2011 Waste Rock and Quarry Monitoring Report

Report Prepared for

Hope Bay Mining Ltd.

Report Prepared by

SRK Consulting (Canada) Inc.
1CH008.057
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Hope Bay Project

2011 Waste Rock and Quarry Monitoring Report

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1 Introduction

Development of the Hope Bay mining project has resulted in the development of quarries, use of quarry rock for construction of roads, pads and other infrastructure, and production of waste rock from the underground mine. Monitoring plans are in place to confirm that the potential for acid rock drainage and metal leaching (ARD/ML) from quarry rock and waste rock and to monitor the chemistry of seepage and runoff associated with these materials.

This report presents results from the 2011 quarry and waste rock monitoring programs. The report is organized as follows:

- A summary of the monitoring requirements as presented in the “Doris North Gold Mine Monitoring and Follow-Up Plan” (HBML 2011) is provided in Section 2.
- Results of the geochemical inspections and monitoring of quarry rock solids are summarized in Section 3.
- Results of the geological inspections and monitoring of underground waste rock are summarized in Section 4.
- Results of the seepage surveys around infrastructure areas and downgradient of the waste rock pile are provided in Section 5.
- Detailed technical memorandum on each of these subjects are provided in Appendices A, B and C.

2 Monitoring Requirements

2.1 Quarry Rock

Details on the monitoring program used for quarries and quarry rock along the Doris Windy Road are provided in "*Hope Bay Project Quarry A, B & D Management and Monitoring Plan- Revision 01*" (SRK 2010a). For consistency, those procedures are also used for quarries in the Doris North area. A summary of the requirements is provided as follows (HBML 2011):

- Visual inspections and sampling at the quarry face by site geologist when the quarries are in active use;

- Collection and testing of two samples per year from each active quarry for total sulphur analysis, and, if the sulphur content exceeds 0.1%, the samples would be subjected to full acid base accounting (ABA) tests. A subset of samples will be subjected to shake flask extraction tests. The ABA tests would be done on the whole sample and on the -2mm size fraction to determine whether there is any concentration of sulphides in the fine component of the rock;

- Quarry sumps will be monitored as described under the routine site water quality monitoring program;

- After construction, the mined out quarries, and any roads and other infrastructure components that were constructed using the quarry or waste rock since the previous inspection will be inspected by a qualified geologist or geochemist to verify that the rock used in construction was suitable for that purpose. During the inspection, samples will be collected for total sulphur analysis. If the sulphur content exceeds 0.1%, the samples will be subjected to full ABA tests. A subset of samples will be subjected to shake flask extraction tests. Where possible, the testing would be done on the whole sample and on the -2mm size fraction to determine whether there is any concentration of sulphides in the fine component of the rock;

- A seep survey will be conducted around all infrastructure components that have been constructed of modified within the previous 3 years, and in the minded out quarries. Field pH, electrical conductivity (EC), Eh, and temperature readings will be collected. A minimum of 10% of the samples will be submitted for laboratory analyses, as detailed in the Quarry A, B and D Management and monitoring Plan (SRK 2010a). The seep survey will include all of the rock drains. Reference stations will also be established to provide basis for comparing this to waters that are not influenced by the development activities; and

- An annual quarry monitoring report, including the results and an interpretation of the geochemical data will be prepared and submitted to the NWB by March 31 of the year following sample collection (i.e. within 6 months of collecting the final quarry samples).

2.2 Underground Waste Rock

Monitoring plans for the waste rock are provided in the "*Doris North Waste Rock and Ore Management Plan"* (SRK 2010b). The program includes inspection and geochemical monitoring of the waste rock solids, routine monitoring of the pollution collection pond, and annual seepage surveys along the downgradient side of the waste rock storage area.

A summary of the requirements is provided as follows (HBML 2011):

- Daily visual inspection of the working face and muck pile by a field geologist to confirm rock types, mineralogical characteristics, and to classify the rock as mineralized or non-mineralized;

- Sampling and testing of the underground waste rock, including ABA on a minimum of one sample per 5000 tonnes of rock, with additional analysis of total sulphur and TIC on some rock units (SRK 2010b), and shake flask extraction tests on one sample per 50,000 tonnes of rock;

- Monitoring and recording the volumes of waste rock mined and placed in the mineralized and non-mineralized areas of the waste rock stockpile, and any non-mineralized waste rock that is removed for use in construction (pending approval);

- Regular water quality monitoring will be carried out at a surveillance monitoring station ST-2 located in the pollution control pond;

- Annual inspections by a qualified geochemist of the designated non-mineralized areas of the waste rock pile to confirm that there are no areas with elevated amounts of sulphide mineralization, and inspections of the designated mineralized areas of the pile to look for signs of weathering and oxidation of the sulphides;

- Seep surveys along the down-gradient toe of the waste rock pile and below the pollution control ponds and access road throughout operations and for at least 2 years following mining and backfilling activities. The seep survey will be completed at the same time and will follow the same procedures as used for the seep survey around other infrastructure areas. However, given the increased importance of obtaining samples from this area, all distinct seeps in the immediate vicinity of the waste rock pile (i.e. any seeps spaced more than 50 metres apart) will be tested for a full suite of laboratory parameters;

- Any non-mineralized waste rock in construction will also be inspected and sampled after construction is complete. The inspection and sampling protocols will be the same as those established for the quarry rock. The sampling density would be one sample per 10,000 tonnes of rock; and

- An annual quarry monitoring report, including the results and an interpretation of the geochemical data will be prepared and submitted to the NWB by March 31 of the year following sample collection (i.e. within 6 months of collecting the final quarry samples).

3 Monitoring of Quarry Rock Geochemistry

3.1 Sampling and Testing Program

Details of the 2011 sampling and testing program are presented in Appendix A.

A total of 40 rock samples were collected, including:

- 3 samples from Quarry 2
- 27 samples from infrastructure components in the Doris North area, including samples from Tail Lake Road, Tail Lake Dam, the road from camp to Robert's Bay and Camp Pads; and,
- 10 samples from the Doris Windy All-Weather road.

The three quarry samples and all twenty-seven of the samples from the Doris North area were submitted to ALS Chemex for total sulphur and total inorganic carbon analysis by Leco. One of the quarry samples and thirteen of the infrastructure samples were submitted to Maxxam Laboratories for full acid base accounting (ABA) analysis, in addition, eleven of the samples were submitted to Maxxam for shake flask extraction tests and elemental analysis by ICP-MS following aqua regia digestion.

All ten samples from the Doris Windy All-Weather road were submitted to ALS Chemex for total sulphur and total inorganic carbon analysis by Leco to confirm that they were within the range of previous samples collected in this area. The main purpose of collecting these samples was to obtain suitable material for Shake Flask Extraction (SFE) tests which could not be completed previously due to a sample preparation error. Five of the samples were selected for SFE testing as well as elemental analysis by ICP-MS following aqua regia digestion.

3.2 Results

3.2.1 Quarry 2 Monitoring

The majority of the rock from Quarry 2 has been classified as mafic basalt. This material has been thoroughly characterized through previous investigations and monitoring programs and has been classified as not potentially acid generating (non-PAG) due to its consistently low sulphide content and high neutralization potential. The 2011 samples also showed that the basalt had a low sulphide content and was classified as non-PAG. Trace element concentrations were below screening criteria based on ten times the typical crustal abundance for basaltic rocks (Price 1997).

In 2011, during one of the routine inspections in Quarry 2, a section of diabase was observed. Visual inspections indicated that portions of the diabase appeared to have elevated sulphide concentrations. Results of the laboratory testing on the diabase samples indicated that this material was non-PAG with low sulphur concentrations.

3.2.2 Doris North Area Monitoring

Twenty seven quarry rock samples from the Doris North area were submitted for laboratory testing. Results indicate all samples are non-PAG. Elemental analysis results were screened for anomalously high parameters through comparison to ten times average crustal abundances of basaltic rocks (Price 1997), none of the parameters exceeded these criteria, except one value for Se (0.6ppm). This value is in close to the detection limit for this parameter (0.5ppm) and is therefore within the range of analytical uncertainty.

Eleven of the Doris North Area samples were submitted for shake flask extraction analysis. All of the SFE results indicated alkaline pH values (8.9 to 10.2). Sulphate concentrations were low (median 9.1 mg/L) indicating little oxidation had occurred in the rocks. Comparison of these results to a screening criteria based on ten times the CCME water quality guidelines for the protection of aquatic life (CCME 2007) indicated no exceedances.

3.2.3 Doris Windy Road Monitoring

Ten samples were collected for the purpose of conducting shake flask extraction tests, therefore full ABA analysis was not requested for these samples. Total sulphur and TIC results indicate that these samples are classified as non-PAG. Elemental analysis results were compared to ten times average crustal abundances for basaltic rocks (Price 1997), none of the parameters exceeded these criteria.

Five of the ten samples were submitted for SFE tests. SFE results indicated alkaline pH values ranging from 9.1 to 9.7. Sulphate concentrations were low (median 5.3) indicating little oxidation has occurred in the rocks. Results were compared to ten times CCME water quality guidelines for the protection of aquatic life (CCME 2007) to screen for parameters that were elevated in the test leachate. None of the parameters exceeded these criteria.

4 Monitoring of Waste Rock Geochemistry

4.1 Sampling and Testing Program

Details of the 2011 Waste Rock monitoring program are presented in Appendix B.

Geological inspections of the blasted rock were made by site geologists at least once per day when the mining was in diabase, and once per shift in other rock units. Where possible, both the working face and the muck pile were inspected. The results of the inspections were recorded in an inspection log and included the location of the record, the rock type, the visual estimate of sulphide content, and whether the rock was directed to the non-mineralized or mineralized area of the waste rock pile.

Samples of the blasted rock (muck) were taken at regular intervals within the underground mine by site geologists. The samples were composited over an individual blast round, typically representing 50 to 100 m^3 of rock. Two types of samples were collected:

- Samples for sulphur (S), total inorganic carbon (TIC) and acid base accounting (ABA) tests included a representative mixture of fine and coarse rock fragments from the pile. These were pulverized prior to testing.

- Samples for Shake Flask Extraction (SFE) tests were sieved through a 1 cm sieve to collect the – 1 cm size fraction. The -1cm size fraction was subjected to testing.

The inspections were completed within the ore zones, but ore was considered to be mineralized by definition. Ttherefore geochemical testing was not completed on this material. All of the ore was stockpiled in an ore stockpile adjacent to the waste rock storage area.

Samples for S, TIC and ABA tests were shipped to ALS Laboratories (ALS) in Yellowknife for preparation. Splits were sent to ALS for S and TIC analyses at ALS in Vancouver, and to Maxxam Laboratories (Maxxam) for ABA tests. The samples for SFE tests were shipped directly to Maxaam for testing.

4.2 Results

Mining activities have resulted in the production of approximately 183,000 tonnes of waste rock, including approximately 86% of non-mineralized and 14% of mineralized waste rock. Additionally, 9,400 tonnes of ore was produced. Approximately 55% of the waste rock was diabase, while the remainder was basalt. The ore was a mixture of basalt with quartz veins. Basalt within approximately 15 metres of the diabase, including most of the basalt along the main decline was altered by contact metamorphism (heat) from the diabase.

The diabase had consistently low sulphur concentrations (typically less than 0.03%) and low TIC (typically less than 9 kg $CaCO_3$ eq/tonne). These were classified as not potentially acid generating.

The majority of the basalt had low sulphur concentrations (0.03 to 0.13%). However, TIC and NP content was variable (P25 to P75 values for TIC between 6.8 and 23 kg CaCO3 eq/tonne), and many samples had lower TIC and NP than expected given typical concentrations observed in basalt from the Doris area (P25 to P75 values between 167 to 339 kg CaCO3 eq/tonne, SRK 2011). This may be due to alteration of the basalts that are located in close proximity to the diabase. As a result, roughly one-third of the basalt samples were classified as having an uncertain potential for ARD based on TIC/AP ratios, and three samples had TIC/AP ratios of less than 1, and were classified as potentially acid generating. Comparison of TIC and Modified Sobek NP results for samples subjected to full ABA tests indicated that NP was typically greater than TIC, indicating that some NP would be contributed by silicate minerals. As a result, a smaller proportion of the basalt samples (i.e., 2/17) were classified as having an uncertain potential for ARD (NP/AP ratios between 1 and 3), and none were classified as potentially acid generating (NP/AP ratios less than 1). Given the relatively low sulphur content of this material, the presence of silicate NP, alkalinity contributed by other rock in the pile, and the relatively coarse grain size of this rock, it is considered unlikely that acidic conditions would develop in this material.

Trace element analyses on the solids indicated that lead and sulphur concentrations were enriched relative to typical basalt in a small proportion of the samples.

Shake flask extraction tests indicated that leachate in contact with these samples had high chloride, ammonia and nitrate concentrations. Concentrations of other trace elements were low in comparison to screening criteria.

The basalt was to be segregated according to visual estimates of sulphide content. A comparison of visual percent sulphide and analytical sulphide content for basalt indicates that the visual percent estimations are generally higher than the equivalent analytical sulphur content indicating that the visual estimates resulted in a generally conservative classification of sulphur content and therefore management destination. Some exceptions occurred, typically for samples with trace amounts of sulphides.

Due to the lower than expected TIC and NP content of the rock, the segregation criteria for basalt should be reviewed. A humidity cell test was started in 2010 on this type of material, and further assessment of the results of that test are recommended to more fully understand the long-term implications of these findings.

5 Seepage Surveys

5.1 Sampling and Testing Program

Details of the 2011 seep survey are provided in Appendix C.

The 2011 seep survey was carried out from June 5th to June 16th 2011. Seep survey locations were established by walking the toes of all roadways, building pads and quarry sites. A total of 99 sites, including 3 reference sites, were established and field pH and electrical conductivity readings were taken.

Samples were collected from six sites with pHs exceeding 8, seventeen of the more typical sites with pHs between 7 and 8, and all three reference sites. Samples were submitted to ALS-Chemex in Vancouver BC for analysis of nutrients (ammonia, nitrate and chloride), routine parameters (pH, alkalinity and sulphate) and dissolved metals by ICP-MS.

5.2 Results

The results of the seep field measurements are summarized in Table 1. The majority of seepage sites had field pH measurements between 7 and 8, and none of the seeps were acidic. The range of pHs were similar to that of reference point locations. Field conductivity readings varied by location, the highest electrical conductivity (EC) values were in the Mine Area and lowest EC values at the reference sites.

Table 1: Mean and Median EC and Field pH of Seepage Sites; Grouped According to Area

Area	Electrical Conductivity (EC)		Field pH	
	Mean	Median	Mean	Median
Mine Area (n=20)	2020	1569	7.7	7.6
Doris North Areas (n=53)	327	233	7.8	7.8
Doris Windy (n=23)	184	128	7.6	7.5
Reference Points (n=3)	47	43	7.6	7.7

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Note: Total n=99

The results of laboratory analyses indicated that six of the eleven samples from the Doris North infrastructure areas had slightly elevated levels of copper compared to screening criteria based on CCME water quality guidelines. One sample, TLR5 was elevated in more parameters (ammonia, nitrate, sulphate, and chloride as well as copper). Samples from the Doris Windy Road and the reference areas had generally low nutrient and metal concentrations in comparison to these screening criteria. These results were comparable to results from previous years.

This is the first year where underground mine rock was present at the site. Seepage in the Mine Area (i.e. below the ore and waste rock piles), had elevated calcium, chloride, nitrate and ammonia concentrations in comparison to the infrastructure areas. These have been attributed to flushing of drilling brines and blasting residues from the waste rock. HBML have implemented additional seepage control measures in this area to minimize seepage losses from this area in future.

There were no differences in the results of laboratory analyses completed on samples with neutral versus slightly alkaline pH conditions, indicating that in future, sampling should not be biased towards water with more alkaline pH conditions as is currently specified in the monitoring protocols.

6 Summary and Conclusions

The results of the quarry rock geochemistry investigation indicates that all of the samples collected and submitted for testing are not potentially acid generating. Elemental analyses indicate that concentrations of most parameters are within 10 times the average crustal abundance for basaltic rocks. SFE tests indicate that there is low potential for metal leaching from these materials. These findings are consistent with the results of the 2010 road and quarry monitoring programs and testing completed in support of the permit applications for the Doris Mine Area and for the Doris-Windy Road. The results of the 2011 seepage survey indicated that there were no major issues with respect to ML/ARD in seepage associated with the infrastructure at Hope Bay. Results were comparable to that measured in previous years.

The survey of the waste rock from the underground decline indicated that the diabase, which comprised approximately 55% of the waste rock, had a consistently low sulphide content and was classified as non-PAG. Basalt had a lower than expected TIC and NP content, resulting in a small proportion of samples being classified as PAG based on TIC/AP ratios. Given the relatively low sulphur content of this material, the presence of silicate NP, alkalinity contributed by other rock in the pile, and the relatively coarse grain size of this rock, it is considered unlikely that acidic conditions would develop in this material.

Shake flask extraction tests on waste rock samples from the underground mine indicated that leachate in contact with these samples had high chloride, ammonia and nitrate concentrations, and that concentrations of other trace elements were low in comparison to screening criteria. These results were consistent with seepage samples from the Mine Area. The high chloride and nutrient concentrations have been attributed to flushing of drilling brines and blasting residues from the waste rock. HBML have implemented additional seepage control measures in this area to minimize seepage losses from this area in future.

This report "*2011 Waste Rock and Quarry Monitoring Report*" has been 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.

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7 References

Canadian Council of the Environment, 2007. Canadian Water Quality Guidelines for the Protection of Aquatic Life Update 7.0. September 2007

Miramar Hope Bay Ltd. 2007. Monitoring and Follow-Up Plan Doris North Project, Nunavut. April 2007.

Hope Bay Mining Ltd. 2011. Monitoring and Follow-Up Plan Doris North Project, Nunavut. May 2011.

Nunavut Water Board License License No: 2AM-DOH0713 September 19, 2007.

Price, W.A., 1997. DRAFT Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia. BC Ministry of Employment and Investment, Energy and Minerals Division. 151pp

SRK Consulting, 2011. Geochemical Characterization Report for Waste Rock and Ore from the Doris Deposits. Prepared for Hope Bay Mining Ltd, March 2011

SRK Consulting, 2010a. Hope Bay Project Quarry A, B & D Management and Monitoring Plan- Revision 01. Prepared for HBML, October 2010.

SRK Consulting, 2010b. Hope Bay Project Doris North Waste Rock and Ore Management Plan, Prepared for HBML, December 2010.

Appendices

Appendix A
2011 Quarry Rock Geochemistry

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Memo

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		Project #:	1CH008.057
Subject:	2011 Quarry Rock Geochemistry		

1 Introduction

During 2011, quarry rock excavated from Quarry 2 and from the new Roberts Bay Tank Farm was used for the construction of various infrastructure associated with development of the Doris Mine. Prior to development, the rock from each of these quarries was characterized geochemically (SRK 2008) and classified as not potentially acid generating with low potential for metal leaching. To confirm these results and assess the ARD potential of the fine fraction, further characterization and monitoring was completed during quarrying activities and post-construction. This memo documents the results of the 2011 characterization and monitoring program. The memo also includes results of further testing of rock from the Doris-Windy All-Weather Road to address a gap from the 2010 program.

Monitoring requirements for quarries and quarry rock associated with the Doris Mine and Doris-Windy Road are specified in Water License 2AM-DOH0713, Water Licence 2BE-HOP0712, and KIA Permits KTP307Q010 and KTP308Q010. These requirements are summarized in the *Doris North Gold Project Monitoring and Follow-up Plan* for the site (HBML 2011). Details on how the requirements will be implemented for quarries and quarry rock associated with the Doris Windy Road are provided in the *Hope Bay Project Quarry A, B & D Management and Monitoring Plan- Revision 01* (SRK 2010). To ensure consistent procedures are followed in all areas of the site, the monitoring procedures in the A, B & D Management and Monitoring Plan are also followed for quarries and quarry rock in the Doris North area.

2 Methods

2.1 Quarry Monitoring, Sampling and Analysis

During the 2011 construction season, quarrying operations were active in Quarry 2 and in the excavation for the new Roberts Bay Tank Farm. Freshly exposed rock in active quarry faces was visually inspected and sampled by qualified site geologists. Field notes were taken to document the lithology, sulphide content and veining.

In 2011, three rock samples were collected from Quarry 2, including one routine monitoring sample and two sample of diabase that was unexpectedly encountered in the quarry. The routine monitoring sample was sieved and separated into <1cm and <2 mm fractions. Both size fractions were were sent to ALS Labs for total sulphur analysis, with the criteria that any sample with greater than 0.1% sulphur would be submitted for acid base accounting (ABA) and elemental analysis by ICP-MS. The diabase samples were submitted for analysis of total sulphur and TIC only.

2.2 Doris North Area Inspection, Sampling and Analysis

The areas were visually inspected by walking along the base on the sides of the roads and pads. Samples were collected from a total of 27 sites in June 2011. Doris North monitoring areas consisted of sample collection from Tail Lake Road, Tail Lake Dam, the road from Rob Bay to Doris Camp and Pad areas in camp. 27 samples were collected from these areas. These samples contain material from Quarry 2 and from the excavation for the new Roberts Bay Tank Farm.

Twenty-seven samples were submitted to ALS for total sulphur and total inorganic carbon (TIC) by Leco. Based on the criteria >0.1 wt. % total sulphur, ten of these samples were submitted for further ABA. ABA tests were conducted using the Modified Sobek method with sulphur speciation and TIC analysis.

Nineteen samples from the Doris North area were submitted for elemental analysis by ICP-MS following aqua regia digestion.

Ten of the samples were submitted for SFE tests in accordance with permit requirements. SFE tests provide an indication of the relative potential for metal leaching from weathered waste materials. However, the actual concentrations in waste material seepage will depend on the amount of water, the proportion of waste material that is contacted by infiltrating water, the amount of time the material has been allowed to weather, the amount of time the water is in contact with the waste material, the grain size distribution of the material, and the presence of secondary minerals that may control or limit concentrations. Therefore, they cannot be directly compared to discharge water quality guidelines.

2.3 Doris Windy All-Weather Road Inspection, Sampling and Analysis

In 2010, shake flask tests could not be completed on samples from the Doris-Windy road due to an error that occurred in sample preparation. In 2011, samples were collected from a total of 10 of the previously samples sites to provide material for the shake flask tests. The locations are shown in Figure 2. Slight differences in the location are attributed to variability in the handheld GPS readings.

At each site, a composite of approximately 2 kg of run-of-quarry material was sampled from the base of the side of the road. The surface of the road was not sampled as the objective was to obtain samples of Quarry A, B and D material and the surface crush was sourced from Quarry 2. When available, approximately 1 kg of the fine fraction (<2 mm) was obtained by manual sieving. Sample locations are shown in drawings in Attachment 1.

All ten samples were submitted to ALS for total sulphur and carbon analysis by Leco. None of the samples were submitted for further ABA testing as this was completed in the 2010 report.

Five of the samples collected were submitted to Maxxam Laboratories for SFE tests in accordance with permit requirements as well as elemental analysis by ICP-MS following aqua regia digestion. SFE tests provide an indication of the relative potential for metal leaching from weathered waste materials. The actual concentrations in waste material seepage will depend on the amount of water, the proportion of waste material that is contacted by infiltrating water, the amount of time the material has been allowed to weather, the amount of time the water is in contact with the waste material, the grain size distribution of the material, and the presence of secondary minerals that may control or limit concentrations.

3 Results

3.1 Quarry Monitoring

Quarry 2

Visual inspections reported that active faces in Quarry 2 were primarily composed of mafic volcanics with trace disseminated pyrite and visible carbonates with pervasive calcium carbonate veining. Occasionally an active face was composed of coarse basalt, with 1-2% pyrite and calcium carbonate alteration. In February 2011, a coarse grained diabase was identified with visible sulphide content estimates ranging from <1-3% in Quarry 2. In areas of greater sulphide concentration, pyrite cubes were observed up to 2mm in size. Two samples were collected from the area to geochemically characterize the material. The samples were analyzed for total sulphur, total carbon and TIC at ALS. Maxxam Laboratories analyzed both samples for modified acid-base accounting, and ICP element scan including Se and low level Hg. These samples were classified as non-potentially acid generating with low sulphur (Table 1).

Table 1: Total Sulphur and Carbon Results for 2 Samples of Quarry 2 Diabase Material

Sample ID	Rock Type	Total Sulphur wt %	Acid Potential $kgCaCO_3/t$	TIC* $kgCaCO_3/t$	TIC/AP
885001	Diabase	0.02	0.63	41	65
885002	Diabase	0.02	0.63	11	18

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* TIC= Total inorganic carbon in units of NP, based on ALS C-GAS05 analysis of CO_2.

One routine sample was collected from other areas in Quarry 2 and was submitted for analysis for sulphur at ALS labs. The sample was sieved to produce a -2mm and a +2mm-1cm size fraction. The -2mm portion had >0.1% sulphur and was therefore submitted for further analysis including modified ABA, ICP element scan including Se and low level Hg and shake flask extraction tests at Maxxam Laboratories. Full results are provided in Attachment 2. The elemental analysis results were compared to ten times the average crustal abundances for basaltic rocks (Price 1997). None of the parameters exceeded these criteria. SFE results were compared to ten times CCME water quality guidelines for the protection of aquatic life (CCME 2007) to screen for parameters that were elevated in the test leachate. All parameters were below guidelines. This sample was classified as non-PAG, ABA results are provided in Table 2. These results were comparable to results of previous sampling in this area.

Table 2: Acid Base Accounting Result for Quarry 2 Sample

Sample ID	Paste pH	Sulphate Sulphur wt %	Sulphide Sulphur wt %	MPA* kg $CaCO_3$/t	Modified NP kg $CaCO_3$/t	NP/AP
11Q20022 (<2MM)-PULP	8.9	<0.01	0.17	5.3	84.3	15.9

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Note: *MPA = Maximum Potential Acidity

Robert's Bay Fuel Farm

The active faces in the quarry at the Robert's Bay Fuel Farm were composed of primarily mafic variolitic pillow basalt and mafic volcanics. Carbonates were often strongly present and pervasive, trace sulphides were present. There was occasional hematite staining on joints. No samples were taken directly from the quarry due to safety concerns. However, material from this area was placed in the airstrip and roads in the Roberts Bay area which were sampled in 2011.

3.2 Doris North Area Monitoring

3.2.1 Visual Observations

Visual observations are provided in Attachment 3. Samples from these areas were characterized as grey-green metavolcanics with <1% sulphides, calcite, disseminated throughout or as veinlets, and occasional quartz veins.

3.2.2 Static Test Results

Total sulphur and inorganic carbon analyses were completed on all 27 samples from the Doris North Area. Full ABA analyses were completed on 10 of these, including all samples with total sulphur content greater than 0.1%. Full results are provided in Attachment 4.

The total sulphur and TIC analyses are summarized in Table 3. The total sulphur was used to calculate the acid potential (AP) and TIC was represented in units of neutralization potential. These in turn were used to calculate TIC/AP ratios for the full set of samples. TIC significantly exceeds acid potential in all of the samples (Figure 1), indicating that they are not potentially acid generating.

Table 3: Summary of Total Sulphur and Carbon Results for 27 Samples, Doris North Area

Statistics (n=27)	Total Sulphur wt%	Acid Potential kg $CaCO_3$/t	TIC* kg $CaCO_3$/t	TIC/AP
P25	0.11	3.3	82	19
Median	0.12	3.8	111	27
P75	0.14	4.4	125	32
Max	0.48	15	233	57

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* TIC= Total inorganic carbon in units of NP, based on ALS C-GAS05 analysis of $CO_{2.}$.

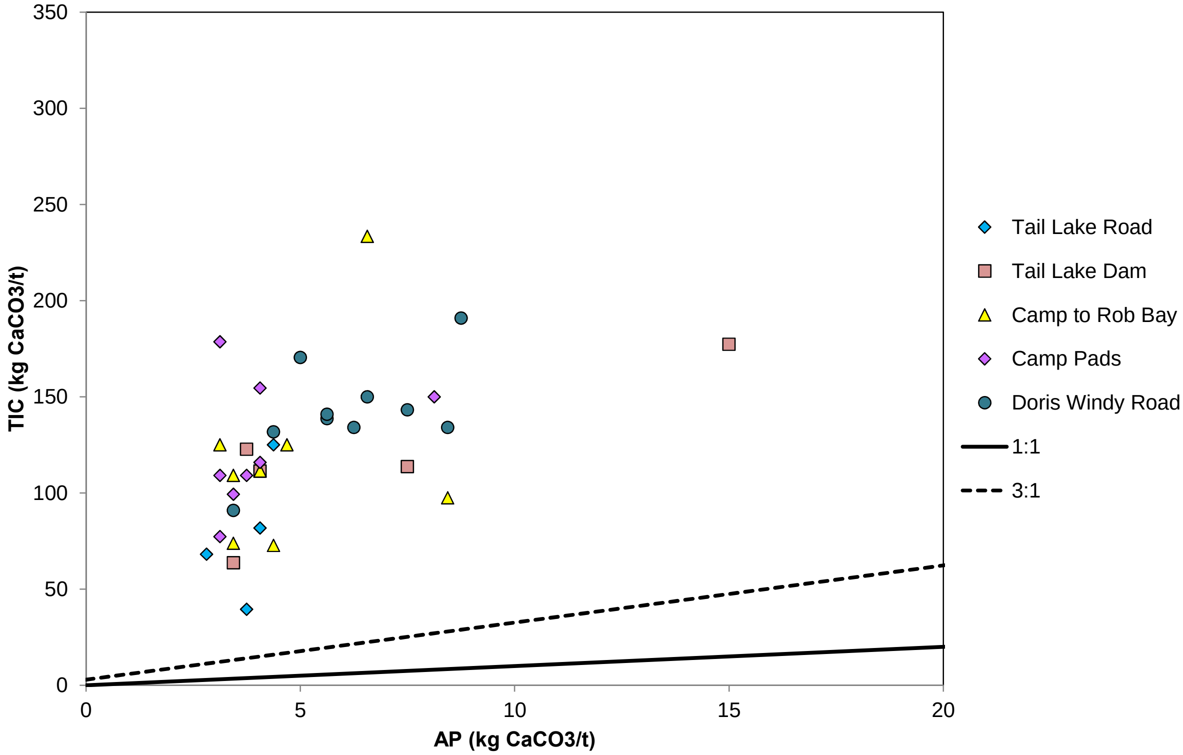

Figure 1: Acid Potential versus Total Inorganic Carbon for 2011 Infrastructure Samples

Summarized results from of the full ABA tests are presented in Table 4. These results confirm that all of the samples contain substantial amounts of neutralization potential. The NP/AP ratios are significantly greater than 3 (Figure 2, Table 4), indicating that the samples are not potentially acid generating. Neutralization potential is well correlated with TIC, suggesting that calcium-magnesium carbonates are the source of the neutralization potential (Figure 3).

Table 4: Summary of Acid Base Accounting Results for 10 Samples from the Doris North Area

Statistics (n=10)	Paste pH	Sulphate Sulphur wt %	Sulphide Sulphur wt %	MPA* kg CaCO3/t	Modified NP kg CaCO3/t	NP/AP
25th Percentile	9.0	0.01	0.10	3.2	93	14
Median	9.1	0.01	0.16	5.0	132	20
75th Percentile	9.2	0.01	0.25	7.9	158	30
Max	9.4	0.02	0.46	14	182	57

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Note: *MPA = Maximum Potential Acidity

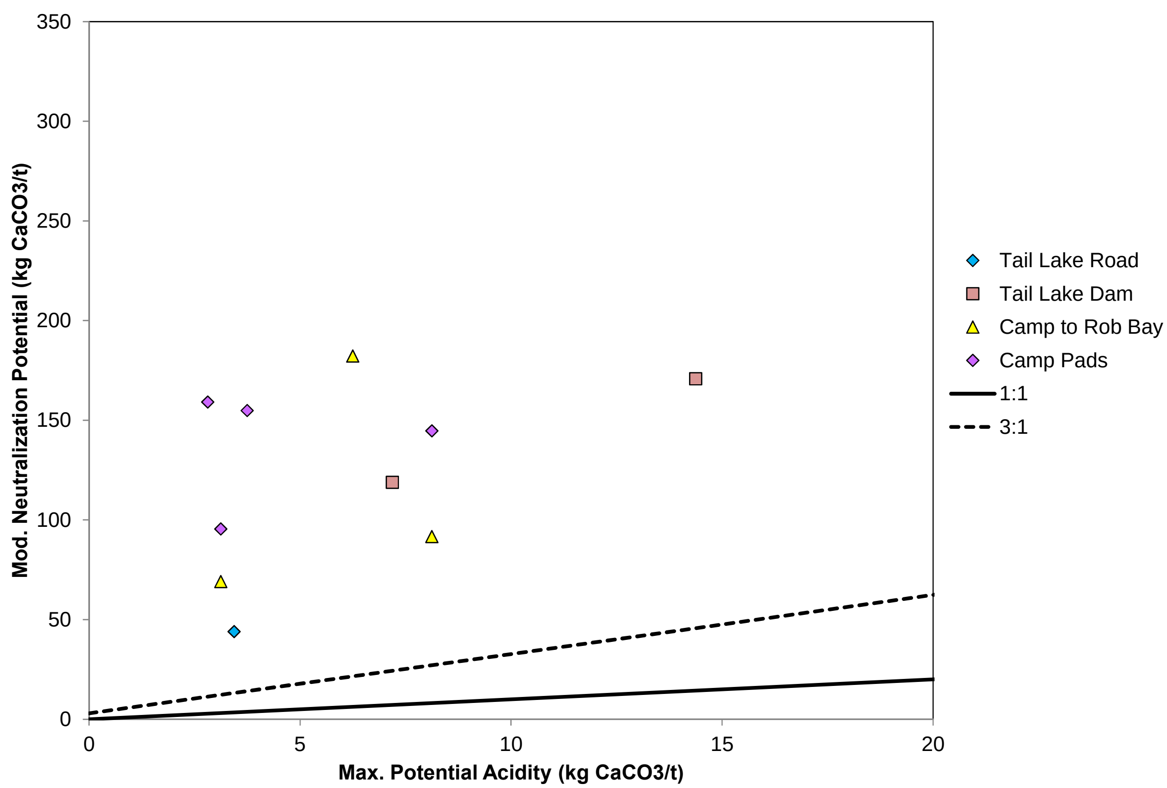

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Figure 2: Maximum Potential Acidity versus Neutralization Potential for 2011 Infrastructure samples with ≥0.1 wt. % Total Sulphur.

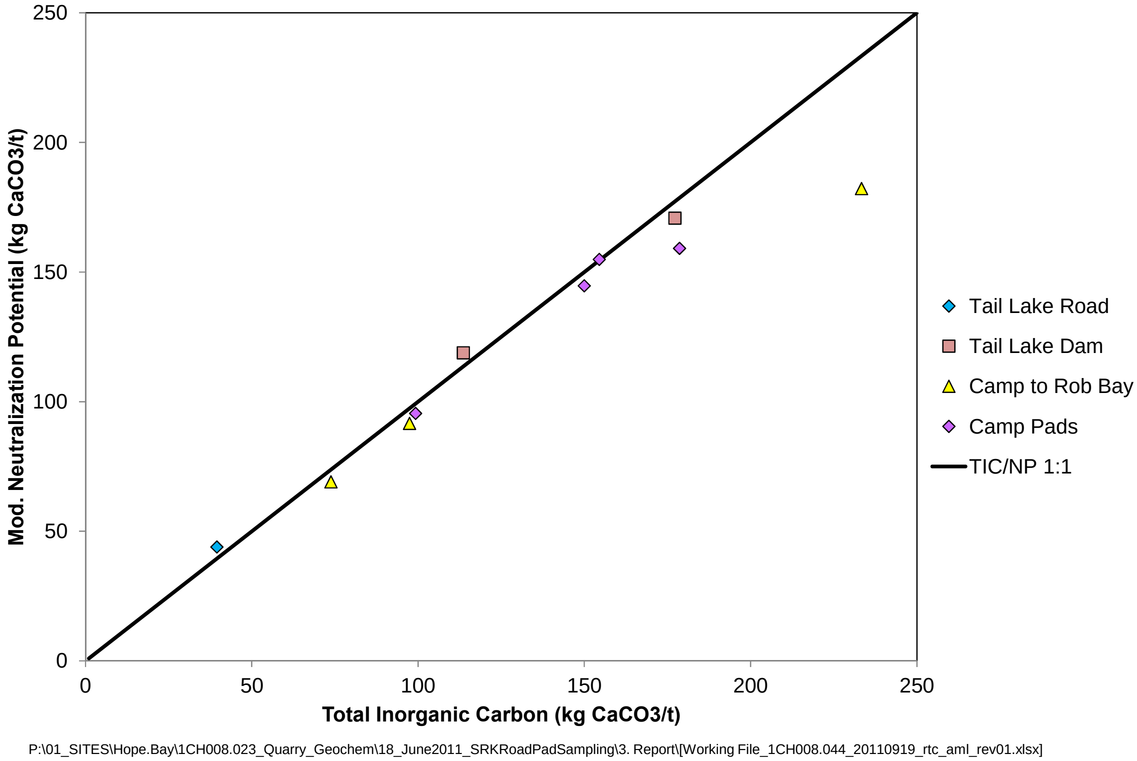

Figure 3: Total Inorganic Carbon versus Neutralization Potential for 2011 Infrastructure Samples

3.2.3 Elemental Analyses

Results of the elemental analysis of the Doris North area samples are provided in Attachment 5. A summary of these results is provided in Table 5. The data area compared to 10 times the average crustal abundance for basaltic rocks (Price 1997) as a means of screening the data for anomalously high values. Most parameters are not elevated compared to these screening criteria. For most samples, selenium could not be assessed because the detection limits were high in comparison to these screening criteria and the values were less than detection. However one sample exceeded the detection limit and the screening criteria with a concentration of 0.6 ppm.

3.2.4 Shake Flask Extraction Tests

SFE tests were completed on 11 of the 27 Doris North area samples. The SFE results are summarized in Table 6, with complete results presented in Attachment 6. All SFE tests had slightly alkaline pH ranging from 8.9 to 10.2. SFE results were compared to ten times the CCME guidelines for the protection of aquatic life (CCME 2007) to screen for parameters that were elevated in the test leachate. None of the samples exceeded ten times the CCME guidelines.

Table 5: Summary of Metals Analyses for 19 Samples from the Doris North Area

Statistic (n=19)	Units	DL	P25	Median	P75	Max	Average Crustal Abundance for Basaltic Rocks
Mo	ppm	0.1	0.2	0.3	0.4	2.3	1.5
Cu	ppm	0.1	115	122	134	207	87
Pb	ppm	0.1	1.2	1.5	2.2	9.3	6
Zn	ppm	1.0	69	74	85	99	105
Ag	ppm	0.1	<0.1	<0.1	<0.1	<0.1	0.1
Ni	ppm	0.1	59	79	101	377	130
Co	ppm	0.1	37	39	41	64	48
Mn	ppm	1.0	1042	1199	1237	1539	1500
Fe	%	0.01	5.6	5.8	6.1	7.7	8.7
As	ppm	0.5	1.4	2.0	4.5	11	2
U	ppm	0.1	<0.1	<0.1	0.1	0.3	1
Au	ppb	0.5	1.8	2.5	6.1	12	4
Sr	ppm	1.0	24	27	30	38	465
Cd	ppm	0.1	<0.1	<0.1	0.1	0.3	0.2
Sb	ppm	0.1	<0.1	<0.1	<0.1	0.1	0.2
V	ppm	2.0	128	137	165	223	250
Ca	%	0.01	3.3	4.6	5.5	6.8	7.6
P	%	0.001	0.031	0.035	0.042	0.073	0.11
Cr	ppm	1.0	139	177	219	653	170
Mg	%	0.01	2.7	2.9	3.2	6.1	4.6
Ba	ppm	1.0	4.5	7.0	10	21	330
Ti	%	0.001	0.21	0.26	0.28	0.32	1.4
W	ppm	0.1	<0.1	<0.1	<0.1	<0.1	0.7
Hg	ppm	0.01	0.01	0.01	0.01	0.01	0.09
Se	ppm	0.5	<0.5	<0.5	<0.5	**0.60**	0.05

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Note: Numbers highlighted in bold exceed 10 times the average crustal abundance for basaltic rocks from Price (1997).

Table 6: Summary of Shake Flask Extraction Results for the Doris North Area

Statistics (n=11)	Units	DL	P25	Median	P75	Max	Screening Criteria
Al	mg/L	0.0002	0.24	0.28	0.35	0.57	1
Sb	mg/L	0.00002	0.00013	0.00017	0.00021	0.00032	
As	mg/L	0.00002	0.00092	0.0012	0.0028	0.019	0.05
Cd	mg/L	0.000005	<0.000005	<0.000005	<0.000005	<0.000005	
Ca	mg/L	0.05	3.7	5.1	6.9	11	
Cr	mg/L	0.0001	0.0001	0.0002	0.0002	0.0057	
Co	mg/L	0.000005	0.000041	0.000054	0.00021	0.00068	
Cu	mg/L	0.00005	0.0006	0.00089	0.0015	0.0061	0.02
Fe	mg/L	0.001	0.018	0.023	0.061	0.48	3
Mg	mg/L	0.05	0.80	0.94	1.1	2.0	
Mn	mg/L	0.00005	0.00077	0.00088	0.0026	0.01	
Mo	mg/L	0.00005	0.00073	0.0009	0.0013	0.0019	0.73
Ni	mg/L	0.00002	0.000065	0.00011	0.00038	0.0041	0.25
Se	mg/L	0.00004	0.00037	0.00057	0.00092	0.0010	0.01
Ag	mg/L	0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.001
Sr	mg/L	0.00005	0.0090	0.011	0.015	0.032	
U	mg/L	0.000002	0.000002	0.000005	0.000012	0.00018	0.15
Zn	mg/L	0.0001	0.0001	0.0001	0.0004	0.0013	0.3
Hg	ug/L	0.002	<0.002	0.002	0.003	0.006	0.26

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3.3 Doris-Windy All-Weather Road Monitoring

3.3.1 Visual Observations

Samples along the entire length of the road were characterised as mafic meta-volcanics. Sulphides were predominantly not present or present at <1% abundance and finely disseminated. Occasional calcite veinlets were observed. Full visual observations are recorded in Attachment 3.

3.3.2 Static Test Results

As discussed previously, these samples were collected primarily for the purposes of completing SFE testing. Therefore, full ABA analysis was not requested for these samples. Total sulphur and inorganic carbon analyses were completed to confirm that the samples were representative of the 2010 dataset. Results for all 10 samples are provided in Attachment 4. The total sulphur was used to calculate acid potential (AP), total inorganic carbon is represented in units of neutralization potential. These values were used to calculate TIC/AP ratios for the full set of samples. Based purely on total sulphur and total carbon data, TIC significantly exceeds acid potential in all of the samples (Figure 1), indicating that all samples from the Doris-Windy All-Weather Road are not potentially acid generating. Table 7 summarizes these results. These findings are consistent with results from the 2010 investigation (SRK 2011).

Table 7: Summary of Total Sulphur and Carbon Results for 10 Doris-Windy Road Samples

Statistic (n=10)	Total Sulphur wt%	Acid Potential kg CaCO3/t	TIC* kg CaCO3/t	TIC/AP
25th Percentile	0.17	5.2	134	22
Median	0.19	5.9	140	24
75th Percentile	0.23	7.3	148	26
Max	0.28	8.8	191	34

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* TIC= Total inorganic carbon in units of NP, based on ALS C-GAS05 analysis of CO_2.

3.3.3 Elemental Analyses

Results of elemental analysis of 5 of the 10 samples collected from the Doris-Windy road are provided in Attachment 5. A summary is provided in Table 8. The data are compared to 10 times the average crustal abundance for basaltic rocks (Price, 1997). None of the parameters exceeded these screening criteria.

3.3.4 Shake Flask Extractions

SFE tests were completed on five of the Doris-Windy All-Weather Road samples. The results are summarized in Table 9, with complete results presented in Attachment 6. These samples all had slightly alkaline pH ranging from 9.1 to 9.7. Shake flask extraction results were compared to ten times the CCME guidelines for the protection of aquatic life (CCME 2007) to screen for parameters that were elevated in the test leachate. None of the samples were elevated in comparison to these criteria.

Table 8: Summary of Metals Analyses for 5 Samples from the Doris-Windy All-Weather Road

Parameter (n=5)	Units	DL	P25	Median	P75	Max	Average Crustal Abundance for Basaltic Rocks
Mo	ppm	0.1	0.2	0.2	0.2	0.4	1.5
Cu	ppm	0.1	130	133	146	157	87
Pb	ppm	0.1	1.4	1.5	2.2	4.8	6
Zn	ppm	1.0	103	107	114	118	105
Ag	ppm	0.1	<0.1	<0.1	<0.1	0.2	0.1
Ni	ppm	0.1	43	48	63	66	130
Co	ppm	0.1	41	42	42	44	48
Mn	ppm	1.0	1530	1547	1594	1677	1500
Fe	%	0.01	6.9	7.9	8.8	9.2	8.7
As	ppm	0.5	1.6	3.2	5.5	6.7	2
U	ppm	0.1	<0.1	<0.1	0.3	0.3	1
Au	ppb	0.5	3.2	4.0	4.9	5.8	4
Sr	ppm	1.0	22	23	27	31	465
Cd	ppm	0.1	0.1	0.1	0.1	0.3	0.2
Sb	ppm	0.1	<0.1	<0.1	<0.1	<0.1	0.2
V	ppm	2.0	185	233	234	251	250
Ca	%	0.01	5.3	5.4	6.2	7.3	7.6
P	%	0.001	0.026	0.035	0.041	0.047	0.11
Cr	ppm	1.0	71	87	147	163	170
Mg	%	0.01	3.0	3.0	3.2	3.5	4.6
Ba	ppm	1.0	11	17	30	32	330
Ti	%	0.001	0.17	0.19	0.24	0.33	1.40
W	ppm	0.1	<0.1	<0.1	<0.1	<0.1	0.7
Hg	ppm	0.01	0.01	0.01	0.01	0.01	0.09
Se	ppm	0.5	<0.5	<0.5	<0.5	<0.5	0.05

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Average crustal abundances for basaltic rocks from Price (1997)

Table 9: Summary of Shake Flask Extraction Results for the Doris-Windy All-Weather Road

Statistic (n=5)	Units	DL	P25	Median	P75	Max	CCME *10
Al	mg/L	0.0002	0.30	0.34	0.35	0.39	1
Sb	mg/L	0.00002	0.00024	0.00024	0.00028	0.00031	
As	mg/L	0.00002	0.0010	0.0015	0.0017	0.0065	0.05
Cd	mg/L	0.000005	<0.000005	<0.000005	<0.000005	<0.000005	
Ca	mg/L	0.05	6.4	7.6	7.8	9.3	
Cr	mg/L	0.0001	<0.0001	<0.0001	0.0001	0.0002	
Co	mg/L	0.000005	0.00002	0.00004	0.00015	0.00017	
Cu	mg/L	0.00005	0.00068	0.00069	0.0028	0.0042	0.02
Fe	mg/L	0.001	0.0070	0.051	0.063	0.092	3
Mg	mg/L	0.05	0.93	1.1	1.2	2.2	
Mn	mg/L	0.00005	0.00075	0.0025	0.0025	0.0032	
Mo	mg/L	0.00005	0.00067	0.00069	0.00081	0.0015	0.73
Ni	mg/L	0.00002	0.00005	0.00015	0.00017	0.00018	0.25
Se	mg/L	0.00004	0.00085	0.00085	0.0011	0.0033	0.01
Ag	mg/L	0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.001
Sr	mg/L	0.00005	0.012	0.012	0.015	0.021	
U	mg/L	0.000002	0.000011	0.000026	0.00003	0.00011	0.15
Zn	mg/L	0.0001	0.0002	0.0002	0.0002	0.0003	0.3
Hg	ug/L	0.002	0.002	0.002	0.002	0.004	0.26

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4 Conclusions

The results of the road and quarry monitoring program indicates that all of the samples collected and submitted for testing are not potentially acid generating. Elemental analyses indicate that concentrations of most parameters are within 10 times the average crustal abundance for basaltic rocks. SFE tests indicate that there is low potential for metal leaching from these materials. These findings are consistent with the results of the 2010 road and quarry monitoring programs and testing completed in support of the permit applications for the Doris Mine Area and for the Doris-Windy Road.

