346	0.6	61.1
12771	11SRKGCD011	Quarry W	1	7.6	1.8	19.5	3	4	44.9	<1	364.4	0.4	5.3	0.9	55	0.6	122.4
12772	11SRKGCD056	Quarry W	<1	55.3	2.7	16.5	1.3	2.4	41.1	3	244.6	0.1	0.4	0.2	302	<0.5	46.9
12773	11SRKGCD012	Quarry W	<1	6.9	2	19.8	4.2	2.8	43.3	<1	453.6	0.1	2.8	0.3	48	<0.5	177.7
12781	11SRKGCD015	Quarry W	<1	44.3	1.7	17.9	1.7	1.2	29.4	<1	218.9	0.1	0.4	0.2	176	<0.5	40.7
12782	11SRKGCD014	Quarry W	<1	38.2	3.5	18.1	2.5	2.7	45.3	1	390.6	<0.1	0.4	0.1	174	0.7	77.9
12783	11SRKGCD013	Quarry W	<1	42.4	2.3	18.2	2.2	1.3	23	<1	215	0.1	0.6	0.2	169	0.9	66.7
Detection Limits																	
Maxxam SOP No:																	
Average Crustal Abundances of Basaltic Rock			1	48	1.1	17	2	19	30	1.5	465	1.1	4	1	250	0.7	
Average Crustal Abundances x10			10	480	11	170	20	190	300	15	4650	11	40	10	2500	7	

			4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	4A-4B	1DX	1DX
			Y	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Ag	Al
Sample ID	Drill Hole ID	Quarry	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
			0.1	0.1	0.1	0.02	0.3	0.05	0.02	0.05	0.01	0.05	0.02	0.03	0.01	0.05	0.01	0.1	0.01
			50000	50000	50000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	100	10
12830	11SRKGCD067	Quarry J	19.2	2.8	7.8	1.13	5.5	2.07	0.74	2.67	0.54	3.27	0.73	2.18	0.35	2.27	0.33	<0.1	3.55
12831	11SRKGCD068	Quarry J	17.7	2.4	6.4	1.05	5.3	1.71	0.65	2.39	0.48	2.93	0.65	2.01	0.3	2.01	0.31	<0.1	2.64
12832	11SRKGCD069	Quarry J	18.4	2.7	6.5	1.07	5.2	1.75	0.7	2.42	0.5	2.96	0.71	1.99	0.32	2.12	0.31	<0.1	4.63
12833	11SRKGCD070	Quarry J	16	2.4	6.3	0.98	4.4	1.74	0.6	2.18	0.44	2.73	0.62	1.82	0.29	1.81	0.28	0.1	3.1
12834	11SRKGCD071	Quarry J	25.5	10.4	25.6	3.8	17.8	4.75	1.68	5.16	0.9	4.85	0.97	2.67	0.38	2.26	0.31	<0.1	2.7
12835	11SRKGCD072	Quarry J	17.4	2.4	6.8	1.06	4.7	1.82	0.72	2.53	0.5	2.92	0.64	2.06	0.31	2.05	0.3	<0.1	3.15
12836	11SRKGCD073	Quarry J	17	2.4	6.3	0.99	5.7	1.73	0.65	2.38	0.47	2.93	0.65	2.01	0.29	2.11	0.29	<0.1	3.28
12837	11SRKGCD074	Quarry J	17.2	2.4	6.4	1.02	4.9	1.79	0.7	2.47	0.48	2.93	0.66	1.9	0.32	1.89	0.29	<0.1	3.2
12838	11SRKGCD075	Quarry J	17	2.5	6.6	1.04	5.3	1.77	0.67	2.37	0.47	3.02	0.65	1.96	0.3	1.93	0.28	<0.1	3.45
12839	11SRKGCD076	Quarry J	18.1	2.7	7.1	1.1	5.4	1.9	0.71	2.5	0.53	3.52	0.68	2.06	0.32	2.1	0.34	<0.1	2.74
12820	11SRKGCD001	Quarry L	18.4	3.1	8.1	1.26	6.2	2.06	0.7	2.64	0.5	3.09	0.68	1.91	0.31	1.95	0.31	<0.1	3.48
12821	11SRKGCD002	Quarry L	11.4	1.3	3.7	0.6	3.1	1.11	0.32	1.52	0.3	1.87	0.42	1.17	0.2	1.3	0.19	<0.1	4.18
12822	11SRKGCD003	Quarry L	14.3	2.1	5.3	0.87	4.4	1.37	0.48	1.95	0.39	2.41	0.49	1.57	0.26	1.56	0.23	<0.1	2.34
12823	11SRKGCD004	Quarry L	17.2	2.5	6.6	1.04	5.3	1.8	0.62	2.25	0.47	2.88	0.64	1.82	0.31	1.92	0.3	<0.1	3.64
12824	11SRKGCD005	Quarry L	16.9	2.7	7.6	1.11	4.9	1.69	0.63	2.31	0.46	2.72	0.58	1.91	0.28	1.82	0.27	<0.1	2.95
12825	11SRKGCD006	Quarry M	18.7	2.9	7.3	1.16	6.1	1.89	0.65	2.65	0.49	2.98	0.67	2.02	0.32	2.01	0.31	<0.1	3.07
12826	11SRKGCD007	Quarry M	16.9	2.8	7.1	1.06	4.8	1.75	0.67	2.4	0.46	2.82	0.63	1.91	0.3	1.91	0.3	<0.1	3.65
12827	11SRKGCD008	Quarry M	13.5	1.9	4.6	0.74	3.4	1.29	0.41	1.71	0.35	2.26	0.52	1.57	0.23	1.44	0.23	<0.1	4.05
12828	11SRKGCD009	Quarry M	14.9	2.2	5.8	0.89	4.4	1.57	0.56	2.11	0.4	2.63	0.55	1.71	0.26	1.78	0.24	<0.1	2.73
12829	11SRKGCD010	Quarry M	14.9	2.1	5.8	0.89	5	1.56	0.54	2.07	0.4	2.46	0.54	1.73	0.26	1.81	0.26	<0.1	2.44