5 Recommendations

Construction of roads and infrastructure, including further development of the quarries is expected to continue in 2012. Therefore, it will be necessary to expand the inspection and sampling programs to cover any new infrastructure components in 2012.

6 References

CCME, 1999, updated 2007. Canadian Environmental Quality Guidelines. Canadian Council of Ministers of Environment.

Miramar Hope Bay Ltd. 2007. Monitoring and Follow-Up Plan Doris North Project, Nunavut. April 2007.

Nunavut Water Board License License No: 2AM-DOH0713 September 19, 2007.

Price, W.A. 1997. DRAFT Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia. BC Ministry of Employment and Investment, Energy and Minerals Division. 151pp

SRK Consulting 2011. 2010 Waste Rock and Quarry Monitoring Report. 1CH008.023. Prepared for Hope Bay Mining Ltd, March 2011.

Attachment 1: Drawings

Legend

- 2011 Sample Points
- 2010 Sample Points

0 125 250 500 750 1,000 Meters

srk consulting

NEWMONT The Gold Company

Job No: 1CH008.057

Filename: 1CH008.057_2011_quarry_rock_geochemistry

2011 Quarry Rock Geochemistry

Hope Bay Gold Project

QR Survey Locations

Date:	Approved:	Figure:
March 2012	-	1

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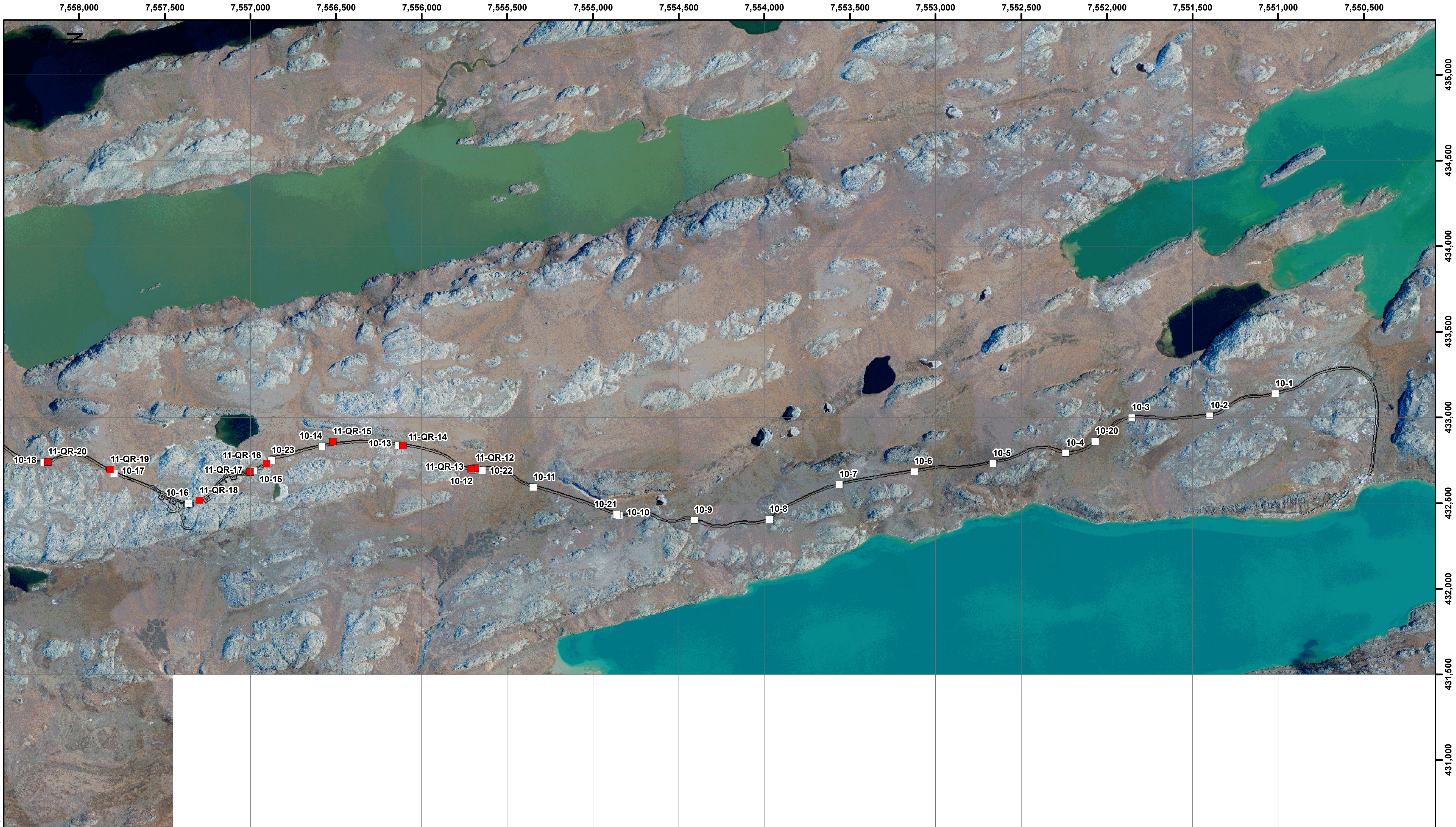

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Legend

- 2011 Sample Points
- 2010 Sample Points

0 190 380 760 1,140 1,520 Meters

srk consulting

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Hope Bay Gold Project

QR Survey Locations

Job No: 1CH008.057

Filename: 1CH008.057_2011_quarry_rock_geochemistry

2011 Quarry Rock Geochemistry

Date: March 2012

Approved: -

Figure: 2

Attachment 2: Newmont Observations and Sample Information

Hope Bay Quarry Sampling Log

Sample #	Quarry	Hole ID	UTM N	UTM E	Elev	Notes	Method	Lab	Date	Sampled By
876035	2	S20				west wall ramp drill cuttings taken for Industrial Hygeine	Fibrous minerals Y/N		1-Sep-11	Correen O'Shea
876036	2	O16				west wall ramp drill cuttings taken for Industrial Hygeine	Fibrous minerals Y/N		1-Sep-11	Correen O'Shea
11Q20021	2	N/A	7559023	432370	60	Fine grain green Basalt Blast material. No visible sulphides. Sieved to -1cm. No -2mm sieve available onsite.	ICP	ALS	11-Sep-11	James MacLean
11Q20022	2	N/A	7559023	432370	60	Fine grain green Basalt Blast material. No visible sulphides. Sieved to -2mm at Lab.	ICP	ALS	11-Sep-11	James MacLean

Hope Bay Quarry Inspection Log

Quarry	Date	Inspected by	Activity*	Location**	Notes	Key Observations: Sulphides	Key Observations: Fibrous Minerals	Follow-up
2	24-Feb-11	James MacLean	Yes	Quarry 2	Active face was composed primarily of mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were present. Coarse grained diabase was identified with sulphide contents ranging from <1% to ~3%. SRK was notified.	trace, <1% to ~3%	None	Detail Map of Quarry 2, Samples sent for ABA and total S analysis
2	25-Feb-11	James MacLean, Joe Sagar	Yes	Quarry 2	Coarse grained diabase was identified on the second bench in the wall and in material that has been previously blasted. Sulphide percentage ranges from <1% to ~3%. The greater concentration pyrite are cubes up to 2mm in size. Calcite veinlets were identified in one Diabase sample.	<1% to ~3%	None	Sample Crushed material and send for ABA and total S. Examine Ice Core dam Armor to determine if Diabase material is present.
2	25-Feb-11	James MacLean	Yes	Ice Core Dam site	Piles of ROQ material were examined for presence of Diabase material. In approximately 26m3 of material I only found 0.0045m3 or 0.017%	1%	None	Inform SRK
2	5-Mar-11	James MacLean	Yes	Quarry 2	Active face was composed primarily of mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were present. Previously noted diabase is being avoided in current Quarry production.	trace	None	None
2	14-Mar-11	Correen O'Shea	yes	Quarry 2	Blast planned for 13-Mar, hence delay in visit. Active face was composed primarily of mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were present. Previously noted diabase is being avoided in current Quarry production.	trace	None	None
2	20-Mar-11	Correen O'Shea	No Activity		Next planned blast is Wednesday, Mar 23			
2	24-Mar-11	Correen O'Shea	Yes	Quarry 2	Active face was composed of coarse basalt with 1-2% py but still CC altered.	1-2%	None	None
2	2-Apr-11	James MacLean	Yes	Quarry 2	Active face was composed primarily of mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were present.	trace	None	None
2	10-Apr-11	James MacLean	Yes	Quarry 2	Active face was composed primarily of mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were present.	trace	None	None
2	16-Apr-11	James MacLean	Yes	Quarry 2	Active face was composed primarily of mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were present.	trace	None	None
2	24-Apr-11	Correen O'Shea	Yes	Quarry 2	Active face was composed primarily of mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were present, pervasive cc veining.	trace	None	None
RBFF	24-Apr-11	Correen O'Shea	Yes	Roberts Bay Fuel Farm	Active face was composed primarily of mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were weakly present, mm scale stringers.	trace	None	None
2	30-Apr-11	Correen O'Shea	No Activity	Quarry 2	no blasting, but moving continues. Took a look at better exposed pile, no change			
RBFF	30-Apr-11	Correen O'Shea	Yes	Roberts Bay Fuel Farm	Active face was composed primarily of mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were more strongly present as more pervasive mm scale stringers.	trace	None	None
2	7-May-11	Correen O'Shea	No Activity	Quarry 2			None	None
RBFF	7-May-11	Correen O'Shea	Yes	Roberts Bay Fuel Farm	Active face was composed primarily of mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were more strongly present as more pervasive mm scale stringers.One oversize was 60% quartz, no min in vein, 1% py in 2-4cm margin, blast hole in oversize revealed pervasive calcite veining to qv contact, no alt halo on vein at all.	trace	None	None
2	17-May-11	James MacLean	Yes	Quarry 2	No Blasting, but moving continues. Exposed material still mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonate alteration and mm scale carbonate stringers	trace	None	None
RBFF	17-May-11	James MacLean	Yes	Roberts Bay Fuel Farm	Active face was composed primarily of mafic variolitic pillow basalt (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were strongly present as pervasive mm and cm scale stringers. no alteration halo on veining at all.	trace	None	None
2	24-May-11	James MacLean	Yes	Quarry 2	No Blasting, but moving continues. Exposed material still mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonate alteration and mm scale carbonate stringers	Trace	None	None
RBFF	24-May-11	James MacLean	Yes	Roberts Bay Fuel Farm	Active face was composed primarily of mafic variolitic pillow basalt (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were strongly present as pervasive mm and cm scale stringers. no alteration halo on veining at all. Strong Hematite staining on Joints	trace	None	None
2	30-May-11	James MacLean	Yes	Quarry 2	Moving continues. Exposed material still mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonate alteration and mm scale carbonate stringers	Trace	None	None
RBFF	30-May-11	James MacLean	Yes	Roberts Bay Fuel Farm	Active face was composed primarily of mafic variolitic pillow basalt (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were strongly present as pervasive mm and cm scale stringers. no alteration halo on veining at all. Strong Hematite staining on Joints	Trace	None	None
2	5-Jun-11	Correen O'Shea	No Activity	Quarry 2	Toured for new Geo. Exposed material still mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonate alteration and mm scale carbonate stringers	Trace	None	None
RBFF	5-Jun-11	Correen O'Shea	Yes	Roberts Bay Fuel Farm	Active face was composed primarily of mafic variolitic pillow basalt (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were strongly present as pervasive mm and cm scale stringers. no alteration halo on veining at all. Strong Hematite staining on Joints. Exposed folded vein with mod-high strained basalts was too high to get close, however lack of alteration was obvious, no accessible rubble below site showed sulphide increase or carbonate depletion	Trace	None	Attempt closer inspection of folded vein with strained basalt in SW corner of pit once clearing allows (next week's inspection)
RBFF	15-Jun-11	Correen O'Shea	Yes	Roberts Bay Fuel Farm	Active face was composed primarily of mafic variolitic pillow basalt (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were strongly present as pervasive mm and cm scale stringers. no alteration halo on veining at all. Strong Hematite staining on Joints. Rubble contained bull white quartz, wall rock unaltered, no sulphides present	Trace	None	Folded vein still high up, better exposed, no tan alteration, rubble suggests no min, no further follow up.
2	25-Jun-11	James MacLean	Yes	Quarry 2	Exposed material still mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonate alteration and mm scale carbonate stringers.	Trace	None	None

NEWMONT NORTH AMERICA

Hope Bay Quarry Inspection Log

Quarry	Date	Inspected by	Activity*	Location**	Notes		Key Observations	Follow-up
RBFF	25-Jun-11	James MacLean	Yes	Roberts Bay Fuel Farm	Active face was composed primarily of mafic variolitic pillow basalt (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were strongly present as pervasive mm and cm scale stringers. no alteration halo on veining at all. Strong Hematite staining on Joints. Rubble contained bull white quartz, wall rock unaltered, no sulphides present. Crush pad being placed for Tanks.	Trace	None	None
2	2-Jul-11	James MacLean	Yes	Quarry 2	Exposed material still mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonate alteration and mm scale carbonate stringers. Drilling in Southwest corner on top of upper bench.	Trace	None	None
RBFF	2-Jul-11	James MacLean	Yes	Roberts Bay Fuel Farm	Active face was composed primarily of mafic variolitic pillow basalt (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were strongly present as pervasive mm and cm scale stringers. no alteration halo on veining at all. Strong Hematite staining on Joints. Rubble contained bull white quartz, wall rock unaltered, no sulphides present. Crush pad in place, lining and berming in progress	Trace	None	None
2	9-Jul-11	James MacLean	Yes	Quarry 2	Exposed material still mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonate alteration and mm scale carbonate stringers. Drilling in Southwest corner on top of upper bench.	Trace	None	None
RBFF	9-Jul-11	James MacLean	Yes	Roberts Bay Fuel Farm	Active face was composed primarily of mafic variolitic pillow basalt (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were strongly present as pervasive mm and cm scale stringers. no alteration halo on veining at all. Strong Hematite staining on Joints. Rubble contained bull white quartz, wall rock unaltered, no sulphides present. Crush pad in place, lining and berming in progress	Trace	None	None
2	14-Jul-11	James MacLean	Yes	Quarry 2	Exposed material still mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonate alteration and mm scale carbonate stringers. Drilling in Southwest corner on top of upper bench. Blast on 12th	Trace	None	None
RBFF	14-Jul-11	James MacLean	Yes	Roberts Bay Fuel Farm	Active face was composed primarily of mafic variolitic pillow basalt (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were strongly present as pervasive mm and cm scale stringers. no alteration halo on veining at all. Strong Hematite staining on Joints. Rubble contained bull white quartz, wall rock unaltered, no sulphides present. Crush pad in place, Tanks being built.	Trace	None	None
2	6-Aug-11	James MacLean	Yes	Quarry 2	Exposed material still mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonate alteration and mm scale carbonate stringers. Drilling in Southeast corner on top of upper bench.	Trace	None	None
RBFF	6-Aug-11	James MacLean	No Activity	Roberts Bay Fuel Farm	Active face was composed primarily of mafic variolitic pillow basalt (1pv, ACODE 0) with trace disseminated pyrite. Carbonates were strongly present as pervasive mm and cm scale stringers. no alteration halo on veining at all. Strong Hematite staining on Joints. Rubble contained bull white quartz, wall rock unaltered, no sulphides present. Crush pad in place, Tanks being built.	Trace	None	None
RBFF	30-Aug-11	Correen O'Shea	No Activity	Roberts Bay Fuel Farm				
2	30-Aug-11	Correen O'Shea	Yes	Quarry 2	Exposed material still mafic volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonate alteration and mm scale carbonate stringers. Drilling in Southeast corner on top of upper bench. East wall has mod-high strain zones, no additional alteration or py present, still visible cc veinlets.	Trace	None	None
2	1-Sep-11	Correen O'Shea	Yes	Quarry 2	West wall revisited when high fibrous min. exposure results came back for drillers from an Industrial Hygeine air quality survey. Cuttings from drill holes S20 and O16 were taken for analysis by Industrial Hygeine Meaghan Maclean. West wall and proximal rubble showed no evidence of fibrous minerals, wall itself had ~10m wide zone on face of mod-high strained basalts, more platy than surrounding basalts, no change in alteration or sulphide content.	Trace	none visible	I.H. will be doing more air quality surveys, will provide results from the samples taken.
2	18-Sep-11	James MacLean	Yes	Quarry 2	Wall Consists of Mafic Volcanics (1pv, ACODE 0) with trace disseminated pyrite. Carbonate alteration and mm to cm scale carbonate veinlets. Clearing of overburden in Southeast corner. Mod-High strain zones in Southern half of East wall, no additional alteration or pyrite present. Structure and geology map of wall completed. Hard Copy Stored in Camp.	Trace	None	I.H. awaiting further sample results.
RBFF	18-Sep-11	James MacLean	No Activity	Roberts Bay Fuel Farm	Structure and geology map of wall completed. Hard copy kept in Camp.			

Notes:

* If there has been no activity since the last inspection, record "no activity", and the date. No other information is required

** This can be a reference to a map showing where the actual inspection was completed, or could be coordinates of a transect

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Table 1: ABA Test Results for project NEWMICO

Maxxam Sample No	Sample ID	Paste pH	CO2	CaCO3 Equiv.	Total S	HCl Extractable Sulphur	Sulphide Sulphur (by diff.)	Acid Generation Potential	Mod. ABA Neutralization Potential	Fizz Rating	Net Neutralization Potential	Neutralization Potential Ratio
	Units	**pH Units**	**wt%**	**Kg CaCO3/T**	**wt%**	**wt%**	**wt%**	**Kg CaCO3/T**	**Kg CaCO3/T**	N/A	**Kg CaCO3/T**	**N/A**
CO1493	11Q20022 (<2MM)-PULP	8.9	3.66	83.2	0.17	<0.01	0.17	5.3	84.3	STRONG	79.0	15.9
Detection Limits		*0.5*	*0.02*		*0.02*	*0.01*	*0.02*	*0.3*	*0.1*		*0.1*	*0.1*
Maxxam SOP #		*7160*	*LECO*	*Calculation*	*LECO*	*7410*	*Calculation*	*Calculation*	*7150*	*7150*	*Calculation*	*Calculation*

Notes:

Total sulphur, total carbon and carbonate carbon (CO_2; direct HCl method) by Leco furnace done at Acme Labs.

CO_2 Analysis: A 0.2g pf pulp sample is digested with 6 ml of 1.8N HCl in a hot water bath of 70 ˚C for 30 minutes. The CO_2 that evolves is trapped in a gas chamber that is controled with a stopcock, once the stopcock is is opened the CO_2 gas is swept into the Leco analyser with a oxygen carrier gas. Leco then determines the CO_2 as total-carbon which is calculated to total CO_2.

References:

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

Acid Generation Potential = Sulphide Sulphur (by diff.)*31.25

Acid Generation Potential = Sulphide Sulphur (by diff.)*31.25

Net Neutralization Potential = (Modified ABA Neutralization Potential)-(Acid Generation Potential)

Neutralization Potential Ratio = (Neutralization Potential)/(Acid Generation Potential)

$CaCO_3$ Equivalency = Carbonate Carbon (CO_2)*(100/44)*10

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Table 2: ABA QAQC Test Results for project NEWMICO

Duplicate QC

Maxxam Sample No	**Sample ID**	Paste pH Reported	**Paste pH Dup**	CO2 Reported	**CO2 Dup**	Total S Reported	**Total S Dup**	HCl Extractable Sulphur Reported	**HCl Extractable Sulphur**	Mod. ABA Neutralization Potential Reported Reported	**Mod. ABA Neutralization Potential Reported Dup**
	Units	pH Units	pH Units	wt%	wt%	wt%	wt%	wt%	wt%	Kg CaCO3/T	Kg CaCO3/T
CO1493 Dup	11Q20022 (<2MM)-PULP	8.9	8.7	3.66	3.51	0.17	0.16	<0.01	0.01	84.3	86.3

Reference Material QC

	Total S	Mod. ABA Neutralization Potential Reported
Reference Material (58.9 Kg CaCO3/T)		57.3
Units	wt%	Kg CaCO3/T
Reference Material		
ARD Ref Mat C&S (5630208) (8.27 wt%)	7.9	
ARD Spike C&S (5630208) (4.25 wt%)	3.9	

Blank QC

	Total S	Mod. ABA Neutralization Potential Reported
Method Blank		<0.1
Method Blank	<0.02	

Maxxam

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Table 3: Aqua Regia Metals Test Results for project NEWMICO

Maxxam Sample No	Sample ID	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm
CO1493	11Q20022 (<2MM)-PULP	0.3	175	8.5	141	<0.1	314	57.7	902	5.67	8.1	<0.1	10.0	0.5	29	1.7	<0.1	<0.1
Detection Limits		0.1	0.1	0.1	1	0.1	0.1	0.1	1	0.01	0.5	0.1	0.5	0.1	1	0.1	0.1	0.1
Maxxam SOP #																		
Method Blank										<0.01								
Method Blank													<0.5					
Method Blank		<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<1		<0.5	<0.1		<0.1	<1	<0.1	<0.1	<0.1

Maxxam Sample No	Sample ID	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se
	Units	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm
CO1493	11Q20022 (<2MM)-PULP	72	3.19	0.039	5	444	4.23	6	0.110	44	3.68	0.053	0.02	<0.1	0.02	1.7	<0.1	0.18	7	<0.5
Detection Limits		2	0.01	0.001	1	1	0.01	1	0.001	20	0.01	0.001	0.01	0.1	0.01	0.1	0.1	0.05	1	0.5
Maxxam SOP #																				
Method Blank			<0.01	<0.001			<0.01		<0.001		<0.01	<0.001	<0.01					<0.05		
Method Blank																				
Method Blank		<2			<1	<1		<1		<20				<0.1	<0.01	<0.1	<0.1		<1	<0.5

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Table 4: MEND SFE Test Results for project NEWMICO

Maxxam Sample No	Sample ID	Sample Weight	Volume Used	pH	EC	SO4	Acidity to pH4.5	Acidity to pH8.3	Total Alkalinity	Bicarbonate	Carbonate	hydroxide	Dissolved Chloride	Total Ammonia	Total Dissolved Solids	Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cesium (Cs)	Dissolved Cadmium (Cd)	Dissolved Calcium (Ca)	Dissolved Chromium (Cr)
	Units	g	mL	pH Units	uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
CO1492	11Q20022 (<2MM)	250	750	7.4	663.0	48.9	<0.5	1.0	27	33	<0.5	<0.5	84.3	5.32	390	62.7	0.29	2.82	9.57	0.07	<0.005	172	0.52	0.047	20000	0.2
QAQC																										
Duplicates																										
CO1492 Dup	11Q20022 (<2MM)	250	750	7.6	661.0		<0.5	1.7	29	36	<0.5	<0.5														
Blanks																										
Method Blank							<0.5	0.5																		
Method Blank																<0.2	<0.02	<0.02	<0.02	<0.01	<0.005	<50	<0.05	<0.005	<50	<0.1
Method Blank									<0.5	<0.5	<0.5	<0.5														
Method Blank														<0.005												
Method Blank													0.5													
Method Blank						0.6																				
Method Blank															<10											
Method Blank			750																							
Method Blank		250																								
Method Blank					0.7																					
Reference Material																										
Acidity 8.3 W-Van (5609220)								105.8																		
True Values Acidity 8.3 W-Van								**100**																		
Percent Difference (5609220)								-5.80																		
Reference Material																										
CRC ICPMS H2O 10 ppb (5609226)																106	1.05	9.72	10.5	9.5	1.02		1.02	10		9.54
True Values CRC ICPMS H2O 10 ppb																**100**	**1**	**10**	**10**	**10**	**1**		**1**	**10**		**10**
Percent Difference (5609226)																6	5	-2.8	5	-5	2		2	0		-4.6
Reference Material																										
Alkalinity W Soln' B (5609247)									44.27																	
True Values Alkalinity W Soln' B									**47.6**																	
Percent Difference (5609247)									-6.99																	
Reference Material																										
Ammonia-Van (5609263)														0.107												
True Values Ammonia-Van														**0.1**												
Percent Difference (5609263)														7												
Reference Material																										
Chloride W Kone-Van (5611764)													20.4													
True Values Chloride W Kone-Van													**20**													
Percent Difference (5611764)													2													
Reference Material																										
Sulphate W Kone- Van (5616523)						20.6																				
True Values Sulphate W Kone- Van						**20**																				
Percent Difference (5616523)						3																				
Reference Material																										
TDS Blank Spk (5621403)															400											
True Values TDS Blank Spk															**400**											
Percent Difference (5621403)															0											
Detection Limits				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.005	10	0.2	0.02	0.02	0.02	0.01	0.005	50	0.05	0.005	50	0.1
Maxxam SOP #						BBY6SOP-00(	BY6SOP-0003	BBY6SOP-0003	SOP-00026, BBY0SOP-(	00026, BBY0S	00026, BBY0S	00026, BBY0S	BY6SOP-000	Y6SOP-000	Y6SOP-000	BY7SOP-000	BY7SOP-000	Y7SOP-000	BY7SOP-000	BY7SOP-0000	Y7SOP-000	BY7SOP-000	BY7SOP-000	BBY7SOP-000	BY7SOP-0000	BBY7SOP-0000

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Table 4: MEND SFE Test Results for project NEWMICO

Maxxam Sample No	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Lanthanum (La)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Magnesium (Mg)	Dissolved Manganese (Mn)	Dissolved Phosphorus (P)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Potassium (K)	Dissolved Rubidium (Rb)	Dissolved Selenium (Se)	Dissolved Silicon (Si)	Dissolved Silver (Ag)	Dissolved Sodium (Na)	Dissolved Strontium (Sr)	Dissolved Tellurium (Te)	Dissolved Thallium (Tl)	Dissolved Thorium (Th)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Tungsten (W)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)	Dissolved Zirconium (Zr)	Dissolved Mercury (Hg)	Anion Sum	Cation Sum	Ion Balance
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	N/A	N/A	N/A
CO1492	3.19	1.81	<0.05	39	0.299	2.6	3570	24.9	23	3.34	0.57	8510	8.70	1.08	1700	<0.005	93600	64.5	<0.02	0.017	<0.005	<0.2	<0.5	0.15	0.005	3.4	20.8	<0.1	<0.05	3.94	5.59	-17.4
QAQC																																
Duplicates																																
CO1492 Dup																																
Blanks																																
Method Blank																																
Method Blank	<0.005	<0.05	<0.05	<1	<0.005	<0.5	<50	<0.05	<2	<0.05	<0.02	<50	<0.05	<0.04	<100	<0.005	<50	<0.05	<0.02	<0.002	<0.005	<0.2	<0.5	<0.01	<0.002	<0.2	<0.1	<0.1	<0.05			
Method Blank																																
Method Blank																																
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Method Blank																																
Method Blank																																
Method Blank																																
Method Blank																																
Method Blank																																
Reference Material																																
Acidity 8.3 W-Van (5609220)																																
True Values Acidity 8.3 W-Van																																
Percent Difference (5609220)																																
Reference Material																																
CRC ICPMS H2O 10 ppb (5609226)	9.44	9.44	1.04	104	10.2	9.94		9.84		1.02	9.8			10.1		1.05		10.3	1.03	1.05		1.02	10.5		10.7	9.67	10.1		0.991			
True Values CRC ICPMS H2O 10 ppb	**10**	**10**	**1**	**100**	**10**	**10**		**10**		**1**	**10**			**10**		**1**		**10**	**1**	**1**		**1**	**10**		**10**	**10**	**10**		**1**			
Percent Difference (5609226)	-5.6	-5.6	4	4	2	-0.6		-1.6		2	-2			1		5		3	3	5		2	5		7	-3.3	1		-0.9			
Reference Material																																
Alkalinity W Soln' B (5609247)																																
True Values Alkalinity W Soln' B																																
Percent Difference (5609247)																																
Reference Material																																
Ammonia-Van (5609263)																																
True Values Ammonia-Van																																
Percent Difference (5609263)																																
Reference Material																																
Chloride W Kone-Van (5611764)																																
True Values Chloride W Kone-Van																																
Percent Difference (5611764)																																
Reference Material																																
Sulphate W Kone- Van (5616523)																																
True Values Sulphate W Kone- Van																																
Percent Difference (5616523)																																
Reference Material																																
TDS Blank Spk (5621403)																																
True Values TDS Blank Spk																																
Percent Difference (5621403)																																
Detection Limits	0.005	0.05	0.05	1	0.005	0.5	50	0.05	2	0.05	0.02	50	0.05	0.04	100	0.005	50	0.05	0.02	0.002	0.005	0.2	0.5	0.01	0.002	0.2	0.1	0.1	0.05			
Maxxam SOP #	BY7SOP-0000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	Y7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BY7SOP-000	BBY7SOP-00002			

Attachment 3: SRK Field Observations

Region	Sample Location	Sample ID	Stn ID	Easting	Northing	Sample Type	Description of sample point	Date	Time	Sampler	Material Size		Percent distribution		Description of rock samples	Visible sulphides	Colour of fines	Rinse of <1mm fraction	
											Coarse	<1cm	<1cm	<2mm				pH	Sp_Cond (uS/cm)
Doris North Areas	Tail Lake Road	SRK-QR-1	20	433744	7559386	ROQ	Tail-Lake Road, 100m E of top of hill west of Tail Stream Crossing, sample taken from South Edge of road, pocket of fines on top of blasted rock	5-Jun-11	1:08 PM	LA		X			Fine-grained green metavolcanics, weakly metamorphosed. 5-10% calcite veining, trace fine disseminated pyrite generally associated with carbonate veining. Calcite rind on weathered surface	finely disseminated	light grey to brown	8.69	180.2
		SRK-QR-2	21	433541	7559205	ROQ	Tail-Lake Road, top of hill west of Tail Stream Crossing, sample taken from South Edge of road, pocket of fines on top of blasted rock, 200m SW of stn 20	5-Jun-11	2:25 PM	LA	X				Fine-grained green metavolcanics, weakly metamorphosed. Calcite as veins and disseminated. Salmon carbonate rind on weathered surface (Fe-dolomite), some zones more gabboric	none	NA		
		SRK-QR-3	22	433472	7559072	ROQ	Tail-Lake Road, top of hill west of Tail Stream Crossing, sample taken from North Edge of road, pocket of fines on top of blasted rock, 150m SW of stn 20	5-Jun-11	2:45 PM	LA		X	30	20	Dark-green to black metavolcanics, waxy texture. Calcite as veins and finely dissmeninated. Fe-carbonate veins	trace to 1% locally, some crystals up to 1mm	brown to grey	9.41	279
		SRK-QR-4		433472	7559072	Crush	Road Crush at intersection of Doris-Lake Road and Tail Lake road	5-Jun-11		LA		X	50	10	Green to dark green metavolcanics, calcite venis and disseminated	none	brown to grey	8.96	222
		SRK-QR-22	37	434200	7559274	ROQ	Tail Lake Road. Between Tail Lake Dam and Tail stream crossing. South side of road.	8-Jun-11	10:45 AM	LA		X			Fine-grained green metavolcanics. 15% carbonates, primarily veinlets but also disseminated. Trace quartz veining. Trace fine disseminated pyrite generally associated with carbonate veining. Calcite rind on weathered surface	trace			
	Tail Lake Dam	SRK-QR-7	31	434588	7559204	Crush	Tail Lake Dam Core Material	8-Jun-11	8:30 AM	LA		X	95	10	Light Green Metavolcanic Crush	none	grey	9.42	393
		SRK-QR-8	32	434417	7559136	ROQ	Tail Lake Dam South Apron East Side	8-Jun-11	9:00 AM	LA		X	80	50	Green metavolcanics, 5% qtz veins, trace orthoclase 10% calcite disseminated and as veinlets. None to 1% pyrite in veins, ~1mm cubes.	trace to 1% in some veins, some crystals up to 1mm. Trace to 0.5% finely disseminated.	light grey	9.07	215
		SRK-QR-9	33	434375	7559081	ROQ	Tail Lake Dam South Apron West Side	8-Jun-11	9:30 AM	LA		X	80	50	Green metavolcanics, 5% qtz veins, trace orthoclase 10% calcite disseminated and as veinlets. None to 1% pyrite in veins, ~1mm cubes.	trace to 1% in some veins, some crystals up to 1mm. Trace to 0.5% finely disseminated.	red	9.85	279
		SRK-QR-10	35	434365	7559114	Crush	Tail Lake Dam Centre Material	8-Jun-11	10:00 AM	LA		X	80	50	Green metavolcanics, 5% qtz veins, trace orthoclase. Light green fine grained veins and blebs of olivine(?) 10% calcite disseminated and as veinlets. None to 1% pyrite in veins, ~1mm cubes.	trace to 1% in some veins, some crystals up to 1mm. Trace to 0.5% finely disseminated.	red	9.8	535
		SRK-QR-11	36	434324	7559156	ROQ	Tail Lake Dam North Apron	8-Jun-11	10:20 AM	LA		X	60	10	Green metavolcanics, 5% qtz veins, trace orthoclase. 10% calcite disseminated and as veinlets. None to 1% pyrite in veins, ~1mm cubes. Same material as QR 8, 9, 10 - coarser.	trace to 1% in some veins, some crystals up to 1mm. Trace to 0.5% finely disseminated.	red	9.7	130.5
	Camp to Rob Bay	SRK-QR-5	29	433061	7562213	ROQ	Runway Apron Expansion North	7-Jun-11	2:10 PM	LA		X	40	60	fine-grained green metavolcanics, carbonate disseminated and as veins. Fe-carbonate weathering rind. 5% quartz veins, trace epidote.	none	dark-grey to brown	9.51	597
		SRK-QR-6	30	432923	7563289	Crush	Rob Bay ROQ, Easternmost Pile at end of north Road	7-Jun-11	2:40 PM	LA		X	80	10	Light green to grey, fine grained metavolcanics, fine carbonate dust	none	light grey	9.11	1293
		SRK-QR-23	156	432655	7560458	ROQ	North Side of Upper reagent pad, 10m W of Doris Lake Road	22-Jun-11	3:30 PM	LA		X	40	20	Mafic volcanics, some amphibolite-altered (darker green). Trace finely disseminated pyrite.	none	grey-brown	8.95	171.1
		SRK-QR-24	157	432579	7560433	ROQ	Coarse Pad Base Material on Western Edge of Reagent Pad (BBE Laydown Are)	22-Jun-11	3:40 PM	LA	X				Fine-grained green metavolcanics. 5-10% calcite veinlets, trace fine disseminated pyrite generally associated with carbonate veining. Calcite rind on weathered surface	trace to 0.5	NA		
		SRK-QR-25	158	432499	7560291	ROQ	1-10cm pile at Western Edge of reagent pad.	22-Jun-11	3:50 PM	LA	X				Dark green volcanics. 0.5% pyrite finely disseminated. Calcite disseminated and as veinlets.	0.5	NA		
		SRK-QR-26	159	432430	7559705	Crush	crush pile at reagent pad	22-Jun-11	4:00 PM	LA		X	NA	NA	Crush		light green-grey	9.27	62.5
		SRK-QR-28	160	432471	7559856	ROQ	Western Side of Lower Reagent Pad, 100m N of S edge.	22-Jun-11	4:15 PM	LA	X				Dark green to green metavolcanics. ~30% gabbroic material. Calcite as veinlets and finely disseminated. Trace pyrite.	trace	NA		
		SRK-QR-29	161	432444	7560129	ROQ	Lower Reagent Pad, NW Corner	22-Jun-11	4:30 PM	LA		X	60	20	Dark green to green metavolcanics. Trace epidote. Calcite as veinlets and finely disseminated. Reddish fines suggest ferroan dolomite weathering.	none	red-brown	9.33	87.1
	Camp Pads	SRK-QR-30	162	433053	7559227	Crush	Pad R. East Side Doris Camp Tank Farm. Location of 10PR007/008	23-Jun-11	4:00 PM	LA		X	60	20	fine-grained volcanics, trace sulphides, calcite disseminated and as veinlets.	trace	light brown	9.46	244
		SRK-QR-31	163	432988	7559246	Crush	Pad R. NW corner of Doris Camp Tank Farm. Location of 10PR001	23-Jun-11	4:15 PM	LA		X	70	20	fine-grained volcanics, trace sulphides, calcite disseminated and as veinlets.	trace	light brown	9.47	105.8
		SRK-QR-32	164	432989	7559199	Crush	Pad R. West Side Doris Camp Tank Farm. Location of 10PR005	23-Jun-11	4:30 PM	LA		X	70	20	fine-grained volcanics, trace sulphides, calcite disseminated and as veinlets.	trace	grey	9.62	91.4
		SRK-QR-33	165	433224	7559169	ROQ	West Side of Emergency Pond. Material from base of Berm on West Side.	23-Jun-11	4:45 PM	LA	X				Mafic volcanics, some amphibolite-altered (darker green). Finely disseminated calcite and calcite veinlets. Trace finely disseminated pyrite.	trace	NA		
		SRK-QR-34	166	433244	7559101	ROQ	Southwest Corner of Pad J/H. Material from Base of Pad.	23-Jun-11	5:00 PM	LA		X	50	20	fine-grained volcanics, trace sulphides, calcite disseminated and as veinlets. 10% Material weathered red (ferroan dolomite). Carbonate veinlets generally associated with quartz veinlets.	trace	dark grey	10.36	215
		SRK-QR-35	167	433401	7559030	ROQ	Northern Edge of Pad F. ~20m East of Portal Road. ROQ.	23-Jun-11	5:20 PM	LA	X				Mafic volcanics, some amphibolite-altered (darker green). Finely disseminated calcite and calcite veinlets. Trace finely disseminated pyrite.	trace	NA		
		SRK-QR-36	168	433362	7559026	ROQ/Crush	ROQ and crush from top of Pad G. Central portion of pad.	23-Jun-11	5:30 PM	LA		X	50	20	Fine-grained volcanics, calcite disseminated and as veinlets. Carbonate weathered rind on material.	none	light grey	9.57	69.4
		SRK-QR-37	169	433235	7558948	ROQ	ROQ from East Berm inside pollution control pond. ~1/2way up berm.	23-Jun-11	5:45 PM	LA	X				Fine-grained volcanics, calcite disseminated and as veinlets. Carbonate weathered rind on material. Approximately 5% of weathered rind is red (ferroan dolomite). Trace finely disseminated pyrite. 5% quartz veinlets.	trace	NA		
		SRK-QR-38	170	433307	7559168	ROQ	ROQ from top of pad Q near berm at North End.	23-Jun-11	6:00 PM	LA		X	60	20	Green metavolcanics, 5% qtz veins, 10% calcite disseminated and as veinlets. Finely disseminated pyrite, locally 1-2% pyrite, ~1mm cubes.	trace to 1-2% finely disseminated and as cubes <1mm.	dark grey	9.35	754
Doris Windy Road	Doris Windy Road	SRK-QR-12	147	432704	7555687	Crush/ROQ	East side of DAW road, at most southern extent before stream crossing. Approximate location of 2010 sample 22.	21-Jun-11	8:15 AM	LA		X	60	60	Fine-grained green metavolcanics. Trace to 0.5% finely disseminated pyrite, calcite finely disseminated and veinlets	localized trace finely disseminated	dark grey	9.24	108.9
		SRK-QR-13	148	432700	7555711	Crush/ROQ	East side of DAW road, approximately 50 m N of QR-12. Approximate location of 2010 sample 12.	21-Jun-11	8:30 AM	LA		X	30	10	Mafic metavolcanics, trace to no pyrite. Calcite finely dissminated and as veinlets.	none	Dark green to grey	9.3	112.3
		SRK-QR-14	149	432838	7556109	Crush/ROQ	400m N of sample QR-13, east side of DAW road. Approximate location of 2010 sample 13.	21-Jun-11	9:00 AM	LA		X	40	10	Mafic volcanics, some amphibolite-altered (darker green). Trace finely disseminated pyrite. Finely disseminated calcite and carbonate veinlets.	none to trace	green to light grey	9.26	99.8
		SRK-QR-15	150	432860	7556518	Crush/ROQ	Pullout 400m N of sample QR-14. West side of road. Approximate location as 2010 sample 14.	21-Jun-11	9:30 AM	LA		X	60	30	Mafic volcanics, some amphibolite-altered (darker green). Finely disseminated calcite and calcite veinlets. Trace ferroan dolomite (red-weathering) Trace finely disseminated pyrite.	none to trace	light grey to brown	9.44	106.3
		SRK-QR-16	151	432731	7556906	Crush/ROQ	400m N of sample QR-15. West side of road. Approximate location as 2010 sample 23.	21-Jun-11	10:00 AM	LA		X	60	30	Mafic metavolcanic. Locally very fine grain pyrite, occuring as disseminations and veinlets. Pyrite associated with quartz-carbonate veins.	None to trace pyrite	red-brown	9.55	151.2
		SRK-QR-17		432682	7557002	Crush/ROQ	400m N of sample QR-16. West side of road. Approximate location as 2010 sample 15.	21-Jun-11	10:15 AM	LA		X	20	40	Mafic metavolcanic. Trace pyrite. Quartz and carbonate veins.	none to trace pyrite	grey	9.18	116.2
		SRK-QR-18	152	432515	7557297	Crush/ROQ	400m N of sample QR-17. West side of road. Approximate location as 2010 sample 16.	21-Jun-11	10:45 AM	LA		X	30	20	Mafic metavolcanic. Some amphibolite altered. Calcite finely disseminated and as veinlets. Quartz veinlets.	none	light grey	9.32	86.3
		SRK-QR-19	153	432696	7557817	Crush/ROQ	400m N of sample QR-18. West side of road. Approximate location as 2010 sample 17.	21-Jun-11	11:10 AM	LA		X	30	10	Dark green to dark grey Mafic metavolcanics some amphibolite altered. Trace very fine grain disseminated pyrite. Calcite disseminated and as veinlets.	trace	light grey	9.24	102.1
		SRK-QR-20	154	432741	7558182	Crush/ROQ	400m N of sample QR-14. West side of road. Approximate location as 2010 sample 18.	21-Jun-11	11:40 AM	LA		X	40	20	Mafic volcanics, some amphibolite-altered (darker green). Trace finely disseminated pyrite.	none-trace	dark grey-green	9.37	102.1
		SRK-QR-21	155	432939	7558687	Crush/ROQ	400m N of sample QR-14. West side of road. Approximate location as 2010 sample 19.	21-Jun-11	12:00 PM	LA		X	40	20	Mafic metavolcanic. Trace to 1% disseminated, very fine grain pyrite.	trace to 1%		9.67	105.7

Attachment 4: Static Test Results

Attachment 4: Static Test Results

Sample Locations	Sample Locations	Sample ID	Total Sulphur (S-IR08)	Acid Potential	CO2 (%CO2) (C-GAS05)	Equiv CaCO3 (CO2)	TIC/AP	Total Carbon (C-GAS05)	CO3-NP	CO3-NP/AP	Paste pH	Sulphate Sulphur	Sulphide Sulphur	Maximum Potential Acidity	Neutralization Potential	Net Neutralization Potential	Neutralization Potential Ratio (NPR)	Fizz Rating
		Units	wt %	kg CaCO3/t	%CO2	kg CaCO3/t		%C	kg CaCO3/t		pH	wt %	wt %	kg CaCO3/t	kg CaCO3/t	kg CaCO3/t		
		Measurable Detection Limit	0.01		0.01						0.01	0.01	0.02	0.6				
Doris North Area	Tail Lake Road	SRK-QR-01	0.14	4.38	5.5	125.0	28.6	1.49	125	29	--	--	--	--	--	--	--	--
		SRK-QR-02	0.12	3.75	1.74	39.5	10.5	--	--	--	9.38	0.01	0.11	3.44	43.91	40.47	12.77	Strong
		SRK-QR-03	0.13	4.06	3.6	81.8	20.1	0.98	82	20	--	--	--	--	--	--	--	--
		SRK-QR-04	0.09	2.81	3	68.2	24.2	0.81	68	24	--	--	--	--	--	--	--	--
		SRK-QR-22	0.09	2.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Tail Lake Dam	SRK-QR-07	0.13	4.06	4.9	111.4	27.4	1.34	111	28	--	--	--	--	--	--	--	--
		SRK-QR-08	0.48	15.00	7.8	177.3	11.8	2.12	177	12	9.08	0.02	0.46	14.38	170.77	156.40	11.88	Strong
		SRK-QR-09	0.11	3.44	2.8	63.6	18.5	0.76	64	19	--	--	--	--	--	--	--	--
		SRK-QR-10	0.12	3.75	5.4	122.7	32.7	1.47	123	33	--	--	--	--	--	--	--	--
		SRK-QR-11	0.24	7.50	5	113.6	15.2	1.35	114	15	9.25	0.01	0.23	7.19	118.78	111.59	16.53	Strong
	Camp to Rob Bay	SRK-QR-05	0.15	4.69	5.5	125.0	26.7	1.51	125	27	--	--	--	--	--	--	--	--
		SRK-QR-06	0.14	4.38	3.2	72.7	16.6	0.87	73	17	--	--	--	--	--	--	--	--
		SRK-QR-23	0.13	4.06	4.9	111.4	27.4	1.35	111	28	--	--	--	--	--	--	--	--
		SRK-QR-24	0.21	6.56	10.27	233.4	35.6	--	--	--	8.99	0.01	0.20	6.25	182.16	175.91	29.15	Strong
		SRK-QR-25	0.11	3.44	3.25	73.9	21.5	--	--	--	9.11	0.01	0.10	3.13	69.03	65.90	22.09	Strong
		SRK-QR-26	0.11	3.44	4.8	109.1	31.7	1.32	109	32	--	--	--	--	--	--	--	--
		SRK-QR-28	0.27	8.44	4.29	97.5	11.6	--	--	--	9.30	0.01	0.26	8.13	91.60	83.48	11.27	Strong
		SRK-QR-29	0.1	3.13	5.5	125.0	40.0	1.51	125	40	--	--	--	--	--	--	--	--
	Camp Pads	SRK-QR-30	0.12	3.75	4.8	109.1	29.1	1.3	109	29	--	--	--	--	--	--	--	--
		SRK-QR-31	0.1	3.13	4.8	109.1	34.9	1.31	109	35	--	--	--	--	--	--	--	--
		SRK-QR-32	0.13	4.06	5.1	115.9	28.5	1.38	116	29	--	--	--	--	--	--	--	--
		SRK-QR-33	0.04	1.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		SRK-QR-34	0.1	3.13	3.4	77.3	24.7	0.93	77	25	--	--	--	--	--	--	--	--
		SRK-QR-35	0.11	3.44	4.37	99.3	28.9	--	--	--	9.13	0.01	0.10	3.13	95.46	92.34	30.55	Strong
		SRK-QR-36	0.26	8.13	6.6	150.0	18.5	1.8	150	19	8.76	<0.01	0.26	8.13	144.65	136.53	17.80	Strong
		SRK-QR-37	0.10	3.13	7.86	178.6	57.2	--	--	--	9.00	0.01	0.09	2.81	159.08	156.27	56.56	Strong
		SRK-QR-38	0.13	4.06	6.8	154.5	38.0	1.84	155	38	8.52	0.01	0.12	3.75	154.85	151.10	41.29	Strong
Doris Windy Road	Doris Windy Road	SRK-QR-12	0.21	6.56	6.6	150.0	22.9	1.79	150	23	--	--	--	--	--	--	--	--
		SRK-QR-13	0.18	5.63	6.1	138.6	24.6	1.65	139	25	--	--	--	--	--	--	--	--
		SRK-QR-14	0.2	6.25	5.9	134.1	21.5	1.62	134	22	--	--	--	--	--	--	--	--
		SRK-QR-15	0.24	7.50	6.3	143.2	19.1	1.73	143	19	--	--	--	--	--	--	--	--
		SRK-QR-16	0.16	5.00	7.5	170.5	34.1	2.04	170	34	--	--	--	--	--	--	--	--
		SRK-QR-17	0.28	8.75	8.4	190.9	21.8	2.29	191	22	--	--	--	--	--	--	--	--
		SRK-QR-18	0.18	5.63	6.2	140.9	25.1	1.7	141	25	--	--	--	--	--	--	--	--
		SRK-QR-19	0.14	4.38	5.8	131.8	30.1	1.58	132	30	--	--	--	--	--	--	--	--
		SRK-QR-20	0.27	8.44	5.9	134.1	15.9	1.6	134	16	--	--	--	--	--	--	--	--
		SRK-QR-21	0.11	3.44	4	90.9	26.4	1.08	91	27	--	--	--	--	--	--	--	--

Attachment 5: Elemental Analysis Results

Elemental Analysis Results

Sample Location	Sample ID	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se	Te
	Units	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	%	PPM	PPM	PPB	PPM	PPM	PPM	PPM	PPM	PPM	%	%	PPM	PPM	%	PPM	%	PPM	%	%	%	PPM	PPM	PPM	PPM	%	PPM	PPM	PPM
	Measurable DLs	0.1	0.1	0.1	1	0.1	0.1	0.1	1	0.01	0.5	0.1	0.5	0.1	1	0.1	0.1	0.1	2	0.01	0.001	1	1	0.01	1	0.001	20	0.01	0.001	0.01	0.1	0.01	0.1	0.1	0.05	1	0.5	0.2
Tail Lake Road	SRK-QR-01	0.3	117	3.3	86	<0.1	53.7	34.4	1199	5.5	<0.5	0.2	11.9	1.4	30	0.2	<0.1	<0.1	137	5.4	0.031	6	128	2.43	15	0.267	<20	3.27	0.031	0.05	<0.1	<0.01	8.1	<0.1	0.14	7	<0.5	<0.2
	SRK-QR-02	2.3	191.9	1.3	50	0.1	56.2	31.4	750	4.41	6.3	<0.1	6.1	0.4	26	<0.1	0.1	<0.1	129	2.03	0.037	4	149	1.82	3	0.323	<20	2.39	0.065	0.02	<0.1	<0.01	6.3	<0.1	0.09	7	<0.5	<0.2
	SRK-QR-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-04	1.9	109.4	2.1	84	<0.1	167.7	45	1042	5.84	2.2	<0.1	2.5	0.4	27	0.1	<0.1	<0.1	117	3.17	0.042	5	309	3.41	7	0.243	<20	3.65	0.026	0.02	<0.1	<0.01	6.2	<0.1	0.09	8	<0.5	<0.2
	SRK-QR-22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tail Lake Dam	SRK-QR-07	0.2	121.9	3.2	88	<0.1	79.2	41.2	1234	6.19	2	<0.1	2.5	0.3	29	0.1	<0.1	<0.1	165	4.62	0.035	3	166	2.85	5	0.246	<20	3.46	0.022	0.03	<0.1	<0.01	9.9	<0.1	0.13	9	<0.5	<0.2
	SRK-QR-08	0.9	117.5	9.3	99	0.1	58.9	40.8	1470	6.54	4.4	<0.1	8.1	0.3	36	0.2	<0.1	<0.1	167	6.1	0.037	4	140	2.99	9	0.281	<20	3.53	0.015	0.04	<0.1	<0.01	9.3	<0.1	0.42	9	<0.5	<0.2
	SRK-QR-09	0.2	119.9	1.5	60	<0.1	248.6	47	970	5.69	<0.5	0.1	1.8	0.9	36	<0.1	<0.1	<0.1	91	2.74	0.05	9	429	4.45	13	0.151	<20	3.77	0.037	0.03	<0.1	<0.01	4.5	<0.1	0.09	8	<0.5	<0.2
	SRK-QR-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-11	0.2	154.6	1.7	69	<0.1	73.8	35.3	1229	5.9	1.3	0.1	1.2	0.5	38	<0.1	<0.1	<0.1	127	4.07	0.048	6	123	3.1	21	0.221	<20	3.12	0.041	0.05	<0.1	<0.01	7.4	<0.1	0.17	8	<0.5	<0.2
Rob Bay to Camp	SRK-QR-05	0.1	206.8	2.1	68	<0.1	49.4	41.1	1039	5.59	8.6	0.2	3.9	0.1	19	0.1	<0.1	<0.1	125	5.55	0.023	2	57	2.72	3	0.218	<20	3.14	0.033	0.05	<0.1	<0.01	6.8	<0.1	0.16	8	0.6	<0.2
	SRK-QR-06	0.1	125.8	1.4	74	<0.1	104.3	40.4	1056	5.63	1.5	<0.1	1.7	0.4	28	<0.1	<0.1	<0.1	130	3.48	0.042	5	196	2.92	5	0.259	<20	3.37	0.035	0.03	<0.1	<0.01	7.9	<0.1	0.11	8	<0.5	<0.2
	SRK-QR-23	<0.1	132.2	1.1	73	<0.1	79	39.4	1240	5.8	<0.5	<0.1	1.9	0.2	19	<0.1	<0.1	<0.1	140	4.75	0.025	2	182	2.77	6	0.29	<20	3.43	0.02	0.02	<0.1	<0.01	7.2	<0.1	0.09	7	<0.5	<0.2
	SRK-QR-24	0.4	140.9	7.2	95	<0.1	59.4	36.5	1392	6.01	1.4	0.3	6	0.1	25	0.3	<0.1	<0.1	165	6.8	0.023	2	150	2.55	7	0.259	<20	3.5	0.015	0.05	<0.1	<0.01	10.5	<0.1	0.17	8	<0.5	<0.2
	SRK-QR-25	0.4	121.8	0.7	80	<0.1	121.6	38.9	1042	5.72	1.5	<0.1	7.7	0.3	25	<0.1	<0.1	<0.1	140	2.68	0.036	3	226	3.07	4	0.259	<20	3.31	0.025	0.03	<0.1	<0.01	7.8	<0.1	0.11	8	<0.5	<0.2
	SRK-QR-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-28	0.5	112.8	0.5	69	<0.1	97.9	38.2	978	6	2.3	0.1	4.6	1	38	<0.1	<0.1	<0.1	137	3.36	0.073	11	193	3.36	13	0.201	<20	3.45	0.042	0.03	<0.1	<0.01	10.5	<0.1	0.21	9	<0.5	<0.2
	SRK-QR-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pad Areas	SRK-QR-30	0.1	127	1.3	75	<0.1	98.4	39.3	1144	5.61	<0.5	<0.1	2.1	0.5	22	<0.1	<0.1	<0.1	134	4.73	0.032	3	211	2.82	9	0.278	<20	3.41	0.028	0.03	<0.1	<0.01	7.5	<0.1	0.09	8	<0.5	<0.2
	SRK-QR-31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-34	<0.1	111	1	67	<0.1	376.9	64.1	1113	7.02	5.4	0.2	1.2	0.5	16	<0.1	<0.1	<0.1	126	3.08	0.048	8	653	6.14	4	0.167	<20	4.52	0.032	0.02	<0.1	<0.01	8.3	<0.1	0.07	10	<0.5	<0.2
	SRK-QR-35	0.2	111.8	0.6	70	<0.1	61.9	37.8	1201	6.08	1.9	0.1	<0.5	0.2	23	<0.1	<0.1	<0.1	176	3.45	0.031	3	138	2.83	7	0.281	<20	3.4	0.029	0.04	<0.1	<0.01	11.2	<0.1	0.11	8	<0.5	<0.2
	SRK-QR-36	0.3	136.6	1.3	97	<0.1	46.6	41.7	1539	7.71	4.6	0.1	<0.5	0.3	27	<0.1	<0.1	<0.1	223	4.65	0.035	3	76	2.92	11	0.17	<20	3.87	0.009	0.06	<0.1	<0.01	15.9	<0.1	0.22	11	0.5	<0.2
	SRK-QR-37	0.4	97.5	2.2	68	<0.1	80.3	34.2	1208	5.22	2.6	<0.1	3.5	0.3	28	0.1	<0.1	<0.1	157	5.56	0.035	3	177	2.57	2	0.287	<20	3.16	0.026	0.02	<0.1	<0.01	9.3	<0.1	0.09	8	<0.5	<0.2
	SRK-QR-38	0.3	130.3	1.7	78	<0.1	95.8	46.1	1389	7.2	11.4	0.1	6.5	0.2	24	<0.1	<0.1	0.1	197	6.08	0.025	2	294	4.32	5	0.16	<20	4.81	0.022	0.06	<0.1	<0.01	16.5	<0.1	0.09	11	<0.5	<0.2
Doris-Windy All-Weather Road	SRK-QR-12	0.2	129.6	1.4	114	<0.1	47.5	40.4	1594	7.9	1.6	<0.1	4	0.2	27	0.1	<0.1	<0.1	233	5.34	0.035	3	87	2.96	11	0.188	<20	4.09	0.009	0.05	<0.1	<0.01	16.4	<0.1	0.17	12	<0.5	<0.2
	SRK-QR-13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-14	0.2	133.1	1.5	107	<0.1	43.1	41.7	1677	8.77	1.2	0.3	2.9	0.2	31	0.1	<0.1	<0.1	251	5.36	0.041	4	71	2.95	17	0.239	<20	4.22	0.013	0.06	<0.1	<0.01	16.9	<0.1	0.17	13	<0.5	<0.2
	SRK-QR-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-16	0.1	145.5	4.8	103	<0.1	66.1	41.2	1377	6.61	3.2	<0.1	4.9	0.1	23	0.3	<0.1	0.1	185	7.25	0.024	2	163	2.92	30	0.326	29	3.83	0.015	0.05	<0.1	<0.01	12	0.1	0.15	9	<0.5	<0.2
	SRK-QR-17	0.2	156.7	2.2	85	0.2	62.9	41.5	1530	6.88	5.5	<0.1	3.2	0.6	22	0.1	<0.1	0.1	183	6.18	0.026	4	147	3.49	8	0.127	<20	3.93	0.012	0.06	<0.1	<0.01	15.1	<0.1	0.26	10	<0.5	<0.2
	SRK-QR-18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ARK-QR-19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-20	0.4	108.2	1.4	118	<0.1	41.5	44.1	1547	9.18	6.7	0.3	5.8	0.6	20	<0.1	<0.1	0.1	234	4.29	0.047	5	41	3.16	32	0.174	<20	4.09	0.01	0.08	<0.1	<0.01	16.3	<0.1	0.24	13	<0.5	<0.2
	ARK-QR-21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Attachment 6: Shake Flask Extraction Test Results

Shake Flask Extractions

Sample Locations	Sample ID	Weight of dry sample used	Volume of DI water used	pH (24h)	Electric Conductivity (24h)	Acidity (pH 4.5)	Acidity (pH 8.3)	Alkalinity (Total as CaCO3)	Bicarbonate (HCO3)	Carbonate (CO3)	Hydroxide (OH)	Dissolved Sulphate (SO4)	Dissolved Chloride (Cl)	Ammonia (N)	Nitrate plus Nitrite (N)	Nitrite (N)	Nitrate (N)	Total Dissolved Solids
	Units	g	ml	pH Units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	Measurable Detection Limit			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.005	0.02	0.005	0.02	10
Tail Lake Road	SRK-QR-01	250	750	8.88	131.5	<0.5	<0.5	36	43	<0.5	<0.5	5.9	2.2	2.4	0.9	0.038	0.862	58
	SRK-QR-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-04	250	750	9.77	87.2	<0.5	<0.5	30	36	<0.5	<0.5	3.7	3	0.11	0.14	0.006	0.134	36
	SRK-QR-22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tail Lake Dam	SRK-QR-07	250	750	9.59	119.7	<0.5	<0.5	25	31	<0.5	<0.5	8.4	6.5	0.76	1.33	<0.005	1.33	48
	SRK-QR-08	250	750	9.67	114.5	<0.5	<0.5	21	25	<0.5	<0.5	15.4	4.6	0.32	0.26	<0.005	0.26	48
	SRK-QR-09	250	750	9.86	198.5	<0.5	<0.5	45	51	2.2	<0.5	10	12	0.65	0.47	0.01	0.46	74
	SRK-QR-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Camp to Rob Bay	SRK-QR-05	250	750	9.9	183.5	<0.5	<0.5	31	38	<0.5	<0.5	9.1	16	0.63	2.25	<0.005	2.25	76
	SRK-QR-06	250	750	9.73	231	<0.5	<0.5	27	33	<0.5	<0.5	11.2	29	0.68	1.36	<0.005	1.36	86
	SRK-QR-23	250	750	9.71	94.1	<0.5	<0.5	26	31	<0.5	<0.5	5.1	2.6	0.18	0.59	0.005	0.585	38
	SRK-QR-24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Camp Pads	SRK-QR-30	250	750	9.78	122.8	<0.5	<0.5	27	33	<0.5	<0.5	12.9	5.2	0.031	0.42	<0.005	0.42	48
	SRK-QR-31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-34	250	750	10.15	185.3	<0.5	<0.5	53	59	2.7	<0.5	5.1	3.8	0.27	0.13	0.018	0.112	72
	SRK-QR-35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-38	250	750	9.64	284	<0.5	<0.5	17	21	<0.5	<0.5	12.5	48	0.39	2.78	<0.005	2.78	98
Doris Windy Road	SRK-QR-12	250	750	9.48	72.5	<0.5	<0.5	25	31	<0.5	<0.5	3.7	1	0.037	0.14	0.007	0.133	30
	SRK-QR-13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-14	250	750	9.56	72.1	<0.5	<0.5	21	26	<0.5	<0.5	4.8	0.7	0.18	0.2	<0.005	0.2	30
	SRK-QR-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-16	250	750	9.73	93.5	<0.5	<0.5	26	31	<0.5	<0.5	9	1.6	0.29	0.05	<0.005	0.05	36
	SRK-QR-17	250	750	9.21	76.7	<0.5	<0.5	23	28	<0.5	<0.5	5.3	0.7	0.055	0.17	0.007	0.163	32
	SRK-QR-18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-20	250	750	9.1	116.5	<0.5	<0.5	27	33	<0.5	<0.5	13.6	0.6	0.048	0.13	0.01	0.12	52
	SRK-QR-21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Shake Flask Extractions — **Dissolved Metals by ICPMS**

Sample Locations	Sample ID	Dissolved Hardness (CaCO3)	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cs	Cr	Co	Cu	Fe	La	Pb	Li	Mg	Mn	Mo	Ni
	Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	Measurable Detection Limit	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.000005	0.05	0.00005	0.0001	0.000005	0.00005	0.001	0.00005	0.000005	0.0005	0.05	0.00005	0.00005	0.00002
Tail Lake Road	SRK-QR-01	32.6	0.287	0.00015	0.00048	0.00214	<0.00001	<0.000005	<0.05	<0.000005	11.1	<0.00005	0.0002	0.000202	0.00605	0.09	0.00008	0.000106	0.0015	1.18	0.00399	0.00083	0.00062
	SRK-QR-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-04	12.3	0.34	0.00022	0.00118	0.00358	<0.00001	<0.000005	<0.05	<0.000005	3.63	<0.00005	0.0002	0.000031	0.00053	0.031	<0.00005	0.000026	<0.0005	0.78	0.00084	0.00176	0.00013
	SRK-QR-22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tail Lake Dam	SRK-QR-07	21.3	0.247	0.00017	0.0009	0.00095	<0.00001	<0.000005	0.05	<0.000005	6.46	<0.00005	0.0002	0.000039	0.00072	0.026	<0.00005	0.000026	<0.0005	1.25	0.00189	0.0009	0.00011
	SRK-QR-08	22.2	0.272	0.00013	0.00126	0.00399	<0.00001	<0.000005	<0.05	<0.000005	7.36	<0.00005	0.0001	0.000096	0.00058	0.014	0.00009	0.000021	<0.0005	0.94	0.00076	0.0013	0.00007
	SRK-QR-09	8.4	0.351	0.0002	0.0012	0.00263	<0.00001	<0.000005	0.09	<0.000005	2.05	<0.00005	0.0012	0.000213	0.00188	0.192	0.00011	0.000177	<0.0005	0.8	0.00334	0.00188	0.00078
	SRK-QR-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Camp to Rob Bay	SRK-QR-05	11.1	0.239	0.00007	0.00438	0.00066	<0.00001	<0.000005	0.08	<0.000005	3.5	0.00009	<0.0001	0.000048	0.00041	0.008	<0.00005	0.000016	0.0011	0.58	0.0004	0.00088	<0.00002
	SRK-QR-06	18.3	0.235	0.00021	0.00093	0.00095	<0.00001	<0.000005	0.06	<0.000005	5.51	<0.00005	0.0001	0.000043	0.00089	0.02	<0.00005	0.000025	0.0008	1.1	0.00056	0.00119	0.00004
	SRK-QR-23	16	0.416	0.00012	0.00049	0.00264	<0.00001	<0.000005	<0.05	<0.000005	5.07	<0.00005	0.0002	0.000054	0.00102	0.023	<0.00005	0.000028	<0.0005	0.8	0.00088	0.00044	0.00008
	SRK-QR-24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Camp Pads	SRK-QR-30	16.4	0.283	0.00017	0.00119	0.00317	<0.00001	<0.000005	0.06	<0.000005	4.98	<0.00005	0.0001	0.000023	0.00062	0.02	<0.00005	0.000027	<0.0005	0.95	0.00078	0.00063	0.00013
	SRK-QR-31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-34	5.5	0.565	0.00032	0.0194	0.00152	0.00001	<0.000005	0.11	<0.000005	0.89	<0.00005	0.0057	0.000679	0.00281	0.479	<0.00005	0.000385	0.001	0.79	0.01	0.00033	0.00406
	SRK-QR-35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-38	31.5	0.142	0.00012	0.00851	0.00625	<0.00001	<0.000005	0.07	<0.000005	9.34	0.00009	0.0002	0.000264	0.0011	0.016	<0.00005	0.000024	0.0014	1.98	0.00099	0.0013	0.00006
Doris Windy Road	SRK-QR-12	23.8	0.345	0.00024	0.00102	0.00207	<0.00001	<0.000005	<0.05	<0.000005	7.76	<0.00005	0.0002	0.000036	0.00068	0.063	<0.00005	0.000022	<0.0005	1.07	0.0025	0.00069	0.00017
	SRK-QR-13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-14	19.8	0.39	0.00024	0.00076	0.00467	<0.00001	<0.000005	<0.05	<0.000005	6.41	<0.00005	<0.0001	0.000006	0.00069	0.005	<0.00005	0.00003	<0.0005	0.92	0.00075	0.00081	0.00002
	SRK-QR-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-16	17.3	0.343	0.00028	0.00153	0.0121	<0.00001	<0.000005	<0.05	<0.000005	5.4	0.00007	<0.0001	0.000015	0.00058	0.007	<0.00005	0.000013	0.0007	0.93	0.00044	0.0006	0.00005
	SRK-QR-17	23.8	0.266	0.00006	0.00169	0.00123	<0.00001	<0.000005	<0.05	<0.000005	7.56	<0.00005	0.0001	0.000146	0.0042	0.051	<0.00005	0.000054	0.0013	1.19	0.00247	0.00067	0.00015
	SRK-QR-18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-20	32.4	0.303	0.00031	0.00651	0.00882	<0.00001	<0.000005	0.06	<0.000005	9.33	<0.00005	<0.0001	0.000169	0.0028	0.092	<0.00005	0.000105	0.0017	2.21	0.00324	0.00151	0.00018
	SRK-QR-21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Shake Flask Extractions

Sample Locations	Sample ID	P	K	Rb	Se	Si	Ag	Na	Sr	S	Te	Tl	Th	Sn	Ti	W	U	V	Zn	Zr	Hg
	Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L
	Measurable Detection Limit	0.002	0.05	0.00005	0.00004	0.1	0.000005	0.05	0.00005	10	0.00002	0.000002	0.000005	0.00001	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001	0.002
Tail Lake Road	SRK-QR-01	0.085	1.6	0.00097	0.00057	1	<0.000005	4.21	0.0315	<10	<0.00002	0.000012	0.000009	0.00023	0.0024	0.0001	0.000181	0.0016	0.0004	<0.0001	0.003
	SRK-QR-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-04	0.046	1.25	0.00123	0.0002	1.3	<0.000005	9.56	0.00999	<10	<0.00002	0.000004	<0.000005	0.00009	<0.0005	0.00006	<0.000002	0.0045	<0.0001	<0.0001	<0.002
	SRK-QR-22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tail Lake Dam	SRK-QR-07	0.059	2.21	0.00199	0.00057	1	<0.000005	11.8	0.0109	<10	<0.00002	0.000004	<0.000005	0.00012	<0.0005	0.00002	<0.000002	0.0026	<0.0001	<0.0001	<0.002
	SRK-QR-08	0.048	1.82	0.00209	0.00086	0.8	<0.000005	9.02	0.0139	<10	<0.00002	0.000004	<0.000005	0.00014	<0.0005	0.00004	<0.000002	0.0021	0.0002	<0.0001	<0.002
	SRK-QR-09	0.059	2.36	0.00135	0.00036	2.2	<0.000005	31.4	0.0076	<10	<0.00002	0.000003	<0.000005	0.00045	0.0019	0.00004	0.000017	0.0098	0.0004	<0.0001	0.003
	SRK-QR-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Camp to Rob Bay	SRK-QR-05	0.007	2.96	0.00262	0.00102	1	<0.000005	23.3	0.008	<10	<0.00002	0.000004	<0.000005	0.00008	<0.0005	0.00002	0.000003	0.0069	<0.0001	<0.0001	0.002
	SRK-QR-06	0.018	2.69	0.00114	0.00031	1.1	<0.000005	28.2	0.0167	<10	0.00002	0.000004	<0.000005	0.00026	<0.0005	0.00004	0.000007	0.0033	0.0005	<0.0001	0.003
	SRK-QR-23	0.046	1.18	0.00093	0.00038	1	<0.000005	8.59	0.01	<10	<0.00002	0.000005	<0.000005	0.00006	<0.0005	0.00009	0.000005	0.0035	0.0001	<0.0001	<0.002
	SRK-QR-24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Camp Pads	SRK-QR-30	0.059	1.55	0.00051	0.00076	1.1	<0.000005	13.6	0.0115	<10	<0.00002	0.000005	<0.000005	0.00013	<0.0005	0.00004	0.000006	0.0038	<0.0001	<0.0001	<0.002
	SRK-QR-31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-34	0.159	2.14	0.00124	0.00101	2.5	<0.000005	33.6	0.00273	<10	<0.00002	<0.000002	<0.000005	0.00014	0.0022	0.00004	0.00003	0.0618	0.0013	<0.0001	0.006
	SRK-QR-35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-38	0.057	4.33	0.00366	0.00097	0.6	<0.000005	34.6	0.0212	<10	<0.00002	0.000007	<0.000005	0.00013	<0.0005	0.00003	<0.000002	0.0015	<0.0001	<0.0001	<0.002
Doris Windy Road	SRK-QR-12	0.051	1.31	0.00086	0.0007	0.7	<0.000005	2.5	0.0112	<10	<0.00002	0.000002	<0.000005	0.00024	<0.0005	0.00002	0.000011	0.0019	0.0003	<0.0001	<0.002
	SRK-QR-13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-14	0.005	1.09	0.00074	0.00085	0.7	<0.000005	3.6	0.012	<10	<0.00002	0.000002	<0.000005	0.00015	<0.0005	0.00004	0.000026	0.0023	0.0002	<0.0001	<0.002
	SRK-QR-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-16	0.018	1.93	0.00218	0.00106	0.9	<0.000005	7.27	0.0153	<10	<0.00002	0.000014	<0.000005	0.00009	<0.0005	0.00004	<0.000002	0.0052	<0.0001	<0.0001	<0.002
	SRK-QR-17	0.057	1.57	0.0005	0.00085	0.7	<0.000005	2.21	0.0121	<10	<0.00002	0.000002	<0.000005	0.00008	0.0008	0.00004	0.000033	0.0017	0.0002	<0.0001	0.004
	SRK-QR-18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	SRK-QR-20	0.058	1.61	0.00038	0.00333	0.9	<0.000005	4.76	0.0207	<10	<0.00002	<0.000002	<0.000005	0.00009	0.0009	0.00003	0.00011	0.0023	0.0002	0.0001	0.002
	SRK-QR-21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Geochemical Monitoring of Waste Rock from the Underground Decline

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Memo

To:	File	**Date:**	March 29, 2012
cc:		**From:**	Kelly Sexsmith
Subject:	Geochemical Monitoring of Waste Rock from the Underground Decline	**Project #:**	1CH008.057

1 Introduction

In 2010 and 2011, approximately 2,670 metres of lateral and 76 metres of vertical underground development were completed at the Doris North Mine. These activities resulted in production of approximately 183,000 tonnes of waste rock, including approximately 86% of non-mineralized and 14% of mineralized waste rock. Additionally, 329 metres of ore development occurred resulting in the production of approximately 9,400 tonnes of ore. Throughout this period, HBML managed the rock according the interim management plans described in the Waste Rock Management Plan (SRK 2010), including geological inspection, segregation of mineralized and non-mineralized waste rock within the footprint of Pad I, placement of ore on Pad Q, and confirmatory sampling and testing of the rock to assess the ML/ARD potential of each of these materials.

Underground mining commenced in November 2010, and the monitoring program was implemented upon the start of mining. This memo documents the results of monitoring completed prior to December 31, 2011. Mining activities at the site stopped in December 2011, and in January 2012, the Hope Bay site was put on care and maintenance. Therefore, this memo provides a complete record of the monitoring associated with this phase of mining activity.

Other monitoring activities in this mine area included an annual seep survey along the downgradient toe of the storage area, and routine monitoring of water reporting to the Pollution Collection Pond (PCP). The results of the seepage survey are reported in an accompanying memo by SRK (SRK 2012), while results of the routine monitoring program are included in the monthly water quality monitoring report prepared by HBML.

2 Methods

2.1 Geological Inspections

Detailed protocols for the geological inspections are documented in the Waste Rock Management Plan (SRK 2010). Geological inspections were made by site geologists at least once per day when the mining was in diabase and alteration zone, and once per shift in other rock units. Where possible, both the working face and the muck pile were inspected to identify the rock type, quantity of sulphide minerals, quartz veining, carbonate mineralization and the presence of fibrous minerals. This data was recorded in geological inspection logs. The detailed inspection logs are provided in Attachment A.

The rock type and visual sulphide content were used to define whether the waste rock should be considered “mineralized” waste or “non-mineralized” for management purposes.

SRK also inspected the waste rock pile during our June site visit.

2.2 Sampling and Sample Preparation

Samples of the blasted rock (muck) were taken at regular intervals within the underground mine by site geologists.

The samples were composited over an individual blast round, typically representing 50 to 100 m^3 of rock. Two types of samples were collected:

- Samples for sulphur (S), total inorganic carbon (TIC) and acid base accounting (ABA) tests included a representative mixture of fine and coarse rock fragments from the pile. These were pulverized prior to testing.

- Samples for Shake Flask Extraction (SFE) tests were sieved through a 1 cm sieve to collect the – 1 cm size fraction. The -1cm size fraction was subjected to testing.

The frequency of sampling and analysis is summarized in Table 1. The numbers of samples subjected to each of the tests are summarized in Table 2. All of the samples tested were designated as waste or mineralized waste. Ore is considered to be mineralized by definition, and therefore geochemical testing was not required.

Samples for S, TIC and ABA tests were shipped to ALS Laboratories (ALS) in Yellowknife for preparation. Splits were sent to ALS for S and TIC analyses at ALS in Vancouver, and to Maxxam Laboratories (Maxxam) for ABA tests. The samples for SFE tests were shipped directly to Maxaam for testing.

Table 1: Analytical Test Program According to Sample Type and Rock Type / Waste Management Unit

Rock Type / Management Unit	tonnes per sample	Sample Type		
		Random Composite		-1cm fraction
		Total S & TIC	Full ABA	SFE
Diabase	5,000	X	x	Jan to Mar 2011: One sample each month Jan, Feb, Mar. Apr to Dec 2011: One sample for every 50,000 tonnes.
Basalt	1,000	X	Every 5th sample	
Gabbro	5,000	X	x	
Buffer zone	1,000	X	Every 5th sample	
Alteration zone	5,000	X	x	

Table 2: Summary of Testing Program

Rock Type	Number of Samples		
	S & TIC	ABA and Trace Elements	SFE
Basalt	72	17	3
Diabase	17	8	4
Basalt with quartz veins	3	0	0
Other	3	1	0
Total	95	26	7

The site geologists completed some extra monitoring of rock within the stockpile area. For completeness, the results from this testing are included in Attachment 4 of this memo, but are not discussed in this memo because they are not part of the routine monitoring program. A review of this data indicates that there were no appreciable differences between those results and the results documented herein.

2.3 Analytical Methods

The following test methods were used in this program:

- S analyses were completed using the Leco method.
- TIC analyses were completed using the direct coulometric method.
- ABA tests were completed using the Modified Sobek method with sulphur speciation and TIC. (The TIC method reported for the full ABA test was based on measurement of evolved CO2 by Leco following HCL treatment of the sample).
- Elemental concentrations were determined by aqua regia digestion followed by ICP-MS analyses.
- SFE tests were completed using a water to rock ratio of 3:1, with ultrapure deionized water contacting the rock for 24 hours. The leachate was filtered through a 0.45 µm filter and was submitted for analysis of acidity, alkalinity, sulphate, chloride, nitrate, nitrite, ammonia, and a full suite of metals by ICP-MS (including Hg & Se).
- S and TIC analyses were completed at ALS. All other tests were completed at Maxxam.

3 Results and Discussion

3.1 Geological Inspections

The results of the geological inspections are provided in Attachment 1. The two main rock types that were encountered were diabase (11c) and basalt (1, 1a, 1i, and 1p). The extent of the diabase, basalt, and basalt with quartz veins are shown in Figure 1. The relative proportions of each of these units based on the number of records in the inspection logs, as well as the destination of the waste rock are summarized in Table 3. Other rock types included very minor amounts of mafic dyke (10b, two records), CV (suspected to be carbonate or quartz vein, one record), and fine grained dyke (one record).

Table 3: Distribution and Destination of Rock Types from the Underground Mine

Grade	Rock Type	Number of records	Percent of Records	Destination (% of rock type)		
				Waste	Mineralized Waste	Ore
Waste Rock	Diabase (11c)	397	55%	99.7%	0.3%	
	Basalt (1)	245	34%	65%	34%	
	Basalt with quartz veins (1/12q)	9	1%		100%	
Ore	Basalt (1)	2	0.3%			100%
	Basalt with quartz veins (1/12q)	70	10%			100%

Basalt along the contact with diabase was initially identified as a fine grained aphanitic dyke due to alteration caused by contact metamorphism (heat) from the diabase. Because this was initially considered to be a unique rock type that had not been geochemically characterized, it was initially managed as mineralized waste and was placed in the mineralized pile. However, once it became clear that it was part of the basalt unit, it was reclassified. The altered basalt may have been misidentified as a gabbro (10b) in some of the historical geological logs from this area. Additionally, as discussed under the laboratory results, its geochemical characteristics may differ from that of normal basalt. However, the altered basalt was not distinguished in the geological inspection logs. Information from the geologists indicates the alteration extended approximately 15 metres from the diabase, and that most of the basalt in the main decline was altered to some extent. In contrast, most of the basalt from the cross cuts to the east and the ramp to the south were not altered.

The observations of visual sulphide contents were typically as follows:

- non-mineralized diabase: 0% to trace amounts
- non-mineralized basalt: 0 to 0.5%
- mineralized basalt: trace to 2% (altered basalt typically had only trace amounts)
- ore grade basalt with quartz viens: 1 to 3%

There were two records of fibrous minerals in the logs, both filling small cavities in the rock.

SRK completed an inspection of the waste rock pile in June 2011. Only one observation of sulphides was made during that inspection. The sulphides were found in a single round of basalt. The sulphides occurred in isolated fragments of pillow basalt, and were mostly located along a the margins of the pillow. The rock fragment broke across the pillows such that only a small portion of the sulphide was exposed (i.e. there was no preferential exposure of the sulphides).

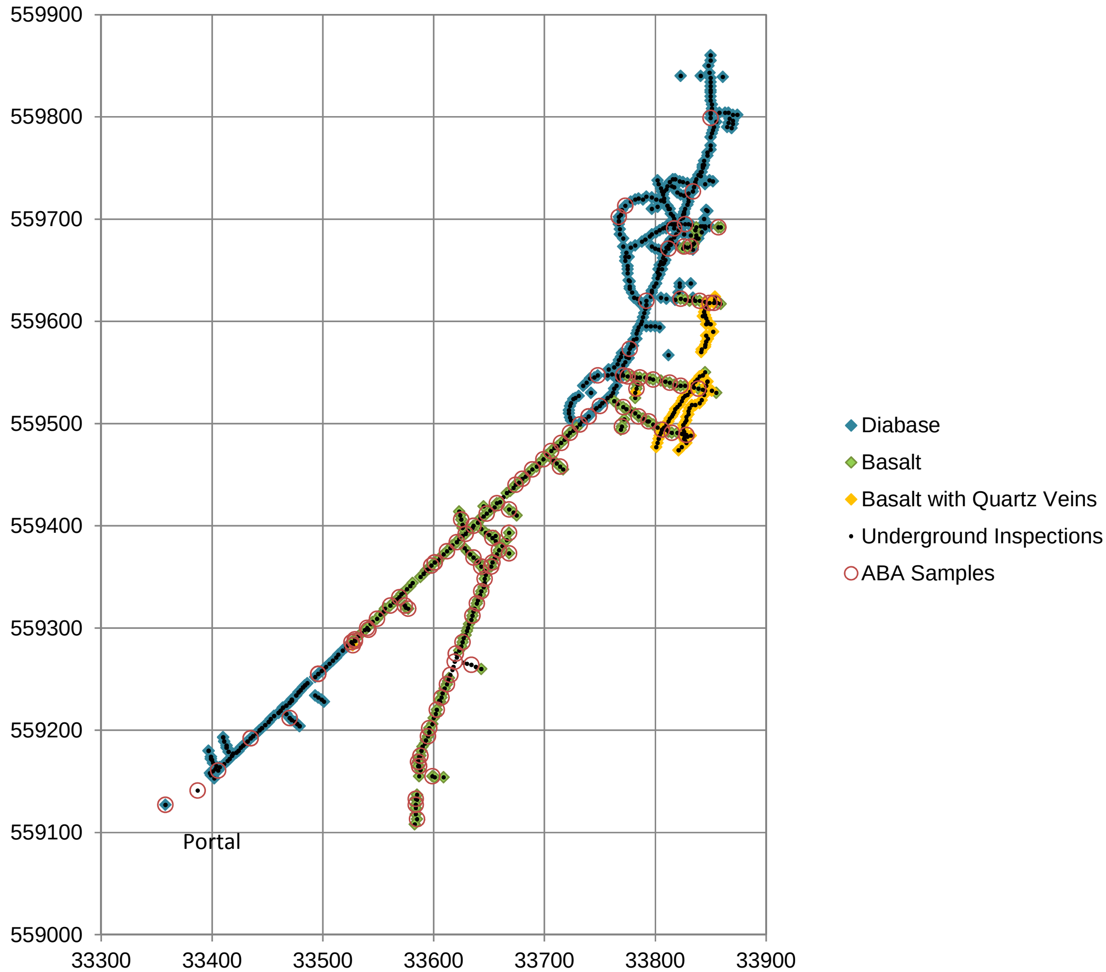

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Figure 1: Plan view of workings showing the extent of the diabase, basalt, and basalt with quartz veins, locations of observation records, and sample locations.

3.2 Laboratory Test Results

Laboratory testing data are provided in Attachments 2 and 3.

3.2.1 S and TIC Results

S and TIC results from ALS are available for 92 of the samples, including 17 diabase samples, 72 basalt samples, 3 basalt samples with quartz veins, and three samples representing other rock types. Summaries of the sulphur and TIC data by rock type are provided in Figures 2 and 3.

Diabase

The results show that the diabase had consistently low sulphur (P25 to P75 range from 0.02 to 0.03%) and low TIC (P25 to P75 range from 4.5 to 9.1 kg $CaCO_3$ eq/tonne). Typical (median) TIC/AP ratios were 7.3, and the minimum TIC/AP ratio was 3.6, indicating that the diabase has a negligible potential for ARD. With the exception of one round that was mixed with mineralized basalt, all of the diabase was managed as non-mineralized waste.

Basalt

Sulphur concentrations in the basalt were typically (P25 to P75) between 0.03 to 0.13%, while TIC values were typically between 6.8 to 23 kg $CaCO_3$ eq/tonne. The TIC content of these samples was much less than observed in other basalt samples characterized as part of this project. The lower TIC levels are attributed to alteration of the basalt resulting from contact metamorphism close to the diabase.

Median TIC/AP ratios in the basalt were 6.0, but roughly one third of the samples had TIC/AP ratios of less than 3 (indicating uncertain potential for ARD), and three samples had TIC/AP ratios of less than 1 (indicating that they were potentially acid generating). Of the samples with TIC/AP ratios less than 3, 7 were managed as mineralized waste and 14 were managed as non-mineralized waste. Ten of the 14 samples with TIC/AP of less than 3 that were managed as non-mineralized waste had sulphur concentrations of less than 0.25, which meant that they met the criteria for segregation as non-mineralized waste. The other four samples in this group had sulphur concentrations of greater than 0.25, indicating that they did not meet this criterion.

Basalt with Quartz Veins

Most of the basalt with quartz veins was managed as ore. However, as discussed previously this material was not characterized.

The three waste rock samples comprised of basalt with quartz veins had slightly elevated sulphur content (up to 0.22%), TIC ranging from 20 to 114 kg $CaCO_3$ eq/tonne, and TIC/AP ratios greater than 3. All three were managed as mineralized waste due to the potential association between quartz veins and sulphides.

Other

The three samples classified as “other” (CV, FGD, and 10B) had generally low sulphur content (maximum 0.11 %), moderately elevated TIC (11 to 114 $CaCO_3$ eq/tonne), and TIC/AP ratios greater than 3 indicating that they were not potentially acid generating. The inspection logs do not provide clear information on how these samples were managed.

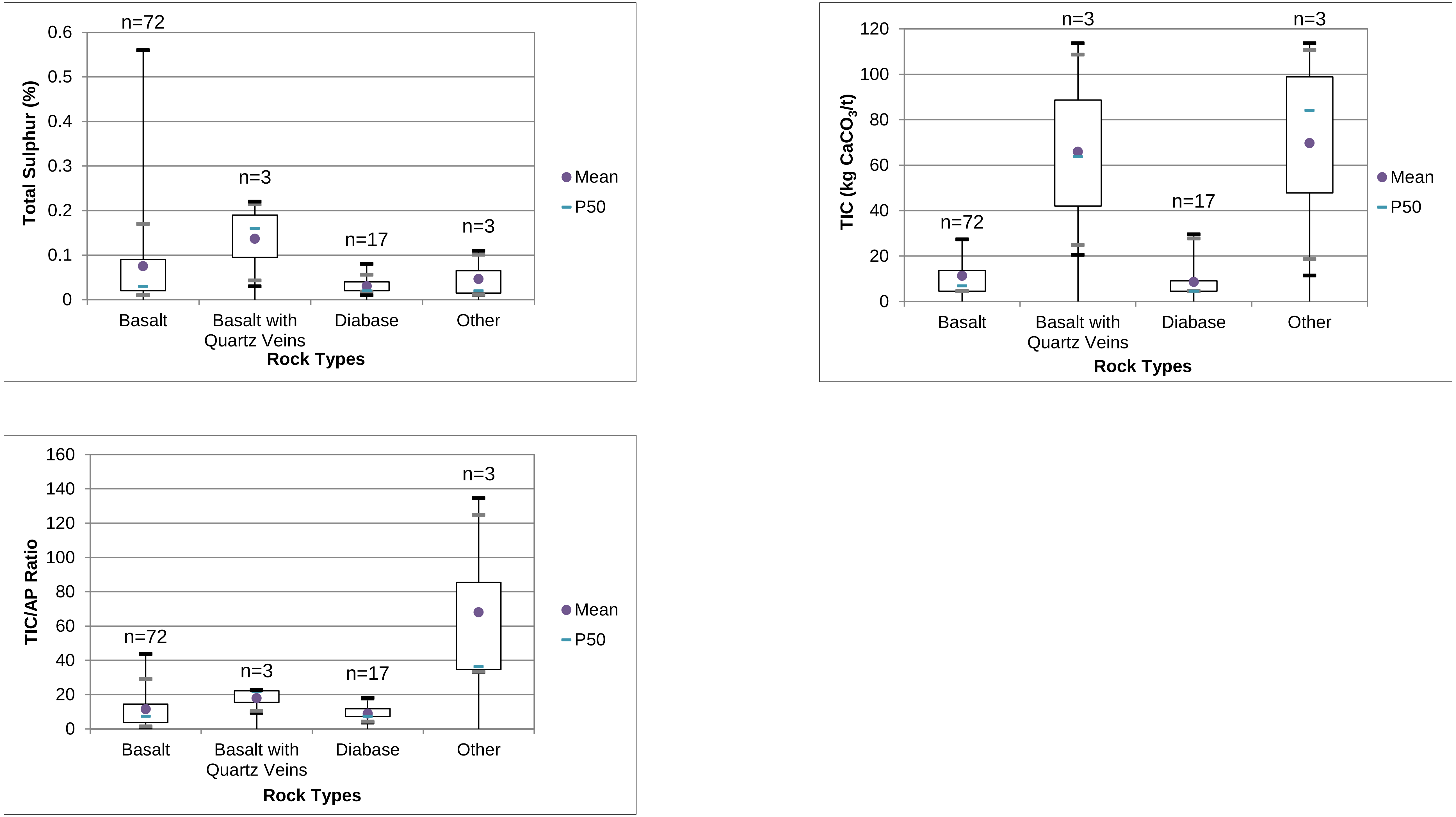

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Figure 2: Box and Whisker Plots of S, TIC, and TIC/AP ratios by Rock Type

(These plots are conventional box and whisker graphs, with the upper and lower extremes showing the minimum and maximum values, tick marks outside of the box showing the 5th and 95th percentiles, outer margins of the box showing the 25th and 75th percentiles and central division in the box showing the median value)

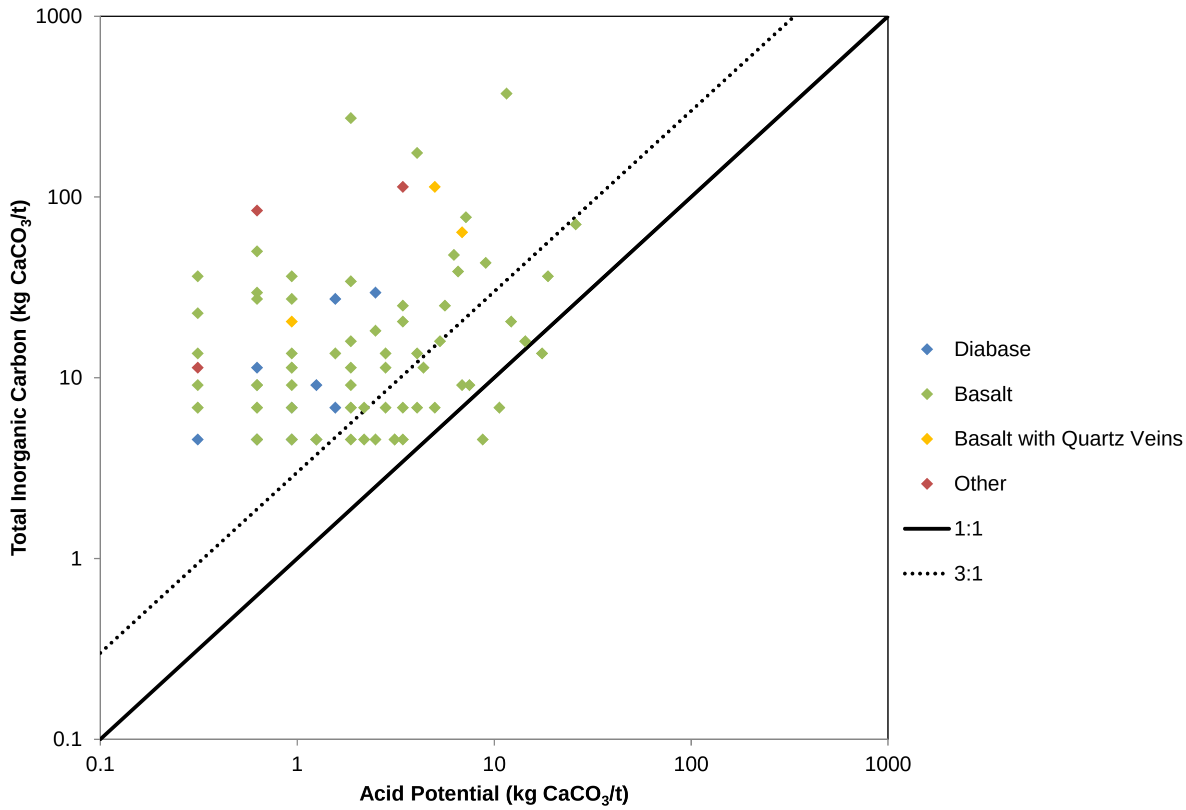

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Figure 3: TIC versus AP for Monitoring Samples

3.2.2 ABA Results

Full ABA results are available for 26 samples. The results indicate consistently alkaline paste pH. Plots of NP versus TIC (Figure 4) indicate that samples with low TIC values still contain moderate amounts of NP, likely due to buffering by silicate minerals. At higher NP values, NP and TIC were correlated indicating buffering was primarily from carbonate minerals. All samples with low TIC had some NP, indicating that some of the material with low TIC/AP ratios would have higher NP/AP ratios.

Within this dataset, all of the samples had NP/AP greater than 1, and all but 2 (both basalt) had NP/AP greater than 3 (Figure 5). The samples with NP/AP of less than 3 are considered to have an uncertain potential for ARD. The proportion of basalt samples classified as uncertain by ABA is much less than the proportions classified using TIC/AP ratios.

Based on the combined results of the S, TIC and full ABA results, it is concluded that approximately 10 to 30% of the basalt has an uncertain potential for ARD, and that a small number of samples (3/72) would be classified as potentially acid generating. However, due to the relatively low sulphur content (less than 1%), the presence of some silicate NP, alkalinity contributed by weathering of the surrounding rock, and the relatively coarse grain size of the rock, it is considered unlikely that acidic conditions would develop in the waste rock pile. A humidity cell test was started in 2010 on this type of material, and further assessment of the results of that test are recommended to more fully understand the long-term implications of these findings.

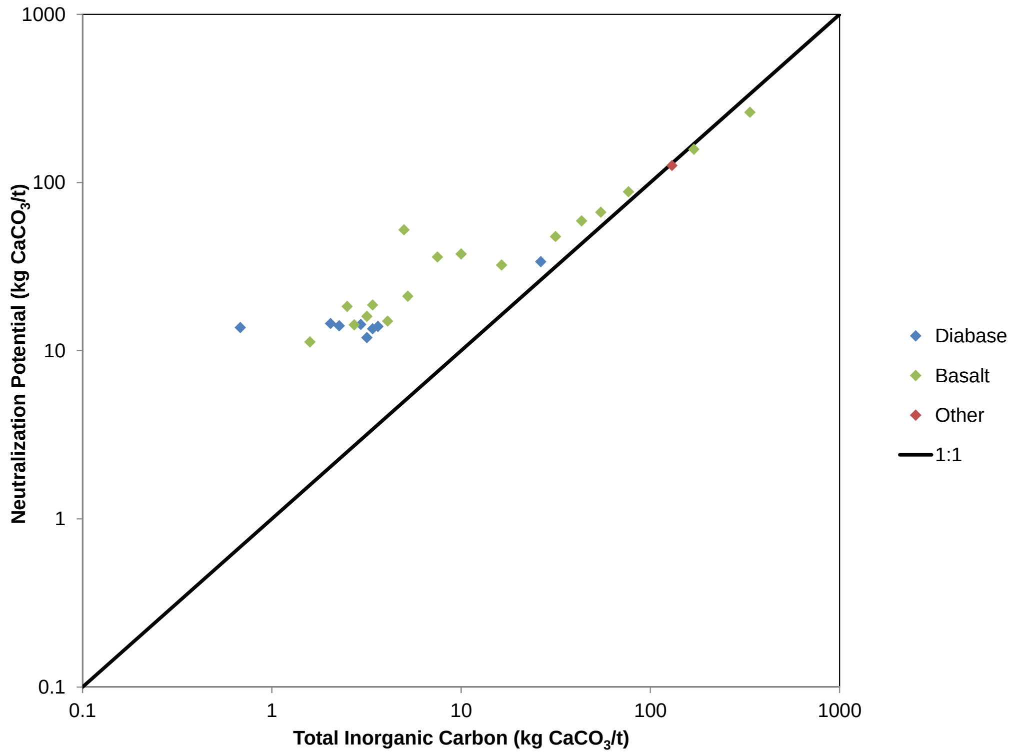

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Figure 4: Modified Sobek NP versus TIC for ABA Samples.