12786	11SRKGCD059	Quarry N	25	8.3	20.9	2.9	13.7	3.18	1.07	3.68	0.58	4.01	0.81	2.5	0.36	2.71	0.4	<0.1	3
12787	11SRKGCD058	Quarry N	23.2	11.2	27.1	3.68	15.3	3.19	1.18	3.77	0.58	3.85	0.82	2.4	0.37	2.47	0.36	0.1	2.65
12795	11SRKGCD057	Quarry N	27.3	20.9	50.7	6.66	29.1	4.84	1.5	4.55	0.67	4.11	0.85	2.48	0.38	2.87	0.41	<0.1	2.87
12796	11SRKGCD060	Quarry N	19	11.4	28.2	3.65	15.1	3.15	0.99	3.24	0.56	3.36	0.77	2.31	0.35	2.23	0.36	<0.1	2.56
12797	11SRKGCD061	Quarry N	23.6	12.2	30.1	4.11	18.5	3.57	1.2	3.9	0.69	4.03	1	2.84	0.45	2.81	0.45	<0.1	2.5
12798	11SRKGCD063	Quarry O	8	37.6	74.3	7.44	23.9	3.17	0.74	2.03	0.3	1.47	0.3	0.78	0.14	0.99	0.15	<0.1	0.3
12799	11SRKGCD062	Quarry O	8.1	14.9	28.3	3.11	11.4	2.06	0.41	1.73	0.28	1.39	0.28	0.72	0.12	0.77	0.11	0.2	0.39
12800	11SRKGCD064	Quarry O	7.9	17.8	34.2	3.53	11.7	2.06	0.44	1.61	0.27	1.42	0.27	0.75	0.11	0.69	0.1	<0.1	0.32
12801	11SRKGCD065	Quarry O	14.4	25.2	50.5	5.4	19.6	3.25	0.85	2.59	0.45	2.48	0.53	1.54	0.24	1.5	0.23	<0.1	0.41
12802	11SRKGCD066	Quarry O	8.5	20.7	38.3	3.91	13.2	2.03	0.48	1.69	0.27	1.37	0.31	0.73	0.12	0.8	0.11	0.1	0.31
12785	11SRKGCD050	Quarry P	12.6	14.4	28.9	3.54	15.6	2.8	0.91	2.71	0.37	1.99	0.44	1.13	0.17	1	0.15	<0.1	1.92
12790	11SRKGCD052	Quarry P	19.4	19.1	40.1	4.9	18.9	3.6	1.05	3.56	0.51	3.07	0.61	1.64	0.25	1.69	0.26	<0.1	2.22
12791	11SRKGCD051	Quarry P	9.7	13.7	26.3	2.84	11.1	1.97	0.64	1.99	0.28	1.67	0.31	0.91	0.14	0.88	0.13	0.2	2.02
12792	11SRKGCD053	Quarry P	12.3	17.1	34.2	3.97	14.8	2.72	0.83	2.55	0.35	2.07	0.36	1.07	0.17	1.05	0.16	<0.1	1.82
12793	11SRKGCD054	Quarry P	20.7	19.9	41.4	4.98	21.8	3.89	1.22	3.74	0.54	3.26	0.64	1.93	0.3	1.77	0.29	<0.1	3.03
12794	11SRKGCD055	Quarry P	23.9	8.3	20.8	2.83	13.8	2.73	1.03	3.43	0.52	3.79	0.79	2.31	0.36	2.57	0.37	0.3	3.82
12788	11SRKGCD048	Quarry Q	19.5	2.5	7.7	1.19	6.7	2.16	0.74	2.79	0.48	3.48	0.65	2.06	0.31	2.03	0.28	<0.1	3.2
12789	11SRKGCD049	Quarry Q	18.1	2.7	7.2	1.12	6	1.92	0.71	2.8	0.46	2.93	0.64	1.8	0.28	1.81	0.26	<0.1	4.51
12815	11SRKGCD044	Quarry Q	18.1	2.5	6.5	1.05	5.7	1.85	0.66	2.45	0.46	2.85	0.67	1.97	0.31	1.92	0.31	<0.1	3.47
12816	11SRKGCD045	Quarry Q	19.4	2.7	7.1	1.14	5.1	1.89	0.7	2.71	0.52	3.15	0.7	2.08	0.33	2.12	0.32	<0.1	3.23
12817	11SRKGCD046	Quarry Q	19	2.8	7.2	1.14	6.1	1.93	0.73	2.59	0.52	3.37	0.73	2.03	0.32	1.93	0.31	<0.1	3.31
12818	11SRKGCD043	Quarry Q	18.1	2.5	6.8	1.06	6.1	1.8	0.64	2.34	0.48	3.15	0.71	2	0.31	2.05	0.31	<0.1	3.95
12819	11SRKGCD047	Quarry Q	17.7	2.5	6.8	1.06	5.4	1.72	0.64	2.44	0.47	2.89	0.65	1.98	0.31	1.95	0.32	<0.1	3.86
12809	11SRKGCD039	Quarry R	19.8	3.3	8.3	1.28	6.1	1.99	0.7	2.6	0.51	3.28	0.71	2.11	0.32	2.14	0.31	<0.1	4.08
12810	11SRKGCD042	Quarry R	17.3	2.9	7.2	1.1	5.2	1.72	0.66	2.44	0.47	2.91	0.66	1.96	0.3	1.81	0.27	<0.1	4.57
12811	11SRKGCD040	Quarry R	19	6.7	15.3	1.99	9.4	2.41	0.83	2.84	0.55	3.33	0.7	2.04	0.31	2.06	0.33	<0.1	3.3
12812	11SRKGCD041	Quarry R	18.8	3.5	9.1	1.34	7	1.94	0.69	2.65	0.52	3.17	0.73	2.01	0.34	2.04	0.31	<0.1	4.8
12813	11SRKGCD037	Quarry R	17.7	3.2	7.5	1.18	6.1	1.96	0.71	2.5	0.48	3.09	0.71	1.97	0.29	1.9	0.29	<0.1	4.03
12814	11SRKGCD038	Quarry R	18.6	2.9	8.1	1.24	6.5	1.97	0.68	2.69	0.51	3.3	0.7	2.09	0.33	1.99	0.31	<0.1	2.8
12803	11SRKGCD032	Quarry S	24.2	17	46	6.27	27.2	5.56	1.73	5.25	0.82	4.3	0.95	2.67	0.38	2.61	0.38	0.2	2.42
12804	11SRKGCD031	Quarry S	26.6	17.8	46.4	6.38	27.9	5.77	1.72	5.29	0.88	4.55	1	2.93	0.43	2.66	0.44	<0.1	3.17