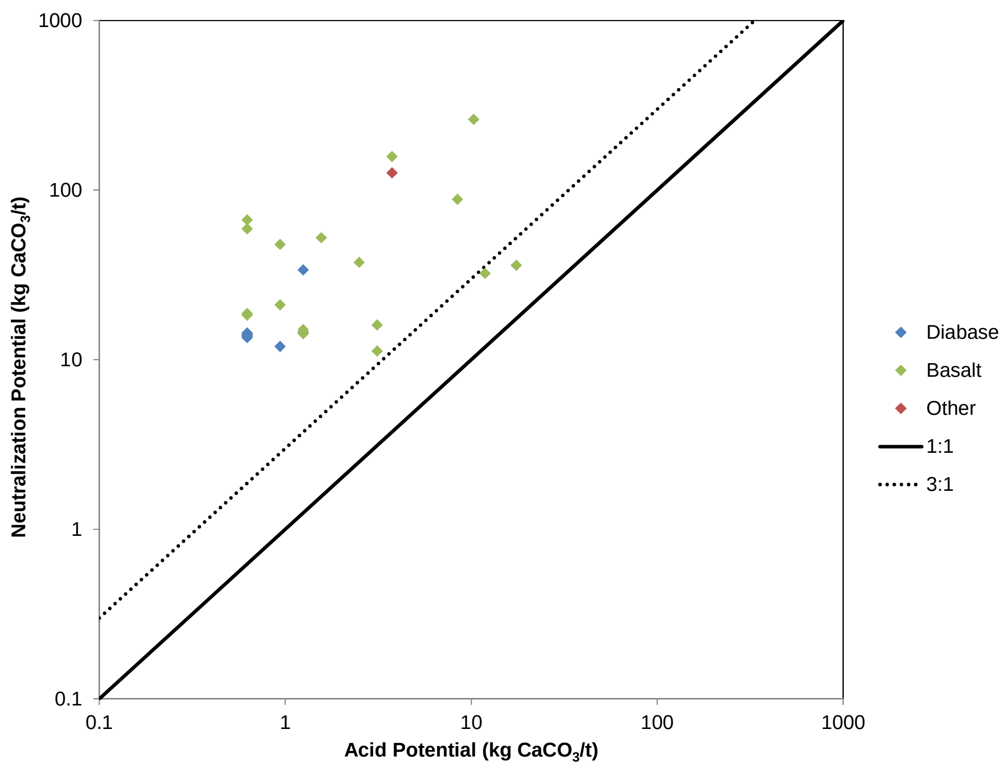

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Figure 5: Modified Sobek NP versus AP for ABA Samples. Note: Rock types that do not appear on the plot were not measured for these parameters.

3.2.3 Elemental Analyses

Results of the elemental analyses indicate that concentrations of trace elements in the diabase were less than ten times the average crustal abundances (Price 1997) (Table 4).

For the basalt, concentrations were generally less than ten times the average crustal abundances (Table 5). The 95th percentile levels of lead and sulphur exceeded ten times the average crustal abundances, indicating these elements were enriched relative to typical basalt in a small proportion of the samples. The 95th percentile level of selenium also exceeded this screening criteria. However this value was very close to the detection limit, limiting the value of this comparison.

Elemental analyses were not completed on samples of basalt with quartz veins or the other minor rock types encountered in the underground mine.

Table 4: Summary of Elemental Analyses for Diabase

Statistics (n=8)	Detection Limit	Unit	P25	median	P75	P95	10X Average Crustal Abundance* for Basalt
Ag	0.1	ppm	0.10	0.10	0.13	0.20	1.1
As	0.5	ppm	0.50	0.50	0.63	0.70	20
Au	0.5	ppb	5.5	6.6	9.9	14	40
Ba	1	ppm	19	26	30	38	3300
Ca	0.01	%	1.3	1.4	1.5	1.9	76
Cd	0.1	ppm	0.10	0.10	0.10	0.17	2.2
Co	0.1	ppm	20	21	23	24	480
Cr	1	ppm	4.8	8.0	12	29	1700
Cu	0.1	ppm	278	307	331	401	870
Fe	0.01	%	4.3	4.4	4.7	5.9	86.5
Hg	0.01	ppm	0.01	0.01	0.01	0.01	0.9
Mg	0.01	%	0.60	0.65	0.70	0.91	46
Mn	1	ppm	375	407	475	531	15000
Mo	0.1	ppm	0.30	0.30	0.40	0.4	15
Ni	0.1	ppm	19	26	29	36	1300
P	0.001	%	0.05	0.06	0.07	0.07	1.1
Pb	0.1	ppm	2.1	2.6	4.3	6.2	60
S	0.05	%	0.05	0.05	0.05	0.05	0.3
Sb	0.1	ppm	0.10	0.10	0.10	0.10	2
Se	0.5	ppm	0.50	0.50	0.50	0.5	0.5
Sr	1	ppm	39	45	47	50	4650
U	0.1	ppm	0.10	0.10	0.10	0.18	10
V	2	ppm	286	300	407	548	2500
W	0.1	ppm	0.10	0.10	0.10	0.10	7
Zn	1	ppm	72	83	87	123	1050

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Note: Numbers highlighted in bold exceed 10 times the average crustal abundance for basaltic rocks from Price (1997)
*CA- Crustal Abundance

Table 5: Summary of Elemental Analyses for Basalt

Statistics (n=17)	Detection Limit	Unit	P25	median	P75	P95	10X Average Crustal Abundance for Basalt
Ag	0.1	ppm	0.10	0.10	0.20	0.52	1.1
As	0.5	ppm	0.50	1.2	2.9	18	20
Au	0.5	ppb	2.3	3.0	6.5	31	40
Ba	1	ppm	8.00	16	28	54	3300
Ca	0.01	%	1.0	1.2	2.5	5.0	76
Cd	0.1	ppm	0.10	0.10	0.20	0.48	2.2
Co	0.1	ppm	19	28	33	47	480
Cr	1	ppm	5.0	15	62	97	1700
Cu	0.1	ppm	76	123	237	569	870
Fe	0.01	%	4.7	6.4	7.6	9.7	86.5
Hg	0.01	ppm	0.01	0.01	0.01	0.014	0.9
Mg	0.01	%	1.76	2.11	2.51	2.81	46
Mn	1	ppm	563	990	1162	2059	15000
Mo	0.1	ppm	0.20	0.20	0.30	0.6	15
Ni	0.1	ppm	4.8	21	40	85	1300
P	0.001	%	0.04	0.05	0.09	0.1016	1.1
Pb	0.1	ppm	1.50	4.2	13	**81**	60
S	0.05	%	0.05	0.05	0.12	**0.59**	0.3
Sb	0.1	ppm	0.10	0.10	0.10	0.12	2
Se	0.5	ppm	0.50	0.50	0.50	**0.72**	0.5
Sr	1	ppm	11	21	29	44	4650
Ti	0.001	%	0.16	0.18	0.22	0.26	13.8
U	0.1	ppm	0.10	0.10	0.10	0.10	10
V	2	ppm	77	122	180	223	2500
W	0.1	ppm	0.10	0.10	0.10	0.10	7
Zn	1	ppm	46	93	174	258	1050

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Note: Numbers highlighted in bold exceed 10 times the average crustal abundance for basaltic rocks from Price (1997).
*CA- Crustal Abundance

3.2.4 Shake Flask Extraction Test Results

Seven samples, including four diabase and three basalt samples were subjected to shake flask extraction tests. The results are summarized in Table 6. The leachate analyses indicated neutral to slightly alkaline pH, high TDS concentrations (primarily as calcium and chloride), high ammonia and nitrate concentrations, low alkalinity, low sulphate, and generally low metal concentrations. The high calcium and chloride concentrations are attributed to the use of calcium chloride brines for drilling water in the underground mine, while the elevated ammonia and nitrate concentrations are attributed to residues from blasting.

Trace element results were compared to screening criteria based on ten times the CCME guidelines for freshwater aquatic life (CCME, 2007). With the exception of chloride and nutrients, none of the results exceeded these screening criteria, indicating that the fresh rock has a very low potential for leaching of these elements.

Table 6: Summary of Shake Flask Extraction Tests

Maxxam ID (n=7)	Detection Limit	Units	P25	Median	P75	P95	Screening Criteria (CCME*10)
pH (24h)	0.01	pH Units	8.1	8.1	8.2	8.3	6.5-9
SO_4	0.5	mg/L	7.8	12	12	22	
Total Alkalinity	0.5	mg $CaCO_3$/L	12	13	17	17	
Nitrate	0.02	mgN/L	16	35	43	51	130
Ammonia	0.1	mgN/L	9.5	16	31	36	8.55
Cl	5	mg/L	890	1300	1350	1610	1280
Al	0.001	mg/L	0.06	0.08	0.10	0.10	0.1
Sb	0.0001	mg/L	0.0001	0.0001	0.0002	0.0002	
As	0.0001	mg/L	0.0003	0.0004	0.0005	0.0005	0.05
Cd	0.00003	mg/L	0.00005	0.00009	0.0001	0.0002	0.00017
Ca	0.3	mg/L	292	591	630	824	
Co	0.00003	mg/L	0.0003	0.0005	0.0010	0.0012	
Cu	0.0003	mg/L	0.0012	0.0013	0.0028	0.0040	0.02
Fe	0.005	mg/L	0.01	0.02	0.02	0.03	3
Mg	0.3	mg/L	7.6	12	13	16	
Mn	0.0003	mg/L	0.07	0.10	0.12	0.13	
Hg	0.00005	mg/L	0.000050	0.0001	0.0001	0.0001	0.00026
Mo	0.0003	mg/L	0.0027	0.0057	0.01	0.01	0.73
Ni	0.0001	mg/L	0.0003	0.0006	0.0007	0.0008	0.25
Se	0.0002	mg/L	0.0003	0.0003	0.0005	0.0008	0.01
Ag	0.00003	mg/L	0.00003	0.00003	0.00003	0.00003	0.001
Sr	0.0003	mg/L	0.54	0.80	3.1	9.2	
S	50	mg/L	50	50	50	50	
U	0.00001	mg/L	0.00002	0.00004	0.00004	0.0005	
Zn	0.0005	mg/L	0.0010	0.0016	0.0049	0.02	0.3

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Note: Values in **bold** exceed criteria

4 Evaluation of Segregation Methods

Rock type and visual percent sulphide were the main features used to segregate the rock into mineralized and non-mineralized areas of the waste rock pile.

By definition, all diabase was considered non-mineralized, and the testing has confirmed this.

The basalt was to be segregated according to visual estimates of sulphide content. The visual percent sulphide is expected to be roughly twice the analytical sulphur content. Therefore, the segregation criteria of 0.5% sulphide is equivalent to 0.25% sulphur. A comparison of visual percent sulphide and analytical sulphide content for basalt (Figure 6) indicates that the visual percent estimations are generally higher than the equivalent analytical sulphur content, except at very low sulphur concentrations. This means that the visual estimates should have provided generally conservative classification of sulphur content. Most of the exceptions evident on Figure 6 are for samples classified as having “trace sulphides”, which were arbitrarily assigned a value of 0.25% visual sulphide. For samples with trace sulphides, 41% of samples (or 34/82) were handled as mineralized waste, while the remainder were handled as non-mineralized waste, indicating that the classification of this material varied. In contrast, most samples with 0.5% of more visual sulphide were handled as mineralized waste.

Of the 72 basalt samples analyzed for TIC and S, 9 had an analytical sulphur content of greater than 0.25%, indicating that they exceeded the criteria for segregation as mineralized waste. Four of these were managed as mineralized waste, and five were not. A further 21 samples with sulphur contents of less than 0.25% were managed un-necessarily as mineralized waste. Of this latter group, several were managed as mineralized waste due to uncertainties in the rock type. Several others were managed as mineralized waste due to overestimation of the visual percent sulphur. Given that the proportion of mineralized waste is still less than the amounts that were anticipated in the planning phases, this conservatism is not viewed as a concern.

The segregation criteria of 0.5% visual sulphide (equivalent to 0.25% analytical sulphur) was based on prior testing of basalt which indicated that it typically has a much higher NP content than indicated in this monitoring program. Based on actual TIC/AP ratios, 18 of the basalt samples had an uncertain potential for ARD, and 3 were classified as PAG. Only 7 of the 21 basalt samples with TIC/AP ratios of less than 3 had sulphur concentrations that exceeded the segregation criteria, and all were below 1% sulphur. This suggests that the segregation criteria should be revised if mining activities resume. The presence of carbonate mineralization in basalt appears to be a more important consideration in the vicinity of the diabase than sulphur content. Data from the more complete ABA analyses indicates that some NP is present in the form of silicate minerals. Therefore, the classifications based on TIC/AP ratios are considered to be conservative.

Although the segregation criteria for basalt may not have been ideal, acidic conditions are considered unlikely to develop in the non-mineralized portion of the pile due to the relatively small proportion of material that is classified as potentially acid generating, buffering by silicate minerals, and the alkalinity contributed by the surrounding rock.

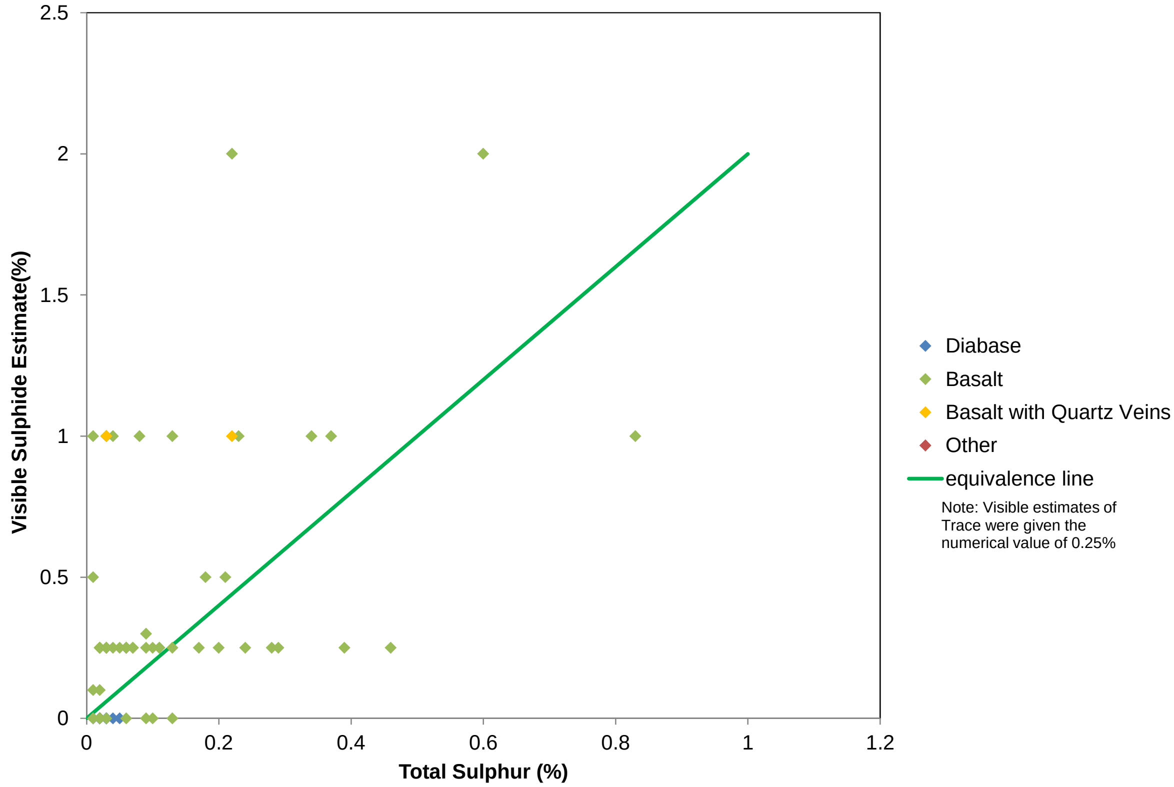

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Figure 6: Comparison of Visual % Sulphide and Analytical S

5 Summary and Conclusions

Mining activities have resulted in the production of approximately 183,000 tonnes of waste rock, including approximately 86% of non-mineralized and 14% of mineralized waste rock. Additionally, 9,400 tonnes of ore was produced. Approximately 55% of the waste rock was diabase, while the remainder was basalt. The ore was a mixture of basalt with quartz veins. Basalt within approximately 15 metres of the diabase, including most of the basalt along the main decline was altered by contact metamorphism (heat) from the diabase.

The diabase had consistently low sulphur concentrations (typically less than 0.03%) and low TIC (typically less than 9 kg $CaCO_3$ eq/tonne). These were classified as not potentially acid generating.

The majority of the basalt had low sulphur concentrations (0.03 to 0.13%). However, TIC and NP content was variable (P25 to P75 values for TIC between 6.8 and 23 kg $CaCO_3$ eq/tonne), and many samples had lower TIC and NP than expected given typical concentrations observed in basalt from the Doris area (P25 to P75 values between 167 to 339 kg $CaCO_3$ eq/tonne, SRK 2011). This may be due to alteration of the basalts that are located in close proximity to the diabase. As a result, roughly one-third of the basalt samples were classified as having an uncertain potential for ARD based on TIC/AP ratios, and three samples had TIC/AP ratios of less than 1, and were classified as potentially acid generating. Comparison of TIC and Modified Sobek NP results for samples subjected to full ABA tests indicated that NP was typically greater than TIC, indicating that some NP would be contributed by silicate minerals. As a result, a smaller proportion of the basalt samples (i.e., 2/17) were classified as having an uncertain potential for ARD (NP/AP ratios between 1 and 3), and none were classified as potentially acid generating (NP/AP ratios less than 1). Given the relatively low sulphur content of this material, the presence of silicate NP, alkalinity contributed by other rock in the pile, and the relatively coarse grain size of this rock, it is considered unlikely that acidic conditions would develop in this material.

Trace element analyses on the solids indicated that lead and sulphur concentrations were enriched relative to typical basalt in a small proportion of the samples.

Shake flask extraction tests indicated that leachate in contact with these samples had high chloride, ammonia and nitrate concentrations. Concentrations of other trace elements were low in comparison to screening criteria.

The basalt was to be segregated according to visual estimates of sulphide content. A comparison of visual percent sulphide and analytical sulphide content for basalt indicates that the visual percent estimations are generally higher than the equivalent analytical sulphur content indicating that the visual estimates resulted in a generally conservative classification of sulphur content and therefore management destination. Some exceptions occurred, typically for samples with trace amounts of sulphides.

Due to the lower than expected TIC and NP content of the rock, the segregation criteria for basalt should be reviewed. A humidity cell test was started in 2010 on this type of material, and further assessment of the results of that test are recommended to more fully understand the long-term implications of these findings.

6 References

Canadian Council of the Environment, 2007. Canadian Water Quality Guidelines for the Protection of Aquatic Life Update 7.0. September 2007

Price, W.A., 1997. DRAFT Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia. BC Ministry of Employment and Investment, Energy and Minerals Division. 151pp

SRK Consulting, 2010. Hope Bay Project Doris North Waste Rock and Ore Management Plan. Prepared for Hope Bay Mining Ltd., December 2010.

SRK Consulting, 2011. Geochemical Characterization Report for Waste Rock and Ore from the Doris Deposits, Hope Bay. Report prepared for HBML, November 2011.

SRK Consulting, 2012. Hope Bay Quarry Seepage Monitoring Program. Memo prepared for HBML, March, 2012.

Attachments

Attachment 1: Geological Inspection Logs

Attachment 1- Geological Inspection Logs

Date of Inspection	Geo	Round taken		Source location								Key Observations									ABA Sample			Stockpile Location				
		Date	Time	Heading	Face ID	Round easting	Round northing	Round elevation	Face map?	Face photo	Mining Notes	Lith	Rock Type	Alt: Y/N	Min Y/N	Sulph %	Carb	Fibrous min. Y/N	Geology Notes	Call (W/MW/O)	Y/N	Sample #	Sample Notes	Pad	Sector	Easting	Northing	Lift (Lift|Elev)
4-Mar-11	KM/JD	03/04/11	6:00	N5046RP	DN-N5046RP-20110304	33526	559286	5015	Y	Y		basalt	Basalt	Y	Y	2		N	Crossed into mafic dyke, very silicified, aphanitic. Qtz veining (5cm wide) along contact between diabase and mafic dyke. Trace to 10 % (highest sulphide content along diabase and mafic dyke contact) py/cp in dyke.	MW	N	N/A		I	SE			1
5-Mar-11	JD/KM	03/05/11	1:00	N5046RP	DN-N5046RP-20110305	33529	559289	5015	Y	Y	Moved intial portion of round to mineralized pile on N/S. Once geologist checked muck the rest was moved to NM waste pile. Scoop broken down for most of the day.	basalt	Basalt	Y	Y	tr		N	Muck is mainly mafic dyke with trace sulphides (concentrated sulphide content(~3%) in two pieces of muck observed)	W	Y	544510	Random composite sample. Total S, TIC, modified ABA, Au assay.	I	SE			1
6-Mar-11	JD/KM	03/06/11	6:00	N5046RP	DN-N5046RP-20110306F1	33532	559292	5014	Y	Y		basalt	Basalt	N	Y	tr		N	Round all mafic dyke, very silicified. Fine grained. Trace sulphides. Concentration of hematite and pyrite along joint planes.	W	N	N/A		I	W			3
7-Mar-11	JD/KM	03/06/11	21:30	N5046RP	DN-N5046RP-20110306F2	33535	559295	5013	N	N		basalt	Basalt	N	Y	tr		N		W	N	N/A		I	W			3
7-Mar-11	JD/KM	03/07/11	15:00	N5046RP	DN-N5046RP-20110307	33538	559298	5013	Y	Y		basalt	Basalt	N	Y	tr		N		W	N	N/A		I	W			3
8-Mar-11	JD/KM	03/08/11	6:00	N5046RP	DN-N5046RP-20110308	33540	559300	5012	Y	Y		basalt	Basalt	Y	Y	tr		N		W	Y	544511	Random composite sample, Total S, TIC.	I	W			3
9-Mar-11	JD/KM	03/09/11	1:00	N5046RP	DN-N5046RP-20110309	33543	559304	5011	Y	Y	Water lines frozen. Delay in mining.	basalt	Basalt	N	Y	tr		N	Recommended to send silicified mafic rock as mineralized waste until we know what the AGP is. What has already been dumped on the non-mineralized stockpile is ok to stay where it is.	MW	N	N/A		I	SE			1
10-Mar-11	KM	03/10/11	1:00	N5046RP	DN-N5046RP-20110310F1	33545	559306	5010	Y	Y		basalt	Basalt	Y	Y	tr		N	Hematite staining on joint surfaces.	MW	N	N/A		I	SE			1
11-Mar-11	KM	03/10/11	4:30	N5046RP	DN-N5046RP-20110311F1	33549	559309	5010	N	N		basalt	Basalt	Y	Y	tr		N		MW	Y	544512	Random composite sample, Total S, TIC.	I	SE			1
12-Mar-11	KM	03/11/11	4:40	N5046RP	DN-N5046RP-20110311	33552	559313	5009	Y	Y		basalt	Basalt	Y	Y	tr		N	Hematite staining on joint surfaces.	MW	N	N/A		I	SE			1
12-Mar-11	KM	03/11/11	21:00	N5046RP	DN-N5046RP-20110311F2	33555	559316	5008.5	N	N		basalt	Basalt	Y	Y	tr		N		MW	N			I	SE			1
12-Mar-11	KM	03/12/11	11:00	N5046RP	DN-N5046RP-20110312	33556	559319	5008	Y	Y		basalt	Basalt	Y	Y	tr		N	Hematite staining on joint surfaces.	MW	N			I	SE			1
13-Mar-11	KM	03/13/11	3:30	N5046RP	DN-N5046RP-20110313	33561	559322	5007	Y	Y		basalt	Basalt	Y	Y	tr		N	Hematite staining on joint surfaces, localized high sulphide content around veins.	MW	Y	544513	Random composite sample, Total S, TIC.	I	SE			1
14-Mar-11	KM	03/13/11	21:00	N5046RP	DN-N5046RP-20110314F1	33564	559325	5007	N	N		basalt	Basalt	Y	Y	TR		N		MW	N			I	SE			1
14-Mar-11	KM	03/14/11	9:30	N5046RP	DN-N5046RP-20110314F2	33567	559328	5006	Y	Y		basalt	Basalt	Y	Y	TR		N	Hematite staining on joint surfaces. Py & cpy	MW	n			I	SE			1
15-Mar-11	KM	03/15/11	4:30	N5046RP	DN-N5046RP-20110315	33569	559330	5006	Y	Y		basalt	Basalt	Y	Y	TR		N	Hematite staining on joint surfaces.	MW	Y	544514	Random composite sample, Total S, TIC.	I	SE			1
15-Mar-11	KM	03/16/11	2:00	N5022DE	DN-N5022DE-20110316							basalt	Basalt	N	N			N		W	N			I	W			3
16-Mar-11	KM	03/16/11	10:30	N5046RP	DN-N5046RP-20110316	33571	559333	5005	Y	Y		basalt	Basalt	Y	Y	tr		N	Hematite staining on joint surfaces.	MW	N			I	SE			1
17-Mar-11	KM	03/17/11	2:00	N5046RP	DN-N5046RP-20110317	33573	559335	5005	Y	Y		basalt	Basalt	Y	Y	tr		N	Hematite staining on joint surfaces.	MW	N			I	SE			1
18-Mar-11	KM	03/17/11	21:30	N5046RP	DN-N5046RP-20110318F1	33576	559338	5003	N	N		basalt	Basalt	Y	Y	0.5		N		MW	N							
19-Mar-11	KG	03/18/11	15:30	N5046RP	DN-N5046RP-20110318	33579	559341	5002	Y	Y		basalt	Basalt	Y	Y	0.5		N		MW	N							
20-Mar-11	KG	03/19/11	5:45	N5004DE	DN-N5004DE-20110319	33574	559322	5005	Y	Y		basalt	Basalt	Y	Y	0.5		N	qtz vn w/ hem, py noted at junction	MW	Y	544515	Random composite sample, Total S, TIC, Mod ABA					
21-Mar-11	KG	03/21/11	4:00	N5046RP	DN-N5046RP-20110321	33581	559344	5001	Y	N		basalt	Basalt	Y	Y	0.5		N		MW	N							
22-Mar-11	KG	03/21/11		N5004DE	DN-N5004DE-20110321	33574	559322	5005	N	N	Caught up bolting/screening	basalt	Basalt	Y	Y	1		N		MW	N							
23-Mar-11	KG	03/22/11		N5004DE	DN-N5004DE-20110322	33575	559320	5005	Y	Y		basalt	Basalt	Y	Y	1		N		MW	N							
23-Mar-11	KG	03/23/11	10:00	N5046RP	DN-N5046RP-20110323	33588	559350	5000	Y	N		basalt	Basalt	Y	Y	0.5		N		MW	N							
24-Mar-11	KG	03/24/11	10:00	N5046RP	DN-N5046RP-20110324	33591	559353	4999	Y	N		basalt	Basalt	Y	Y			N		MW	N							
25-Mar-11	KG	03/24/11	18:30	N5004DE	DN-N5004DE-20110324	33577	559319	5005		N	last round in cap mag	basalt	Basalt	Y	Y			N		MW	Y	544516	Random composite sample, Total S, TIC.					
25-Mar-11	KG	03/25/11	6:30	N5046RP	DN-N5046RP-20110325F1	33593	559356	4999	Y	Y		basalt	Basalt	N	N			N		MW	N							
26-Mar-11	KG	03/25/11	20:00	N5046RP	DN-N5046RP-20110325F2	33594	559357	4998	Y	Y		basalt	Basalt		Y	1		N		MW	N							
27-Mar-11	KG	03/26/11	19:30	N5046RP	DN-N5046RP-20110326	33596	559358	4998	N	N		basalt	Basalt		Y	1		N	did not see face (night shift)	MW	N							
27-Mar-11	KG	03/27/11	9:00	N5046RP	DN-N5046RP-20110327	33598	559361	4998	Y	Y		basalt	Basalt	N	Y	1		N		MW	Y	544518	Random composite sample, Total S, TIC.					
28-Mar-11	KG	03/28/11	4:30	N5046RP	DN-N5046RP-20110328	33601	559364	4998	Y	Y		basalt	Basalt	N	Y	1		N		MW	Y	544517	SFE sample					
29-Mar-11	KG	03/29/11		N5046RP	DN-N5046RP-20110329	33604	559366	4998	Y	Y		basalt	Basalt	N	Y	1		N		MW	N							
30-Mar-11		-									no round taken; caught up bolting	basalt	Basalt	N	Y	1		N		MW	N							
31-Mar-11	KG	03/30/11	18:30	N5046RP	DN-N5046RP-20110330	33606	559369	4997	Y	Y		basalt	Basalt	N	Y	0.5		N	qtz vn right wall	MW	N							
1-Apr-11	JD	03/31/11	15:30	N5046RP	DN-N5046RP-20110331	33609	559372	4997	N	N		1	Basalt	N	Y	TR		N		MW	N			I	E			
1-Apr-11	JD	04/01/11	5:30	N5046RP	DN-N5046RP-20110401	33612	559375	4997	Y	Y		1	Basalt	N	Y	TR		N		MW	Y	544520	Random composite sample. Total S, TIC	I	E			
2-Apr-11	JD	04/02/11	0:15	N5046RP	DN-N5046RP-20110402F1	33615	559378	4996	Y	N		1	Basalt	N	Y	TR		N		MW	N			I	E			
3-Apr-11	JD	04/02/11	16:00	N5046RP	DN-N5046RP-20110402F2	33617	559381	4995	Y	Y		1	Basalt	N	Y	tr		N		MW	N			I	E			
4-Apr-11	JD	04/04/11	0:15	N5046RP	DN-N5046RP-20110404	33621	559384	4995	Y	N		1	Basalt	N	Y	1		N		MW	Y	544521	Random composite sample. Total S, TIC, mod. ABA	I	E			
5-Apr-11	JD	04/05/11	6:00	N5046RP	DN-N5046RP-20110405	33623	559387	4994	Y	N		1	Basalt	N	N	tr		N		MW	N			I	E			
6-Apr-11	JD	04/06/11	6:00	N5046RP	DN-N5046RP-20110406	33626	559390	4493	Y	Y		1	Basalt	N	Y	tr				MW	N			I	E			
7-Apr-11	JD	04/07/11	5:45	N5046RP	DN-N5046RP-20110407	33629	559392	4493	Y	Y		1	Basalt	N	Y	tr		N		W	Y	544522	Random composite sample, Total S, TIC.	I	W			
8-Apr-11	JD	04/08/11	5:30	N5046RP	DN-N5046RP-20110408	33631	559395	4492	N	N	Checked muck at stockpile	1	Basalt	N	Y	tr		N		W	N			I	W			
9-Apr-11	JD	04/09/11	15:00	X4994RP	DN-X4994RP-20110409	33628	559378	4494	N	N	Checked muck at stockpile	1	Basalt	N	Y	tr		N		W	N			I	W			
10-Apr-11	JD	04/09/11	15:00	N5046RP	DN-N5046RP-20110409	33635	559398	4492	Y	Y		1	Basalt	N	Y	tr		N		W	N			I	W			
10-Apr-11	JD	04/10/11	5:00	X4994RP	DN-X4994RP-20110410	33630	559375	4494	Y	Y		1	Basalt	N	Y	tr		N		W	N			I	W			
11-Apr-11	JD	04/11/11	5:00	N5046RP	DN-N5046RP-20110411	33636	559400	4991	Y	N		1	Basalt	N	Y	tr		N		W	Y	544523	Random composite sample, Total S, TIC.	I	W			
11-Apr-11	JD	04/11/11	5:00	N4990XN	DN-N4990XN-20110411	33626	559398	4994	Y	N		1	Basalt	N	Y	tr		N		W	N			I	W			
12-Apr-11	JD	04/12/11	5:00	X4994RP	DN-X4994RP-20110412	33633	559372	4994	Y	N		1	Basalt	N	Y	tr		N		W	N			I	W			
12-Apr-11	JD	04/12/11	5:00	N4990XN	DN-N4990XN-20110412	33626	559401	4993	Y	N		1	Basalt	N	Y	tr		N		W	N			I	W			
14-Apr-11	JD	04/13/11	6:00	N5046RP	DN-N5046RP-20110413	33640	559403	4990	Y	Y		1	Basalt	N	Y	tr		N		W	N			I	W			
14-Apr-11	JD	04/14/11	3:00	N4990XN	DN-N4990XN-20110414	33625	559406	4993	Y	N		1	Basalt	N	Y	tr		N		W	Y	544524	Random composite sample, Total S, TIC.	I	W			
14-Apr-11	JD	04/14/11	3:00	X4994RP	DN-X4994RP-20110414	33636	559369	4994	Y	Y		1	Basalt	N	Y	tr		N		W	Y	544525	Random composite sample, Total S, TIC.	I	W			
15-Apr-11	JD	04/15/11	5:00	N5046RP	DN-N5046RP-20110415	33642	559407	4990	Y	N		1	Basalt	N	N	0		Y	Small bit of fibrous amphibole found in the wall	W	N			I	W			
17-Apr-11	JD	04/16/11	9:00	N4990XN	DN-N4990XN-20110416	33624	559410	4994	Y	Y		1	Basalt	N	N	0		N		W	N			I	W			
17-Apr-11	JD	04/16/11	9:00	N5046RP	DN-N5046RP-20110416	33645	559409	4990	Y	Y		1	Basalt	N	N	0		N		W	N			I	W			

Date of Inspection	Geo	Round taken		Source location								Key Observations									ABA Sample			Stockpile Location				
		Date	Time	Heading	Face ID	Round easting	Round northing	Round elevation	Face map?	Face photo	Mining Notes	Lith	Rock Type	Alt: Y/N	Min Y/N	Sulph %	Carb	Fibrous min. Y/N	Geology Notes	Call (W/MW/O)	Y/N	Sample #	Sample Notes	Pad	Sector	Easting	Northing	Lift (Lift|Elev)
17-Apr-11	JD	04/16/11	18:30	X4994RP	DN-X4994RP-20110416	33639	559366	4994	Y	Y		1	Basalt	N	N	0		N		W	N			I	W			
17-Apr-11	JD	04/16/11	18:30	N4990DE	DN-N4990DE-20110416	33643	559397	4991	Y	Y		1	Basalt	N	N	0		N		W	N			I	W			
18-Apr-11	JD	04/17/11	18:30	N4990XN	DN-N4990XN-20110417	33623	559414	4994	Y	Y	Advance complete.	1	Basalt	N	N	0		N		W	N			I	W			
18-Apr-11	JD	04/17/11	18:30	N5046RP	DN-N5046RP-20110417	33648	559412	4989	Y	Y		1	Basalt	N	N	0		N		W	Y	544526	Random composite sample. Total S, TIC, mod. ABA	I	W			
18-Apr-11	JD	04/18/11	6:30	N4990DE	DN-N4990DE-20110418	33647	559393	4991	Y	Y		1	Basalt	N	N	0		N		W	N			I	W			
19-Apr-11	JD	04/18/11	18:30	X4994RP	DN-X4994RP-20110418	33641	559364	4994	N	N	Checked muck at stockpile	1	Basalt	N	N	0		N		W	N			I	W			
19-Apr-11	JD	04/19/11	6:30	N4990DE	DN-N4990DE-20110419	33650	559391	4992	N	N	Checked muck at stockpile	1	Basalt	N	N	0		N		W	N			I	W			
20-Apr-11	JD	04/19/11	18:30	X4994RP	DN-X4994RP-20110419	33643	559360	4993	Y	N		1	Basalt	N	N	0		N		W	Y	544528	Random composite sample, Total S, TIC.	I	W			
20-Apr-11	JD	04/20/11	6:30	N5046RP	DN-N5046RP-20110420	33651	559415	4988	Y	Y		1	Basalt	N	N	0		N		W	N			I	W			
20-Apr-11	JD	04/20/11	6:30	N4990DE	DN-N4990DE-20110420	33653	559388	4992	Y	Y	Apr 21 WRM sample (JD). Mapped 23 Apr (KG)	1	Basalt	N	N	0		N		W	Y	544527	Random composite sample, Total S, TIC.	I	W			
21-Apr-11	JD	04/20/11	18:30	X4994RP	DN-X4994RP-20110420	33646	559356	4993	Y	Y		1	Basalt	N	N	0		N		W	N			I	W			
21-Apr-11	JD	04/21/11	6:30	N5046RP	DN-N5046RP-20110421	33655	559418	4987	Y	N		1	Basalt	N	N	0		N		W	N			I	W			
22-Apr-11	KG	04/21/11	18:30	X4994RP	DN-X4994RP-20110421	33647	559352	4991	Y	Y		1a	Basalt	N	N	0.25		N	rare coarse Py	W	N			I	W			
22-Apr-11	KG	04/22/11	6:30	N5046RP	DN-N5046RP-20110422	33657	559422	4986	Y	Y		1p	Basalt	N	N	0.25		N		W	Y	544529	Random composite sample, Total S, TIC.	I	W			
23-Apr-11	KG	04/22/11	21:00	X4994RP	DN-X4994RP-20110422	33646	559348	4990	Y	Y		1a	Basalt	N	N			N		W	Y	544530	Random composite sample, Total S, TIC.	I	W			
23-Apr-11	KG	04/23/11	6:30	N5046RP	DN-N5046RP-20110423	33660	559423	4985	Y	Y		1p	Basalt	N	N	0		N		W	N			I	W			
25-Apr-11	KG	04/25/11	6:30	X4994RP	DN-X4994RP-20110422	33645	559340	4990	Y	Y		1p	Basalt	N	Y	0.25		N	rare coarse Py	W	N			I	W			
25-Apr-11	KG	04/25/11	6:30	N4990XS	DN-N4990XS-20110425	33652	559360	4990	Y	Y		1p	Basalt	N	Y	0.5		N	coarse Py in small qtz veins	W	Y	544531	SFE (Type 3)	I	W			
26-Apr-11	KG	04/25/11	18:45	N5046RP	DN-N5046RP-20110425	33666	559432	4984	Y	Y		1	Basalt	N	N			N		W	N			I	W			
26-Apr-11	KG	04/26/11	6:30	N4990XS	DN-N4990XS-20110426	33653	559364	4990	Y	Y		1	Basalt	N	N			N		W	Y	544532	Type 1: Total S, TIC, Mod ABA	I	W			
26-Apr-11	KG	04/26/11	6:30	X4994RP	DN-X4994RP-20110426	33643	559336	4989	Y	Y		1	Basalt	N	N			N		W	Y	544533	Type 2: Total S, TIC	I	W			
27-Apr-11	KG	04/27/11	6:30	X4994RP	DN-X4994RP-20110427	33642	559332	4988	Y	Y		1	Basalt	N	N			N		W	N			I	W			
27-Apr-11	KG	04/27/11	18:30	N5046RP	DN-N5046RP-20110427	33669	559434	4983	Y	Y		1	Basalt	N	N			N		W	N			I	W			
28-Apr-11	KG	04/27/11	18:30	N4990XS	DN-N4990XS-20110427	33655	559368	4990	Y	Y		1	Basalt	N	N			N		W	N			I	W			
28-Apr-11	KG	04/28/11	6:30	N5046RP	DN-N5046RP-20110428	33672	559437	4982	Y	Y		1	Basalt	N	N			N		W	N			I	W			
29-Apr-11	KG	04/28/11	18:30	X4994RP	DN-X4994RP-20110428	33640	559327	4987	Y	Y		1	Basalt	N	N			N		W	N			I	W			
29-Apr-11	KG	04/29/11	17:00	N4990XS	DN-N4990XS-20110429	33657	559372	4990	Y	Y		1	Basalt	N	Y	TR		N	trace py in qtz vein margins	W	N			I	W			
30-Apr-11	KG	04/29/11	18:30	N4984DE	DN-N4984DE-20110429	33645	559419	4984	Y	Y		1	Basalt	N	N			N		W	N			I	W			
30-Apr-11	KG	04/29/11	6:30	N5046RP	DN-N5046RP-20110429	33674	559440	4982	Y	Y		1	Basalt	N	N			N		W	Y	544536	Type 2: Total S, TIC	I	W			
1-May-11	KG	04/30/11	18:30	N4990XS	DN-N4990XS-20110430	33659	559376	4990	Y	N		1	Basalt	N	Y	TR		N	trace py in qtz vein margins	W	Y	544535	Type 2: Total S, TIC	I	W			
1-May-11	KG	05/01/11	6:30	N5046RP	DN-N5046RP-20110501	33677	559442	4981	Y	N		1	Basalt	N	N			N		W	N			I	W			
2-May-11	KG	04/30/11	6:30	X4994RP	DN-X4994RP-20110430	33639	559324	4986	N	N	04/30: muckbound. On hold pending DDH 11TDDU008.	1p	Basalt	N	Y	0.5		N	dissem py observed in single preserved pillow margin	W	Y	544534	Type 2: Total S, TIC	I	W			
2-May-11	KG	05/01/11	18:30	N4990XS	DN-N4990XS-20110501	33662	559380	4990	Y	Y		1p	Basalt	N	N			N		W	N			I	W			
2-May-11	KG	05/02/11	6:30	N5046RP	DN-N5046RP-20110502	33680	559446	4980	Y	Y		1p	Basalt	N	N			N		W	Y	544537	Type 1: Total S, TIC, Mod ABA	I	W			
3-May-11	KG	05/02/11	18:30	N4984DE	DN-N4984DE-20110502	33668	559416	4984	Y	Y		1p	Basalt	N	N			N		W	Y	544538	Type 2: Total S, TIC	I	W			
3-May-11	KG	05/03/11	6:30	X4994RP	DN-X4994RP-20110503	33637	559319	4985	N	N		1a	Basalt	N	N	tr		N		W	N			I	W			
4-May-11	KG	05/03/11	18:30	N5046RP	DN-N5046RP-20110503	33683	559448	4979	Y	Y		1p	Basalt	N	N			N		W	N			I	W			
4-May-11	KG	05/04/11	6:30	N4984DE	DN-N4984DE-20110504	33672	559413	4984	Y	N		1p	Basalt	N	N			N		W	N			I	W			
5-May-11	KG	05/04/11	18:30	N5046RP	DN-N5046RP-20110504	33686	559452	4978	Y			1p	Basalt	N	N			N	2 steep late faults converge in face	W	N			I	W			
5-May-11	KG	05/05/11	6:30	N4984DE	DN-N4984DE-20110505	33675	559410	4984	Y	Y		1p	Basalt	N	N			N		W		GET	Type 2: Total S, TIC	I	W			
7-May-11	KG	05/05/11	18:30	N4994RP	DN-N4994RP-20110505	33689	559455	4976	N	N	not mapped	1p	Basalt	N	N			N		W	Y	544540	Type 2: Total S, TIC	I	W			
7-May-11	KG	05/06/11	18:30	N5046RP	DN-N5046RP-20110506	33693	559458	4975	Y	Y		1p	Basalt	N	N			N		W	N			I	W			
7-May-11	KG	05/07/11	6:30	X4994RP	DN-X4994RP-20110507	33636	559316	4984	Y	Y		1a	Basalt	N	N	tr		N		W	N			I	W			
7-May-11	KG	05/05/11		N4990DE	DN-N4990DE-20110505	33656	559385	4990	N	N		1p	Basalt	N	N			N		W	N			I	W			
7-May-11	KG	05/05/11		N4990SP	DN-N4990SP-20110505	33656	559390	4990	Y	Y	slash	1p	Basalt	N	N			N		W	N			I	W			
9-May-11	KG	05/08/11	18:30	X4994RP	DN-X4994RP-20110508	33635	559312	4983	Y	Y		1a	Basalt	N	N	tr		N	py in <1% qtz vns, E wall	W	Y	544539	Type 2: Total S, TIC	I	W			
10-May-11	AC	05/09/11	18:30	N5046RP	DN-N5046RP-20110509	33699	559465	4975	Y	N		1p	Basalt	N	N			N	1a in SE wall.	W	Y	544541	Type 1: Total S, TIC, Mod ABA	I	W			
11-May-11	AC	05/10/11	6:30	N4990SP	DN-N4990SP-20110510				N	N		1	Basalt							W	N			I	W			
11-May-11	AC	05/10/11	18:30	N5046RP	DN-N5046RP-20110510	33702	559469	4974	Y	Y		1	Basalt							W	N			I	W			
12-May-11	KG	05/11/11	18:30	N5046RP	DN-N5046RP-20110511	33695	559461	4978	Y	Y	round + slash into remuck	1	Basalt	Y	Y	0.5		N	Mod alt and 1% py in/adjacent to vein only	W	N			I	W			
12-May-11	KG	05/12/11	6:30	X4994RP	DN-X4994RP-20110511	33634	559308	4981	Y	Y		1a	Basalt	N	N			N		W	N			I	W			
13-May-11	JD	05/11/11	6:30	N4990SP	DN-N4990SP-20110511	33668	559393	4990	Y	Y		1	Basalt	N	N			N		W	Y	544542	Type 2: Total S, TIC	I	W			
13-May-11	JD	05/12/11	18:30	N4990DE	DN-N4990DE-20110512	33666	559386	4990	Y	Y		1	Basalt	N	N			N		W	N			I	W			
13-May-11	JD	05/13/11	6:30	N5046RP	DN-N5046RP-20110513	33706	559473	4976	Y	Y		1	Basalt	N	N			N		W	Y	544543	Type 2: Total S, TIC	I	W			
13-May-11	JD	05/13/11	6:30	N4974DE	DN-N4974DE-20110513	33708	559464	4977	Y	Y		1	Basalt	N	N			N		W	N			I	W			
15-May-11	JD	05/13/11	18:30	X4994RP	DN-X4994RP-20110513	33632	559304	4980	N	N		1	Basalt	N	N			N		W	N			I	W			
15-May-11	JD	05/14/11	6:30	N4990DE	DN-N4990DE-20110514	33668	559373	4991	Y	Y	Advance complete	1	Basalt	N	N			N		W	Y	544544	Type 2: Total S, TIC	I	W			
15-May-11	JD	05/14/11	18:30	N5046RP	DN-N5046RP-20110514	33709	559476	4975	Y	Y		1	Basalt	N	Y	tr	5	N	Chipped WVW vein in LW.	W	N			I	W			
15-May-11	JD	05/15/11	6:30	X4994RP	DN-X4994RP-20110515	33631	559300	4980	Y	N		1	Basalt	N	N			N		W	N			I	W			
16-May-11	JD	05/15/11	18:30	N5046RP	DN-N5046RP-20110515	33712	559478	4975	Y	Y		1	Basalt	N	N			N		W	N			I	W			
16-May-11	JD	05/15/11	18:30	N4974DE	DN-N4974DE-20110515	33711	559461	4977	Y	Y		1	Basalt	N	N			N		W	N			I	W			
16-May-11	JD	05/16/11	6:30	X4994RP	DN-X4994RP-20110516	33630	559297	4979	Y	Y		1	Basalt	N	N			N		W	N			I	W			
17-May-11	JD	05/16/11	18:30	N4974DE	DN-N4974DE-20110516	33714	559458	4977	Y	Y		1	Basalt	N	N			N		W	Y	544545	Type 2: Total S, TIC	I	W			
18-May-11	JD	05/18/11	6:30	N5046RP	DN-N5046RP-20110518	33715	559481	4974	Y	Y		1	Basalt	N	N			N		W	Y	544546	Type 2: Total S, TIC	I	W			
19-May-11	JD	05/18/11	18:30	X4994RP	DN-X4994RP-20110518	33629	559293	4978	Y	N		1	Basalt	N	N			N		W	N			I	W			
19-May-11	JD	05/19/11	6:30	N5046RP	DN-N5046RP-20110519	33718	559484	4973	Y	N		1	Basalt	N	N			N		W	N			I	W			
20-May-11	JD	05/18/11	6:30	N4974DE	DN-N4974DE-20110518	33717	559455	4977	Y	Y		1	Basalt	N	N			N		W	N			I	W			
20-May-11	JD	05/19/11	18:30	X4994RP	DN-X4994RP-20110519	33627	559290	4977	Y	N		1	Basalt	N	N	tr		N		W	N			I	W			
21-May-11	JD	05/20/11	18:30	N5046RP	DN-N5046RP-20110520	33721	559488	4973	Y			1	Basalt	N	N			N		W	N			I	W			
22-May-11	JD	05/21/11	18:30	X4994RP	DN-X4994RP-20110521	33626	559286	4977	Y	N		1	Basalt	N	Y	tr		N		W	Y	544548	Type 1: Total S, TIC, Mod ABA	I	W			
22-May-11	JD	05/21/11	22:00	N5046RP	DN-N5046RP-20110521	33723	559491	4973	Y	Y		1	Basalt	N	N			N		W	Y	544547	Type 1: Total S, TIC, Mod ABA	I	W			
23-May-11	JD	05/22/11	18:30	X4994RP	DN-X4994RP-20110522	33625	559282	4977	Y	Y		1	Basalt	N	Y	tr		N		W	N			I	W			
23-May-11	JD	05/22/11	23:00	N5046RP	DN-N5046RP-20110522	33726	559493	4972	Y	Y		1	Basalt	N	N			N		W	N			I	W			