12805	11SRKGCD035	Quarry S	24.4	17.3	43.2	5.72	23.8	5.16	1.6	5.16	0.85	4.74	0.93	2.85	0.41	2.61	0.38	<0.1	2.8
12806	11SRKGCD034	Quarry S	23.7	18	43.4	5.86	24.4	5.17	1.6	4.9	0.82	4.38	0.9	2.57	0.4	2.41	0.38	<0.1	2.68
12807	11SRKGCD033	Quarry S	23.5	15.4	40.1	5.52	24.5	5.37	1.73	5.19	0.85	4.7	1.01	2.89	0.42	2.63	0.41	<0.1	2.96
12808	11SRKGCD036	Quarry S	23.9	15.6	40	5.58	25.3	5.57	1.72	5.36	0.88	4.42	0.99	2.86	0.41	2.68	0.4	<0.1	3.01
12764	11SRKGCD029	Quarry T	17.9	2.2	6.7	1.02	4.3	1.66	0.62	2.5	0.4	2.71	0.62	1.73	0.27	1.71	0.27	<0.1	2.91
12765	11SRKGCD030	Quarry T	18.8	2.7	6.8	1.09	6.8	1.79	0.73	2.55	0.42	3.11	0.6	1.88	0.3	1.89	0.29	0.7	3.4
12778	11SRKGCD028	Quarry T	18.5	2.3	6.5	1.02	6.5	1.74	0.69	2.57	0.43	3.15	0.59	1.77	0.31	1.9	0.3	<0.1	3.25
12779	11SRKGCD027	Quarry T	20.1	2.6	7	1.06	6.1	1.8	0.65	2.82	0.45	3.1	0.63	1.94	0.31	2.06	0.32	<0.1	2.49
12780	11SRKGCD026	Quarry T	18.9	2.8	7.5	1.11	6.1	1.78	0.76	2.69	0.43	3.02	0.57	1.78	0.28	1.83	0.29	<0.1	3.24
12774	11SRKGCD022	Quarry U	8.3	17.8	34.3	4.1	15.1	2.72	0.77	2.28	0.28	1.8	0.24	0.8	0.13	0.66	0.12	<0.1	1.05
12775	11SRKGCD021	Quarry U	6.9	15.3	29.8	3.29	12.8	2.07	0.63	1.61	0.22	1.32	0.21	0.62	0.11	0.7	0.09	<0.1	0.95
12776	11SRKGCD024	Quarry U	6.9	15	28.8	3.15	11.1	1.9	0.63	1.79	0.21	1.19	0.23	0.6	0.11	0.59	0.1	<0.1	0.91
12777	11SRKGCD025	Quarry U	7	21.6	38.3	4.07	13.5	2.09	0.41	1.45	0.19	1.19	0.17	0.61	0.09	0.62	0.09	<0.1	0.26
12784	11SRKGCD023	Quarry U	20.7	22.8	44.9	5.57	20.6	4.05	1.32	3.95	0.56	3.44	0.63	1.75	0.29	1.99	0.27	<0.1	1.64
12766	11SRKGCD018	Quarry V	26.3	4.9	12.8	1.87	9.9	2.86	1.02	3.86	0.62	4.62	0.87	2.72	0.42	2.55	0.4	0.1	1.89
12767	11SRKGCD017	Quarry V	32.5	4.7	13	2.03	9.4	3.08	1.17	4.7	0.77	5.22	1.09	3.23	0.49	3.27	0.5	0.1	3.84
12768	11SRKGCD016	Quarry V	32.5	6.3	16.1	2.46	11.7	3.56	1.2	4.57	0.76	5.22	1.08	3.28	0.47	3.46	0.54	<0.1	1.51
12769	11SRKGCD019	Quarry V	28.8	4	11	1.78	9.8	2.94	1.17	4.21	0.69	4.89	0.92	2.91	0.42	2.87	0.44	0.1	2.4
12770	11SRKGCD020	Quarry V	26.8	4.7	12.9	1.88	8.3	2.85	1.05	3.84	0.63	4.54	0.85	2.54	0.4	2.61	0.38	<0.1	2.2
12771	11SRKGCD011	Quarry W	5.7	23.8	42.7	4.42	15	2.16	0.64	1.55	0.18	0.79	0.2	0.57	0.09	0.55	0.08	0.2	1.34
12772	11SRKGCD056	Quarry W	20.6	3.7	9.2	1.36	6.5	2.04	0.94	2.95	0.51	3.31	0.67	2.12	0.32	2.13	0.32	0.2	2.27
12773	11SRKGCD012	Quarry W	4.6	18.3	32.3	3.29	12.2	1.88	0.63	1.4	0.17	0.92	0.16	0.43	0.07	0.34	0.05	<0.1	1.37
12781	11SRKGCD015	Quarry W	14.5	3.6	8.3	1.19	6.4	1.97	0.8	2.66	0.41	2.67	0.46	1.38	0.2	1.15	0.17	<0.1	1.58
12782	11SRKGCD014	Quarry W	18.2	6.5	16.1	2.54	13	3.65	1.33	4.21	0.59	3.59	0.64	1.62	0.25	1.43	0.2	0.1	1.93
12783	11SRKGCD013	Quarry W	19.1	4.3	10.1	1.58	7.3	2.72	1.03	3.66	0.54	3.77	0.66	1.62	0.24	1.5	0.23	<0.1	1.66
Detection Limits																			
Maxxam SOP No:																			
Average Crustal Abundances of Basaltic Rock			21	15	48	4.6	20	5.3	0.8	5.3	0.8	3.8	1.1	2.1	0.2	2.1	0.6	0.11	78000
Average Crustal Abundances x10			210	150	480	46	200	53	8	53	8	38	11	21	2	21	6	1.1	780000

Sample ID	Drill Hole ID	Quarry	1DX As ppm 0.5 10000	1DX Au PPB 0.5 100000	1DX B ppm 20 2000	1DX Ba ppm 1 10000	1DX Bi ppm 0.1 2000	1DX Ca % 0.01 40	1DX Cd ppm 0.1 2000	1DX Co ppm 0.1 2000	1DX Cr ppm 1 10000	1DX Cu ppm 0.1 10000	1DX Fe % 0.01 40	1DX Ga ppm 1 1000	1DX Hg ppm 0.01 100	1DX K % 0.01 10	1DX La ppm 1 10000	1DX Mg % 0.01 30	1DX Mn ppm 1 10000
12830	11SRKGCD067	Quarry J	0.7	0.8	<20	3	<0.1	1.76	<0.1	39.5	162	98.2	5.97	8	0.01	0.03	1	3.49	946
12831	11SRKGCD068	Quarry J	0.5	0.7	<20	2	<0.1	5.82	<0.1	32.3	118	102.1	4.43	4	0.01	0.01	<1	1.6	1068
12832	11SRKGCD069	Quarry J	0.5	3.1	<20	<1	<0.1	3.56	<0.1	43.4	193	107	6.54	8	<0.01	0.01	1	3.81	1170
12833	11SRKGCD070	Quarry J	2.7	0.6	<20	5	<0.1	1.39	<0.1	34	111	86.4	4.66	5	<0.01	0.03	1	2.75	728
12834	11SRKGCD071	Quarry J	0.5	3.5	<20	14	<0.1	1.7	<0.1	24	25	222.7	5.38	10	<0.01	0.12	7	0.71	345
12835	11SRKGCD072	Quarry J	0.5	1.8	<20	2	<0.1	4.81	0.2	39.9	146	119.8	5.01	4	<0.01	0.01	<1	1.92	1151
12836	11SRKGCD073	Quarry J	0.5	0.9	<20	9	<0.1	4.96	<0.1	36.4	152	89.6	5.38	6	<0.01	0.04	<1	2.25	1217
12837	11SRKGCD074	Quarry J	0.5	1.4	<20	2	<0.1	4.35	<0.1	36.4	135	126.6	5.01	4	<0.01	<0.01	<1	2.19	1054
12838	11SRKGCD075	Quarry J	0.5	1.1	<20	<1	<0.1	4.81	0.1	40.1	149	109.7	5.4	5	<0.01	<0.01	<1	2.29	1176
12839	11SRKGCD076	Quarry J	0.5	0.5	<20	10	<0.1	1.2	0.1	30.4	127	134.3	4.34	5	0.01	0.09	1	2.26	649
12820	11SRKGCD001	Quarry L	0.5	1.6	<20	2	<0.1	3.97	<0.1	35.4	103	116.6	5.48	7	<0.01	<0.01	<1	2.7	1363
12821	11SRKGCD002	Quarry L	0.5	0.8	<20	2	<0.1	0.64	<0.1	51.6	1347	8.8	5.29	8	<0.01	<0.01	1	5.58	823
12822	11SRKGCD003	Quarry L	0.5	0.7	<20	5	<0.1	5.03	<0.1	32.5	517	78.6	3.78	4	<0.01	0.01	<1	1.78	973
12823	11SRKGCD004	Quarry L	0.5	0.7	46	7	<0.1	2.93	<0.1	45.2	552	76.6	5.89	4	<0.01	0.03	<1	2.54	1411
12824	11SRKGCD005	Quarry L	0.5	3.8	<20	3	<0.1	4.99	0.2	40.7	320	89.7	5.06	6	<0.01	<0.01	<1	1.99	1247
12825	11SRKGCD006	Quarry M	0.5	1.5	<20	2	<0.1	2.98	<0.1	33.8	168	101.8	4.83	6	<0.01	0.02	<1	2.46	899
12826	11SRKGCD007	Quarry M	0.6	11.3	<20	2	<0.1	3	0.2	37.1	204	144.9	5.84	7	<0.01	0.01	<1	2.92	1091
12827	11SRKGCD008	Quarry M	0.9	1.8	<20	11	<0.1	7.13	<0.1	47.9	542	97.4	7.17	7	0.03	0.05	1	3.08	1574
12828	11SRKGCD009	Quarry M	0.5	0.5	<20	2	<0.1	1.73	<0.1	31.7	490	97.9	3.75	5	0.01	0.02	<1	2.57	679
12829	11SRKGCD010	Quarry M	0.5	0.5	<20	2	<0.1	1.48	<0.1	32.2	443	104.8	3.48	4	0.01	0.01	<1	2.28	625
12786	11SRKGCD059	Quarry N	0.5	0.5	<20	3	<0.1	3.63	<0.1	39	131	87.5	4.75	5	<0.01	0.02	1	1.88	1175
12787	11SRKGCD058	Quarry N	0.5	0.7	<20	2	<0.1	2.98	0.3	37.8	133	98.4	4.48	4	<0.01	0.01	3	1.71	995
12795	11SRKGCD057	Quarry N	0.5	1.8	<20	6	<0.1	2.6	<0.1	44.3	183	106.9	5.05	5	<0.01	<0.01	5	2.08	1168
12796	11SRKGCD060	Quarry N	0.5	1.2	<20	2	<0.1	8.97	<0.1	33.7	114	81.2	4.35	4	<0.01	<0.01	4	1.58	1447
12797	11SRKGCD061	Quarry N	0.5	1.2	<20	2	<0.1	3.13	0.2	36.7	122	96.7	4.28	4	<0.01	0.01	4	1.65	871
12798	11SRKGCD063	Quarry O	1.9	4.2	<20	26	<0.1	0.44	<0.1	0.7	2	1.4	0.37	<1	<0.01	0.19	27	0.23	183
12799	11SRKGCD062	Quarry O	2.9	3.8	<20	50	0.2	0.86	<0.1	2.4	1	7	0.65	<1	<0.01	0.26	12	0.28	267
12800	11SRKGCD064	Quarry O	1	2.1	<20	47	0.2	0.92	<0.1	1.3	2	10.3	0.59	<1	<0.01	0.25	15	0.34	366
12801	11SRKGCD065	Quarry O	5	2.1	<20	59	0.1	1.19	<0.1	5.1	2	15.8	1.27	1	<0.01	0.34	22	0.24	485
12802	11SRKGCD066	Quarry O	1.8	1.7	<20	34	0.2	1.33	<0.1	1.9	<1	6.4	0.6	<1	<0.01	0.24	17	0.52	642
12785	11SRKGCD050	Quarry P	0.9	0.5	<20	17	<0.1	1.35	<0.1	15.1	76	34	2.4	5	<0.01	0.14	7	1.43	377
12790	11SRKGCD052	Quarry P	0.5	2	<20	32	<0.1	3.45	0.1	20.2	11	63.3	3.76	7	<0.01	0.13	16	1.38	683
12791	11SRKGCD051	Quarry P	0.5	1.8	<20	26	<0.1	2.78	<0.1	17.4	89	32.8	3.39	6	<0.01	0.11	10	1.22	765
12792	11SRKGCD053	Quarry P	0.6	1.4	<20	9	<0.1	3.6	<0.1	15.7	86	54.3	2.18	8	<0.01	0.04	11	1.37	457
12793	11SRKGCD054	Quarry P	0.5	1.1	<20	28	<0.1	1.61	<0.1	26.7	19	44.2	5.36	11	<0.01	0.08	11	2.5	575