Attachment 1- Geological Inspection Logs

Date of Inspection	Geo	Round taken		Source location								Key Observations									ABA Sample			Stockpile Location				
		Date	Time	Heading	Face ID	Round easting	Round northing	Round elevation	Face map?	Face photo	Mining Notes	Lith	Rock Type	Alt: Y/N	Min Y/N	Sulph %	Carb	Fibrous min. Y/N	Geology Notes	Call (W/MW/O)	Y/N	Sample #	Sample Notes	Pad	Sector	Easting	Northing	Lift (Lift|Elev)
24-May-11	JD	05/23/11	18:30	X4994RP	DN-X4994RP-20110523	33623	559278	4975	Y	Y		1	Basalt	N	Y	tr		N		W	N			I	W			
24-May-11	JD	05/23/11	23:30	N5046RP	DN-N5046RP-20110523	33729	559496	4971	Y	Y		1	Basalt	N	N			N		W	N			I	W			
25-May-11	JD	05/24/11	18:30	X4994RP	DN-X4994RP-20110524	33620	559275	4975	Y	Y		1	Basalt	N	Y	tr		N		W	Y	544549	Type 2: Total S, TIC	I	W			
26-May-11	JD	05/25/11	18:30	X4994RP	DN-X4994RP-20110525	33621	559271	4974	Y	Y	round + slash into remuck	1	Basalt	N	Y	tr		N		W	N			I	W			
27-May-11	JD	05/26/11	18:30	X4994RP	DN-X4994RP-20110526	33619	559267	4974	N	N	Examined muck on surface	1	Basalt	N	N			N		W	Y	544551	Type 2: Total S, TIC	I	W			
28-May-11	JD	05/28/11	6:30	X4976DE	DN-X4976DE-20110528	33627	559266	4979	Y	Y		1	Basalt	N	N			N		W	N			I	W			
28-May-11	JD	05/28/11	6:30	X4994RP	DN-X4994RP-20110528	33618	559262	4978	Y	Y		1	Basalt	N	N			N		W	N			I	W			
30-May-11	JD	05/29/11	18:30	X4994RP	DN-X4994RP-20110529	33617	559259	4977	Y	Y		1	Basalt	N	N			N		W	N			I	W			
30-May-11	JD	05/29/11	18:30	X4976DE	DN-X4976DE-20110529	33630	559265	4979	Y	Y		1	Basalt	N	N			N		W	N			I	W			
1-Jun-11	JD	05/31/11	18:30	X4994RP	DN-X4994RP-20110531	33615	559254	4976	Y	Y		1	Basalt	N	N			N		W	Y	544555	Type 2: Total S, TIC	I	W			
1-Jun-11	JD	05/31/11	18:30	X4976DE	DN-X4976DE-20110531	33634	559264	4979	Y	Y		1	Basalt	N	N	tr		N	trace py in qtz vein	W	Y	544554	Type 2: Total S, TIC	I	W			
2-Jun-11	JD	06/02/11	6:30	X4976DE	DN-X4976DE-20110602	33638	559262	4979	Y	N		1	Basalt	N	N			N		W	N			I	W			
4-Jun-11	AC	06/02/11	18:30	X4994RP	DN-X4994RP-20110602	33614	559251	4987	Y	Y		1a	Basalt	N	N			N		W	N			I	W			
4-Jun-11	AC	06/03/11	18:30	X4976DE	DN-X4976DE-20110603	33643	559260	4979	Y	Y	not bolted	1a	Basalt	N	N			N		W	N			I	W			
5-Jun-11	AC	06/04/11	18:30	X4994RP	DN-X4994RP-20110604	33613	559248	4986	Y	Y		1a	Basalt	N	N			N		W	N			I	W			
6-Jun-11	KG	06/05/11	18:30	X4994RP	DN-X4994RP-20110605	33612	559245	4985	Y	Y		1	Basalt	N	Y	tr		N		W	Y	544556	Type 1: Total S, TIC, Mod ABA	I	W			
7-Jun-11	AC	06/07/11	6:30	X4994RP	DN-X4994RP-20110607	33610	559241	4982	Y	Y		1	Basalt	N	Y	tr	0	N		W	N			I	W			
8-Jun-11	AC	06/08/11	6:30	X4994RP	DN-X4994RP-20110608	33608	559236	4981	Y	Y		1	Basalt	N	N	tr	W	N		W	N			I	W			
9-Jun-11	AC	06/09/11	6:30	X4994RP	DN-X4994RP-20110609	33607	559232	4980	Y	Y		1	Basalt	N	N	tr	N	N		W	Y	544558	Type 2: Total S, TIC	I	W			
12-Jun-11	AC	06/12/11	0:00	X4994RP	DN-N4994RP-20110612	33606	559228	4979	Y	Y	bolter at face	1	Basalt	N	N	tr	N	N		W	N			I	W			
13-Jun-11	AC	06/13/11	6:30	X4994RP	DN-X4994RP-20110613	33605	559229	4979	Y	Y	bolter at face	1	Basalt	N	N	tr	N	N		W	N			I	W			
14-Jun-11	AC	06/13/11	22:30	N4964DE	DN-N4964DE-20110613	33763	559522	4963	Y	Y	unbolted, 2m muck pile	1a	Basalt	N	N	0	N	N		W	N			I	W			
14-Jun-11	AC	06/14/11	6:30	X4994RP	DN-X4994RP-20110614	33603	559220	4978	Y	Y	bolter at face	1i	Basalt	N	N	tr	N	N		W	Y	544559	Type 2: Total S, TIC	I	W			
15-Jun-11	AC	06/15/11	6:30	X4994RP	DN-X4994RP-20110615	33602	559216	4977	Y	Y	bolter at face	1i	Basalt	N	N	tr	N	N		W	N			I	W			
16-Jun-11	AC	06/16/11	6:30	X4994RP	DN-X4994RP-20110616	33600	559212	4977	Y	Y	not bolted	1i	Basalt	N	N	tr	N	N		W	N			I	W			
17-Jun-11	KG	06/17/11	6:30	N4964DE	DN-N4964DE-20110617	33766	559519	4963	Y	Y	not bolted	1a	Basalt	N	N	0		N		W	N			I	W			
17-Jun-11	KG	06/17/11	18:30	X4994RP	DN-X4994RP-20110617	33599	559206	4976	N	N	fans off, couldn't get to face	1	Basalt	N	Y	tr		N		W	N			I	W			
20-Jun-11	KG	06/19/11	18:30	N4964DE	DN-N4964DE-20110619	33771	559516	4963	Y	Y		1p	Basalt	N	N	0		N		W	Y	544560	Type 2: Total S, TIC	I	W			
20-Jun-11	KG	06/20/11	6:30	X4994RP	DN-X4994RP-20110619	33596	559202	4975	N	N	mucking/hauling; couldn't access face	1	Basalt	N	Y	tr		N	some horizons with lots of pyrite	MW	Y	544562	Type 2: Total S, TIC	I	E			
21-Jun-11	KG	06/20/11	18:30	X4994RP	DN-X4994RP-20110620	33596	559198	4975	Y	Y		1	Basalt	N	Y	tr		N		MW	N			I	E			
21-Jun-11	KG	06/20/11	18:30	N4964DE	DN-N4964DE-20110620	33774	559514	4962	Y	Y		1	Basalt	N	N	0		N		W	N			I	W			
22-Jun-11	KG	06/21/11	18:30	X4994RP	DN-X4994RP-20110621	33595	559194	4975	Y	Y		1	Basalt	N	Y	tr		N		MW	Y	544563	Type 2: Total S, TIC	I	E			
22-Jun-11	KG	06/21/11	18:30	N4964DE	DN-N4964DE-20110621	33778	559512	4962	Y	Y	unbolted.	1	Basalt	N	N	0		N		W	N			I	W			
24-Jun-11	JD	06/23/11	18:30	X4994RP	DN-X4994DE-20110623	33593	559190	4965	Y	Y		1	Basalt	N	Y	tr		N		MW	N			I	E			
24-Jun-11	JD	06/23/11	18:30	N4964DE	DN-N4964DE-20110623	33782	559510	4962	Y	N	bolter at face	1	Basalt	N	N	0		N		W	N			I	W			
25-Jun-11	JD	06/25/11	6:30	X4994RP	DN-X4994RP-20110625	33592	559187	4965	Y	Y	bolter at face	1	Basalt	N	N	0		N		MW	N			I	E			
26-Jun-11	JD	06/26/11	6:30	N4962RP	DN-N4962RP-20110626	33772	559504	4963	Y	Y	not bolted	1	Basalt	N	Y	2	N	N		MW	N			I	E			
26-Jun-11	JD	06/26/11	6:30	N4964DE	DN-N4964DE-20110626	33785	559507	4962	Y	Y	not bolted	1	Basalt	N	Y	2	N	N		MW	Y	544564	Type 2: Total S, TIC	I	E			
27-Jun-11	JD	06/26/11	18:30	X4994RP	DN-X4994RP-20110626	33590	559184	4964	Y	Y	not bolted	1	Basalt	N	N	0		N		W	N			I	W			
28-Jun-11	JD	06/27/11	18:30	N4962RP	DN-N4962RP-20110627	na	na	na	N	N	MISSED FACE	1	Basalt	N	Y	2		N		MW	N			I	E			
29-Jun-11	JD	06/27/11	18:30	N4964DE	DN-N4964DE-20110627	33789	559505	4961	Y	Y		1	Basalt	N	Y	2		N		MW	N			I	E			
29-Jun-11	JT	06/29/11	6:30	N4962RP	DN-N4962RP-20110629	33770	559497	4962.5	Y	Y	not bolted	1	Basalt	N	Y	2		N		MW	Y	544567	Type 2: Total S, TIC	I	E			
30-Jun-11	JT	06/29/11	18:30	X4994RP	DN-X4994RP-20110629	33589	559180	4962	Y	Y	bolter at face	1	Basalt	N	Y	1		N		MW	N			I	E			
1-Jul-11	JT	01-Jul-11	6:30	N4962RP	DN-N4962RP-20110701	33769	559494	4962.5	Y	Y	not bolted	1	Basalt	N	Y	1		N		MW	N			I	E			
2-Jul-11	JT	01-Jul-11	18:30	X4994RP	DN-X4994RP-20110701	33588	559175	4962	Y	Y	not bolted	1	Basalt	N	Y	1		N	sample taken Jul-7-11	W	Y	544571	Type 1: Total S, TIC, Mod ABA	I	W			
3-Jul-11	JT	02-Jul-11	18:30	N4964DE	DN-N4964DE-20110702	33793	559502	4960	Y	Y	not bolted	1P	Basalt	N	Y	1		N		MW	N			I	E			
5-Jul-11	AC	05-Jul-11	10:00	N4964DE	DN-N4964DE-20110705	33794	559502	4959.5	Y	Y	not bolted; muck at face	1p	Basalt	N	Y	1	N	N	sampled Jul-6-11	MW	Y	544570	Type 2: Total S, TIC	I	E			
6-Jul-11	AC	05-Jul-11	18:30	N4970RP	DN-N4970RP-20110705	33775	559546	4978	Y	Y	not bolted	1p	Basalt	N	N	tr		N	sampled taken Jul-10-11	W	Y	544572	Type 2: Total S, TIC	I	W			
7-Jul-11	AC	06-Jul-11	16:30	X4994RP	DN-X4994RP-20110706	33587	559174	4962	Y	Y	unbolted	1i	Basalt	N	N	tr		N	bad ground; blocky	MW	N			I	E			
8-Jul-11	AC	07-Jul-11	18:30	N4964DE	DN-N4964DE-20110707	33798	559499	4959	Y	Y	jumbo at face	1p	Basalt	N	N	1		N	1 round away from ore	MW	N			I	E			
9-Jul-11	AC	08-Jul-11	18:30	N4964DE	DN-N4964DE-20110708	33802	559496	4959	Y	Y	bolter at face	1p	Basalt	N	Y	1		N	west limb intersection;little QV(ore for now, but won't grade)	MW	N			I	Q			
10-Jul-11	AC	09-Jul-11	6:30	X4994RP	DN-X4994RP-20110709	33586	559170	4961	Y	Y	not bolted	1i	Basalt	N	N	tr		N	highly fractured	MW	N			I	E			
10-Jul-11	AC	09-Jul-11	6:30	N4964DE	DN-N4964DE-20110709	33806	559494	4960.5	Y	Y	bolter at face	1p	Basalt	N	N	1		N	sample taken Jul-11-11	MW	Y	544573	Type 2: Total S, TIC	I	E			
11-Jul-11	AC	10-Jul-11	18:30	N4970RP	DN-N4970RP-20110710	33779	559546	4978	Y	Y	bolter at face	1p	Basalt	N	N	tr		N		W	N			I	W			
11-Jul-11	AC	11-Jul-11	6:30	N4964DE	DN-N4964DE-20110711	33810	559494	4958	Y	Y	not bolted	1p	Basalt	N	N	tr		N		MW	N			I	E			
12-Jul-11	AC	12-Jul-11	6:30	N4964DE	DN-M4964DE-20110712	33812	559492	4958	Y	Y	bolter at face	1p	Basalt	N	N	tr		N	fractures controlled by foliation	MW	N			I	E			
12-Jul-11	AC	12-Jul-11	6:30	N4970RP	DN-N4970RP-20110712	33783	559545	4979	Y	Y	unbolted	1p	Basalt	N	N	tr		N		W	N			I	W			
13-Jul-11	AC	13-Jul-11	6:30	N4964DE	DN-N4964DE-20110713	33815	559491	4958	Y	Y	not bolted	1p	Basalt	N	N	tr		N		MW	Y	544574	Type 1: Total S, TIC, Mod ABA	I	E			
14-Jul-11	AC	13-Jul-11	18:30	N4970RP	DN-N4970RP-20110713	33786	559545	4979	Y	Y	not bolted; slash taken on RW	1p	Basalt	N	N	tr		N		MW	Y	544576	Type 2: Total S, TIC	I	E			
15-Jul-11	KG	14-Jul-11	18:30	N4964DE	DN-N4964DE-20110714	33820	559491	4958	Y	Y		1	Basalt	N	Y	tr		N		MW	N							
15-Jul-11	KG	15-Jul-11	6:30	X4994RP	DN-X4994RP-20110715	33587	559165	4961	Y	Y		1p	Basalt	N	Y	0.5	wk	N		MW	Y	544577	Type 2: Total S, TIC					
16-Jul-11	KG	16-Jul-11	6:30	N4970RP	DN-N4970RP-20110716	33791	559545	4979	Y	Y		1	Basalt	N	Y	tr		N		MW	N							
17-Jul-11	KG	16-Jul-11	18:30	N4964DE	DN-N4964DE-20110716	33824	559490	4959	Y	Y		1	Basalt	N	N			N		W	N							
18-Jul-11	KG	17-Jul-11	18:30	N4970RP	DN-N4970RP-20110717	33795	559544	4979	Y	Y		1a	Basalt	Y	Y	tr	N	N		MW	N							
18-Jul-11	KG	17-Jul-11	18:30	N4978XS	DN-N4978XS-20110717	33784	559538	4979	Y	Y		1a	Basalt	Y	Y	tr	N	N		MW	N							
18-Jul-11	KG	18-Jul-11	6:30	N4964DE	DN-N4964DE-20110718	33828	559489	4959	Y	Y	unbolted	1a	Basalt	Y	N			N	hangingwall to east limb vein	MW	Y	544575	Type 2: Total S, TIC					
20-Jul-11	KG	20-Jul-11	6:30	N4970RP	DN-N4970RP-20110720	33798	559543	4979	Y	N		1a	Basalt	N	N	tr	wk	N		W	Y	544578	Type 1: Total S, TIC, Mod ABA					
20-Jul-11	KG	20-Jul-11	6:30	N4978XS	DN-N4978XS-20110720	33783	559534	4979	Y	N		1a	Basalt	Y	Y	tr	0	N	wk alt	MW	Y	544579	Type 2: Total S, TIC					
22-Jul-11	KG	21-Jul-11	18:30	N4994RP	DN-N4994RP-20110721	33588	559161	4960	Y	Y		1p	Basalt	N	Y	tr	wk	N		W								
23-Jul-11	JT	22-Jul-11	18:30	N4970RP	DN-N4970RP-20110722	33805	559542	4979	N	N		1?	Basalt	N?	N?	?tr	?	N	missed face	MW								
24-Jul-11	JT	23-Jul-11	18:30	N4978XS	DN-N4978XS-20110723	33782	559525	4979	Y	Y	not screened	1a	Basalt	N	Y	?	0	N		MW								

Date of Inspection	Geo	Round taken		Source location								Key Observations									ABA Sample			Stockpile Location				
		Date	Time	Heading	Face ID	Round easting	Round northing	Round elevation	Face map?	Face photo	Mining Notes	Lith	Rock Type	Alt: Y/N	Min Y/N	Sulph %	Carb	Fibrous min. Y/N	Geology Notes	Call (W/MW/O)	Y/N	Sample #	Sample Notes	Pad	Sector	Easting	Northing	Lift (Lift|Elev)
24-Jul-11	JT	24-Jul-11	6:30	N4970RP	DN-N4970RP-20110724	33809	559541	4979	Y	Y	bolter at face	1a	Basalt	N	Y	1	0	N		MW								
25-Jul-11	JT	25-Jul-11	6:30	N4970RP	DN-N4970RP-20110725	33813	559540	4980	Y	Y	not bolted	1p	Basalt	N	Y	1	0	N		MW	Y	544580	Type 2: Total S, TIC					
26-Jul-11	JT	26-Jul-11	6:30	X4994RP	DN-X4994RP-20110726	33587	559155	4960	Y	Y	jumbo at face	1	Basalt	N	N	0	0	N		W								
27-Jul-11	JT	27-Jul-11	6:30	X4994RP	DN-X4994RP-20110727	33586	559169	4959	Y	Y	not screened	1	Basalt	N	N	0	0	N		W	Y	544582	Type 1: Total S, TIC, Mod ABA					
27-Jul-11	JT	26-Jul-11	18:30	N4970RP	DN-N4970RP-20110726	33817	559538	4980	Y	Y	not screened	1P	Basalt	N	Y	1	0	N		MW								
29-Jul-11	JT	29-Jul-11	6:30	N4970RP	DN-N4970RP-20110729	33827	559537	4980	Y	Y	not screened	1p	Basalt	N	Y	1	0	N		MW								
31-Jul-11	KG	30-Jul-11	18:30	X4994RP	DN-X4994RP-20110730	33586	559165	4958	Y	Y	unbolted	1p	Basalt	N	N	tr	wk	N		W								
31-Jul-11	KG	30-Jul-11	18:30	N4970RP	DN-N4970RP-20110730	33823	559537	4980	Y	Y		1p	Basalt	Y	Y	tr	wk	N		MW	Y	544583	Type 1: Total S, TIC, Mod ABA					
1-Aug-11	JT	31-Jul-11	18:30	N4970RP	DN-N4970RP-20110731	33819	559537	4980	Y	Y	Loaded	1P	Basalt	Y	N	1	0	N		MW								
2-Aug-11	JT	01-Aug-11	18:30	N4970RP	DN-N4970RP-20110801	33835	559535	4980	Y	Y	Loaded, West Limb crosscut	1P	Basalt	Y	Y	2	0	N	West limb intersection some VG	O			see N4970RP-RHW-01/-LHW-01 for ore sampling					
3-Aug-11	JT	02-Aug-11	18:30	N4970RP	DN-N4970RP-20110802	33839	559534	4980	Y	Y		1P	Basalt	Y	Y	1	0	N		MW	Y	544584	Type 1: Total S, TIC, Mod ABA					
4-Aug-11	JT	03-Aug-11	18:30	N4970RP	DN-N4970RP-20110803	33843	559533	4980	Y	Y		1P	Basalt	Y	Y	1	0	N		MW								
5-Aug-11	JT	04-Aug-11	18:30	N4970RP	DN-N4970RP-20110804	33845	559532	4980	Y	Y		1P	Basalt	Y	Y	1	0	N	In East Limb	O	N							
8-Aug-11	JT	08-Aug-11	6:30	X4994RP	DN-X4994RP-20110808	33584	559133	4957	Y	Y		1	Basalt	N	Y	1	0	N	sampled 2011-08-12	MW	Y	544585	Type 2: Total S, TIC					
8-Aug-11	JT	08-Aug-11	6:30	X4960DE	DN-X4960DE-20110808	33599	559155	4960	Y	Y		1	Basalt	N	Y	1	0	N	sampled 2011-08-15	MW	Y	544586	Type 2: Total S, TIC					
9-Aug-11	JT	06-Aug-11	18:30	N4970RP	DN-N4970RP-20110806	33855	559530	4980	Y	Y		1P	Basalt	N	Y	1	0	N		MW	N							
10-Aug-11	JT	09-Aug-11	18:30	X4994RP	DN-X4994RP-20110809	33585	559137	4957.5	Y	Y		1	Basalt	N	Y	1	0	N		MW	N							
12-Aug-11	AC	12-Aug-11	6:30	X4994RP	DN-X4994RP-20110811	33585	559132	4957	Y	Y	not bolted, very bad ground	1	Basalt	N	Y	1	0	N	WRM sample for 20110808 round	MW	N			I	E			
15-Aug-11	AC	13-Aug-11	6:30	X4960DE	DN-X4960DE-20110813	33601	559154	4960	Y	Y	NOT BOLTED	1	Basalt	N	N	0.5	0	N	WRM sample taken for 20110808	W	N			I	W			
17-Aug-11	JD	16-Aug-11	6:30	X4962DE	DN-X4960DE-20110816	N/A	N/A	N/A	N	N	MISSED FACE	1	Basalt					N		MW	N							
19-Aug-11	AC	18-Aug-11	18:30	X4994RP	DN-X4994RP-20110818	33584	559127	4956	Y	Y	jumbo at face	1	Basalt	0	0	0.3	0	N		W	Y	544588	Type 2: Total S, TIC	I	W			
20-Aug-11	AC	19-Aug-11	18:30	X4994RP	DN-X4994RP-20110819	33584	559124	4955.5	Y	Y	Bolter at face	1i	Basalt	N	N	0.2	0	N		W	N							
21-Aug-11	AC	21-Aug-11	6:30	X4994RP	DN-X4994RP-20110821	33584	559118	4955	Y	Y	not bolted	1i	Basalt	N	N	0.1	Y	N		W	N							
23-Aug-11	AC	17-Aug-11	6:30	X4960DE	DN-X4960DE-20110817	33609	559154	4960	Y	Y	Last round	1i	Basalt	N	N	0	0	N		W	N							
24-Aug-11	AC	23-Aug-11	18:30	X4994RP	DN-X4994RP-20110823	33585	559113	4954	Y	Y	not bolted	1i	Basalt	N	N	0.1	wk	N		W	Y	544591	Type 2: Total S, TIC					
26-Aug-11	AC	25-Aug-11	6:30	N4952DE	DN-N4952DE-20110825	33823	559622	4953.5	Y	Y	drilled off	1p	Basalt	n	n	0	wk	n		W	Y	544589	Type 2: Total S, TIC					
27-Aug-11	KG	26-Aug-11	18:30	N4952DE	DN-N4952DE-20110826	33827	559621	4953.5	Y	Y		1p	Basalt	N	N	0	wk	N		W	N							
28-Aug-11	AC	28-Aug-11	6:30	N4952DE	DN-N4952DE-20110828	33831	559620	4953.5	Y	Y		1p	Basalt	N	N	0		N		W	N							
1-Sep-11	KG	31-Aug-11		N4952DE	DN-N4952DE-20110831	33836	559620	4953	Y	Y		1p	Basalt	N	N	0	wk	N	highly strained	W	N							
2-Sep-11	JT	02-Sep-11	6:30	N4952DE	DN-N4952DE-20110902	33840	559620	4953	Y	Y	not screened	1P	Basalt	N	N	0	0	N		W	Y	544590	Type 1: Total S, TIC, Mod ABA					
6-Sep-11	JT	04-Sep-11	18:30	X4994RP	DN-X4994RP-20110904	33583	559108	4954	Y	Y	not screened	1	Basalt	N	N	0	0	N		W	N							
24-Sep-11	AC	24-Sep-11	6:30	N4952DE	DN-N4952DE-20110924	33856	559618	4953	Y	Y	bolted	1p	Basalt	Y	N	1	0	N		W	N							
27-Sep-11	AC	25-Sep-11	15:00	N4952DE	DN-N4952DE-20110925	33859	559617	4953	Y	N	bolted; last round	1p	Basalt	N	N	0.3	0	N		W	N							
24-Oct-11	JT	23/10/11	0:00	N4960LV-970AC	DN-N4960LV-970AC-20111023	33857	559692	4960	Y	Y		1P	Basalt	N	N	0.1	0	N	sample taken Nov. 6/11	W	Y	544600	Type 2: Total S, TIC					
4-Nov-11	AC	02-Nov-11	18:30	N4960LV-970AC	DN-N4960LV-970AC-20111102	33859	559692	4960	Y	Y		1p	Basalt	N	N	0	0	N		MW	N							
13-Nov-11	JD	11-Nov-11	18:30	N4980LV	DN-N4980LV-20111111	33826	559673	4980	Y	Y		1P	Basalt	N	N	tr	0	N	sample taken Nov.14	W	Y	542501	Type 2: Total S, TIC					
16-Nov-11	AC	14-Nov-11	18:30	N4980LV	DN-N4980LV-20111114	33825	559671	4980	Y	Y		1P	Basalt	N	N	tr	0	N		W	N							
19-Nov-11	JJ	18-Nov-11	18:30	N4980LV	DN-N4980LV-20111118	33829	559672	4981	Y	Y	bolter at face	1P	Basalt	N	N	0	0	N		W	N							
21-Nov-11	JJ	20-Nov-11	8:00	N4980LV	DN-N4980LV-20111120	33832	559673	4981	Y	Y		1p	Basalt	N	N	0	0	N		W	Y	542502	Type 2: Total S, TIC					
23-Nov-11	JJ	22-Nov-11	18:30	N4980LV	DN-N4980LV-20111122	33835	559676	4981	Y	Y		1p	Basalt	N	N	0	0	N	Poor ground conditions due to 1p	W	N							
25-Nov-11	JJ	25-Nov-11	6:30	N4980LV	DN-N4980LV-20111125	33836	559680	4980	Y	Y		1p	Basalt	N	N	0	0	N	Poor ground conditions due to 1p	W	N							
30-Nov-11	JJ	19-Nov-11	6:30	N4970RP-954AC-WLN	DN-N4970RP-954AC-WLN-2011111	33845	559550	4980	Y	Y	Heading Stopped -fault	1p	Basalt	N	N	1	0	N		MW	N							
2-Dec-11	JJ	02-Dec-11	6:30	N4980LV	DN-N4980LV-20111202	33837	559684	4981	Y	Y		1p	Basalt	N	N	0	0	N		W	N							
11-Dec-11	JT	10-Dec-11	18:30	N4980LV	DN-N4980LV-20111210	33836	559689	4981	Y	Y		1P	Basalt	N	N	0.4	0	N		W	N							
15-Dec-11	JT	15-Dec-11	6:30	N4980LV	DN-N4980LV-20111215	33837	559692	4981	Y	Y		1P	Basalt	N	N	0.5	0	N		W	N							
4-Mar-11	JD			N5046RP	DN-N5046RP-20110304	33527	559283	5012				12q	Basalt w. Qtz Veins									544408	Grab sample. Total S, TIC. Au Assay	-	-	#N/A	#N/A	-
20-Jul-11	KG	19-Jul-11	18:30	N4964DE	DN-N4964DE-20110719	33832	559488	4959	Y	Y	ore	12q	Basalt w. Qtz Veins	Y	Y	2	N	N	east limb	O	N							
22-Jul-11	KG	22-Jul-11	6:30	N4978XS	DN-N4978XS-20110722	33782	559530	4979	Y	Y		1 / 12q	Basalt w. Qtz Veins	Y	Y	0.5	0	N		MW								
6-Aug-11	JT	05-Aug-11	18:30	N4970RP	DN-N4970RP-20110805	33851	559532	4980	Y	Y		1P/12Q	Basalt w. Qtz Veins	Y	Y	1	0	N	End of east limb, some faulting	MW								
4-Sep-11	JT	03-Sep-11	18:30	N4952DE	DN-N4952DE-20110903	33845	559619	4953	Y	Y		1P/12Q	Basalt w. Qtz Veins	Y	Y	1	0	N	Just into the east limb	O	N							
5-Sep-11	JT	04-Sep-11	18:30	N4952DE	DN-N4952DE-20110904	33849	559618	4953	Y	Y	unbolted	12Q/1P/(9N?)	Basalt w. Qtz Veins	Y	Y	1	0	N	east limb	MW	Y	544593	Type 2: Total S, TIC					
8-Sep-11	JT	07-Sep-11	6:30	N4952DE	DN-N4952DE-20110907	33853	559618	4953	Y	Y	unbolted	12Q/1P/(9N?)	Basalt w. Qtz Veins	Y	Y	1	0	N		MW	Y	544596	Type 2: Total S, TIC					
30-Sep-11	AC	29-Sep-11	0:00	N4952-ELS	DN-N4952-962-ELS-20110929	33846	559615	4952.5	Y	Y	~1m overbreak on LW	1p/12q	Basalt w. Qtz Veins	Y	Y	1	0	N	strong septa	O	Y							
30-Sep-11	AC	29-Sep-11	0:00	N4952-ELN	DN-N4952-962-ELN-20110929	33854	559621	4952.5	Y	Y	~1m overbreak on RW	1p/12q/10a	Basalt w. Qtz Veins	Y	Y	1	0	N	10a dyke running through vein	O	Y							
3-Oct-11	AC	01-Oct-11	18:30	N4952-ELS	DN-N4952-962-ELS-20111001	33845	559612	4954	Y	Y	right side underbroke, but still along contact	1p/12q	Basalt w. Qtz Veins	Y	Y	1	0	N	strong septa, FW contact along shoulder	O	N							
4-Oct-11	AC	01-Oct-11	18:30	N4952-ELN	DN-N4952-962-ELN-20111001	33854	559624	4954	Y	Y	back broke unevenly	1p/12q/10a	Basalt w. Qtz Veins	Y	Y	1	0	N	mod-strong septa; dyke running across vein	O	N							
5-Oct-11	AC	04-Oct-11	6:30	N4952-ELS	DN-N4952-962-ELS-20111004	33844	559609	4953	Y	Y		1p/12q	Basalt w. Qtz Veins	Y	Y	1	0	N	very strong septa, FW contact along shoulder	O	N							
7-Oct-11	AC	06-Oct-11	6:30	N4952-ELS	DN-N4952-962-ELS-20111006	33843	559605	4953	Y	Y	lifters missfired	1p/12q	Basalt w. Qtz Veins	N	Y	1	0	N	hit fault; need to take LW slash	O	N							
8-Oct-11	AC	08-Oct-11	6:30	N4952-ELS	DN-N4952-962-ELS-20111008	33845	559606	4953	Y	Y	slash on left wall	1p/12q	Basalt w. Qtz Veins	N	Y	0.5	0	N	slash taken, driving to find ore on other side of fault	MW	N							
9-Oct-11	KG	09-Oct-11	6:30	N4952-ELS	DN-N4952-962-ELS-20111009	33846	559603	4953	Y	Y		12q/1p	Basalt w. Qtz Veins	N	N		0	N	next round should catch ore on other side of fault	MW	N							
10-Oct-11	AC	10-Oct-11	6:30	N4952-ELS	DN-N4952-962-ELS-20111010	33847	559600	4953.5	Y	Y	lifters missfired	12q/1p	Basalt w. Qtz Veins	N	N	0.3	0	N	Ore picked up on other side of fault	MW	N							
11-Oct-11	AC	11-Oct-11	6:30	N4952-ELS	DN-N4952-962-ELS-20111011	33848	559598	4953.5	Y	Y	left side of face underbroke	12q/1p	Basalt w. Qtz Veins	N	N	0.4	0	N		O	N							
12-Oct-11	AC	12-Oct-11	6:30	N4952-ELS	DN-N4952-962-ELS-20111012	33850	559597	4953.5	Y	Y		12q/1p	Basalt w. Qtz Veins	N	N	0.4	0	N	crossed vein into basalt. Ore on RHW	O	N							
14-Oct-11	KG	13-Oct-11	18:30	N4952-ELS	DN-N4952-962-ELS-20111013	33846	559597	4954	Y	Y		12Q/1P	Basalt w. Qtz Veins	N	Y	0.5	0	N	Driving left on ore, slash taken in RHW to allow boom movement.	O	N							
16-Oct-11	JT	15-Oct-11	18:30	N4952-ELS	DN-N4952-962-ELS-20111015	33852.2	559589.7	4956.5	Y	Y		12Q/1P	Basalt w. Qtz Veins	N	Y	0.3	0	N	Drive straight on ore, move left wall 0.5m left, bring right wall in 0.5	O	N							
18-Oct-11	JT	16-Oct-11	18:30	N4952-ELS	DN-N4952-962-ELS-20111016	33846	559586	4955	Y	Y		12Q/1P	Basalt w. Qtz Veins	N	Y	0.4	0	N	1m Left wall, 1/2 m Right wall to better expose vein.	O	N							
19-Oct-11	JT	18-Oct-11	18:30	N4952-ELS	DN-N4952-962-ELS-20111018	33847.5	559583	4955.2	Y	Y		12q/1p	Basalt w. Qtz Veins	N	Y	0.4	0	N	1m right, bring in left wall	O	N							

Date of Inspection	Geo	Round taken		Source location								Key Observations									ABA Sample			Stockpile Location				
		Date	Time	Heading	Face ID	Round easting	Round northing	Round elevation	Face map?	Face photo	Mining Notes	Lith	Rock Type	Alt: Y/N	Min Y/N	Sulph %	Carb	Fibrous min. Y/N	Geology Notes	Call (W/MW/O)	Y/N	Sample #	Sample Notes	Pad	Sector	Easting	Northing	Lift (Lift|Elev)
20-Oct-11	JT	19-Oct-11	18:30	N4952-ELS	DN-N4952-962-ELS-20111019	33846	559580	4955.2	Y	Y		12Q/1P	Basalt w. Qtz Veins	N	Y	0.3	0	N	Straight	O	N							
21-Oct-11	JT	20-Oct-11	18:30	N4952-ELS	DN-N4952-962-ELS-20111020	33845.2	559577	4955	Y	Y		12Q/1P	Basalt w. Qtz Veins	N	Y	1	0	N	Straight	O	N							
22-Oct-11	JT	22-Oct-11	6:30	N4952-ELS	DN-N4952-962-ELS-20111022	33845	559575	4956.2	Y	Y		12Q/1P	Basalt w. Qtz Veins	N	Y	1	0	N	Straight	O	N							
23-Oct-11	JT	23-Oct-11	6:30	N4952-ELS	DN-N4952-962-ELS-20111023	33842	559572.5	4956.5	Y	Y		12Q/1P	Basalt w. Qtz Veins	N	Y		0	N	Straight	O	N							
24-Oct-11	JT	24-Oct-11	6:30	N4952-ELS	DN-N4952-962-ELS-20111024	33841.5	559570	4956	Y	Y		12Q/1P	Basalt w. Qtz Veins	N	Y		0	N	HOLD	O	N							
26-Oct-11	JT	26-Oct-11	6:30	N4970RP-954AC-C5	DN-N4970RP-954AC-C5-20111026	33846	559537	4981	Y	Y		12Q/1P	Basalt w. Qtz Veins	Y	Y	1	0	N	Straight	O	N							
28-Oct-11	JT	28-Oct-11	6:30	N4970RP-ELS	DN-N4970RP-ELS-20111028	33844	559528	4981	Y	Y		12Q/1P	Basalt w. Qtz Veins	Y	Y	0.8	0	N		O	N							
29-Oct-11	JT	29-Oct-11	6:30	N4970RP-ELS	DN-N4970RP-ELS-20111029	33847	559541	4981.6	Y	Y		12Q	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
30-Oct-11	JT	27-Oct-11	6:30	N4970RP-954AC-C5	DN-N4970RP-954AC-C5-20111027	33847	559541	4981.6	Y	Y	STOP - FAULT	1P/12Q	Basalt w. Qtz Veins	Y	Y	0.5	0	N		MW	N							
30-Oct-11	JT	29-Oct-11	18:30	N4970RP-ELS	DN-N4970RP-ELS-20111029	33842	559523	4981.5	Y	Y		12Q/1P	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
31-Oct-11	JT	30-Oct-11	18:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011103	33840	559520	4981.1	Y	Y		12Q/1P	Basalt w. Qtz Veins	Y	Y	0.5	0	N		O	N							
1-Nov-11	JT	31-Oct-11	18:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011103	33831.5	559531	4981.2	Y	Y		12Q/1P	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
2-Nov-11	JT	31-Oct-11	18:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011103	33836	559518	4981.5	Y	Y		12Q/1P	Basalt w. Qtz Veins	Y	Y	0.5	0	N		O	N							
3-Nov-11	JT	01-Nov-11	18:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011103	33829	559528	4982.5	Y	Y		12Q/1P	Basalt w. Qtz Veins	Y	Y	0.5	0	N		O	N							
4-Nov-11	AC	03-Nov-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011110	33833	559518	4981.5	Y	Y		12Q/1P	Basalt w. Qtz Veins	Y	Y	0.5	0	N		O	N							
5-Nov-11	AC	03-Nov-11	6:30?	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011110	33827	559527	4980.5	Y	Y	slight overhang	12q/1p	Basalt w. Qtz Veins	Y	Y	0.5	0	N		O	N							
5-Nov-11	AC	05-Nov-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011110	33831	559515	4980.5	Y	Y	slight overhang	12q/1p	Basalt w. Qtz Veins	Y	Y	0.5	0	N		O	N							
6-Nov-11	AC	06-Nov-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011110	33825	559525	4980.5	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	0.3	0	N		O	N							
6-Nov-11	AC	06-Nov-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011110	33830	559512	4980.5	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	0.5	0	N		O	N							
7-Nov-11	AC	07-Nov-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011110	33824	559522	4980.5	Y	Y		1P/12Q	Basalt w. Qtz Veins	Y	Y	tr	0	N		O	N							
7-Nov-11	JD	07-Nov-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011110	33830	559509	4980.5	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y		0	N		O	N							
8-Nov-11	AC	08-Nov-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011110	33822	559518.5	4980.5	Y	Y		1P/12Q	Basalt w. Qtz Veins	Y	Y	tr	0	N	STRONG VG IN VEIN	O	N							
8-Nov-11	AC	05-Nov-11	6:30	N4970RP-954AC-WLN	DN-N4970RP-954AC-WLN-2011110	33834	559538.5	4980	Y	Y		1P/12Q	Basalt w. Qtz Veins	Y	Y	tr	0	N		O	N							
9-Nov-11	AC	08-Nov-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011110	33828	559506.5	4980.5	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	0.5	0	N	STRONG VG IN VEIN	O	N							
10-Nov-11	AC	08-Nov-11	6:30	N4970RP-954AC-WLN	DN-N4970RP-954AC-WLN-2011110	33836	559541	4980	Y	Y		1P/12Q	Basalt w. Qtz Veins	Y	Y	tr	0	N		O	N							
10-Nov-11	AC	09-Nov-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011110	33820	559516	4980	Y	Y		1P/12Q	Basalt w. Qtz Veins	Y	Y	tr	0	N	VG	O	N							
11-Nov-11	AC	10-Nov-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011111	33828	559503	4980	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	0.5	0	N	STRONG VG IN VEIN	O	N							
12-Nov-11	AC	11-Nov-11	18:30	N4970RP-954AC-WLN	DN-N4970RP-954AC-WLN-2011111	33838	559543	4980	Y	Y		1P/12Q	Basalt w. Qtz Veins	Y	Y	0.5	0	N		O	N							
13-Nov-11	JD	12-Nov-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011111	33818	559514	4980	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	0.5	0	N	STRONG VG IN VEIN	O	N							
14-Nov-11	AC	13-Nov-11	6:30	N4970RP-954AC-WLN	DN-N4970RP-954AC-WLN-2011111	33840	559546	4980	Y	Y		1P/12Q	Basalt w. Qtz Veins	Y	Y	0.5	0	N		O	N							
15-Nov-11	AC	14-Nov-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011111	33817	559511	4980	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	2	0	N	STRONG VG IN VEIN	O	N							
17-Nov-11	AC	12-Nov-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011111	33827	559501	4980	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	0.5	0	N	STRONG VG IN VEIN	O	N							
18-Nov-11	AC	15-Nov-11	18:30	N4970RP-954AC-WLN	DN-N4970RP-954AC-WLN-2011111	33843	559547	4980	Y	Y		1P/12Q	Basalt w. Qtz Veins	Y	Y	0.5	0	N		O	N							
18-Nov-11	AC	16-Nov-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011111	33816	559509	4980	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	2	0	N		O	N							
19-Nov-11	JJ	19-Nov-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011111	33815	559507	4980	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	2	0	N	face widened to get 2 seperate veins	O	N							
20-Nov-11	JJ	20-Nov-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011112	33813	559505	4981	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	2	0	N		O	N							
21-Nov-11	JJ	18-Nov-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011111	33825.4	559498.5	4981	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	2	0	N		O	N							
26-Nov-11	JT	22-Nov-11	18:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011112	33825	559495	4981	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	2	0	N	15 degree turn to left, 3m face	O	N							
26-Nov-11	JJ	22-Nov-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011112	33812	559502	4981	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	2	0	N		0	N							
27-Nov-11	JJ	27-Nov-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011112	33826	559492	4981	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	2	0	N		0	N							
28-Nov-11	JJ	28-Nov-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011112	33826	559489	4981	Y	Y		12q	Basalt w. Qtz Veins	Y	Y	2	0	N	Specks of vis au observed	O	N							
28-Nov-11	JJ	27-Nov-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011112	33810	559499	4980	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
29-Nov-11	JT	29-Nov-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011112	33829	559487	4984	Y	Y		12Q	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
30-Nov-11	JJ	30-Nov-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011113	33826	559485	4980	Y	Y		12q	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
30-Nov-11	JJ	29-Nov-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011112	33808	559496	4981	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
2-Dec-11	JJ	30-Nov-11	18:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011113	33806	559494	4981	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
2-Dec-11	JJ	01-Dec-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011120	33827	559483	4981	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
3-Dec-11	JJ	02-Dec-11	18:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011120	33805	559491	4981	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
4-Dec-11	JJ	04-Dec-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011120	33828	559481	4982	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
5-Dec-11	JJ	05-Dec-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011120	33824	559477	4982	Y	N		12q/1p	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
10-Dec-11	JT	10-Dec-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011121	33821	559474	4983	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	3	0	N		O	N							
10-Dec-11	JT	10-Dec-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011121	33804	559488	4982	Y	Y		12q/1p	Basalt w. Qtz Veins	Y	Y	2	0	N		O	N							
11-Dec-11	JT	11-Dec-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011121	33803	559485	4982	Y	Y		1P/12Q	Basalt w. Qtz Veins	Y	Y	2	0	N		O	N							
12-Dec-11	JT	12-Dec-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011121	33802	559481	4983	Y	Y		12Q/1P	Basalt w. Qtz Veins	Y	Y	2	0	N		O	N							
14-Dec-11	AC	12-Dec-11	6:30	N4970RP-954AC-ELS	DN-N4970RP-954AC-ELS-2011121	33821	559474	4983	Y	Y		12Q	Basalt w. Qtz Veins	Y	Y	2	0	N		O	N							
15-Dec-11	JT	21-Oct-11	18:30	N4952-ELN	DN-N4952-962-ELN-20111021							12Q/1P	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
15-Dec-11	JT	15-Dec-11	6:30	N4970RP-954AC-WLS	DN-N4970RP-954AC-WLS-2011121	33801	559477	4983	Y	Y		12Q/1P	Basalt w. Qtz Veins	Y	Y	1	0	N		O	N							
7-Nov-10	JS			N5046RP		33358	559127		N	N		DIA	Diabase								Y	544501	taken 0 - 9m from portal			#N/A	#N/A	
28-Nov-10	KG / KM	2010-11-28	6:00	DN decline		33402	559153		N	N	face not visited; geo UG orientation not complete.	DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
30-Nov-10	KG /	2010-11-29	20:00	DN decline		33399	559156		Y	Y	jumbo problems	DIA	Diabase	N	N	tr	0	N	1 speck Py in muck		N	N/A		I	NW	#N/A	#N/A	
1-Dec-10	KG /	2010-11-30	21:00	DN decline		33398	559158		Y	N		DIA	Diabase	N	N	tr	0	N	1 speck Py in muck		N	N/A		I	NW	#N/A	#N/A	
2-Dec-10	JD	2010-12-01	18:00	DN decline		33405.7	559160.5		Y	Y		DIA	Diabase	N	N	0	0	N			Y	544503		I	NW	#N/A	#N/A	
2-Dec-10	JD	2010-12-02	5:00	DN decline		33400.6	559159.8		-	Y	slash LHW for Sump 1	DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
2-Dec-10		2010-12-02	14:00	DN Sump1		33403	559162		Y	N	2nd slash LHW for Sump 1	DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
3-Dec-10	KG	2010-12-03	5:00	DN decline		33407	559164		Y	Y		DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
5-Dec-10	KG	2010-12-05	4:00	DN decline		33411	559167		N	N	no power/fans; did not go U/G. 1/2 of muck still U/G.	DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
7-Dec-10	KG			DN Sump1		33401	559168		Y	Y		DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
12-Dec-10	JD	2010-12-09	5:30	N5046RP		33414	559170		Y	N		DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
7-Jan-11	JD	5-Jan-11		N5046RP		33416	559172		Y	N	Two boom jumbo broken down. Drilling with single boom jumbo (3m deep rounds max)	DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
7-Jan-11	JD	01/05/11		N5046RP		33416	559172		Y	N	Two boom jumbo broken down. Drilling with single boom jumbo (3m deep rounds max)	DIA	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1
8-Jan-11	JD	7-Jan-11	18:40	N5046RP		33418	559175		Y	N		DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
8-Jan-11	JD	01/07/11	18:40	N5046RP		33418	559175		Y	N		DIA	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1
9-Jan-11	JD	8-Jan-11	18:30	N5046RP		33419	559177		Y	N	Round ahead in N5046RP with a small slash into N5036SP	DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
9-Jan-11	JD	8-Jan-11	18:30	N5038SP		33399	559174		Y	N		DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
9-Jan-11	JD	01/08/11	18:30	N5046RP		33419	559177		Y	N	Round ahead in N5046RP with a small slash into N5036SP	DIA	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1
9-Jan-11	JD	01/08/11	18:30	N5038SP		33399	559174		Y	N		DIA	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1
10-Jan-11	JD	9-Jan-11	19:00	N5046RP		33422	559178		Y	N		DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
10-Jan-11	JD	10-Jan-11	3:30	N5038SP		33399	559172		Y	N		DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
10-Jan-11	JD	01/09/11	19:00	N5046RP		33422	559178		Y	N		DIA	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1
10-Jan-11	JD	01/10/11	3:30	N5038SP		33399	559172		Y	N		DIA	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1