12794	11SRKGCD055	Quarry P	0.6	1.2	<20	8	<0.1	5.99	<0.1	44	172	84.4	6.58	8	<0.01	0.04	4	2.87	1636
12788	11SRKGCD048	Quarry Q	1.2	1	<20	2	<0.1	3.95	<0.1	37.7	149	103.4	5.5	7	<0.01	<0.01	<1	2.23	1086
12789	11SRKGCD049	Quarry Q	0.5	2.6	<20	6	<0.1	5.75	<0.1	40.7	181	123.4	9.05	11	<0.01	0.02	<1	2.8	2496
12815	11SRKGCD044	Quarry Q	0.5	1.5	<20	11	<0.1	3.05	0.3	38.6	119	88.1	5.12	6	0.03	0.06	<1	2.98	795
12816	11SRKGCD045	Quarry Q	0.5	3	<20	3	<0.1	2.1	0.2	29.9	96	118.8	4.53	6	0.03	0.04	<1	2.1	766
12817	11SRKGCD046	Quarry Q	0.5	1.6	<20	4	<0.1	2.54	<0.1	37.3	110	111.9	5.13	6	<0.01	0.02	<1	2.54	953
12818	11SRKGCD043	Quarry Q	0.5	1.7	<20	1	<0.1	4.71	0.1	33.6	156	96.8	5.92	7	<0.01	<0.01	<1	3.16	1504
12819	11SRKGCD047	Quarry Q	0.5	1.7	<20	2	<0.1	5.1	<0.1	36.8	156	106.2	5.83	7	0.01	0.01	<1	3.08	1433
12809	11SRKGCD039	Quarry R	0.5	3.8	<20	9	<0.1	4.58	<0.1	44.2	143	104.3	6.51	6	<0.01	0.03	<1	2.9	1464
12810	11SRKGCD042	Quarry R	1.8	1.6	<20	11	<0.1	5.53	<0.1	46.8	140	149.1	6.7	10	<0.01	0.05	<1	2.72	1147
12811	11SRKGCD040	Quarry R	0.9	3.2	<20	5	<0.1	3.64	<0.1	41	123	86	5.22	6	<0.01	0.02	2	2.64	1182
12812	11SRKGCD041	Quarry R	0.5	0.5	<20	<1	<0.1	2.02	<0.1	40	149	88.3	7.96	7	<0.01	<0.01	1	3.91	1667
12813	11SRKGCD037	Quarry R	0.5	2.3	<20	9	<0.1	5.13	<0.1	41.3	137	80.7	6.17	8	<0.01	0.03	<1	2.78	1352
12814	11SRKGCD038	Quarry R	0.5	1.5	<20	2	<0.1	1.12	<0.1	31.4	72	26.6	4.41	5	<0.01	<0.01	<1	2.21	760
12803	11SRKGCD032	Quarry S	0.5	5.9	<20	4	<0.1	4.03	0.1	39.6	136	84.8	4.21	5	<0.01	0.01	4	1.65	864
12804	11SRKGCD031	Quarry S	0.5	2.1	<20	3	<0.1	5.16	<0.1	45.7	197	89.4	5.69	7	<0.01	<0.01	4	2.46	1239
12805	11SRKGCD035	Quarry S	0.5	1.5	<20	3	<0.1	4.21	<0.1	48.9	168	87.8	4.93	5	<0.01	0.01	3	1.96	1071
12806	11SRKGCD034	Quarry S	0.5	1.3	<20	7	<0.1	2.29	0.1	36.6	139	88.5	4.58	6	<0.01	0.02	5	2.07	872
12807	11SRKGCD033	Quarry S	0.5	1.3	<20	6	<0.1	3.33	0.1	43.2	140	99.6	5.3	6	<0.01	<0.01	4	2.23	957
12808	11SRKGCD036	Quarry S	0.5	2.1	<20	9	<0.1	4.96	<0.1	42.9	136	91.4	5.54	6	<0.01	0.02	4	2.25	1267
12764	11SRKGCD029	Quarry T	0.5	4.4	<20	2	<0.1	2.03	<0.1	32.4	140	104.9	4.05	4	<0.01	<0.01	<1	2.24	803
12765	11SRKGCD030	Quarry T	0.6	9	<20	5	<0.1	4.53	<0.1	42.6	189	105.5	5.07	5	<0.01	0.02	<1	1.94	1142
12778	11SRKGCD028	Quarry T	2	2.7	<20	2	<0.1	4.75	<0.1	42.8	198	103.3	5.04	6	<0.01	0.01	<1	1.9	1184
12779	11SRKGCD027	Quarry T	0.5	3.9	<20	2	<0.1	3.7	<0.1	41.2	173	105.4	4.15	4	<0.01	<0.01	<1	1.72	926
12780	11SRKGCD026	Quarry T	1.1	1.7	<20	5	<0.1	5.31	<0.1	40.7	210	91.7	4.97	8	<0.01	0.04	1	1.97	1139
12774	11SRKGCD022	Quarry U	0.5	0.5	<20	43	<0.1	1.76	<0.1	7.8	8	1.7	1.82	4	<0.01	0.14	13	0.43	185
12775	11SRKGCD021	Quarry U	0.5	0.5	<20	42	<0.1	1.71	<0.1	5.1	2	1.6	1.48	3	<0.01	0.17	11	0.37	224
12776	11SRKGCD024	Quarry U	0.5	0.5	<20	30	<0.1	1.71	<0.1	5.2	2	21	1.46	4	<0.01	0.11	10	0.4	231
12777	11SRKGCD025	Quarry U	3.3	0.5	<20	46	0.1	0.77	<0.1	1.7	<1	4.8	0.75	<1	<0.01	0.16	18	0.19	183
12784	11SRKGCD023	Quarry U	0.5	0.5	<20	48	<0.1	2	<0.1	9.1	2	2.9	3.54	6	<0.01	0.16	14	1.05	573
12766	11SRKGCD018	Quarry V	0.5	1.6	<20	12	0.1	2.58	0.1	25.5	40	91.1	3.35	5	<0.01	0.08	4	1.19	707
12767	11SRKGCD017	Quarry V	0.9	1.2	<20	26	0.1	4.76	<0.1	39	31	102.8	7.71	13	<0.01	0.17	3	2.45	1348
12768	11SRKGCD016	Quarry V	0.5	1.8	<20	5	<0.1	1.47	<0.1	19.5	19	123.8	2.92	4	<0.01	0.04	4	1.01	367
12769	11SRKGCD019	Quarry V	0.5	1.8	<20	24	<0.1	4.36	<0.1	26.5	20	105.7	4.63	8	<0.01	0.13	3	1.54	889