Date of Inspection	Geo	Round taken		Source location								Key Observations									ABA Sample			Stockpile Location				
		Date	Time	Heading	Face ID	Round easting	Round northing	Round elevation	Face map?	Face photo	Mining Notes	Lith	Rock Type	Alt: Y/N	Min Y/N	Sulph %	Carb	Fibrous min. Y/N	Geology Notes	Call (W/MW/O)	Y/N	Sample #	Sample Notes	Pad	Sector	Easting	Northing	Lift (Lift|Elev)
11-Jan-11	JD	10-Jan-11	19:00	N5046RP		33424	559180		Y	N		DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
11-Jan-11	JD	11-Jan-11	4:30	N5038SP		33397	559180		Y	Y	Advance complete for N5038SP	DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
11-Jan-11	JD	01/10/11	19:00	N5046RP		33424	559180		Y	N		DIA	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1
11-Jan-11	JD	01/11/11	4:30	N5038SP		33397	559180		Y	Y	Advance complete for N5038SP	DIA	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1
12-Jan-11	JD	12-Jan-11	5:00	N5036SP		33415	559179		Y	Y		DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
12-Jan-11	JD	12-Jan-11	5:00	N5046RP		33426	559183		Y	N	Air and water lines froze.	DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
12-Jan-11	JD	01/12/11	5:00	N5036SP		33415	559179		Y	Y		DIA	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1
12-Jan-11	JD	01/12/11	5:00	N5046RP		33426	559183		Y	N	Air and water lines froze.	DIA	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1
15-Jan-11	JD	13-Jan-11	17:00	N5046RP		33428	559185		Y	N	White out on Jan 14/15.	DIA	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
15-Jan-11	JD	01/13/11	17:00	N5046RP		33428	559185		Y	N	White out on Jan 14/15.	DIA	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1
17-Jan-11	JD	16-Jan-11	5:00	N5046RP		33430	559187		Y	N		11C	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
17-Jan-11	JD	01/16/11	5:00	N5046RP		33430	559187		Y	N		11C	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1
18-Jan-11	JD/KM	18-Jan-11	5:00	N5046RP		33432	559189		Y	N	Dual boom repaired as of today.	11C	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
18-Jan-11	JD/KM	18-Jan-11	5:00	N5036SP		33413	559183		Y	Y		11C	Diabase	N	N	0	0	N			N	N/A		I	NW	#N/A	#N/A	
18-Jan-11	JD/KM	01/18/11	5:00	N5046RP		33432	559189		Y	N	Dual boom repaired as of today.	11C	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1
18-Jan-11	JD/KM	01/18/11	5:00	N5036SP		33413	559183		Y	Y		11C	Diabase	N	N	0		N		W	N	N/A		I	NW	#N/A	#N/A	1
19-Jan-11	JD/KM	01/19/11	5:00	N5046RP		33435	559192		Y	Y		11C	Diabase	N	N	0	0	N		W	Y	544504	Random Composite Sample. Total S, TIC, modified ABA	I	SW	33146	558996	1|5045
21-Jan-11	JD/KM	20-Jan-11	14:00	N5036SP		33413	559185		Y	Y		11C	Diabase	N	N	0	0	N			N	N/A		I	SW	#N/A	#N/A	
21-Jan-11	JD/KM	21-Jan-11	5:00	N5046RP		33437	559194		Y	N		11C	Diabase	N	N	0	0	N			N	N/A		I	SW	#N/A	#N/A	
21-Jan-11	JD/KM	01/20/11	14:00	N5036SP		33413	559185		Y	Y		11C	Diabase	N	N	0		N		W	N	N/A		I	SW	#N/A	#N/A	1
21-Jan-11	JD/KM	01/21/11	5:00	N5046RP		33437	559194		Y	N		11C	Diabase	N	N	0		N		W	N	N/A		I	SW			1
22-Jan-11	JD	22-Jan-11	5:00	N5036SP		33411	559189		Y	N		11C	Diabase	N	N	0	0	N			N	N/A		I	SW	#N/A	#N/A	
22-Jan-11	JD	01/22/11	5:00	N5036SP		33411	559189		Y	N		11C	Diabase	N	N	0		N		W	N	N/A		I	SW			1
24-Jan-11	JD	23-Jan-11		N5036SP		33410	559193		N	N		11C	Diabase	N	N	0	0	N			N	N/A		I	SW	#N/A	#N/A	
24-Jan-11	JD	24-Jan-11	3:00	N5046RP		33440	559197		Y	N		11C	Diabase	N	N	0	0	N			N	N/A		I	SW	#N/A	#N/A	
24-Jan-11	JD	01/23/11		N5036SP		33410	559193		N	N		11C	Diabase	N	N	0		N		W	N	N/A		I	SW			1
24-Jan-11	JD	01/24/11	3:00	N5046RP		33440	559197		Y	N		11C	Diabase	N	N	0		N		W	N	N/A		I	SW			1
25-Jan-11	JD/KM	25-Jan-11	12:00	N5046RP		33443	559200		Y	Y		11C	Diabase	N	N	0	0	N			N	N/A		I	SW	#N/A	#N/A	
25-Jan-11	JD/KM	01/25/11	12:00	N5046RP		33443	559200		Y	Y		11C	Diabase	N	N	0		N		W	N	N/A		I	SW			1
26-Jan-11	JD/KM	26-Jan-11	5:00	N5046RP		33445	559202		Y	Y		11C	Diabase	N	N	0	0	N			N	N/A		Q		#N/A	#N/A	
26-Jan-11	JD/KM	01/26/11	5:00	N5046RP		33445	559202		Y	Y		11C	Diabase	N	N	0		N		W	N	N/A		I	W			1
27-Jan-11	JD/KM	27-Jan-11	6:00	N5046RP		33448	559205		Y	N	Nuna dumped what looks to be mineralized muck on top of first lift of non-mineralized muck. Need to have Nuna remove muck from current location. Perhaps start a mineralized stockpile?	11C	Diabase	N	Y	tr	0	N			N	N/A		Q		#N/A	#N/A	
27-Jan-11	JD/KM	01/27/11	6:00	N5046RP		33448	559205		Y	N	Nuna dumped what looks to be mineralized muck on top of first lift of non-mineralized muck. Need to have Nuna remove muck from current location. Perhaps start a mineralized stockpile?	11C	Diabase	N	Y	tr		N		W	N	N/A		I	W			
28-Jan-11	KM	2011-01-28				33451	559208					11C	Diabase	N	N	0	0	N			N	N/A		Q		#N/A	#N/A	
28-Jan-11	KM	01/28/11				33451	559208					11C	Diabase	N	N	0		N		W	N	N/A		I	W			
29-Jan-11	KG/K	2011-01-29	6:00	N5046RP		33453	559211		N	N		11C	Diabase	N	N	0	0	N	did not see face (orientation)		N	N/A		Q		#N/A	#N/A	
29-Jan-11	KG/K	01/29/11	6:00	N5046RP		33453	559211		N	N		11C	Diabase	N	N	0		N	did not see face (orientation)	W	N	N/A		I	W			
31-Jan-11	KG/K	2011-01-30	16:00	N5046RP		33456	559214		Y	Y		11C	Diabase	N	N	0	0	N			N	N/A		Q		#N/A	#N/A	
31-Jan-11	KG/K	01/30/11	16:00	N5046RP		33456	559214		Y	Y		11C	Diabase	N	N	0		N		W	N	N/A		I	W			
1-Feb-11	KG/K M	2011-01-31	17:00	N5046RP		33460	559217		N	N		11C	Diabase	N	N	0	0	N	face loaded, blocked by equipment; not mapped.		N	N/A		Q		#N/A	#N/A	
1-Feb-11	KG/K M	01/31/11	17:00	N5046RP		33460	559217		N	N		11C	Diabase	N	N	0		N	face loaded, blocked by equipment; not mapped.	W	N	N/A		I	W			
2-Feb-11	KG/K	2011-02-01	5:30	N5046RP		33462	559219		N	N		11C	Diabase	N	N	0	0	N	face not mapped		N	N/A		Q		#N/A	#N/A	
2-Feb-11	KG/K	2011-02-01	2:00	N5046RP		33464	559222		Y	N		11C	Diabase	N	Y	tr	0	N	1 speck Py observed		N	N/A		Q		#N/A	#N/A	
2-Feb-11	KG/K	02/01/11	5:30	N5046RP		33462	559219		N	N		11C	Diabase	N	N	0		N	face not mapped	W	N	N/A		I	W			
2-Feb-11	KG/K	02/01/11	2:00	N5046RP		33464	559222		Y	N		11C	Diabase	N	Y	tr		N	1 speck Py observed	W	N	N/A		I	W			
3-Feb-11	KG/K	2011-02-02	17:30	N5046RP		33467	559224		N	N		11C	Diabase	N	N	0	0	N	face not mapped		N	N/A		Q		#N/A	#N/A	
3-Feb-11	KG/K	2011-02-03	7:00	N5046RP		33470	559227		Y	Y		11C	Diabase	N	Y	tr	0	N	2 specks Py observed		N	N/A		Q		#N/A	#N/A	
3-Feb-11	KG/K	02/02/11	17:30	N5046RP		33467	559224		N	N		11C	Diabase	N	N	0		N	face not mapped	W	N	N/A		I	W			
3-Feb-11	KG/K	02/03/11	7:00	N5046RP		33470	559227		Y	Y		11C	Diabase	N	Y	tr		N	2 specks Py observed	W	N	N/A		I	W			
5-Feb-11	KG	2011-02-04	3:30	N5046RP		33472	559229		Y	N	1/2 of face blocked (bolter). Face/slash not screened.	11C	Diabase	N	N	0	0	N			N	N/A		Q		#N/A	#N/A	
5-Feb-11	KG	02/04/11	3:30	N5046RP		33472	559229		Y	N	1/2 of face blocked (bolter). Face/slash not screened.	11C	Diabase	N	N	0		N		W	N	N/A		I	W			
8-Feb-11	KG	2011-02-06	23:30	N5046RP		33472	559230		Y	N	no advance	11C	Diabase	N	Y	tr	0	N	2 specks Py observed		N	N/A		Q		#N/A	#N/A	
8-Feb-11	KG	02/06/11	23:30	N5046RP		33472	559230		Y	N	no advance	11C	Diabase	N	Y	tr		N	2 specks Py observed	W	N	N/A		I	W			
9-Feb-11	KG	2011-02-09	6:00	N5026DE		33467	559216		Y	N		11C	Diabase	N	N	0	0	N			N	N/A		Q		#N/A	#N/A	
9-Feb-11	KG	02/09/11	6:00	N5026DE		33467	559216		Y	N		11C	Diabase	N	N	0		N		W	N	N/A		I	W			
10-Feb-11	KG	2011-02-10	3:00	N5046RP		33476	559234		Y	Y		11C	Diabase	N	N	0	0	N						Q		#N/A	#N/A	
10-Feb-11	KG	02/10/11	3:00	N5046RP		33476	559234		Y	Y		11C	Diabase	N	N	0		N		W	N	N/A		I	W			
11-Feb-11	KG	2011-02-10	18:00	N5026DE		33470	559212		Y	Y		11C	Diabase	N	N	0	0	N						Q		#N/A	#N/A	
11-Feb-11	KG	2011-02-11	6:30	N5046RP		33478	559237		Y	N		11C	Diabase	N	N	0	0	N						Q		#N/A	#N/A	
11-Feb-11	KG	02/10/11	18:00	N5026DE		33470	559212		Y	Y		11C	Diabase	N	N	0		N		W	Y	544507	Random Composite Sample. Total S, TIC, modified ABA. Taken on Feb 25/11 from RW (JD).	I	W	-	-	
11-Feb-11	KG	02/11/11	6:30	N5046RP		33478	559237		Y	N		11C	Diabase	N	N	0		N		W	N	N/A		I	W			
12-Feb-11	KG	2011-02-12	2:30	N5026DE		33472	559210		Y	N	3 m round	11C	Diabase	N	N	0	0	N						Q		#N/A	#N/A	
12-Feb-11	KG	02/12/11	2:30	N5026DE		33472	559210		Y	N	3 m round	11C	Diabase	N	N	0		N		W	N	N/A		I	W			
13-Feb-11	KG	2011-02-12	18:00	N5046RP		33480	559239		Y	Y	3 m round	11C	Diabase	N	Y	tr	0	N	1 speck Py					Q		#N/A	#N/A	
13-Feb-11	KG	2011-02-13	2:00	N5026DE		33475	559208		Y	N	3 m round	11C	Diabase	N	Y	tr	0	N	1 speck Py					Q		#N/A	#N/A	
13-Feb-11	KG	02/12/11	18:00	N5046RP		33480	559239		Y	Y	3 m round	11C	Diabase	N	Y	tr		N	1 speck Py	W	N	N/A		I	W			
13-Feb-11	KG	02/13/11	2:00	N5026DE		33475	559208		Y	N	3 m round	11C	Diabase	N	Y	tr		N	1 speck Py	W	N	N/A		I	W			
15-Feb-11	KG	2011-02-14	?	N5046RP		33482	559242		N	N	3 m round	11C	Diabase	N	N	0	0	N						Q		#N/A	#N/A	

Attachment 1- Geological Inspection Logs

Date of Inspection	Geo	Round taken		Source location								Key Observations									ABA Sample			Stockpile Location				
		Date	Time	Heading	Face ID	Round easting	Round northing	Round elevation	Face map?	Face photo	Mining Notes	Lith	Rock Type	Alt: Y/N	Min Y/N	Sulph %	Carb	Fibrous min. Y/N	Geology Notes	Call (W/MW/O)	Y/N	Sample #	Sample Notes	Pad	Sector	Easting	Northing	Lift (Lift|Elev)
15-Feb-11	KG	2011-02-14	17:30	N5026DE		33477	559206		Y	Y	3 m round	11C	Diabase	N	N	0	0	N						Q		#N/A	#N/A	
15-Feb-11	KG	2011-02-15	6:30	N5046RP		33484	559244		Y	Y	3 m round	11C	Diabase	N	N	0	0	N						Q		#N/A	#N/A	
15-Feb-11	KG	02/14/11	?	N5046RP		33482	559242		N	N	3 m round	11C	Diabase	N	N	0		N		W	N	N/A		I	W			
15-Feb-11	KG	02/14/11	17:30	N5026DE		33477	559206		Y	Y	3 m round	11C	Diabase	N	N	0		N		W	N	N/A		I	W			
15-Feb-11	KG	02/15/11	6:30	N5046RP		33484	559244		Y	Y	3 m round	11C	Diabase	N	N	0		N		W	N	N/A		I	W			
16-Feb-11	KG	2011-02-15	17:30	N5026DE		33479	559204		Y	Y	3 m round. N5026DE complete.	11C	Diabase	N	N	0	0	N						Q		#N/A	#N/A	
16-Feb-11	KG	02/15/11	17:30	N5026DE		33479	559204		Y	Y	3 m round. N5026DE complete.	11C	Diabase	N	N	0		N		W	N	N/A		I	W			
17-Feb-11	KG	02/16/11	17:00	N5046RP		33486	559246		Y	Y	3 m round, 7 m face width. Nuna moved all waste from prev 3 wks to 2nd lift Pad Q west side, from portal.	11C	Diabase	N	N	0		N		W	N	N/A		Q				
22-Feb-11	JD	02/21/11	12:00	N5046RP	DN-N5046RP-20110221	33493	559252		Y	Y		11C	Diabase	N	N	0		N		W	N	N/A		Q				
22-Feb-11	JD	02/22/11	1:00	N5022DE	DN-N5022DE-20110222	33493	559234		Y	Y		11C	Diabase	N	N	0		N		W	N	N/A		Q				
23-Feb-11	JD	02/22/11	12:00	N5046RP	DN-N5046RP-20110222	33496	559255		Y	Y		11C	Diabase	N	N	0		N		W	Y	544506	Random Composite Sample. Total S, TIC, modified ABA	Q				
23-Feb-11	JD	02/23/11	4:00	N5022DE	DN-N5022DE-20110223	33496	559232		Y	Y	Bolter broke down on N/S.	11C	Diabase	N	N	0		N		W	N	N/A		Q				
24-Feb-11	JD	02/23/11	18:30	N5046RP	DN-N5046RP-20110223	33499	559258		Y	Y		11C	Diabase	N	N	0		N		W	N	N/A		Q				
25-Feb-11	JD	02/24/11	18:00	N5022DE	DN-N5022DE-20110224	33499	559230		Y	Y		11C	Diabase	N	N	0		N		W	N	N/A		Q				
26-Feb-11	JD/KM	02/25/11	18:00	N5022DE	DN-N5022DE-20110225	33501	559228		Y	Y	Advance complete for N5022DE	11C	Diabase	N	N	0		N		W	N	N/A		Q				
26-Feb-11	JD/KM	02/26/11	6:00	N5046RP	DN-N5046RP-20110226	33501	559260		Y	Y		11C	Diabase	N	N	0		N		W	N	N/A		Q				
27-Feb-11	JD	02/27/11	2:00	N5046RP	DN-N5046RP-20110227	33503	559262		Y	N		11C	Diabase	N	Y	tr		N		W	N	N/A		Q				
28-Feb-11	JD/KM	02/28/11	1:30	N5046RP	DN-N5046RP-20110228F1	33506	559265		Y	N		11C	Diabase	N	Y	tr		N		W	N	N/A		Q				
1-Mar-11	JD/KM	02/28/11	17:30	N5046RP	DN-N5046RP-20110228F2	33509	559268		N	N		11C	Diabase	N	N	0		N		W	N	N/A		Q				
1-Mar-11	JD/KM	03/01/11	6:00	N5046RP	DN-N5046RP-20110301	33512	559271		Y	Y		11C	Diabase	Y	N	0		N	Alteration localized along joint plane.	W	N	N/A		Q				
2-Mar-11	JD/KM	03/02/11	2:00	N5046RP	DN-N5046RP-20110302F1	33514	559274		Y	Y		11C	Diabase	N	Y	tr		N		W	N	N/A		Q				
3-Mar-11	JD/KM	03/02/11	13:00	N5046RP	DN-N5046RP-20110302F2	33518	559278		N	N		11C	Diabase	N	N	0		N		W	N	N/A		Q				
3-Mar-11	JD/KM	03/03/11	1:00	N5046RP	DN-N5046RP-20110303F1	33521	559281	5016	Y	Y		11C	Diabase	Y	N	0		N	Alteration localized along joint plane.	W	N	N/A		Q				
4-Mar-11	JD/KM	03/03/11	14:00	N5046RP	DN-N5046RP-20110303F2	33523	559283	5016	N	N		11C	Diabase	N	N	0		N	Muck mixed with mineralized rock from DN-N5046-20110304. Therefore moved to mineralized pile.	MW	N	N/A		I	SE			1
25-May-11	JD	05/24/11	23:00	N5046RP	DN-N5046RP-20110524	33732	559499	4975	Y	Y		1/11C	Diabase	N	N			N		W	Y	544550	Type 2: Total S, TIC	I	W			
26-May-11	JD	05/26/11	4:00	N5046RP	DN-N5046RP-20110526	33734	559502	4970	Y	Y		1/11C	Diabase	N	N			N		W	N			I	W			
28-May-11	JD	05/27/11	6:30	N5046RP	DN-N5046RP-20110527	33737	559504	4969	Y	Y		1/11C	Diabase	N	N			N		W	N			I	W			
28-May-11	JD	05/27/11	18:30	N4970RP	DN-N4970RP-20110527	33724	559503	4971	Y	Y		11C	Diabase	N	N			N		W	N			I	W			
29-May-11	JD	05/29/11	4:00	N5046RP	DN-N5046RP-20110529	33740	559507	4969	Y	Y		11C/1	Diabase	N	N			N		W	Y	544552	SFE (Type 3)	I	W			
29-May-11	JD	05/29/11	4:00	N4970RP	DN-N4970RP-20110529	33723	559506	4972	Y	Y		11C	Diabase	N	N			N		W	N			I	W			
31-May-11	JD	05/30/11	18:30	N5046RP	DN-N5046RP-20110530	33742	559530	4968	Y	Y		11C	Diabase	N	N			N		W	N			I	W			
31-May-11	JD	05/30/11	18:30	N4970RP	DN-N4970RP-20110530	33722	559510	4973	Y	N		11C	Diabase	N	N			N		W	N			I	W			
1-Jun-11	JD	05/31/11	18:30	N4970RP	DN-N4970RP-20110531	33722	559513	4974	Y	Y		11C	Diabase	N	N			N		W	N			I	W			
2-Jun-11	JD	06/01/11	18:30	N5046RP	DN-N5046RP-20110601	33745	559513	4967	Y	Y		11C	Diabase	N	N			N		W	N			I	W			
4-Jun-11	AC	06/03/11	6:30	N4970RP	DN-N4970RP-20110603	33723	559517	4972	Y	Y	face blocked by jumbo at sump; couldn't approach	11C	Diabase	N	N			N		W	N			I	W			
4-Jun-11	AC	06/04/11	6:30	N5046RP	DN-N5046RP-20110604	33747	559515	4965	Y	Y		11C	Diabase	N	N			N		W	N			I	W			
5-Jun-11	AC	06/05/11	6:30	N4970RP	DN-N4970RP-20110605	33724	559520	4972	Y	Y		11c	Diabase	N	N	0	0	N		W	N			I	W			
7-Jun-11	AC	06/06/11	18:30	N5046RP	DN-N5046RP-20110606	33750	559517	4964	Y	Y	jumbo at face	11c	Diabase	N	N	0	0	N		W	Y	544557	Type 1: Total S, TIC, Mod ABA	I	W			
8-Jun-11	AC	06/07/11	18:30	N4970RP	DN-N4970RP-20110607	33726	559524	4969	Y	Y		11c	Diabase	N	N	0	N	N		W	N			I	W			
9-Jun-11	AC	06/08/11	18:30	N5046RP	DN-N5046RP-20110608	33752	559520	4964	Y	Y	1.5m water build up	11c	Diabase	N	N	0	N	N		W	N			I	W			
9-Jun-11	AC	06/09/11	6:30	N4970RP	DN-N4970RP-20110609	33728	559525	4970	Y	Y		11c	Diabase	N	N	0	N	N		W	N			I	W			
10-Jun-11	AC	06/10/11	6:30	N5046RP	DN-N5046RP-20110610	33755	559522	4964	Y	Y		11c	Diabase	N	N	0	N	N		W	N			I	W			
11-Jun-11	AC	06/11/11	12:00	N5046RP	DN-N5046RP-20110611	33757	559525	4964	Y	Y		11c	Diabase	N	N	0	N	N		W	N			I	W			
11-Jun-11	AC	06/11/11	12:00	N4970RP	DN-N4970RP-20110611	33731	559527	4970	Y	Y		11c	Diabase	N	N	0	N	N		W	N			I	W			
13-Jun-11	AC	06/12/11	18:30	N5046RP	DN-N5046RP-20110612	33760	559527	4963	Y	Y	jumbo at face	11c	Diabase	N	N	0	N	N		W	N			I	W			
14-Jun-11	AC	06/13/11	22:30	N5046RP	DN-N5046RP-20110613	33762	559530	4963	Y	Y		11c	Diabase	N	N	0	N	N		W	N			I	W			
15-Jun-11	AC	06/14/11	18:30	N5046RP	DN-N5046RP-20110614	33763	559534	4963	Y	Y	jumbo at face	11c	Diabase	N	N	0	N	N		W	N			I	W			
16-Jun-11	AC	06/15/11	18:30	N5046RP	DN-N5046RP-20110615	33765	559537	4962	Y	Y	drilled off	11c	Diabase	N	N	0	N	N		W	N			I	W			
17-Jun-11	KG	06/17/11	6:30	N5046RP	DN-N5046RP-20110617	33766	559543	4962	Y	Y		11c	Diabase	N	N	0		N		W	N			I	W			
17-Jun-11	KG	06/16/11	18:30	N4970RP	DN-N4970RP-20110616	33735	559537	4972	Y	Y		11c	Diabase	N	N	0		N		W	N			I	W			
18-Jun-11	KG	06/18/11	6:30	N5046RP	DN-N5046RP-20110618	33768	559546	4961	Y	Y		11c	Diabase	N	N	0		N			N			I	W			
19-Jun-11	KG	06/18/11	18:30	N4970RP	DN-N4970RP-20110618	33738	559540	4973				11c	Diabase	N	N	0		N		W	N			I	W			
20-Jun-11	KG	06/20/11	6:30	N4970RP	DN-N4970RP-20110620	33741	559544	4973	Y	N		11c	Diabase	N	N	0		N		W	N			I	W			
21-Jun-11	KG	06/20/11	18:30	N5046RP	DN-N5046RP-20110620	33770	559551	4960	Y	Y		11c	Diabase	N	N	0		N		W	N			I	W			
21-Jun-11	KG	06/21/11	6:30	N4970RP	DN-N4970RP-20110621	33745	559545	4974	Y	Y		11c	Diabase	N	N	0		N		W	N			I	W			
23-Jun-11	KG	06/23/11	6:30	N4970RP	DN-N4970RP-20110623	33748	559547	4975	Y	Y		11c	Diabase	N	N	0		N		W	Y	544561	Type 1: Total S, TIC, Mod ABA	I	W			
24-Jun-11	JD	06/23/11	18:30	N5046RP	DN-N5046RP-20110623	33771	559557	4960	Y	Y	water 6m back	11C	Diabase	N	N	0		N		W	N			I	W			
25-Jun-11	JD	06/24/11	18:30	N4970RP	DN-N4970RP-20110624	33757	559547	4976	Y	Y		11C	Diabase	N	N	0		N		W	N			I	W			
26-Jun-11	JD	06/25/11	18:30	N5046RP	DN-N5046RP-20110625	33773	559560	4959	Y	Y		11C	Diabase	N	N	0		N		W	N			I	W			
27-Jun-11	JD	06/27/11	6:30	N4970RP	DN-N4970RP-20110627	33761	559548	4977	Y	Y	not bolted	11C	Diabase	N	N	0		N		W	N			I	W			
27-Jun-11	JD	06/27/11	6:30	N5046RP	DN-N5046RP-20110627	33774	559565	4958.5	Y	Y	water and bolter at face	11C	Diabase	N	N	0		N		W	N			I	W			
29-Jun-11	JT	06/29/11	6:30	N4970RP	DN-N4970DE-20110629	33765	559547	4978	Y	Y	not bolted	11C	Diabase	N	N	0		N		W	N			I	W			
29-Jun-11	JT	06/28/11	18:30	N5046RP	DN-N5046RP-20110628	33776	559569	4959	Y	Y		11C	Diabase	N	N	0		N		W	N			I	W			
30-Jun-11	JT	06/30/11	6:30	N5046RP	DN-N5046RP-20110630	33777	559573	4959	Y	Y	not bolted	11C	Diabase	N	N	0		N		W	Y	544568	Type 1: Total S, TIC, Mod ABA	I	W			
2-Jul-11	JT	30-Jun-11	18:30	N4970RP	DN-N4970RP-20110701	33769	559547	4978	Y	Y	bolter at face	11C	Diabase	N	N	0		N		W	N			I	W			
2-Jul-11	JT	30-Jun-11	18:30	N4976RP	DN-N4976RP-20110701	33758	559553	4976.5	Y	Y	bolter at face	11C	Diabase	N	N	0		N		W	N			I	W			
3-Jul-11	JT	03-Jul-11	6:30	N5046RP	DN-N5046RP-20110703	33778	559575	4957	Y	Y		11C	Diabase	N	N	0		N		W	N			I	W			
4-Jul-11	AC	03-Jul-11	18:30	N4976RP	DN-N4976RP-20110703	33763	559555	4976.5	Y	Y	bolter at face; poor photo	11C	Diabase	N	N	0	N	N		W	N			I	W			
4-Jul-11	AC	03-Jul-11	18:30	N4970RP	DN-N4970RP-20110703	33771	559547	4976.5	Y	Y	not bolted, bolter adjacent to	11c/1p	Diabase	N	N	0	N	N	Contact btw diabase and basalt, sample Jul-6-11	W	Y	544569	SFE (Type 3)	I	W			
5-Jul-11	AC	04-Jul-11	18:30	N5046RP	DN-N5046RP-20110704	33780	559576	4956	Y	Y	bolter at face	11c	Diabase	N	N	0	N	N		W	N			I	W			
6-Jul-11	AC	05-Jul-11	18:30	N4976RP	DN-N4976RP-20110705	33766	559558	4977	Y	Y	not bolted	11c	Diabase	N	N	0		N		W	N			I	W			
6-Jul-11	AC	06-Jul-11	0:00	N5046RP	DN-N5046RP-20110706	33779	559578	4956	Y	Y	bolter at face	11c	Diabase	N	N	0		N		W	N			I	W			
7-Jul-11	AC	07-Jul-11	6:30	N5046RP	DN-N5046RP-20110707	33780.5	559582	4955.5	Y	Y	bolter at face	11c	Diabase	N	N	0		N		W	N			I	W			
8-Jul-11	AC	08-Jul-11	6:30	N5046RP	DN-N5046RP-20110708	33783	559583	4955	Y	Y	bolter at face	11c	Diabase	N	N	0		N		W	N			I	W			
9-Jul-11	AC	08-Jul-11	18:30	N4976RP	DN-N4976RP-20110708	33767	559562	4978	Y	Y	not bolted	11c	Diabase	N	N	0	N	N		W	N			I	W			
9-Jul-11	AC	09-Jul-11	6:30	N5046RP	DN-N5046RP-20110709	33783	559588	4955	Y	Y	bolter at face	11c	Diabase	N	N	0	N	N		W	N			I	W			
11-Jul-11	AC	10-Jul-11	6:30	N5046RP	DN-N5046RP-20110710	33784	559591	4954.5	Y	Y	drilled off	11c	Diabase	N	N	0	N	N		W	N			I	W			
12-Jul-11	AC	11-Jul-11	18:30	N5046RP	DN-N5046RP-20110711	33785	559594	4954.5	Y	Y	jumbo at face	11c	Diabase	N	N	0	N	N		W	N			I	E			
13-Jul-11	AC	12-Jul-11	18:30	N5046RP	DN-N5046RP-20110712	33787	559597	4954	Y	Y	not bolted; slash taken on RW	11c	Diabase	N	N	0	N	N		W	N			I	W			
14-Jul-11	AC	13-Jul-11	18:30	N4976RP	DN-N4976RP-20110713	33769	559565	4979	Y	Y	not bolted	11c	Diabase	N	N		N	N		W	N			I	W			
14-Jul-11	AC	14-Jul-11	6:30	N5046RP	DN-N5046RP-20110714	33788	559600	4954	Y	Y	not bolted, slash taken on RW	11c	Diabase	N	N	0	N	N		W	N			I	W			

Attachment 1- Geological Inspection Logs

Date of Inspection	Geo	Round taken		Source location								Key Observations									ABA Sample			Stockpile Location				
		Date	Time	Heading	Face ID	Round easting	Round northing	Round elevation	Face map?	Face photo	Mining Notes	Lith	Rock Type	Alt: Y/N	Min Y/N	Sulph %	Carb	Fibrous min. Y/N	Geology Notes	Call (W/MW/O)	Y/N	Sample #	Sample Notes	Pad	Sector	Easting	Northing	Lift (Lift|Elev)
16-Jul-11	KG	15-Jul-11	18:30	N5046RP	DN-N5046RP-20110715	33789	559604	4954	Y	N		11c	Diabase	N	N	0	N	N		W	N							
16-Jul-11	KG	15-Jul-11	18:30	N4954DE	DN-N4954DE-20110715	33792	559595	4954	Y	N		11c	Diabase	N	N	0	N	N		W	N							
16-Jul-11	KG	16-Jul-11	6:30	N4976RP	DN-N4976RP-20110716	33770	559569	4979	Y	Y	last round for N4976RP	11c	Diabase	N	N	0	N	N		W	N							
17-Jul-11	KG	17-Jul-11	6:30	N5046RP	DN-N5046RP-20110717	33790	559608	4954	Y	Y		11c	Diabase	N	N	0	N	N		W	N							
17-Jul-11	KG	17-Jul-11	6:30	N4954DE	DN-N4954DE-20110717	33796	559595	4954	Y	Y		11c	Diabase	N	N	0	N	N		W	N							
19-Jul-11	KG	18-Jul-11	18:30	N4954DE	DN-N4954DE-20110718	33800	559595	4954	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
19-Jul-11	KG	18-Jul-11	18:30	N5046RP	DN-N5046RP-20110718	33791	559612	4954	Y	Y		11c	Diabase	N	N	0	N	N		W	N							
21-Jul-11	KG	20-Jul-11	18:30	N5046RP	DN-N5046RP-20110720	33792	559616	4954	Y	N		11c	Diabase	N	N	0	0	N		W								
21-Jul-11	KG	20-Jul-11	18:30	N4954DE	DN-N4954DE-20110720	33804	559594	4954	Y	N		11c	Diabase	N	N	0	0	N		W								
23-Jul-11	JT	23-Jul-11	6:30	N5046RP	DN-N5046RP-20110723	33792	559620	4954	Y	Y	not screened	11c	Diabase	N	N	0	0	N		W	Y	544581	Type 2: Total S, TIC					
25-Jul-11	JT	24-Jul-11	18:30	N5046RP	DN-N5046RP-20110724	33796	559624	4954	Y	Y		11C	Diabase	N	N	0	0	N		W								
26-Jul-11	JT	26-Jul-11	6:30	N5046RP	DN-N5046RP-20110726	33797	559628	4954	Y	Y	not screened	11c	Diabase	N	N	0	0	N		W								
28-Jul-11	JT	28-Jul-11	18:30	N4952RP	DN-N4952RP-20110728	33786	559618	4955	Y	Y	First face map	11c	Diabase	N	N	0	0	N		W								
28-Jul-11	JT	28-Jul-11	6:30	N5046RP	DN-N5046RP-20110728	33797	559630	4954	Y	Y	not screened	11c	Diabase	N	N	0	0	N		W								
30-Jul-11	KG	29-Jul-11	18:30	N4952RP	DN-N4952RP-20110729	33784	559622	4953	Y	Y		11C	Diabase	N	N	0	0	N		W								
30-Jul-11	KG	29-Jul-11	18:30	N5046RP	DN-N5046RP-20110729	33799	559634	4952	Y	Y	partly bolted	11c	Diabase	N	N	0	0	N		W								
31-Jul-11	KG	31-Jul-11	6:30	N4952RP	DN-N4952RP-20110731	33781	559623	4952	Y	Y	unbolted	11c	Diabase	N	N	0	0	N		W								
1-Aug-11	JT	01-Aug-11	6:30	N4952DE	DN-N4952DE-20110801	33805	559623	4954	Y	Y		11C	Diabase	N	N	0	0	N		W								
2-Aug-11	JT	01-Aug-11	18:30	N5046RP	DN-N5046RP-20110801	33801	559637	4952	Y	Y		11C	Diabase	N	N	0	0	N	good half barrels	W								
3-Aug-11	JT	02-Aug-11	18:30	N5046RP	DN-N5046RP-20110802	33802	559642	4952	Y	Y		11C	Diabase	N	N	0	0	N		W								
3-Aug-11	JT	03-Aug-11	6:30	N4952DE	DN-N4952DE-20110803	33810	559622	4954	Y	Y		11C	Diabase	N	N	0	0	N		W								
3-Aug-11	JT	02-Aug-11	18:30	N4952RP	DN-N4952RP-20110802	33779	559628	4955	Y	Y		11C	Diabase	N	N	0	0	N		W								
4-Aug-11	JT	04-Aug-11	6:30	N4952RP	DN-N4952RP-20110804	33777	559632	4956	Y	Y		11C	Diabase	N	N	0	0	N		W								
5-Aug-11	JT	04-Aug-11	18:30	N5046RP	DN-N5046RP-20110804	33803	559645	4951	Y	Y		11C	Diabase	N	N	0	0	N		W								
6-Aug-11	JT	06-Aug-11	6:30	N4952DE	DN-N4952RP-20110806	33834	559623	4954	Y	Y		11C	Diabase	N	N	0	0	N		W								
7-Aug-11	JT	06-Aug-11	18:30	N5046RP	DN-N5046RP-20110806	33804	559646	4950	Y	Y		11c	Diabase	N	N	0	0	N		W								
8-Aug-11	JT	07-Aug-11	18:30	N4952DE	DN-N4952DE-20110807	33818	559621	4953	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
9-Aug-11	JT	09-Aug-11	6:30	N5046RP	DN-N5046RP-20110809	33806	559651	4950	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
9-Aug-11	JT	08-Aug-11	18:30	N4952RP	DN-N4952RP-20110808	33777	559634	4956	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
10-Aug-11	JT	10-Aug-11	6:30	N5046RP	DN-N5046RP-20110810	33807	559656	4949	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
11-Aug-11	JT	10-Aug-11	18:30	N4952RP	DN-N4952RP-20110810	33777	559639	4957	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
12-Aug-11	AC	12-Aug-11	6:30	N5046RP	DN-N5046RP-20110812	33808	559657	4949	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N			I	W			
13-Aug-11	AC	13-Aug-11	6:30	N5046RP	DN-N5046RP-20110813	33809	559660	4948	Y	Y	Bolter at face	11c	Diabase	N	N	0	0	N		W	N			I	W			
13-Aug-11	AC	12-Aug-11	18:30	N4952RP	DN-N4952RP-20110812	33776	559640	4957.5	Y	Y	jumbo at face	11c	Diabase	N	N	0	0	N		W	N			I	W			
14-Aug-11	AC	13-Aug-11	18:30	N4952RP	DN-N4952RP-20110813	33776	559564	4958	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N			I	W			
14-Aug-11	AC	14-Aug-11	6:30	N5046RP	DN-N5046RP-20110814	N/A	N/A	N/A	N	N	MISSED FACE	11c	Diabase	N	N	0	0	N		W	N			I	E			
15-Aug-11	AC	15-Aug-11	6:30	N5046RP	DN-N5046RP-20110815	33812	559567	4947	Y	Y	NOT BOLTED	11c	Diabase	N	N	0	0	N		W	N			I	W			
16-Aug-11	JD	15-Aug-11	18:30	N4952RP	DN-N4952RP-20110815	33775	559647	4958	Y	N		11C	Diabase	N	N	0	0	N		W	N			I	W			
17-Aug-11	JD	17-Aug-11	6:30	N5046RP	DN-N5046RP-20110817	33812	559671	4947	Y	N		11C	Diabase	N	N	0	0	N	sampe taken Aug 18th	W	Y	544587	Type 2: Total S, TIC	I	W			
17-Aug-11	JD	16-Aug-11	18:30	N4952RP	DN-N4952RP-20110816	33775	559651	4958.5	Y	N		11C	Diabase	N	N	0	0	N		W	N			I	W			
18-Aug-11	AC	17-Aug-11	18:30	N4952RP	DN-N4952RP-20110817	33775	559654	4959	Y	Y	jumbo at face	11c	Diabase	N	N	0	0	N		W	N			I	W			
18-Aug-11	AC	18-Aug-11	6:30	N5046RP	DN-N5046RP-20110818	33814	559675	4947	Y	Y	Not bolted	11c	Diabase	N	N	0	0	N	WRM sample for 20110817 round	W	N			I	W			
19-Aug-11	AC	19-Aug-11	6:30	N4948DW	DN-N4948DW-20110819	33805	559669	4948	Y	Y	Bolter at face; First round	11C	Diabase	N	N	0	0	N		W	N							
20-Aug-11	AC	18-Aug-11	18:30	N4952RP	DN-N4952RP-20110818	33773	559659	4959.5	Y	Y	jumbo at face	11c	Diabase	N	N	0	0	N		W	N							
21-Aug-11	AC	20-Aug-11	18:30	N4952RP	DN-N4952RP-20110820	33773	559663	4960.5	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N							
21-Aug-11	AC	20-Aug-11	6:30	N4948DW	DN-N4948DW-20110820	33803	559670	4948	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N							
21-Aug-11	AC	20-Aug-11	6:30	N5046RP	DN-N5046RP-20110820	33815	559678	4947	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N							
22-Aug-11	AC	21-Aug-11	18:30	N4952RP	DN-N4952RP-20110821	33776	559663	4960.5	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N							
23-Aug-11	AC	22-Aug-11	6:30	N5046RP	DN-N5046RP-20110822	33817	559682	4947	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
23-Aug-11	AC	22-Aug-11	18:30	N4948DW	DN-N4948DW-20110822	33800	559671	4948	Y	Y	not bolted; muck bound	11c	Diabase	N	N	0	0	N		W	N							
24-Aug-11	AC	24-Aug-11	6:30	N4952DE	DN-N4952DE-20110824	33818	559621	4953.5	Y	Y	BOLTER AT FACE	11c/1p	Diabase	N	N	0	0	N		W	N							
25-Aug-11	AC	24-Aug-11	18:30	N5046RP	DN-N5046RP-20110824	33819	559685	4946	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N							
25-Aug-11	AC	23-Aug-11	18:30	N4952RP	DN-N4952RP-20110823	33774	559667	4960.5	Y	Y	jumbo at face	11c	Diabase	N	N	0	0	N		W	N							
25-Aug-11	JD	25-Sep-11	0:00	N4960LV	DN-N4960LV-20110925	33809	559692	4962	Y	N		11c	Diabase	N	N	0	0	N		W	N							
25-Aug-11	JD	25-Sep-11	0:00	N4952RP	DN-N4952RP-20110925	33778	559717	4970	Y	N		11c	Diabase	N	N	0	0	N		W	N							
26-Aug-11	AC	25-Aug-11	18:30	N4952RP	DN-N4952RP-20110825	N/A	N/A	N/A	N	N	MISSED FACE	11c	Diabase	N	N	0	0	N		W	N							
26-Aug-11	AC	26-Aug-11	6:30	N5046RP	DN-N5046RP-20110826	33821	559689	4946	Y	Y	MUCK BOUND	11c	Diabase	N	N	0	0	N		W	N							
27-Aug-11	KG	27-Aug-11	6:30	N4952RP	DN-N4952RP-20110827	33771	559673	4960.5	Y	Y	MUCK BOUND	11c	Diabase	N	N	0	0	N		W	N							
27-Aug-11	KG	24-Aug-11	18:30	N4948DW	DN-N4948DW-20110824	33797	559673	4948	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
28-Aug-11	AC	28-Aug-11	6:30	N5046RP	DN-N5046RP-20110828	33822	559690	4947	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
29-Aug-11	AC	29-Aug-11	6:30	N4952XN	DN-N4952XN-20110829	33821	559628	4954	Y	N	trucks loading in drift	11c	Diabase	N	N	0	0	N		W	N							
30-Aug-11	AC	28-Aug-11	18:30	N4960LV	DN-N4960LV-20110828	33778	559672	4961.5	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
31-Aug-11	AC	29-Aug-11	18:30	N5046RP	DN-N5046RP-20110829	33817	559694	4947.5	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N							
31-Aug-11	AC	29-Aug-11	18:30	N4944RP	DN-N4944RP-20110829	33826	559685	4947.5	Y	Y	jumbo at face	11c	Diabase	N	N	0	0	N		W	N							
31-Aug-11	AC	30-Aug-11	18:30	N4952RP	DN-N4952RP-20110830	33771	559681	4961.5	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N							
31-Aug-11	AC	30-Aug-11	18:30	N4960LV	DN-N4960LV-20110830	33782	559674	4961.5	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
1-Sep-11	KG	31-Aug-11		N4952XN	DN-N4952XN-20110831	33822	559634	4954	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
2-Sep-11	JT	02-Sep-11	6:30	N4952XN	DN-N4952XN-20110902	33822	559637	4953	Y	Y	not screened	11C	Diabase	N	N	0	0	N		W	N							
3-Sep-11	JT	03-Sep-11	6:30	N4944RP	DN-N4944RP-20110903	33832	559684	4949	Y	Y	not screened	11C	Diabase	N	N	0	0	N		W	N							
3-Sep-11	JT	03-Sep-11	6:30	N4952RP	DN-N4952RP-20110903	33768	559685	4962	Y	Y	bolter at face	11C	Diabase	N	N	0	0	N		W	N							
4-Sep-11	JT	04-Sep-11	6:30	N4960LV	DN-N4960LV-20110904	33788	559678	4960	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	N							
4-Sep-11	JT	03-Sep-11	6:30	N5046RP	DN-N5046RP-20110903	33823	559700	4948	Y	Y	unbolted	11C	Diabase	N	N	0	0	N	MUCK AT FACE/DONE 5/9	W	N							
5-Sep-11	JT	04-Sep-11	18:30	N4944RP	DN-N4944RP-20110904	33837	559682	4949	Y	Y	BOLTER AT FACE	11C	Diabase	N	N	0	0	N		W	N							
6-Sep-11	JT	05-Sep-11	18:30	N4960LV	DN-N4960LV-20110905	33791	559680	4960	Y	Y	BOLTER AT FACE	11C	Diabase	N	N	0	0	N		W	N							
6-Sep-11	JT	05-Sep-11	6:30	N4952RP	DN-N4952RP-20110905	33768	559690	4963	Y	Y	not screened	11C	Diabase	N	N	0	0	N		W	N							
7-Sep-11	JT	06-Sep-11	18:30	N5046RP	DN-N5046RP-20110906	33825	559704	4947	Y	Y	not screened	11C	Diabase	N	N	0	0	N		W	N							
7-Sep-11	JT	05-Sep-11	6:30	N4944RP	DN-N4944RP-20110905	33839	559681	4949	Y	Y	BOLTER AT FACE	11C	Diabase	N	N	0	0	N		W	N							
8-Sep-11	JT	07-Sep-11	18:30	N4960LV	DN-N4960LV-20110907	33795	559683	4960	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
8-Sep-11	JT	08-Sep-11	6:30	N4952RP	DN-N4952RP-20110908	33767	559695	4963	Y	Y	BOLTER AT FACE	11C	Diabase	N	N	0	0	N		W	N							
8-Sep-11	JT	08-Sep-11	6:30	N4944RP	DN-N4944RP-20110908	33834	559675	4949	Y	Y	MUCK BOUND	11C	Diabase	N	N	0	0	N		W	N							
9-Sep-11	JT	08-Sep-11	18:30	N5046RP	DN-N5046RP-20110908	33826	559707	4946	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	N							
9-Sep-11	JT	08-Sep-11	18:30	N4960LV	DN-N4960LV-20110908	33797	559685	4960	Y	Y	BOLTER AT FACE	11C	Diabase	N	N	0	0	N		W	N							
10-Sep-11	JT	10-Sep-11	6:30	N4952RP	DN-N4952RP-20110910	33767	559698	4964	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	N							
10-Sep-11	JT	10-Sep-11	6:30	N4960LV	DN-N4960LV-20110909	33801	559687	4960	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	N							
11-Sep-11	JT	10-Sep-11	18:30	N5046RP	DN-N5046RP-20110910	33827	559710	4945	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	N							
11-Sep-11	JT	11-Sep-11	6:30	N4944RP	DN-N4944RP-20110911	33834	559670	4950	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	N							