12770	11SRKGCD020	Quarry V	0.5	1.2	<20	15	<0.1	3.09	0.1	29.2	44	132.1	3.98	6	<0.01	0.07	3	1.32	781
12771	11SRKGCD011	Quarry W	0.5	0.5	<20	182	<0.1	0.43	<0.1	7.6	17	38.8	1.91	5	<0.01	0.64	20	0.69	264
12772	11SRKGCD056	Quarry W	0.5	4.2	<20	40	<0.1	1.84	<0.1	26	28	208.1	3.94	6	<0.01	0.46	2	1.6	584
12773	11SRKGCD012	Quarry W	0.5	1.1	<20	246	<0.1	0.41	<0.1	7.3	3	20.2	2.15	6	<0.01	0.76	16	0.63	197
12781	11SRKGCD015	Quarry W	0.5	0.5	<20	30	<0.1	1.04	<0.1	20.5	47	65	2.65	4	<0.01	0.29	2	1.2	327
12782	11SRKGCD014	Quarry W	0.5	0.5	<20	50	<0.1	1.89	<0.1	21	33	44.2	3.26	7	<0.01	0.52	3	1.44	427
12783	11SRKGCD013	Quarry W	0.5	0.5	<20	26	0.1	1.18	<0.1	21.4	32	50.7	2.95	5	<0.01	0.27	3	1.13	362
Detection Limits																			
Maxxam SOP No:																			
Average Crustal Abundances of Basaltic Rock			2		5	330	0.007	76000	0.22	48	170	87	86500	17	0.09	8300	15	46000	1500
Average Crustal Abundances x10			20		50	3300	0.07	760000	2.2	480	1700	870	865000	170	0.9	83000	150	460000	15000

			1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX
			Mo	Na	Ni	P	Pb	S	Sb	Sc	Se	Sr	Te	Th	Ti	Tl	U	V	W	Zn
			ppm	%	ppm	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Sample ID	Drill Hole ID	Quarry	0.1	0.001	0.1	0.001	0.1	0.05	0.1	0.1	0.5	1	0.2	0.1	0.001	0.1	0.1	2	0.1	1
			2000	10	10000	5	10000	10	2000	100	100	10000	2000	2000	10	1000	2000	10000	100	10000
12830	11SRKGCD067	Quarry J	0.2	0.052	115.4	0.025	0.4	0.09	<0.1	12.3	<0.5	12	<0.2	<0.1	0.252	<0.1	<0.1	174	<0.1	54
12831	11SRKGCD068	Quarry J	0.1	0.023	86.8	0.015	0.4	0.08	<0.1	3.4	<0.5	16	<0.2	<0.1	0.223	<0.1	<0.1	83	<0.1	57
12832	11SRKGCD069	Quarry J	0.1	0.005	120.2	0.022	0.2	0.09	<0.1	9	<0.5	17	<0.2	<0.1	0.25	<0.1	<0.1	168	<0.1	71
12833	11SRKGCD070	Quarry J	0.2	0.05	99.8	0.02	0.3	<0.05	<0.1	3.6	<0.5	11	<0.2	0.1	0.217	<0.1	<0.1	79	<0.1	46
12834	11SRKGCD071	Quarry J	0.5	0.35	34.1	0.063	0.4	<0.05	<0.1	1.9	<0.5	69	<0.2	0.6	0.413	<0.1	0.1	278	<0.1	60
12835	11SRKGCD072	Quarry J	0.1	0.013	96.3	0.016	0.2	0.08	<0.1	4.3	<0.5	12	<0.2	<0.1	0.265	<0.1	<0.1	106	<0.1	76
12836	11SRKGCD073	Quarry J	0.1	0.038	84.1	0.018	0.2	0.07	<0.1	7.2	<0.5	16	<0.2	<0.1	0.278	<0.1	<0.1	140	<0.1	55
12837	11SRKGCD074	Quarry J	0.1	0.019	84	0.017	0.3	0.09	<0.1	4.1	<0.5	10	<0.2	<0.1	0.261	<0.1	<0.1	103	<0.1	59
12838	11SRKGCD075	Quarry J	0.1	0.012	89.4	0.017	0.2	0.06	<0.1	4.2	<0.5	16	<0.2	<0.1	0.215	<0.1	<0.1	112	<0.1	75
12839	11SRKGCD076	Quarry J	0.2	0.054	78.2	0.023	0.5	0.05	<0.1	3.3	<0.5	10	<0.2	<0.1	0.314	<0.1	<0.1	93	<0.1	53
12820	11SRKGCD001	Quarry L	0.1	0.032	48.7	0.022	0.2	0.06	<0.1	6.1	<0.5	21	<0.2	<0.1	0.264	<0.1	<0.1	148	<0.1	63
12821	11SRKGCD002	Quarry L	0.1	<0.001	441.1	0.015	0.2	<0.05	<0.1	1.6	<0.5	2	<0.2	<0.1	0.172	<0.1	<0.1	84	<0.1	55
12822	11SRKGCD003	Quarry L	0.1	0.054	184.9	0.015	0.5	0.05	<0.1	2.5	<0.5	14	<0.2	<0.1	0.221	<0.1	<0.1	70	<0.1	41
12823	11SRKGCD004	Quarry L	0.2	<0.001	213.2	0.018	0.2	<0.05	<0.1	3.6	<0.5	25	<0.2	<0.1	0.217	<0.1	<0.1	82	<0.1	70
12824	11SRKGCD005	Quarry L	0.1	0.029	118.5	0.018	0.3	0.1	<0.1	6.3	<0.5	15	<0.2	<0.1	0.304	<0.1	<0.1	138	<0.1	74
12825	11SRKGCD006	Quarry M	0.1	0.031	63.5	0.022	0.2	0.08	<0.1	4.4	<0.5	19	<0.2	<0.1	0.288	<0.1	<0.1	120	<0.1	54
12826	11SRKGCD007	Quarry M	0.1	0.012	72.7	0.019	1.2	0.06	<0.1	4.1	<0.5	16	<0.2	<0.1	0.296	<0.1	<0.1	123	<0.1	66
12827	11SRKGCD008	Quarry M	0.2	<0.001	207.4	0.013	0.1	0.13	<0.1	12.7	<0.5	25	<0.2	<0.1	0.088	<0.1	<0.1	131	<0.1	64
12828	11SRKGCD009	Quarry M	0.1	0.043	178.5	0.015	0.4	<0.05	<0.1	3.4	<0.5	13	<0.2	<0.1	0.25	<0.1	<0.1	68	<0.1	41
12829	11SRKGCD010	Quarry M	0.1	0.052	173.1	0.013	0.2	0.07	<0.1	2.4	<0.5	10	<0.2	<0.1	0.215	<0.1	<0.1	61	<0.1	37
12786	11SRKGCD059	Quarry N	0.2	0.052	102.9	0.038	0.3	0.08	<0.1	3.6	<0.5	29	<0.2	0.1	0.25	<0.1	<0.1	82	<0.1	67
12787	11SRKGCD058	Quarry N	0.2	0.046	94.3	0.057	14.3	0.11	<0.1	3.5	<0.5	22	<0.2	0.2	0.213	<0.1	<0.1	77	<0.1	114
12795	11SRKGCD057	Quarry N	0.3	0.027	109.8	0.11	0.5	0.15	<0.1	4.2	<0.5	52	<0.2	0.4	0.251	<0.1	<0.1	87	<0.1	74
12796	11SRKGCD060	Quarry N	0.2	0.018	80.9	0.065	0.6	0.05	<0.1	4.8	<0.5	46	<0.2	0.2	0.282	<0.1	<0.1	74	<0.1	62
12797	11SRKGCD061	Quarry N	0.3	0.027	85.4	0.074	4.9	0.12	<0.1	5.6	<0.5	40	<0.2	0.3	0.275	<0.1	<0.1	71	<0.1	74
12798	11SRKGCD063	Quarry O	0.3	0.034	1.1	0.011	1.3	<0.05	<0.1	0.2	<0.5	9	<0.2	3.5	0.001	<0.1	0.5	<2	<0.1	3
12799	11SRKGCD062	Quarry O	0.7	0.032	2.2	0.02	2.4	<0.05	<0.1	0.5	<0.5	51	<0.2	2.5	<0.001	<0.1	1.2	<2	<0.1	11
12800	11SRKGCD064	Quarry O	0.3	0.04	1.5	0.023	3	<0.05	<0.1	0.7	<0.5	10	<0.2	2.4	<0.001	<0.1	0.5	<2	<0.1	31
12801	11SRKGCD065	Quarry O	0.4	0.042	2.6	0.063	2.5	<0.05	<0.1	1	<0.5	32	<0.2	2.7	0.002	<0.1	0.4	3	<0.1	15
12802	11SRKGCD066	Quarry O	0.4	0.047	1.2	0.023	11.5	<0.05	<0.1	0.4	<0.5	28	<0.2	2.8	<0.001	<0.1	0.7	<2	<0.1	43
12785	11SRKGCD050	Quarry P	0.4	0.095	62.8	0.037	1.3	<0.05	<0.1	3.3	<0.5	72	<0.2	1	0.153	<0.1	0.2	43	<0.1	48
12790	11SRKGCD052	Quarry P	0.3	0.062	33.9	0.075	1.4	<0.05	<0.1	3.4	<0.5	84	<0.2	1	0.002	<0.1	<0.1	41	<0.1	68
12791	11SRKGCD051	Quarry P	0.3	0.031	59.6	0.031	3.9	<0.05	<0.1	6.1	<0.5	35	<0.2	1.2	0.057	<0.1	0.3	58	0.2	50
12792	11SRKGCD053	Quarry P	0.1	0.057	68.3	0.046	1.3	<0.05	<0.1	5.6	<0.5	74	<0.2	0.9	0.01	<0.1	0.1	50	<0.1	52
12793	11SRKGCD054	Quarry P	0.1	0.025	50.6	0.064	0.4	<0.05	<0.1	5.6	<0.5	20	<0.2	0.9	0.005	<0.1	<0.1	69	<0.1	81
12794	11SRKGCD055	Quarry P	0.2	0.009	104.2	0.042	2.6	<0.05	<0.1	14.7	<0.5	37	<0.2	0.3	0.2	<0.1	<0.1	135	<0.1	78
12788	11SRKGCD048	Quarry Q	0.1	0.038	81.5	0.019	0.2	0.09	<0.1	5.2	<0.5	11	<0.2	<0.1	0.229	<0.1	<0.1	131	<0.1	60
12789	11SRKGCD049	Quarry Q	0.1	0.004	82.5	0.021	0.3	0.08	<0.1	20.3	<0.5	20	<0.2	<0.1	0.009	<0.1	<0.1	197	<0.1	76
12815	11SRKGCD044	Quarry Q	0.1	0.039	95.3	0.021	0.6	0.08	<0.1	2.7	<0.5	16	<0.2	<0.1	0.172	<0.1	<0.1	111	<0.1	61
12816	11SRKGCD045	Quarry Q	0.1	0.164	61.4	0.019	0.3	0.11	<0.1	3.6	<0.5	18	<0.2	<0.1	0.258	<0.1	<0.1	97	<0.1	73
12817	11SRKGCD046	Quarry Q	0.1	0.059	69.1	0.022	0.3	0.2	<0.1	3.7	<0.5	12	<0.2	<0.1	0.254	<0.1	<0.1	118	<0.1	62
12818	11SRKGCD043	Quarry Q	0.1	0.018	77.3	0.022	0.3	0.06	<0.1	5.8	<0.5	11	<0.2	<0.1	0.212	<0.1	<0.1	156	<0.1	79
12819	11SRKGCD047	Quarry Q	0.1	0.022	80	0.02	0.2	0.08	<0.1	6.4	<0.5	13	<0.2	<0.1	0.227	<0.1	<0.1	162	<0.1	72
12809	11SRKGCD039	Quarry R	0.2	0.009	91.6	0.021	0.9	0.09	<0.1	7.6	<0.5	16	<0.2	<0.1	0.273	<0.1	<0.1	144	<0.1	73
12810	11SRKGCD042	Quarry R	0.2	0.073	84.8	0.022	0.2	0.06	<0.1	16.8	<0.5	22	<0.2	<0.1	0.002	<0.1	<0.1	170	<0.1	57
12811	11SRKGCD040	Quarry R	0.1	0.033	74.5	0.031	0.3	0.92	<0.1	4.5	0.5	14	<0.2	0.2	0.24	<0.1	<0.1	126	<0.1	49
12812	11SRKGCD041	Quarry R	0.2	<0.001	95.6	0.024	0.4	0.42	<0.1	10.7	<0.5	6	<0.2	0.1	0.267	<0.1	<0.1	171	<0.1	79
12813	11SRKGCD037	Quarry R	0.1	0.007	83.4	0.021	0.1	0.06	<0.1	7.9	<0.5	15	<0.2	<0.1	0.149	<0.1	<0.1	154	<0.1	56