Attachment 1- Geological Inspection Logs

Date of Inspection	Geo	Round taken		Source location								Key Observations									ABA Sample			Stockpile Location				
		Date	Time	Heading	Face ID	Round easting	Round northing	Round elevation	Face map?	Face photo	Mining Notes	Lith	Rock Type	Alt: Y/N	Min Y/N	Sulph %	Carb	Fibrous min. Y/N	Geology Notes	Call (W/MW/O)	Y/N	Sample #	Sample Notes	Pad	Sector	Easting	Northing	Lift (Lift|Elev)
11-Sep-11	JT	11-Sep-11	6:30	N4944XN	DN-N4944XN-20110911	33842	559687	4950	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	N							
12-Sep-11	JT	12-Sep-11	6:30	N4952RP	DN-N4952RP-20110912	33767	559702	4964	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	Y	544592	Type 1: Total S, TIC, Mod ABA					
12-Sep-11	JT	11-Sep-11	18:30	N5046RP	DN-N5046RP-20110911	33829	559714	4944	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	N							
13-Sep-11	JT	12-Sep-11	6:30	N4960LV	DN-N4960LV-20110912	33804	559689	4960	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
13-Sep-11	JT	12-Sep-11	18:30	N4944RP	DN-N4944RP-20110912	33843	559693	4957	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	N							
13-Sep-11	JT	12-Sep-11	18:30	N4944XN	DN-N4944XN-20110912	33845	559691	4950	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	N							
14-Sep-11	JT	14-Sep-11	6:30	N4960LV	DN-N4960LV-20110914	33807	559691	4962	Y	Y	BOLTER AT FACE	11C	Diabase	N	N	0	0	N		W	N							
14-Sep-11	JT	13-Sep-11	18:30	N5046RP	DN-N5046RP-20110913	33830	559717	4944	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	N							
15-Sep-11	JT	14-Sep-11	18:30	N4952RP	DN-N4952RP-20110914	33769	559704	4961	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
16-Sep-11	JT	15-Sep-11	18:30	N4952RP	DN-N4952RP-20110915	33770	559709	4963	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
20-Sep-11	JT	19-Sep-11	18:30	N5046RP	DN-N5046RP-20110919	33830	559720	4943	Y	Y	BOLTER AT FACE	11C	Diabase	N	N	0	0	N		W	N							
20-Sep-11	JT	18-Sep-11	6:30	N4944XN	DN-N4944XN-20110918	33844	559700	4957	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
20-Sep-11	JT	18-Sep-11	6:30	N4944RP	DN-N4944RP-20110918	33832	559637	4957	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
22-Sep-11	JT	21-Sep-11	6:30	N5046RP	DN-N5046RP-20110921	33830	559725	4945	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
22-Sep-11	JT	21-Sep-11	6:30	N4940VA	DN-N4940VA-20110921	33826	559723	4945	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
23-Sep-11	JT	20-Sep-11	6:30	N4952RP	DN-N4952RP-20110919	33773	559713	4964	Y	Y	muck bound- still	11c	Diabase	N	N	0	0	N		W	Y	544594	Type 3: SFE, -1cm fraction					
24-Sep-11	AC	24-Sep-11	0:00	N5046RP	DN-N5046RP-20110924	33834	559727	4943	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	Y	544595						
27-Sep-11	AC	26-Sep-11	6:30	N5046RP	DN-N5046RP-20110926	33835	559731	4943	Y	N	not bolted	11c	Diabase	N	N	0	0	N		W	N							
27-Sep-11	AC	25-Sep-11	18:30	N4960LV	DN-N4960LV-20110925	33810	559691	4962	Y	N	drilled off	11c	Diabase	N	N	0	0	N		W	N							
27-Sep-11	AC	27-Sep-11	0:00	N4960LV	DN-N4060LV-20110927	33812	559695	4962	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
28-Sep-11	AC	27-Sep-11	0:00	N4952DE	DN-N4952RP-20110927	33782	559719	4969	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
29-Sep-11	AC	28-Sep-11	6:30	N5046RP	DN-N5046RP-20110928	33836	559734	4941	Y	Y	bolted	11c	Diabase	N	N	0	0	N		W	N							
29-Sep-11	AC	28-Sep-11	6:30	N4946VA	DN-N4946VA-20110928	33823	559724	4943	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
30-Sep-11	AC	30-Sep-11	0:00	N4952RP	DN-N4952RP-20110930	33785	559720	4970	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
30-Sep-11	AC	30-Sep-11	0:00	N4960LV	DN-N4960LV-20110930	33815	559695	4964	Y	Y	bolted	11c	Diabase	N	N	0	0	N		W	N							
1-Oct-11	AC	30-Sep-11	18:30	N5046RP	DN-N5046RP-20110930	33836	559736	4941	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
1-Oct-11	AC	30-Sep-11	18:30	N4946VA	DN-N4946VA-20110930	33820	559726	4943	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N							
2-Oct-11	AC	02-Oct-11	18:30	N4960LV	DN-N4960LV-20111001	33817	559695	4964	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N							
3-Oct-11	AC	03-Oct-11	6:30	N4946VA	DN-N4946VA-20111003	33817	559731	4943	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N							
3-Oct-11	AC	02-Oct-11	18:30	N4960LV	DN-N4960LV-20111002	33819	559695	4943	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
3-Oct-11	AC	02-Oct-11	6:30	N4952RP	DN-N4952RP-20111002	33789	559719	4971	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N							
4-Oct-11	AC	04-Oct-11	6:30	N4960LV	DN-N4960LV-20111004	33823	559695	4964	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N							
4-Oct-11	AC	03-Oct-11	18:30	N5046RP	DN-N5046RP-20111003	33837	559739	4940.5	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
6-Oct-11	AC	06-Oct-11	18:30	N4946VA	DN-N4946VA-20111004	33815	559732	4945	Y	Y	bolted	11c	Diabase	N	N	0	0	N		W	N							
6-Oct-11	AC	05-Oct-11	6:30	N5046RP	DN-N5046RP-20111005	33839	559743	4940	Y	N	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
6-Oct-11	AC	05-Oct-11	18:30	N4960LV	DN-N4960LV-20111005	33827	559695	4964	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	Y	544597	Type 2: Total S, TIC					
7-Oct-11	AC	06-Oct-11	6:30	N4952RP	DN-N4952RP-20111006	33792	559722	4971	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
8-Oct-11	AC	08-Oct-11	6:30	N4952RP	DN-N4952RP-20111008	33797	559721	4972	Y	Y	not bolted	11c	Diabase	N	N	0	0	N		W	N							
8-Oct-11	AC	08-Oct-11	6:30	N4960LV	DN-N4960LV-20111008	33830	559695	4964	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
8-Oct-11	AC	07-Oct-11	6:30	N5046RP	DN-N5046RP-20111007	33841	559746	4939	Y	Y	jumbo at face	11c	Diabase	N	N	0	0	N		W	N							
8-Oct-11	AC	07-Oct-11	6:30	N4946VA	DN-N4946VA-20111007	33813	559736	4946	Y	Y	bolter parked in heading	11c	Diabase	N	N	0	0	N		W	N							
9-Oct-11	KG	08-Oct-11	18:30	N5046RP	DN-N5046RP-20111008	33843	559750	4939	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
10-Oct-11	AC	09-Oct-11	18:30	N5046RP	DN-N5046RP-20111009	33843	559753	4939	Y	Y	bolted	11c	Diabase	N	N	0	0	N		W	N							
10-Oct-11	AC	09-Oct-11	6:30	N4960LV	DN-N4960LV-20111009	33825	559701	4964	Y	Y	jumbo at face	11c	Diabase	N	N	0	0	N		W	N							
10-Oct-11	AC	10-Oct-11	6:30	N4952RP	DN-N4952RP-20111010	33801	559719	4972	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
12-Oct-11	AC	11-Oct-11	18:30	N5046RP	DN-N5046RP-20111011	33844	559757	4938	Y	Y	bolted	11c	Diabase	N	N	0	0	Y	some fibers found in small cavity	W	N							
12-Oct-11	AC	11-Oct-11	0:00	N4960LV	DN-N4960LV-20111011	33826	559705	4964	Y	Y	jumbo drilling adjacent face	11c	Diabase	N	N	0	0	N		W	N							
12-Oct-11	AC	11-Oct-11	0:00	N4960LV-970AC	DN-N4960LV-970AC-20111011	33833	559694	4964	Y	Y	jumbo drilling adjacent face	11c	Diabase	N	N	0	0	N		W	N							
13-Oct-11	AC	12-Oct-11	6:30	N4952RP	DN-N4952RP-20111012	33805	559718	4953	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
14-Oct-11	KG	13-Oct-11	18:30	N5046RP	DN-N5046RP-20111013	33847	559762	4937	Y	Y	water	11c	Diabase	N	N	0	0	N		W	N							
15-Oct-11	JT	13-Oct-11	0:00	N4960LV-970AC	DN-N4970LV-970AC-20111013	33841	559693	4962	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
15-Oct-11	JT	15-Oct-11	6:30	N5046RP	DN-N5046RP-20111015	33847	559765	4936	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
15-Oct-11	JT	13-Oct-11	0:00	N4960LV	DN-N4960LV-20111013	33812	559710	4963	Y	Y	muck at face, not screened	11c	Diabase	N	N	0	0	N		W	N							
16-Oct-11	JT	16-Oct-11	6:30	N4974VA	DN-N4974VA-20111016	33808	559727	4973.5	Y	Y	not screened	11c	Diabase	N	N	0	0	N		W	N							
16-Oct-11	JT	14-Oct-11	6:30	N4952RP	DN-N4952RP-20111014	33811	559713	4975	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
16-Oct-11	JT	16-Oct-11	18:30	N5046RP	DN-N5046RP-20111016	33850	559768	4935	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
17-Oct-11	JT	16-Oct-11	18:30	N4960LV-970AC	DN-N4960LV-970AC-20111016	33845	559693	4962	Y	Y	Jumbo at face	11c	Diabase	N	Y	0	0	N		W	N							
18-Oct-11	JT	16-Oct-11	0:00	N4952RP	DN-N4952RP-20111016	33813	559710	4975.5	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
18-Oct-11	JT	17-Oct-11	6:30	N4960LV	DN-N4960LV-20111017	33811	559713	4963	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
19-Oct-11	JT	17-Oct-11	0:00	N5046RP	DN-N5046RP-20111017	33850	559772	4934.5	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
19-Oct-11	JT	18-Oct-11	18:30	N4952RP	DN-N4952RP-20111018	33814	559705	4976	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
20-Oct-11	JT	20-Oct-11	0:00	N5046RP	DN-N5046RP-20111020	33850	559780	4934	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
20-Oct-11	JT	19-Oct-11	6:30	N4960LV-970AC	DN-N4960LV-970AC-20111019	33849	559693	4961	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
20-Oct-11	JT	19-Oct-11	6:30	N4960LV	DN-N4960LV-20111019	33808	559717	4962	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
21-Oct-11	JT	20-Oct-11	18:30	N4974VA/XN	DN-N4974XN-20111020	33810	559729	4973.5	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
21-Oct-11	JT	20-Oct-11	0:00	N4960LV	DN-N4960LV-20111020	33808	559720	4961.5	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
22-Oct-11	JT	21-Oct-11	18:30	N4974XN	DN-N4974XN-20111021	33811	559732	4973.5	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
22-Oct-11	JT	21-Oct-11	18:30	N4952RP	DN-N4952RP-20111021	33816	559703	4977	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
24-Oct-11	JT	23-Oct-11	0:00	N4960LV	DN-N4960LV-20111023	33807	559724	4961.5	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
26-Oct-11	JT	24-Oct-11	0:00	N4974XN	DN-N4974XN-20111024	33813	559736	4974.5	Y	Y	COMPLETE	11C	Diabase	N	N	0	0	N		W	N							
26-Oct-11	JT	25-Oct-11	0:00	N4952RP	DN-N4952RP-20111025	33817	559700	4978	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
26-Oct-11	JT	25-Oct-11	6:30	N4944OP	DN-N4944OP-20111025	33802	559712	4962.5	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
26-Oct-11	JT	25-Oct-11	6:30	N4960LV	DN-N4960LV-20111025	33806	559727	4960	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
26-Oct-11	JT	25-Oct-11	18:30	N5046RP	DN-N5046RP-20111025	33851	559784	4932	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
27-Oct-11	JT	26-Oct-11	18:30	N4960LV	DN-N4960LV-20111026	33805	559730	4960	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
27-Oct-11	JT	27-Oct-11	6:30	N5046RP	DN-N5046RP-20111027	33852	559787	4931.5	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
28-Oct-11	JT	28-Oct-11	6:30	N5046RP	DN-N5046RP-20111028	33853	559790	4930	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
28-Oct-11	JT	27-Oct-11	18:30	N4952RP	DN-N4952RP-20111027	33817	559695	4978.5	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
29-Oct-11	JT	29-Oct-11	6:30	N4952RP	DN-N4952RP-20111029	33817	559691	4979	Y	Y		11C	Diabase	N	N	0	0	N	sample taken Nov.5/11	W	Y	544599	Type 2: Total S, TIC					
29-Oct-11	JT	28-Oct-11	18:30	N4690LV	DN-N4960LV-20111028	33803	559734	4960	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
29-Oct-11	JT	28-Oct-11	18:30	N4944OP	DN-N4944OP-20111028	33797	559710	4962.5	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
30-Oct-11	JT	29-Oct-11	18:30	N5046RP	DN-N5046RP-20111029	33855	559795	4930	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
30-Oct-11	JT	29-Oct-11	18:30	N4960LV	DN-N4960LV-20111029	33802	559738	4960	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
31-Oct-11	JT	30-Oct-11	18:30	N5046RP	DN-N5046RP-20111030	33850	559799	4930	Y	Y		11C	Diabase	N	N	0	0	N		W	Y	544598	Type 1: Total S, TIC, Mod ABA					
1-Nov-11	JT	01-Nov-11	6:30	N4952RP	DN-N4952RP-20111101	33814	559680	4980	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
1-Nov-11	JT	31-Oct-11	18:30	N5046RP	DN-N5046RP-20111031	33850	559803	4930	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
1-Nov-11	JT	30-Oct-11	18:30	N4944OP	DN-N4944OP-20111030	33846	559709	4962	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
2-Nov-11	JT	02-Nov-11	6:30	N5046RP	DN-N5046RP-20111102	33850	559804	4930	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
4-Nov-11	AC	02-Nov-11	18:30	N4952RP	DN-N4952RP-20111102	33813	559678	4980	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
5-Nov-11	AC	04-Nov-11	18:30	N4952RP	DN-N4952RP-20111104	33812	559674	4981	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
6-Nov-11	AC	04-Nov-11	6:30	N5046RP	DN-N5046RP-20111104	33851	559808	4930	Y	Y	being loaded	11C	Diabase	N	N	0	0	N		W	N							

Attachment 1- Geological Inspection Logs

Date of Inspection	Geo	Round taken		Source location								Key Observations									ABA Sample			Stockpile Location				
		Date	Time	Heading	Face ID	Round easting	Round northing	Round elevation	Face map?	Face photo	Mining Notes	Lith	Rock Type	Alt: Y/N	Min Y/N	Sulph %	Carb	Fibrous min. Y/N	Geology Notes	Call (W/MW/O)	Y/N	Sample #	Sample Notes	Pad	Sector	Easting	Northing	Lift (Lift|Elev)
6-Nov-11	AC	06-Nov-11	0:00	N4960LV	DN-N4960LV-20111106	33841	559742	4959.5	Y	Y	unbolted; wedging in back	11C	Diabase	N	N	0	0	N	previous round missed???	W	N							
6-Nov-11	AC	06-Nov-11	0:00	N4946VR-4960AC	DN-N4946VR-4960AC-20111106	33829	559735	4960	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	N							
7-Nov-11	AC	06-Nov-11	18:30	N5046RP	DN-N5046RP-20111106	33851	559812	4929	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
8-Nov-11	AC	07-Nov-11	6:30	N4952RP	DN-N4952RP-20111107	33810	559672	4982	Y	N	BOLTED	11c	Diabase	N	N	0	0	N		W	N							
8-Nov-11	AC	08-Nov-11	6:30	N4960LV	DN-N4960LV-20111108	33842	559746	4959.5	Y	N	UNBOLTED	11C	Diabase	N	N	0	0	N		W	N							
9-Nov-11	AC	09-Nov-11	6:30	N4980LV	DN-N4980LV-20111109	33819	559675	4980	Y	Y		11C	Diabase	N	N	0	0	N	BASALT AT FACE?	W	N							
9-Nov-11	AC	08-Nov-11	8:30	N4946VR-4960AC	DN-N4946VR-4960AC-20111108	33825	559736	4960	Y	Y	unbolted	11C	Diabase	N	N	0	0	N		W	N							
9-Nov-11	AC	09-Nov-11	6:30	N5046RP	DN-N5046RP-20111109	33850	559816	4929	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
10-Nov-11	AC	09-Nov-11	18:30	N4946VR-4960AC	DN-N4946VR-4960AC-20111109	33822	559737	4960	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
10-Nov-11	AC	09-Nov-11	18:30	N4960AV-974AC	DN-N4960AV-974AC-20111109	33845	559734	4960	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
12-Nov-11	AC	10-Nov-11	18:30	N5046RP	DN-N5046RP-20111110	33850	559820	4928	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
12-Nov-11	AC	10-Nov-11	18:30	N4930XS	DN-N4930XS-20111110	33858	559804	4930	Y	Y	bolter at face	11c	Diabase	N	N	0	0	N		W	N							
13-Nov-11	JD	11-Nov-11	18:30	N4952RP	DN-N4952RP-20111111	33809	559668	4982	Y	N		11c	Diabase	N	N	0	0	N		W	N							
14-Nov-11	AC	12-Nov-11	6:30	N4944OP-N4960AC	DN-N4944OP-N4960AC-20111112	33847	559708	4960	Y	N		11C	Diabase	N	N	0	0	N	1p at face?	W	N							
14-Nov-11	AC	13-Nov-11	18:30	N4960LV	DN-N4960LV-20111113	33843	559751	4960	Y	N		11C	Diabase	N	N	0	0	N		W	N							
14-Nov-11	AC	13-Nov-11	6:30	N5046RP	DN-N5046RP-20111113	33850	559824	4927.5	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
15-Nov-11	AC	12-Nov-11	18:30	N4946VR-4960AC	DN-N4946VR-4960AC-20111112	33818	559739	4960	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
15-Nov-11	AC	11-Nov-11	18:30	N4952RP	DN-N4952RP-20111114	33808	559665	4982	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
15-Nov-11	AC	15-Nov-11	6:30	N4930XS	DN-N4930XS-20111115	33863	559804	4930	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
16-Nov-11	JJ	13-Nov-11	18:30	N4960AV-974AC	DN-N4960AV-974AC-20111113	33849	559738	4959	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
17-Nov-11	JJ	15-Nov-11	18:30	N4960LV	DN-N4960LV-20111115	33844	559753	4960	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
17-Nov-11	JJ	15-Nov-11	18:30	N4946VR-4960AC	DN-N4946VR-4960AC-20111115	33816	559739	4960	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
18-Nov-11	JJ	16-Nov-11	6:30	N5046RP	DN-N5046RP-20111116	33850	559826	4926	Y	Y	bolted	11C	Diabase	N	N	0	0	N		W	N							
18-Nov-11	AC	17-Nov-11	6:30	N4930XS	DN-N4930XS-20111117	33866	559804	4930	Y	Y	bolter at face	11C	Diabase	N	N	0	0	N		W	N							
19-Nov-11	JJ	17-Nov-11	18:30	N4952RP	DN-N4952RP-20111117	33807	559662	4982	Y	Y	bolted	11c	Diabase	N	N	0	0	N		W	N							
20-Nov-11	JJ	19-Nov-11	18:30	N4930XS	DN-N4930XS-20111119	33870	559802	4930	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
21-Nov-11	JJ	20-Nov-11	18:30	N4952RP	DN-N4952RP-20111120	33805	559658	4980	Y	Y		1p/11c	Diabase	N	N	0	0	N	*Diabase/basalt contact*	W	N							
21-Nov-11	JJ	20-Nov-11	18:30	N4960AV-974AC	DN-N4960AV-974AC-20111120	33852	559737	4959	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
21-Nov-11	JJ	21-Nov-11	8:30	N5046RP	DN-N5046RP-20111121	33850	559830	4925	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
22-Nov-11	AC	21-Nov-11	18:30	N4930XS	DN-N4930XS-20111121	33874	559802	4929.8	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
24-Nov-11	JJ	22-Nov-11	18:30	N4952RP	DN-N4952RP-20111122	33804	559655	4982	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
24-Nov-11	JJ	23-Nov-11	6:30	N5046RP	DN-N5046RP-20111123	33850	559834	4925	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
26-Nov-11	JJ	25-Nov-11	6:30	N5046RP	DN-N5046RP-20111125	33850	559838	4925	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
26-Nov-11	JJ	26-Nov-11	6:30	N4952RP	DN-N4952RP-20111126	33803	559651	4983	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
28-Nov-11	JJ	27-Nov-11	18:30	N4952RP	DN-N4952RP-20111127	33802	559648	4983	Y	Y		11c/1p	Diabase	N	N	0	0	N		W	N							
29-Nov-11	JT	29-Nov-11	6:30	N5046RP	DN-N5046RP-20111129	33849	559843	4924	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
29-Nov-11	JT	28-Nov-11	6:30	N4930XS	DN-N4930XS-20111128	33870	559796	4933	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
30-Nov-11	JT	30-Nov-11	6:30	N4930XS	DN-N4930XS-20111130	33870	559793	4933	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
1-Dec-11	JJ	01-Dec-11	6:30	N4930XS	DN-N4930XS-20111201	33869	559789	4934	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
3-Dec-11	JJ	02-Dec-11	18:30	N5046RP	DN-N5046RP-20111202	33848	559850	4924	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
3-Dec-11	JJ	03-Dec-11	6:30	N4024DE	DN-N4024DE-20111203	33861	559839	4925	Y	Y		11c	Diabase	N	N	0	0	N		W	N							
10-Dec-11	JT	04-Dec-11	6:30	N4924DE	DN-N4924DE-20111204	33841	559840	4924	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
10-Dec-11	JT	05-Dec-11	6:30	N4930XS	DN-N4930XS-20111205	33867	559798	4932	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
10-Dec-11	JT	04-Dec-11	6:30	N5046RP	DN-N5046RP-20111204	33850	559855	4922.5	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
11-Dec-11	JT	10-Dec-11	18:30	N5046RP	DN-N5046RP-20111210	33850	559860	4922.5	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
11-Dec-11	JT	10-Dec-11	18:30	N4924DE	DN-N4924DE-20111210	33823	559840	4924	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
14-Dec-11	JT	12-Dec-11	18:30	N4930XS	DN-N4930XS-20111212	33866	559794	4932	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
15-Dec-11	JT	14-Dec-11	18:30	N4930XS	DN-N4930XS-20111214	33865	559790	4931	Y	Y		11C	Diabase	N	N	0	0	N		W	N							
23-Nov-10	JS			N5046RP		33387	559141		N	N		FGD									Y	544502	taken ~ 40m from portal			#N/A	#N/A	
29-Nov-10	KG			DN decline					Y		no round taken	-		-	-	-	-	-			N	N/A		-	-	#N/A	#N/A	
4-Dec-10	KG										no power, no round taken										N	N/A		I	NW	#N/A	#N/A	
5-Dec-10	KG	2010-12-05	4:00	DN Sump1		33404	559165		N	N	not a full round. Muck still U/G.										N	N/A		I	NW	#N/A	#N/A	
6-Dec-10																					N	N/A		I	NW	#N/A	#N/A	
10-Dec-10											Mining activity stopped until 2011															#N/A	#N/A	
12-Dec-10	KG	2010-12-08	18:00	N5038SP		33400	559171		Y	N	Muck moved to Pad I before geologist call.										N	N/A		I	NW	#N/A	#N/A	
19-Jan-11						33435	559192															544505	SFE sample. Taken from stockpile on Jan25. Sampled muck sourced from round on Jan 19/11.					
25-Jan-11						#N/A	#N/A				Sample taken at the same source location as above.										Y	544505	SFE sample. Taken from stockpile on Jan25. Sampled muck sourced from round on Jan 19/11.	I	SW	33146	558996	5045
4-Feb-11	KG										no activity; crew change; muck still at face, not bolted															#N/A	#N/A	
4-Feb-11	KG										no activity; crew change; muck still at face, not bolted									W				I	W			
6-Feb-11											whiteout called after blast															#N/A	#N/A	
6-Feb-11											whiteout called after blast									W				I	W			
7-Feb-11											no advance															#N/A	#N/A	
7-Feb-11											no advance									W				I	W			
16-Feb-11		2011-02-16	17:00	N5046RP		33486	559246				3 m round, 7 m face width															#N/A	#N/A	
17-Feb-11	KG	02/17/11	12:00	N5046RP					N	N	did not visit face									W								
18-Feb-11	-	02/18/11	5:30	N5046RP					N	N										W								
23-Feb-11						33496	559255															544508	SFE Sample					
4-Mar-11	JD			N5046RP	DN-N5046RP-20110304	33529	559287	5013				CV										544409	Grab Sample. Total S, TIC. Au Assay	-	-	#N/A	#N/A	-
4-Mar-11	JD			N5046RP	DN-N5046RP-20110304	#N/A	#N/A															544410	Grab Sample from muckpile from round on March 4th.Total S, TIC. Au Assay	I	SE	#N/A	#N/A	1
4-Mar-11	JD			N5046RP	DN-N5046RP-20110304	33526	559286	5015				10B										544509	Grab Sample. Total S. TIC. Au Assay.			#N/A	#N/A	
8-Mar-11	JD			N5046RP	DN-N5046RP-20110308	33541.2	559298.3	5010.8				10B										544411	Whole Rock Analysis			#N/A	#N/A	
28-Mar-11						33601	559364														Y	544519	Random composite sample, Total S, TIC.					
24-Apr-11	KG	04/23/11	18:30	X4994RP	DN-X4994RP-20110423	33646	559344	4990	Y	Y										W	N			I	W			
24-Apr-11	KG	04/24/11	6:30	N5046RP	DN-N5046RP-20110424	33663	559428	4985	Y	Y										W	N			I	W			
29-May-11						33740	559507															544553	Type 2: Total S, TIC					
END OF 2011 UNDERGROUND MINING																												

Attachment 1- Geological Inspection Logs

Date of Inspection	Geo	Round taken		Source location								Key Observations									ABA Sample			Stockpile Location				
		Date	Time	Heading	Face ID	Round easting	Round northing	Round elevation	Face map?	Face photo	Mining Notes	Lith	Rock Type	Alt: Y/N	Min Y/N	Sulph %	Carb	Fibrous min. Y/N	Geology Notes	Call (W/MW/O)	Y/N	Sample #	Sample Notes	Pad	Sector	Easting	Northing	Lift (Lift|Elev)
Stockpile Samples																												
22-Feb-11	JD			-	-	#N/A	#N/A	-				-										544401	Stockpile sample. Total S, TIC	I	West	33151	559010	2
22-Feb-11	JD			-	-	#N/A	#N/A	-				-										544402	Stockpile sample. Total S, TIC	I	West	33141	559008	2
22-Feb-11	JD			-	-	#N/A	#N/A	-				-										544403	Stockpile sample. Total S, TIC	I	West	33129	559035	2
22-Feb-11	JD			-	-	#N/A	#N/A	-				-										544404	Stockpile sample. Total S, TIC, Mod. ABA	I	West	33132	559043	2
22-Feb-11	JD			-	-	#N/A	#N/A	-				-										544405	Stockpile sample. Total S, TIC	I	West	33156	559051	2
22-Feb-11	JD			-	-	#N/A	#N/A	-				-										544406	Stockpile sample. Total S, TIC	I	West	33166	559052	2
22-Feb-11	JD			-	-	#N/A	#N/A	-				-										544407	Stockpile sample. Total S, TIC	I	West	33171	559030	2
30-Mar-11	KG					#N/A	#N/A					DIA	Diabase									544412	Stockpile sample. Total S, TIC	I	West	33129	559021	3
30-Mar-11	KG					#N/A	#N/A					DIA	Diabase									544413	Stockpile sample. Total S, TIC	I	West	33131	559043	3
30-Mar-11	KG					#N/A	#N/A					DIA	Diabase									544414	Stockpile sample. Total S, TIC, mod ABA	I	West	33143	559052	3
30-Mar-11	KG					#N/A	#N/A					DIA	Diabase									544415	Stockpile sample. Total S, TIC	I	West	33171	559051	3
30-Mar-11	KG					#N/A	#N/A					basalt	Basalt									544416	Stockpile sample. Total S, TIC	I	West	33192	559037	3
8-May-11	MS					#N/A	#N/A															544417	Stockpile sample. Total S, TIC	I	East	35050	559001	
8-May-11	MS					#N/A	#N/A															544418	Stockpile sample. Total S, TIC	I	East	33270	559000	
8-May-11	MS					#N/A	#N/A															544419	Stockpile sample. Total S, TIC	I	East	33244	559012	
8-May-11	MS					#N/A	#N/A															544420	Stockpile sample. Total S, TIC	I	East	33250	559028	
8-May-11	MS					#N/A	#N/A															544421	Stockpile sample. Total S, TIC	I	East	33272	559030	
8-May-11	MS					#N/A	#N/A															544422	Stockpile sample. Total S, TIC	I	East	33269	559018	
8-May-11	KG	05/07/11	18:45	N4990DE	DN-N4990DE-20110507	33659	559383	4990	N	Y	breakthrough round (no face; photo'd)	1p	Basalt	N	N			N		W	N			I	W			
8-May-11	KG	05/07/11	18:45	N4990SP	DN-N4990SP-20110507	33658	559390	4990	Y	Y		1p	Basalt	N	N			N		W	N			I	W			
8-May-11	KG	05/08/11	6:45	N5046RP	DN-N5046RP-20110507	33696	559462	4976	Y	Y		1p	Basalt	N	N			N		W	N			I	W			
9-May-11	MS					#N/A	#N/A															544423	Stockpile sample. Total S, TIC	I	West	33145	559024	
9-May-11	MS					#N/A	#N/A															544424	Stockpile sample. Total S, TIC	I	West	33166	559025	
9-May-11	MS					#N/A	#N/A															544425	Stockpile sample. Total S, TIC	I	West	33183	559025	
9-May-11	MS					#N/A	#N/A															544426	Stockpile sample. Total S, TIC	I	West	33177	559042	
9-May-11	MS					#N/A	#N/A															544427	Stockpile sample. Total S, TIC	I	West	33166	559040	
9-May-11	MS					#N/A	#N/A															544428	Stockpile sample. Total S, TIC	I	West	33150	559036	
21-Jun-11	MS					#N/A	#N/A															544429		I	East	33249	559013	
21-Jun-11	MS					#N/A	#N/A															544430		I	East	33265	559011	
21-Jun-11	MS					#N/A	#N/A															544431		I	East	33285	559020	
21-Jun-11	MS					#N/A	#N/A															544432		I	East	33261	559024	
21-Jun-11	MS					#N/A	#N/A															544433		I	East	33242	559027	
21-Jun-11	MS					#N/A	#N/A															544434		I	East	33250	559043	
21-Jun-11	MS					#N/A	#N/A															544435		I	East	33265	559053	
21-Jun-11	MS					#N/A	#N/A															544436		I	East	33272	559040	

Attachment 2: Laboratory Results

			ALS				Maxxam									
Sample ID	Rock Code	Rock Type	Total S	TIC	TIC/AP	File ref.	Paste pH	Total Sulphur	Sulphate Sulphur	Fizz Rating	Total Carbon	CO2	Mod. NP	TIC	NP/AP	TIC/AP
			%	kgCaCO3/t				%	%		% C	%CO2	kgCaCO3/t	kgCaCO3/t		
542501		Basalt	0.02	29.5	47.3	YW11247144	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
542502		Basalt	0.13	13.6	3.4	YW11247144	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544510	1	Basalt	0.06	4.5	2.4	YW11037333	9.13	0.05	0.03	None	#N/A	0.22	52.3	5.0	33.5	3.2
544511	1	Basalt	0.02	4.5	7.3	YW11041575	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544512	1	Basalt	0.07	6.8	3.1	YW11049562	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544513	1	Basalt	0.1	4.5	1.5	YW11064918	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544514	1	Basalt	0.11	25.0	7.3	YW11049562	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544515	1	Basalt	0.01	6.8	21.8	YW11049561	8.71	0.03	-0.01	Slight	#N/A	0.23	21.0	5.2	22.4	5.6
544516	1	Basalt	0.01	6.8	21.8	YW11049562	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544517	1	Basalt	SFE	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544518	1	Basalt	-0.01	9.1	29.1	YW11049562	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544519	1	Basalt	0.03	27.3	29.1	YW11064918	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544520	1	Basalt	0.03	13.6	14.5	YW11064918	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544521	1	Basalt	0.04	4.5	3.6	YW11064918	9.06	0.04	-0.01	None	#N/A	0.12	14.2	2.7	11.4	2.2
544522	1	Basalt	0.03	4.5	4.8	YW11064918	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544523	1	Basalt	0.02	27.3	43.6	YW11064918	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544524	1	Basalt	0.04	4.5	3.6	YW11064918	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544525	1	Basalt	0.03	6.8	7.3	YW11064918	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544526	1	Basalt	0.02	9.1	14.5	YW11074362	8.59	-0.02	0.01	None	#N/A	0.11	18.3	2.5	29.3	4.0
544527	1	Basalt	0.09	13.6	4.8	YW11074363	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544528	1	Basalt	0.02	6.8	10.9	YW11074363	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544529	1p	Basalt	0.17	15.9	3.0	YW11074363	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544530	1a	Basalt	0.11	20.5	6.0	YW11074363	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544531	1p	Basalt	SFE	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544532	1	Basalt	0.56	13.6	0.8	YW11074362	9.39	0.56	0.01	Slight	#N/A	0.33	36.0	7.5	2.1	0.4
544533	1	Basalt	0.03	11.4	12.1	YW11074363	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544534	1p	Basalt	0.21	38.6	5.9	YW11087186	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544535	1	Basalt	0.28	4.5	0.5	YW11087186	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544536	1	Basalt	0.02	9.1	14.5	YW11087186	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544537	1p	Basalt	0.02	6.8	10.9	YW11087185	8.61	-0.02	-0.01	Slight	#N/A	0.15	18.7	3.4	29.9	5.5
544538	1p	Basalt	0.06	6.8	3.6	YW11087186	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544539	1a	Basalt	0.46	15.9	1.1	YW11087186	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544540	1p	Basalt	0.02	4.5	7.3	YW11087186	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544541	1p	Basalt	0.02	50.0	80.0	YW11087185	8.96	-0.02	-0.01	Moderate	#N/A	2.41	66.6	54.8	106.5	87.6
544542	1	Basalt	0.11	6.8	2.0	YW11087186	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544543	1	Basalt	0.02	9.1	14.5	YW11087186	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544544	1	Basalt	0.16	6.8	1.4	YW11087186	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544545	1	Basalt	0.01	22.7	72.7	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544546	1	Basalt	0.03	36.4	38.8	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544547	1	Basalt	0.06	34.1	18.2	YW11102184	8.83	0.03	-0.01	Strong	#N/A	1.39	47.8	31.6	50.9	33.7
544548	1	Basalt	0.39	20.5	1.7	YW11102184	7.67	0.38	0.01	Moderate	#N/A	0.72	32.3	16.4	2.7	1.4
544549	1	Basalt	0.29	43.2	4.8	YW11102185	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544551	1	Basalt	0.08	18.2	7.3	YW11102185	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544554	1	Basalt	0.06	9.1	4.8	YW11102185	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544555	1	Basalt	0.14	11.4	2.6	YW11102185	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544556	1	Basalt	0.06	11.4	6.1	YW11124642	8.56	0.08	0.01	Slight	#N/A	0.44	37.5	10.0	15.0	4.0
544558	1	Basalt	0.07	4.5	2.1	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544559	1i	Basalt	0.11	4.5	1.3	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544560	1a	Basalt	0.06	15.9	8.5	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544562	1	Basalt	0.06	6.8	3.6	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544563	1	Basalt	0.09	11.4	4.0	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544564	1	Basalt	0.22	9.1	1.3	YW11124641	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544567	1	Basalt	0.6	36.4	1.9	YW11124641	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544570	1p	Basalt	0.13	6.8	1.7	YW11145207	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

			ALS				Maxxam									
Sample ID	**Rock Code**	**Rock Type**	**Total S**	**TIC**	**TIC/AP**	**File ref.**	**Paste pH**	**Total Sulphur**	**Sulphate Sulphur**	**Fizz Rating**	**Total Carbon**	**CO2**	**Mod. NP**	**TIC**	**NP/AP**	**TIC/AP**
			%	**kgCaCO3/t**				**%**	**%**		**% C**	**%CO2**	**kgCaCO3/t**	**kgCaCO3/t**		
544571	1	Basalt	0.08	4.5	1.8	YW11145206	9.01	0.1	-0.01	None	#N/A	0.07	11.3	1.6	3.6	0.5
544572	1p	Basalt	0.05	13.6	8.7	YW11145207	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544573	1p	Basalt	0.83	70.5	2.7	YW11145207	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544574	1p	Basalt	0.02	4.5	7.3	YW11145206	8.13	0.04	-0.01	None	#N/A	0.18	15.0	4.1	12.0	3.3
544575	1a	Basalt	0.06	272.7	145.5	YW11145207	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544576	1p	Basalt	0.24	9.1	1.2	YW11145207	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544577	1p	Basalt	0.18	25.0	4.4	YW11145207	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544578	1a	Basalt	0.2	47.7	7.6	YW11145206	8.47	0.27	0.01	Strong	#N/A	3.37	88.0	76.6	10.4	9.1
544579	1a	Basalt	0.03	4.5	4.8	YW11145207	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544580	1p	Basalt	0.23	77.3	10.8	YW11154751	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544582	1	Basalt	0.1	4.5	1.5	YW11154752	8.92	0.1	<0.01	None	#N/A	0.14	16.0	3.2	5.1	1.0
544583	11c	Basalt	0.13	175.0	43.1	YW11154752	8.16	0.12	0.01	Strong	#N/A	7.47	157.6	169.8	42.0	45.3
544584	1P	Basalt	0.37	372.7	32.2	YW11154752	8.66	0.33	<0.01	Moderate	#N/A	14.78	261.3	335.9	25.3	32.6
544585	1	Basalt	0.03	11.4	12.1	YW11174105	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544586	1	Basalt	0.34	6.8	0.6	YW11174105	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544588	1	Basalt	0.09	6.8	2.4	YW11174105	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544589	1p	Basalt	0.03	9.1	9.7	YW11174105	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544590	1P	Basalt	0.01	36.4	116.4	YW11199301	8.39	-0.02	<0.01	Strong	#N/A	1.91	59.1	43.4	94.5	69.5
544591	1i	Basalt	0.02	4.5	7.3	YW11199300	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544600		Basalt	0.01	13.6	43.6	YW11232161	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544408	12q	Basalt with Qu	0.16	113.6	22.7	YW11037333	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544593	12Q/1P/(	Basalt with qtz	0.03	20.5	21.8	YW11199300	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544596	12Q/1P/(	Basalt with qtz	0.22	63.6	9.3	YW11210333	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544501	DIA	Diabase	0.05	27.3	17.5	YW11001704	8.28	0.04	-0.01	Moderate	#N/A	1.16	33.8	26.4	27.0	21.1
544503	DIA	Diabase	0.01	4.5	14.5	YW11001704	8.48	-0.02	-0.01	None	#N/A	0.13	14.3	3.0	22.9	4.7
544504	11c	Diabase	0.02	4.5	7.3	YW11031973	9.53	0.02	-0.01	None	#N/A	0.16	13.9	3.6	22.3	5.8
544505	11c	Diabase	SFE	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544506	11C	Diabase	0.03	4.5	4.8	YW11031973	9.33	0.02	-0.01	None	#N/A	0.1	14.1	2.3	22.5	3.6
544507	11C	Diabase	0.04	4.5	3.6	YW11031973	7.85	0.03	-0.01	None	#N/A	0.14	11.9	3.2	12.7	3.4
544508	11C	Diabase	SFE	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544550	1/11C	Diabase	0.04	9.1	7.3	YW11102185	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544552	1	Diabase	SFE	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544553	11C/1	Diabase	0.08	29.5	11.8	YW11102185	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544557	11c	Diabase	0.02	4.5	7.3	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544561	11c	Diabase	0.02	4.5	7.3	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544568	11C	Diabase	0.02	4.5	7.3	YW11145206	8.93	0.04	-0.01	None	#N/A	0.09	14.5	2.0	11.6	1.6
544569	11c/1p	Diabase	SFE		#N/A		#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544581	11c	Diabase	0.02	9.1	14.5	YW11154751	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544587	11C	Diabase	0.03	6.8	7.3	YW11174105	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544592	11C	Diabase	0.03	4.5	4.8	YW11199301	9.56	0.02	<0.01	None	#N/A	0.15	13.5	3.4	21.6	5.5
544594	11c	Diabase	SFE				#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544595	11c	Diabase	0.02	4.5	7.3	YW11210333	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544597		Diabase	0.02	11.4	18.2	YW11210334	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544598		Diabase	0.02	4.5	7.3	YW11231228	8.95	-0.02	<0.01	None	0.04	#N/A	13.7	#N/A	21.9	#N/A
544599		Diabase	0.05	6.8	4.4	YW11232161	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544409	CV	Other	0.02	84.1	134.5	YW11037333	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544411	10B	Other	whole rock	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544502	FGD	Other	0.11	113.6	33.1	YW11001704	8.98	0.12	-0.01	Strong	#N/A	5.72	126.1	130.0	33.6	34.7
544509	10B	Other	0.01	11.4	36.4	YW11037333	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

			ICP																																			
Sample ID	**Rock**	**Rock Type**	**Ag**	**Al**	**As**	**Au***	**B**	**Ba**	**Bi**	**Ca**	**Cd**	**Co**	**Cr**	**Cu**	**Fe**	**Ga**	**Hg**	**K**	**La**	**Mg**	**Mn**	**Mo**	**Na**	**Ni**	**P**	**Pb**	**S**	**Sb**	**Sc**	**Se**	**Sr**	**Te**	**Th**	**Ti**	**Tl**	**U**	**V**	**W**	**Zn**
	Code																																						
			ppm	**%**	**ppm**	**ppb**	**ppm**	**ppm**	**ppm**	**%**	**ppm**	**ppm**	**ppm**	**ppm**	**%**	**ppm**	**ppm**	**%**	**ppm**	**%**	**ppm**	**ppm**	**%**	**ppm**	**%**	**ppm**	**%**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**%**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**
542501		Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
542502		Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544510	1	Basalt	0.1	2.88	0.8	1.2	-20	39	-0.1	1.08	0.3	32.8	24	309.7	7.55	12	-0.01	0.43	3	2.74	596	0.2	0.418	39.9	0.054	7.4	0.05	-0.1	8.9	-0.5	35	-0.2	0.4	0.187	-0.1	-0.1	194	-0.1	156
544511	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544512	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544513	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544514	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544515	1	Basalt	-0.1	2.31	1.2	1	-20	8	-0.1	1.04	-0.1	26.2	14	164.1	5.95	12	-0.01	0.04	6	2.57	1147	-0.1	0.188	19.9	0.047	12.8	-0.05	-0.1	7.1	-0.5	11	-0.2	0.5	0.241	-0.1	0.1	222	-0.1	93
544516	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544517	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544518	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544519	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544520	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544521	1	Basalt	0.1	2.4	1.7	2.2	98	17	-0.1	1.17	0.2	22.3	55	188.3	4.39	9	-0.01	0.23	2	2.11	990	0.3	0.294	37.8	0.035	34.3	-0.05	-0.1	7.1	-0.5	23	-0.2	0.2	0.18	-0.1	-0.1	122	-0.1	214
544522	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544523	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544524	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544525	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544526	1	Basalt	-0.1	1.53	1.6	6.7	-20	5	-0.1	0.98	-0.1	18.1	4	60.8	6.35	13	-0.01	0.04	6	1.28	606	0.5	0.208	1.5	0.09	1.2	-0.05	-0.1	6.2	-0.5	8	-0.2	0.7	0.287	-0.1	-0.1	72	-0.1	23
544527	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544528	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544529	1p	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544530	1a	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544531	1p	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544532	1	Basalt	0.5	2.66	2.9	0.9	-20	16	0.1	1.23	0.4	36	3	37.8	9.14	18	-0.01	0.12	6	2.3	1187	0.4	0.246	2.1	0.095	84.8	0.52	0.2	10.1	0.7	10	-0.2	0.6	0.218	-0.1	-0.1	65	-0.1	251
544533	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544534	1p	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544535	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544536	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544537	1p	Basalt	-0.1	1.57	0.7	2.4	-20	26	0.1	0.88	0.2	18.5	15	55	6.52	12	-0.01	0.17	5	1.18	548	1	0.149	2	0.1	1.5	-0.05	-0.1	4.9	-0.5	11	-0.2	0.7	0.211	-0.1	0.1	77	-0.1	85
544538	1p	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544539	1a	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544540	1p	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544541	1p	Basalt	-0.1	1.56	-0.5	2.9	-20	6	-0.1	2.48	-0.1	17.6	12	114.8	6.6	14	0.03	0.06	6	1.55	634	0.5	0.13	3.4	0.089	0.2	-0.05	-0.1	2.7	-0.5	21	-0.2	0.5	0.162	-0.1	-0.1	73	-0.1	26
544542	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544543	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544544	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544545	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544546	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544547	1	Basalt	0.1	1.85	0.7	3	-20	28	-0.1	1.88	-0.1	15.7	30	271	4.72	10	0.01	0.19	4	1.84	478	0.2	0.19	20.1	0.091	4.8	-0.05	-0.1	6.2	-0.5	29	-0.2	0.4	0.139	-0.1	-0.1	141	-0.1	46
544548	1	Basalt	0.6	3.16	10.6	5	-20	76	0.8	1.21	0.2	65.7	4	797.9	9.14	17	0.01	0.44	5	2.74	1121	0.3	0.102	4.8	0.108	79.7	0.85	-0.1	11.3	0.8	11	0.3	0.5	0.169	0.2	-0.1	80	-0.1	209
544549	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544551	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544554	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544555	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544556	1	Basalt	0.2	3.37	-0.5	5.9	29	49	-0.1	1.53	0.1	28.4	84	512.3	5.44	10	-0.01	0.61	4	3.09	1162	0.2	0.225	69.9	0.02	26.7	0.07	-0.1	9.4	0.5	44	-0.2	0.1	0.228	-0.1	-0.1	126	-0.1	133
544558	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544559	1i	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544560	1a	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544562	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544563	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544564	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544567	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544570	1p	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Attachment 2 - Laboratory Results

			ICP																																				
Sample ID	**Rock**	**Rock Type**	**Ag**	**Al**	**As**	**Au***	**B**	**Ba**	**Bi**	**Ca**	**Cd**	**Co**	**Cr**	**Cu**	**Fe**	**Ga**	**Hg**	**K**	**La**	**Mg**	**Mn**	**Mo**	**Na**	**Ni**	**P**	**Pb**	**S**	**Sb**	**Sc**	**Se**	**Sr**	**Te**	**Th**	**Ti**	**Tl**	**U**	**V**	**W**	**Zn**
	Code																																						
			ppm	**%**	**ppm**	**ppb**	**ppm**	**ppm**	**ppm**	**%**	**ppm**	**ppm**	**ppm**	**ppm**	**%**	**ppm**	**ppm**	**%**	**ppm**	**%**	**ppm**	**ppm**	**%**	**ppm**	**%**	**ppm**	**%**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**%**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**
544571	1	Basalt	0.1	2.36	-0.5	3.5	-20	14	-0.1	0.62	-0.1	28.7	89	124.9	3.76	5	-0.01	0.16	3	2.1	563	0.2	0.104	66.1	0.019	4.9	0.09	-0.1	3.5	-0.5	19	-0.2	0.1	0.149	-0.1	-0.1	78	-0.1	40
544572	1p	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544573	1p	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544574	1p	Basalt	-0.1	2.55	-0.5	6.5	-20	23	-0.1	1.68	-0.1	17.3	13	236.7	3.84	9	-0.01	0.14	4	0.64	426	0.2	0.472	21.5	0.052	1.8	-0.05	-0.1	2.4	-0.5	46	-0.2	0.3	0.183	-0.1	-0.1	227	-0.1	63
544575	1a	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544576	1p	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544577	1p	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544578	1a	Basalt	-0.1	3.01	11.1	3	-20	12	-0.1	2.7	-0.1	31.8	3	95.7	7.29	14	-0.01	0.15	4	2.11	1146	0.2	0.131	14.7	0.064	4.2	0.26	0.1	11	-0.5	19	-0.2	0.3	0.159	-0.1	-0.1	180	-0.1	56
544579	1a	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544580	1p	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544582	1	Basalt	-0.1	2.27	1.7	2.3	-20	30	-0.1	1.02	-0.1	22	79	59.5	4.51	9	-0.01	0.24	4	1.76	507	0.2	0.137	38.3	0.054	2	0.1	-0.1	4.7	-0.5	33	-0.2	0.3	0.248	0.1	-0.1	102	-0.1	28
544583	11c	Basalt	-0.1	4.45	-0.5	10.7	-20	16	-0.1	4.71	-0.1	42.2	5	96.1	10.92	15	-0.01	0.09	3	2.09	1474	-0.1	0.005	21.2	0.071	0.5	0.12	-0.1	16.2	-0.5	29	-0.2	0.2	0.008	-0.1	-0.1	187	-0.1	134
544584	1P	Basalt	0.2	2.09	31.1	31.2	-20	8	0.1	6.38	0.8	42.4	62	122.6	9.38	5	-0.01	0.08	1	2.5	2306	0.3	0.092	93.3	0.02	1.2	0.34	-0.1	13.1	0.6	27	0.2	0.1	0.001	-0.1	-0.1	71	-0.1	286
544585	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544586	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544588	1	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544589	1p	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544590	1P	Basalt	0.5	4.2	14.7	31.6	562	7	1.7	4.38	0.2	32.7	127	75.6	5.71	12	-0.01	0.06	1	2.51	1997	0.1	0.129	83	0.018	3.5	-0.05	-0.1	16.2	-0.5	21	-0.2	-0.1	0.163	-0.1	#N/A	139	-0.1	174
544591	1i	Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544600		Basalt	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544408	12q	Basalt with Qua	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544593	12Q/1P/(	Basalt with qtz	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544596	12Q/1P/(	Basalt with qtz	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544501	DIA	Diabase	-0.1	2.43	0.7	4.4	-20	17	-0.1	2.04	-0.1	23.1	38	252.2	4.54	9	-0.01	0.13	4	1.01	561	0.2	0.32	33.4	0.052	5.7	-0.05	-0.1	4.3	-0.5	38	-0.2	0.4	0.246	-0.1	-0.1	244	-0.1	78
544503	DIA	Diabase	-0.1	2.16	-0.5	5	-20	18	-0.1	1.36	0.1	22.3	8	267.5	4.3	9	-0.01	0.14	4	0.72	373	0.3	0.446	38	0.051	2.1	-0.05	-0.1	2.2	-0.5	45	-0.2	0.3	0.292	-0.1	-0.1	290	-0.1	67
544504	11c	Diabase	-0.1	2.2	-0.5	7.0	-20.0	19.0	-0.1	1.5	-0.1	19.8	8.0	282.0	4.3	9.0	0.0	0.2	4.0	0.6	383.0	0.4	0.4	26.7	0.1	1.5	-0.1	-0.1	2.9	-0.5	47.0	-0.2	0.4	0.315	-0.1	-0.1	308	-0.1	67
544505	11c	Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544506	11C	Diabase	0.1	1.88	0.6	6.1	-20	28	-0.1	1.3	0.1	19.5	4	300.6	4.61	9	-0.01	0.18	4	0.61	367	0.3	0.372	17.8	0.061	3.8	-0.05	-0.1	3.2	-0.5	45	-0.2	0.4	0.244	-0.1	-0.1	398	-0.1	87
544507	11C	Diabase	0.2	1.23	-0.5	15.7	-20	39	-0.1	0.99	0.2	24.9	2	436.5	6.37	11	-0.01	0.21	5	0.44	476	0.4	0.246	19.1	0.073	6.4	-0.05	-0.1	3.1	-0.5	37	-0.2	0.5	0.315	-0.1	-0.1	610	-0.1	143
544508	11C	Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544550	1/11C	Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544552	1	Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544553	11C/1	Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544557	11c	Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544561	11c	Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544568	11C	Diabase	0.2	2.45	-0.5	5.6	-20	36	-0.1	1.55	0.1	19.9	5	333.9	4.01	9	-0.01	0.19	6	0.69	375	0.3	0.455	27.9	0.066	2.3	-0.05	-0.1	1.7	-0.5	47	-0.2	0.5	0.159	-0.1	0.2	275	-0.1	87
544569	11c/1p	Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544581	11c	Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544587	11C	Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544592	11C	Diabase	0.1	2.1	-0.5	9.7	-20	24	-0.1	1.44	-0.1	17.4	13	312.5	4.25	9	-0.01	0.2	5	0.63	430	0.3	0.437	19.3	0.066	2.8	-0.05	-0.1	4.1	-0.5	51	-0.2	0.4	0.234	-0.1	#N/A	292	-0.1	73
544594	11c	Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544595	11c	Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544597		Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544598		Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544599		Diabase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544409	CV	Other	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544411	10B	Other	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544502	FGD	Other	-0.1	3.31	1.2	-0.5	-20	14	-0.1	4.78	0.2	37.9	115	141	6.11	9	-0.01	0.04	3	2.32	1244	0.3	0.033	54	0.032	1.7	0.12	-0.1	10.4	-0.5	27	-0.2	0.3	0.239	-0.1	-0.1	185	-0.1	86
544509	10B	Other	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Attachment 3: Shake Flask Extraction Results