12814	11SRKGCD038	Quarry R	0.2	0.043	59.7	0.02	0.4	0.05	<0.1	3.5	<0.5	11	<0.2	<0.1	0.255	<0.1	<0.1	87	0.1	56
12803	11SRKGCD032	Quarry S	0.3	0.027	99.9	0.115	0.4	0.11	<0.1	3.7	<0.5	47	<0.2	0.2	0.228	<0.1	<0.1	73	0.4	55
12804	11SRKGCD031	Quarry S	0.2	0.027	124.9	0.108	0.3	0.1	<0.1	6.1	<0.5	42	<0.2	0.2	0.199	<0.1	<0.1	125	<0.1	69
12805	11SRKGCD035	Quarry S	0.2	0.025	129.8	0.085	0.2	0.11	<0.1	4.1	<0.5	46	<0.2	0.2	0.248	<0.1	<0.1	76	<0.1	79
12806	11SRKGCD034	Quarry S	0.2	0.02	90.7	0.107	0.5	0.09	<0.1	2.9	<0.5	48	<0.2	0.3	0.22	<0.1	<0.1	75	<0.1	72
12807	11SRKGCD033	Quarry S	0.3	0.03	99.1	0.11	0.4	0.13	<0.1	3.7	<0.5	37	<0.2	0.2	0.222	<0.1	<0.1	88	<0.1	76
12808	11SRKGCD036	Quarry S	0.2	0.021	91.9	0.106	0.5	0.08	<0.1	4.4	<0.5	44	<0.2	0.2	0.241	<0.1	<0.1	91	0.2	86
12764	11SRKGCD029	Quarry T	0.2	0.027	105.9	0.014	0.2	<0.05	<0.1	2.9	<0.5	17	<0.2	<0.1	0.198	<0.1	<0.1	63	0.1	51
12765	11SRKGCD030	Quarry T	0.2	0.044	133.4	0.014	0.2	0.23	<0.1	4.6	0.5	15	<0.2	<0.1	0.196	<0.1	<0.1	105	0.7	65
12778	11SRKGCD028	Quarry T	0.1	0.034	127	0.014	0.2	0.09	<0.1	6.4	<0.5	11	<0.2	<0.1	0.241	<0.1	<0.1	126	<0.1	67
12779	11SRKGCD027	Quarry T	0.1	0.079	131.4	0.013	<0.1	0.14	<0.1	3.5	<0.5	8	<0.2	<0.1	0.195	<0.1	<0.1	95	<0.1	65
12780	11SRKGCD026	Quarry T	0.1	0.055	131.8	0.015	0.2	0.08	<0.1	11.3	<0.5	14	<0.2	<0.1	0.195	<0.1	<0.1	154	<0.1	69
12774	11SRKGCD022	Quarry U	0.3	0.066	17.1	0.049	1.2	<0.05	<0.1	1.1	<0.5	89	<0.2	1.4	<0.001	<0.1	0.2	9	<0.1	33
12775	11SRKGCD021	Quarry U	0.4	0.101	5.6	0.03	1.1	<0.05	<0.1	1	<0.5	76	<0.2	1.6	<0.001	<0.1	0.3	9	<0.1	30
12776	11SRKGCD024	Quarry U	0.1	0.074	6.5	0.023	1.8	<0.05	<0.1	0.9	<0.5	81	<0.2	1.6	<0.001	<0.1	0.2	7	<0.1	42
12777	11SRKGCD025	Quarry U	0.2	0.05	1.1	0.017	1.7	<0.05	<0.1	0.4	<0.5	45	<0.2	3.6	<0.001	<0.1	0.4	<2	<0.1	57
12784	11SRKGCD023	Quarry U	0.3	0.082	5.5	0.09	0.8	<0.05	<0.1	1.9	<0.5	43	<0.2	1.7	0.002	<0.1	0.8	6	<0.1	82
12766	11SRKGCD018	Quarry V	1.5	0.136	29.5	0.038	1.5	0.08	<0.1	7.9	<0.5	14	<0.2	0.4	0.166	<0.1	<0.1	107	<0.1	60
12767	11SRKGCD017	Quarry V	0.3	0.045	31.9	0.04	1.1	0.33	<0.1	23	<0.5	43	<0.2	0.2	0.112	<0.1	<0.1	306	<0.1	116
12768	11SRKGCD016	Quarry V	0.3	0.174	25	0.049	0.4	0.09	<0.1	7.5	<0.5	10	<0.2	0.5	0.123	<0.1	<0.1	93	<0.1	35
12769	11SRKGCD019	Quarry V	0.2	0.1	21.5	0.034	0.6	0.11	<0.1	6.5	<0.5	24	<0.2	0.2	0.17	<0.1	<0.1	158	0.1	97
12770	11SRKGCD020	Quarry V	0.2	0.109	33.5	0.027	1.2	0.1	<0.1	7	<0.5	14	<0.2	0.3	0.16	<0.1	<0.1	114	<0.1	55
12771	11SRKGCD011	Quarry W	0.9	0.144	12.2	0.037	2.4	0.05	<0.1	1.5	<0.5	25	<0.2	4.7	0.138	0.1	0.7	30	0.4	57
12772	11SRKGCD056	Quarry W	0.3	0.233	37.4	0.026	0.3	0.14	<0.1	8.5	<0.5	21	<0.2	0.3	0.135	0.1	<0.1	100	<0.1	54
12773	11SRKGCD012	Quarry W	0.1	0.152	4.4	0.045	1.6	<0.05	<0.1	1.9	<0.5	18	<0.2	2.5	0.148	0.1	0.2	35	<0.1	56
12781	11SRKGCD015	Quarry W	3.2	0.167	66	0.012	0.6	0.08	<0.1	3.1	<0.5	10	<0.2	0.4	0.122	<0.1	0.1	48	<0.1	51
12782	11SRKGCD014	Quarry W	0.5	0.181	62.3	0.034	0.6	0.05	<0.1	4	<0.5	31	<0.2	0.4	0.196	0.1	<0.1	62	0.2	73
12783	11SRKGCD013	Quarry W	0.3	0.158	51.9	0.018	0.4	0.14	<0.1	3.2	<0.5	12	<0.2	0.5	0.143	<0.1	<0.1	45	0.1	50
Detection Limits																				
Maxxam SOP No:																				
Average Crustal Abundances of Basaltic Rock			1.5	18000	130	1100	6	300	0.2	30	0.05	465		4	13800	0.21	1	250	0.7	105
Average Crustal Abundances x10			15	180000	1300	11000	60	3000	2	300	0.5	4650		40	138000	2.1	10	2500	7	1050