SFE											
Maxxam ID	Sample wt.	DI Vol	pH (24h)	EC (24h)	SO4	Acidity (to pH 8.3)	Acidity (pH 4.5)	Total Alkalinity (to pH 4.5)	Bicarbonate (HCO3)	Carbonate (CO3)	Hydroxide (OH)
			(filtered)	*(filtered)*	*(filtered)*	*(filtered)*		*(filtered)*	*(filtered)*	*(filtered)*	*(filtered)*
	g	ml	pH Units	µS/cm	mg/L	mg CaCO3/L	mg CaCO3/L	mg CaCO3/L	mg HCO3/L	mg CO3/L	mg OH/L
544517	250	750	8.23	2630	6.5	2.5		17	20	-0.5	-0.5
544531	250	750	8.08	5980	26	0.9		12	14	-0.5	-0.5
AC4449	250	750	7.83	4310	12	5		8.8	11	-0.5	-0.5
AC4450	250	750	8.08	5900	4	13		13	16	-0.5	-0.5
544552	250	750	8.18	3490	12	#N/A		#N/A	13	-0.5	-0.5
544569	250	750	8.28	2360	12	2.7		17	21	-0.5	-0.5
544594	250	750	8.02	3710	9.1	12.9	-0.5	#N/A	21.8	-0.5	-0.5

Attachment 3 - Shake Flask Extraction Results

SFE							
Maxxam ID	Nitrate plus Nitrite	Nitrite	Nitrate	Ammonia	Cl	TDS	Hardness
	(filtered)	*(filtered)*	*(filtered)*	*(filtered)*	*(filtered)*	*(filtered)*	*(filtered)*
	mgN/L	mgN/L	mgN/L	mgN/L	mg/L	mg/L	mgCaCO3/L
544517	40	0.016	39.984	34	580	1200	614
544531	10	0.025	9.975	10	1400	2100	954
AC4449	17.4	0.044	17.356	9.3	1200	2300	1570
AC4450	46	0.039	45.961	37	1700	3100	2270
544552	14.9	0.209	14.691	7.9	1300	2400	1660
544569	35	0.01	34.99	21	540	2000	549
544594	53	0.009	52.991	#N/A	1300	2700	1520

Attachment 3 - Shake Flask Extraction Results

SFE																							
Maxxam ID	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cs	Cr	Co	Cu	Fe	La	Pb	Li	Mg	Mn	Hg	Mo	Ni	P
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
544517	0.092	0.00012	0.00027	0.038	-1E-05	-5E-06	0.09	4.2E-05	227	0.00219	-0.0001	0.00029	0.00128	0.006	-5E-05	0.00012	0.0217	11.6	0.0743	-1E-05	0.00126	0.00021	0.017
544531	0.104	0.0002	0.0005	0.0913	-5E-05	-3E-05	-0.3	0.00009	357	0.0004	-0.0005	0.00079	0.0029	0.024	-0.0003	0.0002	0.027	14.8	0.0963	-5E-05	0.002	0.0002	0.02
AC4449	0.098	0.0002	0.0005	0.0597	-5E-05	-3E-05	0.5	0.00009	620	0.0014	-0.0005	0.00032	0.0008	0.02	-0.0003	-3E-05	0.343	5	0.058	-5E-05	0.0066	0.0007	-0.01
AC4450	0.052	0.0001	0.0005	0.114	-5E-05	-3E-05	1.2	0.00015	903	0.0068	-0.0005	0.00123	0.0011	0.029	-0.0003	-3E-05	0.775	3.7	0.0682	-5E-05	0.0057	0.0007	-0.01
544552	0.079	0.0001	0.0004	0.235	-5E-05	-3E-05	-0.3	-3E-05	639	0.002	-0.0005	0.00036	0.0027	0.01	-0.0003	0.00036	0.038	16.7	0.128	-5E-05	0.008	0.0006	0.01
544569	0.064	0.0001	0.0002	0.113	-5E-05	-3E-05	-0.3	0.00005	200	0.0007	-0.0005	0.00052	0.0012	0.009	-0.0003	0.00006	0.014	11.9	0.136	-5E-05	0.0089	0.0004	0.01
544594	0.033	0.0001	0.0004	0.13	-5E-05	-3E-05	-0.3	0.00016	591	0.0032	-0.0005	0.00119	0.0044	0.015	-0.0003	0.00016	0.022	10.1	0.111	-5E-05	0.0034	0.0008	0.07

SFE																					
Maxxam ID	K	Rb	Se	Si	Ag	Na	Sr	S	Te	Tl	Th	Sn	Ti	W	U	V	Zn	Zr	Anions	Cations	Balance %
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
544517	13.5	0.0219	0.00022	0.6	-5E-06	133	0.383	-10	-2E-05	1.8E-05	-5E-06	0.00003	-0.0005	0.00003	0.00001	0.0007	0.0044	-0.0001	17.5	18.4	-2.7
544531	17.4	0.0145	0.0009	0.6	-3E-05	272	0.698	-50	-0.0001	0.00004	-3E-05	0.00014	-0.003	0.00006	0.00074	-0.001	0.0053	-0.0005	40.4	31.3	12.6
AC4449	16	0.033	0.0003	0.9	-3E-05	77.5	5.29	-50	-0.0001	0.00022	-3E-05	0.00025	0.003	0.00011	0.00004	-0.001	-0.0005	-0.0005	34.5	35.1	-0.91
AC4450	25.8	0.0734	0.0003	0.9	-3E-05	96.4	10.9	-50	-0.0001	0.00091	-3E-05	0.0001	0.004	0.00006	0.00002	-0.001	-0.0005	-0.0005	49.0	50.2	-1.26
544552	19.1	0.0261	0.0006	0.5	-3E-05	127	0.8	-50	-0.0001	0.00005	-3E-05	-5E-05	-0.003	0.00032	0.00004	-0.001	0.0016	-0.0005	37.09	39.2861	-2.875792
544569	12.8	0.022	0.0003	1	-3E-05	143	0.381	-50	-0.0001	0.00002	-3E-05	-5E-05	-0.003	0.00053	0.00004	0.006	0.0015	-0.0005	16.366	17.5167	-3.396596
544594	22.6	0.0472	0.0004	1	-3E-05	182	0.909	-50	-0.0001	0.00009	-3E-05	0.00011	-0.003	0.00037	0.00002	0.001	0.0244	-0.0005	38.022	38.8225	-1.041431

Attachment 4: Stockpile Sample Results

	ALS				Maxxam									
Sample ID	Total S	TIC	TIC/AP	File ref.	Paste pH	Total Sulphur	Sulphate Sulphur	Fizz Rating	Total Carbon	CO2	Mod. NP	TIC	NP/AP	TIC/AP
	%	kgCaCO3/t				%	%		% C	%CO2	kgCaCO3/t	kgCaCO3/t		
544401	0.03	4.5	4.8	YW11031973	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544402	0.09	72.7	25.9	YW11031973	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544403	0.03	4.5	4.8	YW11031973	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544404	0.25	197.7	25.3	YW11031973	8.75	0.21	-0.01	Slight	#N/A	9.97	216.6	226.6	33.0	34.5
544405	0.04	4.5	3.6	YW11031973	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544406	0.04	9.1	7.3	YW11031973	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544407	0.04	4.5	3.6	YW11031973	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544410	0.87	47.7	1.8	YW11037333	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544412	0.03	6.8	7.3	YW11064918	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544413	0.02	4.5	7.3	YW11064918	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544414	0.03	4.5	4.8	YW11064918	8.56	0.03	-0.01	None	#N/A	0.08	11.19402985	1.8	11.9	1.9
544415	0.02	4.5	7.3	YW11064918	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544416	0.03	4.5	4.8	YW11064918	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544417	0.02	4.5	7.3	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544418	0.1	9.1	2.9	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544419	-0.01	11.4	36.4	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544420	0.02	6.8	10.9	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544421	0.03	6.8	7.3	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544422	0.03	9.1	9.7	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544423	0.02	6.8	10.9	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544424	0.05	6.8	4.4	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544425	0.2	9.1	1.5	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544426	0.22	6.8	1.0	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544427	0.06	52.3	27.9	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544428	0.02	9.1	14.5	YW11092610	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544429	0.09	4.5	1.6	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544430	0.02	4.5	7.3	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544431	0.02	4.5	7.3	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544432	0.02	9.1	14.5	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544433	0.01	6.8	21.8	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544434	0.04	6.8	5.5	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544435	0.01	4.5	14.5	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544436	0.07	4.5	2.1	YW11121871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544565	0.07	68.2	31.2	YW11124641	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

	ICP																																			
Sample ID	Ag	Al	As	Au*	B	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	Hg	K	La	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sc	Se	Sr	Te	Th	Ti	Tl	U	V	W	Zn
	ppm	%	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
544401	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544402	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544403	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544404	-0.1	3.44	1.8	1.6	-20	3	-0.1	8.8	-0.1	39.1	24	103	7.56	11	-0.01	-0.01	2	2.14	1588	0.2	0.01	31.6	0.035	0.6	0.2	-0.1	8.6	-0.5	52	-0.2	0.2	0.169	-0.1	-0.1	194	-0.1	103
544405	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544406	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544407	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544410	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544412	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544413	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544414	-0.1	1.12	0.9	6.9	-20	23	-0.1	0.76	-0.1	25.8	20	357.8	5.56	8	-0.01	0.16	4	0.56	431	1	0.19	36.8	0.059	2	-0.05	-0.1	1.6	-0.5	22	-0.2	0.4	0.347	-0.1	-0.1	503	-0.1	89
544415	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544416	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544417	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544418	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544419	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544420	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544421	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544422	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
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544425	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
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544431	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
544432	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
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544565	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Appendix C
2011 Hope Bay Seepage Monitoring Program

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Memo

To:	File	**Date:**	March 29, 2012
		From:	Ashley Landriault Kelly Sexsmith
		Project #:	1CH008.057
Subject:	2011 Hope Bay Seepage Monitoring Program		

1 Introduction

As part of the verification, monitoring and quarry management plans for the Hope Bay Project, Hope Bay Mining Ltd. (HBML) are required to monitor seep surveys around the roads, airstrip, camp area and quarries. SRK was asked to complete the seepage surveys and annual reports in 2009, 2010 and 2011. Results of the most recent seep survey are reported in the *2010 Waste Rock and Quarry Monitoring Report* (SRK 2011).

This memo presents results of the 2011 freshet seep survey. The seepage program was completed in accordance with conditions outlined in Part D “Conditions applying to Construction” Item 21 of Water License 2AM-DOH0713 (Nunavut Water Board 2007) and *the Quarry A, B & D Management and Monitoring Plan, Revision 01* (SRK 2010).

2 Methods

2.1 Seep Survey and Sample Collection

The seep survey was carried out between June 5th and June 16th, 2011. Seep survey locations were established by walking the toes of all roadways, building pads and quarry sites along the Doris-North and Doris-Windy roads (Figures 1 to 10). The samples used as reference points (not subject to mine influences) were collected from the same points as the 2010 Seep Survey (in the vicinity of the Doris Windy Road, Figures 4, 7 and 10).

Field measurements were taken at all locations where water was observed flowing into and out of construction rock material including true seeps where precipitation runoff and snowmelt came into contact with rock along the roadways, building pads and quarry sites. Electrical conductivity (EC) and pH were measured at each of these locations at the time of monitoring. Reference points were also established in areas where no construction rock was present.

A total of 99 sites were established. A minimum of 10% of the total sample set including to any sites with elevated pH (pH>8.0) were submitted for laboratory analysis. 26 samples were sent to an external laboratory for analysis. Three duplicates and two field blanks were collected and submitted for laboratory analysis to provide quality control.

2.2 Laboratory Analysis

Samples were submitted to ALS-Chemex in Vancouver BC for analysis of nutrients (ammonia, nitrate and chloride), routine parameters (pH, alkalinity and sulphate) and dissolved metals by ICP-MS.

3 Results and Discussion

3.1 Field Observations

A complete set of field measurements is provided in Attachment A. Due to an early warming trend, the 2011 field program was completed earlier in the year than the 2010 program. However, upon arrival at the site, weather conditions had cooled, and were colder than the previous survey, with occasional snow and freezing rain. Despite the colder temperatures, the seeps were still flowing. Active construction was taking place in the vicinity of Roberts Bay with additional placement of rock, as well as widening and lengthening of the airstrip, limiting access in some areas.

3.2 Field Measurements

Table 1 outlines the mean and median statistics of conductivity measures and pH levels at each of the areas sampled. The median pH levels measured across all sites were neutral, between 7.5 and 7.8 and none were acidic or strongly alkaline. Conductivity varied by area:

- The Mine Area samples had a median conductivity of 1569 µS/cm. This area had the highest measures of conductivity; a total of ten of the 20 sites visited had conductivity measurements over 2000 µS/cm. All of these samples were in close proximity to the pollution control pond and waste rock pile.

- The conductivity measurements in the Doris North Areas had a median of 233 µS/cm. One high conductivity sample (TLR05 with a value of 3453 µS/cm) was observed in this area, this sample was collected from a ponded area on the Tail Lake Dam aprons.

- Doris Windy Road samples had a median conductivity of 128 µS/cm.

- The reference points that were measured as representative of conditions outside the influence of mining operations, had the lowest conductivity values with a median of 43 µS/cm.

Table 1: Mean and Median EC and Field pH of Seepage Sites; Grouped According to Area

Area	Electrical Conductivity (EC)		Field pH	
	Mean	Median	Mean	Median
Mine Area (n=20)	2020	1569	7.7	7.6
Doris North Areas (n=53)	327	233	7.8	7.8
Doris Windy (n=23)	184	128	7.6	7.5
Reference Points (n=3)	47	43	7.6	7.7

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3.3 Laboratory Analysis

A summary of water quality analyses is presented in Table 2. Complete results are presented in Attachment B. All parameters were compared to the Canadian Council of Ministers of the Environment (CCME) water quality guidelines for the protection of aquatic life to screen for elevated parameters.

3.3.1 Mine Area

Eight samples from the Mine Area were submitted for laboratory analysis (Table 2). The pH levels of these samples were in the neutral range (between 7.6 and 8.2). Ammonia, chloride and nitrate in five of the eight samples were elevated in comparison to CCME guidelines. Copper in six of the eight samples was also elevated in comparison to the CCME guidelines.

Table 2: Summary of Water Quality Results

Group	Sample ID	Field pH	Flow	Alkalinity	SO_4	Ammonia	Nitrate	Chloride	Al	As	Cd	Cu	Pb	Ni	Zn
	Units	s.u.	L/s	mg $CaCO_3$/L	mg/L	mg N/L	mg N/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	CCME Guideline	6.5 - 9				3.9*	2.9	CWQG 128mgCl/L	0.1	0.005	0.000017	0.002 - 0.004	0.001	0.025	0.03
Mine Area	DC01	7.4	1.00	76	38	**23**	**41**	**1040**	<0.015	<0.0030	<0.000085	**0.012**	<0.00025	0.00330	<0.015
	DC02	7.6	ponded	127	20	1.4	2.8	98.0	0.01	<0.0035	<0.000017	0.0032	<0.000050	0.00070	<0.0030
	DC04	7.9	0.5 to 1	109	12	0.30	1.3	36.9	0.01	0.00063	<0.000017	0.0033	0.000061	0.00059	<0.0030
	DC07	7.5	5-10	69	36	**24**	**44**	**1090**	<0.015	<0.0030	<0.000085	**0.015**	<0.00025	0.0031	<0.015
	DC08	7.5	0.50	70	39	**27**	**50**	**1220**	<0.030	<0.0020	<0.00017	**0.014**	<0.00050	<0.0050	<0.030
	DC09	7.4	0.50	50	28	**35**	**63**	**1660**	<0.030	<0.0040	0.00018	**0.0097**	<0.00050	0.0067	<0.030
	DC14	7.5	10-15	73	34	**18**	**36**	**923**	<0.015	<0.0020	<0.000085	**0.0064**	<0.00025	0.0029	<0.015
	DC16	8.0	0.02-0.1	79	5.6	0.23	0.52	21	0.02	0.00052	<0.000017	**0.0085**	<0.000050	0.0011	<0.0030
Doris North Areas	DC24	8.0	5.00	79	2.0	0.09	0.10	13	0.09	0.0011	<0.000050	**0.0047**	0.0001	0.00087	<0.0030
	DC25	8.2	1-5	87	1.8	0.04	0.05	14	0.02	0.00097	<0.000050	**0.0049**	<0.000050	0.00072	<0.0030
	DC52	8.2	3-4	47	4.7	0.57	1.4	16	0.02	0.00016	<0.000050	0.0031	<0.000050	<0.00050	<0.0030
	DC53	8.4	ponded	108	11	0.34	1.2	13	0.04	0.0020	<0.000050	0.0007	<0.000050	<0.00050	<0.0030
	DC55	7.7	5-10	93	2.5	0.06	0.04	10	0.01	0.00039	<0.000050	0.0031	<0.000050	<0.00050	<0.0030
	DC57	7.7	0.1-0.5	140	4.0	0.17	0.02	19	0.01	0.0010	<0.000050	0.0024	<0.000050	0.00067	<0.0030
	DC61	7.8	ponded	117	26	0.71	2.7	81	0.02	0.00055	<0.000050	0.0028	<0.000050	<0.00050	<0.0030
	RB03	7.8	1.00	114	7.8	0.32	0.61	49	0.01	0.0013	<0.000017	**0.0060**	0.000053	0.00080	<0.0030
	TLR10	8.2	15-20	87	3.3	0.07	0.39	13.0	0.02	0.00044	<0.000050	**0.0060**	0.000073	0.00053	<0.0030
	TLR8	8.4	0.5-1	98	4.2	0.52	1.8	33	0.02	0.00064	<0.000050	**0.0046**	0.000087	0.0024	<0.0030
	TLR5	7.9	ponded	229	**193**	**29**	**82**	**685**	<0.015	<0.0035	<0.00025	**0.017**	<0.00025	<0.0025	<0.015
Doris Windy Road	DW12	7.7	1.00	40	1.6	0.11	0.02	13	0.01	0.00016	<0.000050	0.0024	<0.000050	0.00075	<0.0030
	DW13	7.5	1.00	40	1.6	0.10	0.02	12	0.01	0.00022	<0.000050	0.0027	<0.000050	0.00083	<0.0030
	DW24	7.5	~1	24	5.9	0.26	0.92	7.6	0.04	0.00021	<0.000050	0.0016	0.000083	0.00099	0.0035
	DW29	8.7	~10	17	0.58	0.08	0.27	5.6	0.02	<0.00010	<0.000050	0.0010	<0.000050	<0.00050	<0.0030
Reference Points	Reference 1	7.2	~10	15	<0.50	0.02	<0.0050	4.7	0.03	0.00018	<0.000050	0.0011	<0.000050	0.0025	0.0042
	Reference 2	8.0	~5	13	<0.50	0.01	<0.0050	5.6	0.01	0.00011	<0.000050	0.0011	<0.000050	<0.00050	0.0033
	Reference 3	7.7	~5	13	0.68	0.01	<0.0050	3.8	0.01	<0.00010	<0.000050	0.0014	<0.000050	<0.00050	0.0039

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Note: CWQG- Canadian Water Quality Guideline:

Values in **bold** indicates value exceeds respective water quality guideline.

*Guideline for Ammonia is pH and Temperature dependant. Seepage waters had an average temperature of 4ºC at time of sampling. This guideline value is approximate.

3.3.2 Doris North Areas

Eleven samples from the Doris North Areas were submitted for laboratory analysis (Table 2) .The pH values of the samples were very slightly alkaline (between 8 and 8.3). Six samples had slightly elevated levels of copper compared to the CCME guidelines. One sample, TLR5 was elevated in more parameters (ammonia, nitrate, sulphate, and chloride as well as copper). This sample was collected from a ponded area on the Tail Lake Dam aprons (Figure 5) and may not be representative true seepage from this area.

3.3.3 Doris Windy Road

Four samples from the Doris Windy Road were submitted for laboratory analysis (Table 2). None of the dissolved metal concentrations exceeded the CCME guidelines.

3.3.4 Reference Point Samples

All three Reference Point Samples were submitted for laboratory analysis.

Dissolved metal concentrations are generally similar to those measured at other seepage locations, it should be noted that the copper concentrations did not exceed the guidelines set by the CCME. These results are consistent with the 2010 reference point samples, taken from the same locations.

3.4 Quality Assurance and Quality Control

Three duplicates and two field blanks were collected to ensure quality control. Duplicate results were within the accepted range for all parameters. Analysis of the field blanks (DC15 and DC66) indicated that most parameters were below detection limits.

Chloride was included as an analysed parameter in the 2011 data set, unlike in the 2010 survey where chloride was not analyzed and the cation-anion balance was skewed. Ion balances in 2011 indicated that the samples had cation-anion ratios that were within normal ranges

Measured values for total dissolved solids (TDS) demonstrate a strong positive correlation with values for conductivity for all of the points except TLR5, again this sample is suspected to be non-representative of the true seepage in this area. It had high conductivity (3453 µS/cm) that did not correspond to the more moderate level of TDS (1910 mg/L).

3.5 Comparison to Previous Seep Surveys

Historical summary statistics of EC and pH for all sites except the Mine Area are provided in Table 3. The electrical conductivity of seepage waters across the site has decreased continuously since 2009. The values in 2009 and 2010 are slightly elevated in comparison to 2011. During the 2010 survey it was observed that dust at site during construction could have resulted in higher EC values. Comparisons of this type are not possible for the Mine Area because the waste rock was not present in this area during prior surveys.

Very few of the 2011 seepage sites were in the exact same locations as the 2010 seepage sites (as indicated in Figures 1 to 7). Those sample sites that did overlap presented little indication of change between 2010 and 2011. Two locations that were submitted for laboratory analysis in both years were compared across all parameters. The 2011 results were within an order of magnitude of the 2010 results. Only one value, manganese in sample DW12 had increased from 0.0003 mg/L to 0.02 mg/L. An additional five samples, that were not submitted to the lab, but also shared locations with five historical sites, were compared across pH and EC results to screen for change in these parameters. No appreciable differences were observed among pH and EC results from 2010 to 2011.

Table 3: Historical Summary Statistics of EC and pH of Areas Excluding Mine Area

Historical Data Units	Electrical Conductivity (EC) µS/cm			pH		
Year	**2009**	**2010**	**2011**	**2009**	**2010**	**2011**
p25	195	162	104	7.5	7.3	7.6
Mean	374	336	273	7.6	7.4	7.7
Median	269	197	188	7.8	7.5	7.8
p95	896	671	554	8.3	8.1	8.2
Percent Samples >500 µS/cm	23%	43%	19%			

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3.6 Comparison of Results for Samples by pH Groupings

The current licence condition requires samples to be collected at all sites with a field pH greater than 8. A comparison of results for samples with field pHs greater than or less than 8 was made to determine whether there are any differences between these two groups of samples that would justify this condition.

Nine samples in the Doris North Area had field pH values between 7 and 8. Six samples in the Doris North Area had field pH values above 8. Figure 11 to Figure 14 illustrate that regardless of pH these groups of samples yielded very similar laboratory results for ammonia, sulphate, chloride, and copper. The results indicate that a small number of samples in the pH 7 to 8 grouping had higher concentrations of these parameters, but this is likely because Sample TLR05 was included in this group. As previously discussed this sample is somewhat anomalous, and may not be representative of true seepage in this area.

Samples from the Mine Area had field pH values between 7 and 8. Figure 11 to 14 illustrate the comparison between these parameters in the Mine Area samples and the samples from the Doris North Area. Ammonia, chloride, copper, nitrate and sulphate concentrations in the Mine Area were higher than in the Doris North Areas, but these differences were related to the presence of the waste rock rather than differences in pH.

4 Conclusions and Recommendations

The results of the 2011 sampling program indicate that there were no major issues with respect to ML/ARD in seepage associated with the infrastructure at Hope Bay. Results were comparable to that measured in previous years. Seepage in the Mine Area had elevated calcium, chloride, nitrate and ammonia concentrations in comparison to the infrastructure areas. These have been attributed to flushing of drilling brines and blasting residues from the waste rock. HBML have implemented additional seepage control measures in this area to minimize seepage losses from this area in future.

The water licence specifies that seep surveys need to be completed for a period of 3 years following construction. Although this is the third year that comprehensive surveys have been completed, additional construction has occurred and further surveys should be continued in the areas that have had new construction following the 2009 survey. In particular, seeps in the vicinity of the Mine Area, the pollution control pond and the waste rock pile should continue to be monitored.

In reference to Part D “Conditions applying to Construction” Item 21 of Water License 2AM-DOH0713 (Nunavut Water Board 2007), terms for selection of samples to be submitted for secondary analysis should be amended in the monitoring plan and requirements from analyzing all samples above pH 8 to submitting a representative set of samples regardless of measured field pH and EC values. There does not appear to be a trend in any of the laboratory parameters that is related to elevated pH levels.

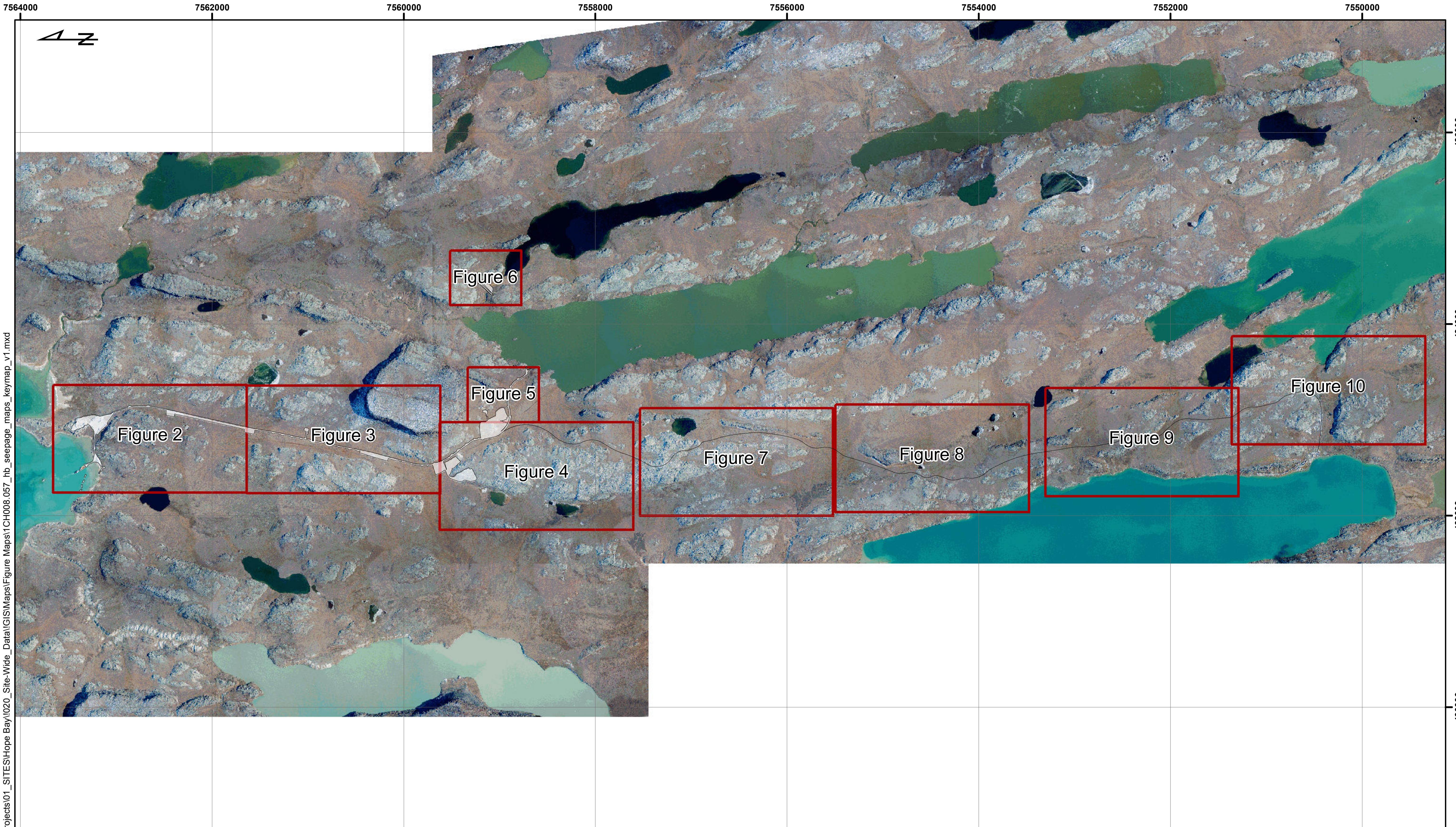
5 References

Canadian Council of the Environment 2007. Canadian Water Quality Guidelines for the Protection of Aquatic Life Update 7.0. September 2007.

Nunavut Water Board, 2007. Licence No: 2AM-DOH0713. September 19, 2007.

SRK Consulting, 2010. Quarry A, B & D Management and Monitoring Plan. Report 1CH008.038.002 prepared by SRK Consulting (Canada) Ltd. for Hope Bay Mining Ltd. October 2010.

Figures



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srk consulting

Job No: 1CH008.057

Filename: 1CH008.057_hb_seepage_maps_keymap_v1

NEWMONT The Gold Company

2011 Quarry Rock Seepage Monitoring

Hope Bay Gold Project

Seepage Survey Locations
Key Map

Date:	Approved:	Figure:
February 2012	-	1

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Legend

2011 Seepage

▲ Sampled

▲ Not Sampled

2010 Seepage

□ 2010 Seepage Points

	pH 7 to 8	pH 7 to 8
EC ≤ 500 µS/cm		
500µS/cm<EC<2000µS/cm		
EC>2000µS/cm		

Measures of pH below 7 or above 8.7 were not observed in 2011

0 50 100 200 300 400 Meters

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Job No: 1CH008.044

Filename: 1CH008.057_hb_seepage_maps_v1

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2011 Quarry Rock Seepage Monitoring

Hope Bay Gold Project

Seep Survey Locations North

Date:	Approved:	Figure:
February 2012	-	2

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Legend

2011 Seepage

- ▲ Sampled
- ▲ Not Sampled

2010 Seepage

- □ 2010 Seepage Points

	pH 7 to 8	pH 7 to 8
EC ≤ 500 µS/cm		
500µS/cm<EC<2000µS/cm		
EC>2000µS/cm		

Measures of pH below 7 or above 8.7 were not observed in 2011

srk consulting

Job No: 1CH008.044

Filename: 1CH008.057_hb_seepage_maps_v1

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2011 Quarry Rock Seepage Monitoring

Hope Bay Gold Project

Seep Survey Locations Central

Date: February 2012 | Approved: - | Figure: 3

Legend

2011 Seepage

- ▲ Sampled
- ▲ Not Sampled

2010 Seepage

- □ 2010 Seepage Points

	pH 7 to 8	pH 7 to 8
EC ≤ 500 µS/cm		
500µS/cm<EC<2000µS/cm		
EC>2000µS/cm		

Measures of pH below 7 or above 8.7 were not observed in 2011

0 50 100 200 300 400 Meters

srk consulting

Job No: 1CH008.044

Filename: 1CH008.057_hb_seepage_maps_v1

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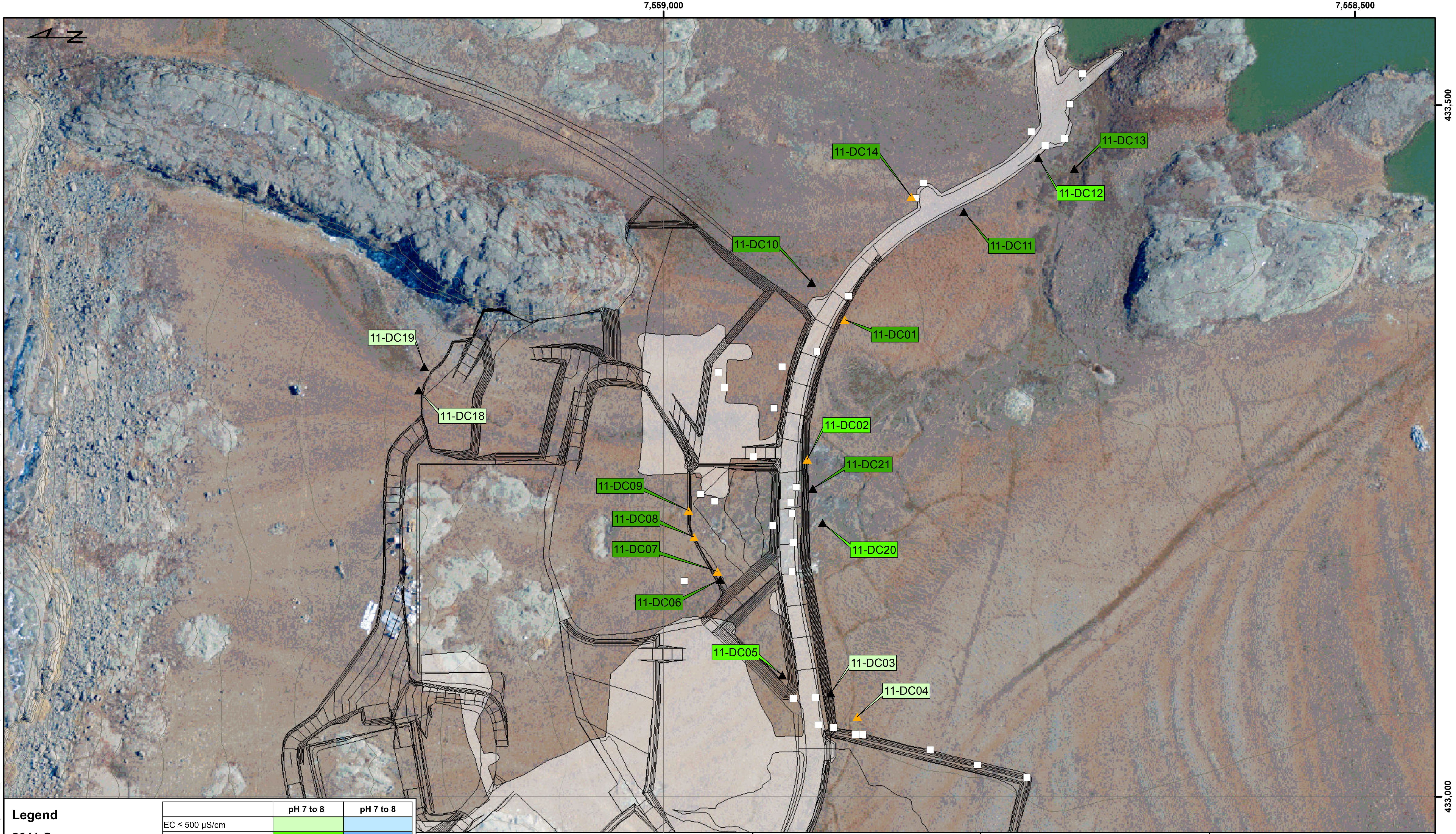
2011 Quarry Rock Seepage Monitoring

Hope Bay Gold Project

Seep Survey Locations
Mine Area West

Date:	Approved:	Figure:
February 2012	-	4



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Legend

2011 Seepage

Sampled

Not Sampled

2010 Seepage

2010 Seepage Points

	pH 7 to 8	pH 7 to 8
EC ≤ 500 µS/cm		
500µS/cm<EC<2000µS/cm		
EC>2000µS/cm		

Measures of pH below 7 or above 8.7 were not observed in 2011

0 25 50 100 150 200 Meters

srk consulting

Job No: 1CH008.044

Filename: 1CH008.057_hb_seepage_maps_v1

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2011 Quarry Rock Seepage Monitoring

Hope Bay Gold Project

Seep Survey Locations
Mine Area East

Date: February 2012

Approved: -

Figure: 5

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Legend

2011 Seepage

Sampled

Not Sampled

2010 Seepage

2010 Seepage Points

	pH 7 to 8	pH 7 to 8
EC ≤ 500 µS/cm		
500µS/cm<EC<2000µS/cm		
EC>2000µS/cm		

Measures of pH below 7 or above 8.7 were not observed in 2011

0 25 50 100 150 200 Meters

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Job No: 1CH008.044

Filename: 1CH008.057_hb_seepage_maps_v1

2011 Quarry Rock Seepage Monitoring

Hope Bay Gold Project

Seep Survey Locations
Tail Lake Road

Date:	Approved:	Figure:
February 2012	-	6

Legend

2011 Seepage

▲ Sampled

▲ Not Sampled

2010 Seepage

□ 2010 Seepage Points

	pH 7 to 8	pH 7 to 8
EC ≤ 500 µS/cm		
500µS/cm<EC<2000µS/cm		
EC>2000µS/cm		

Measures of pH below 7 or above 8.7 were not observed in 2011

0 50 100 200 300 400 Meters

srk consulting

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Job No: 1CH008.044

Filename: 1CH008.057_hb_seepage_maps_v1

2011 Quarry Rock Seepage Monitoring

Hope Bay Gold Project

Seep Survey Locations
Doris Windy Road

Date: February 2012

Approved: -

Figure: 7

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Legend

2011 Seepage

▲ Sampled

▲ Not Sampled

2010 Seepage

□ 2010 Seepage Points

	pH 7 to 8	pH 7 to 8
EC ≤ 500 µS/cm		
500µS/cm<EC<2000µS/cm		
EC>2000µS/cm		

Measures of pH below 7 or above 8.7 were not observed in 2011

0 50 100 200 300 400 Meters

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Hope Bay Gold Project

Seep Survey Locations
Doris Windy Road

Job No: 1CH008.044

Filename: 1CH008.057_hb_seepage_maps_v1

2011 Quarry Rock Seepage Monitoring

Date:	Approved:	Figure:
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Legend

2011 Seepage

▲ Sampled

▲ Not Sampled

2010 Seepage

□ 2010 Seepage Points

	pH 7 to 8	pH 7 to 8
EC ≤ 500 µS/cm		
500µS/cm<EC<2000µS/cm		
EC>2000µS/cm		

Measures of pH below 7 or above 8.7 were not observed in 2011

0 50 100 200 300 400 Meters

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Filename: 1CH008.057_hb_seepage_maps_v1

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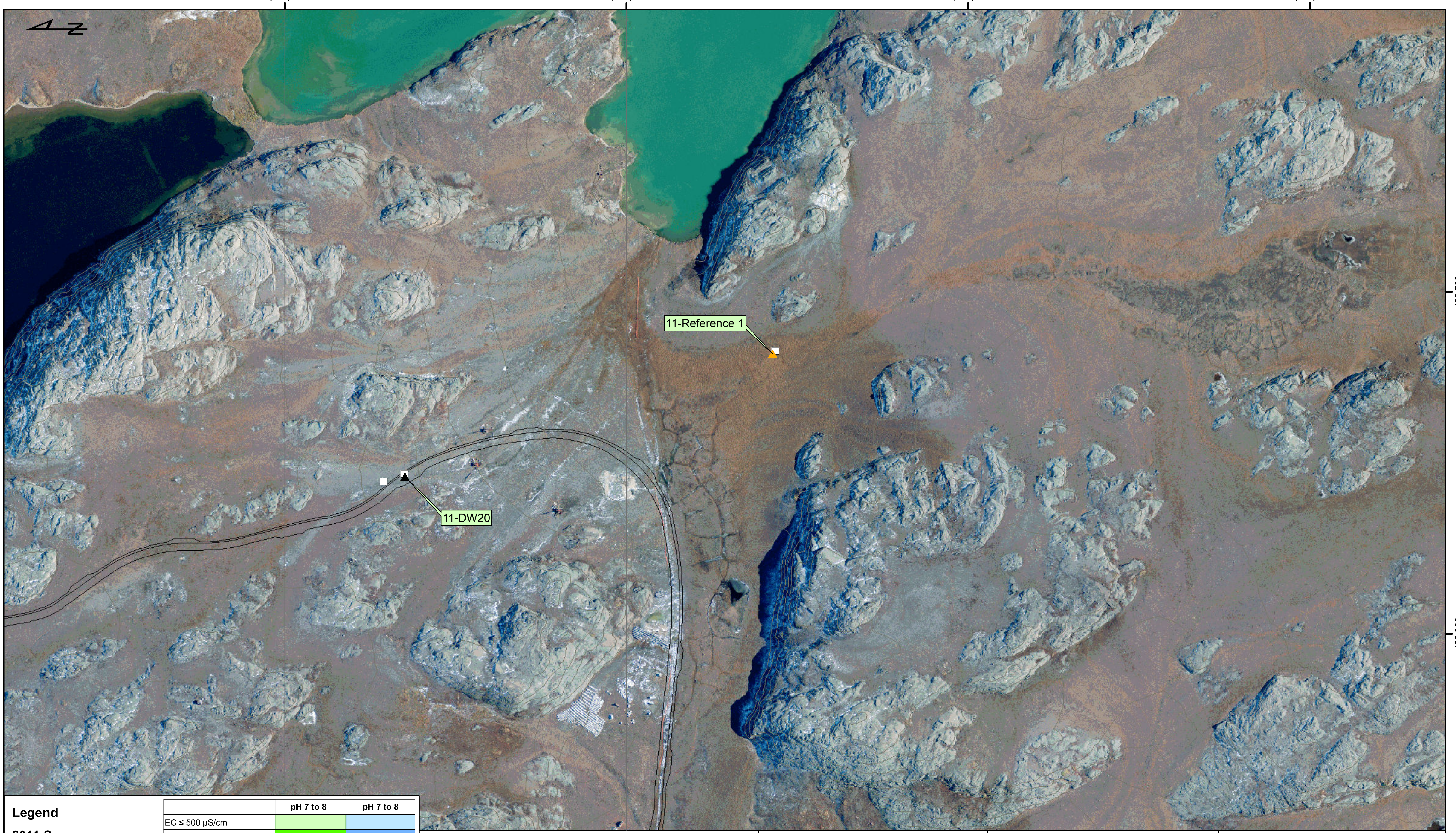
2011 Quarry Rock Seepage Monitoring

Hope Bay Gold Project

Seep Survey Locations
Doris Windy Road

Date: February 2012 | Approved: - | Figure: 9



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Legend

2011 Seepage

- ▲ Sampled
- ▲ Not Sampled

2010 Seepage

- □ 2010 Seepage Points

	pH 7 to 8	pH 7 to 8
EC ≤ 500 µS/cm		
500µS/cm<EC<2000µS/cm		
EC>2000µS/cm		

Measures of pH below 7 or above 8.7 were not observed in 2011

0 50 100 200 300 400 Meters

srk consulting

Job No: 1CH008.044

Filename: 1CH008.057_hb_seepage_maps_v1

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2011 Quarry Rock Seepage Monitoring

Hope Bay Gold Project

Seep Survey Locations
Doris Windy Road

Date:	Approved:	Figure:
February 2012	-	10

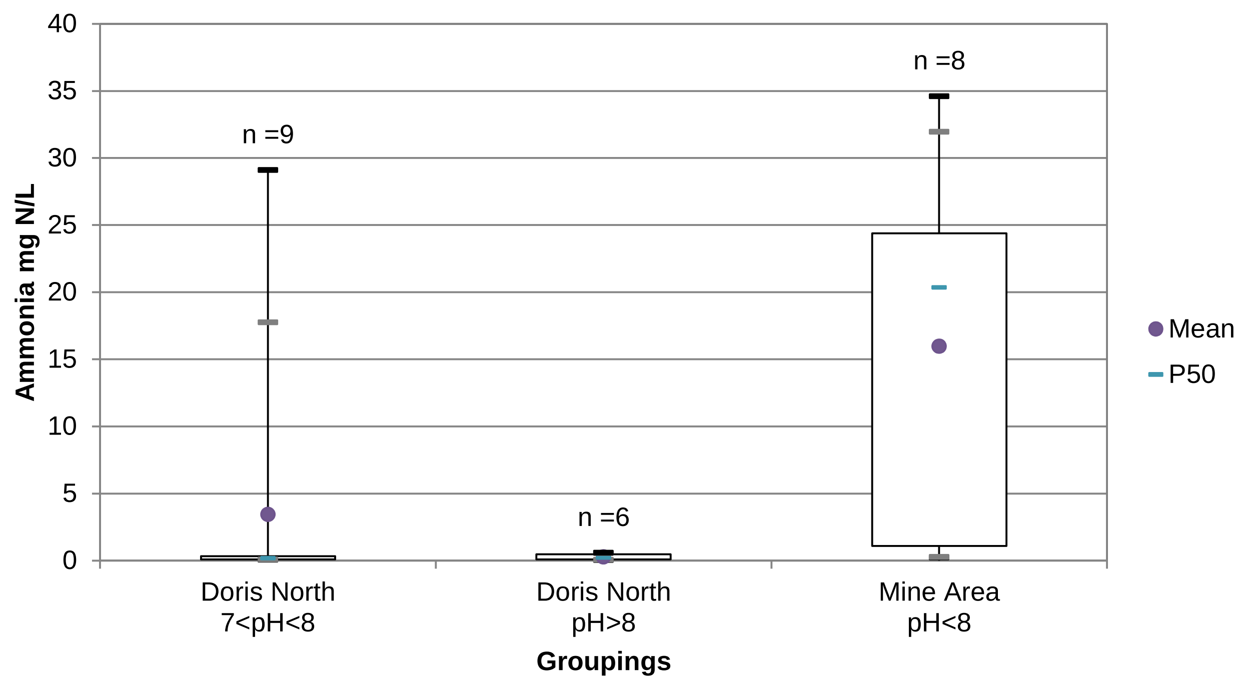

Figure 11: Percentile Distribution of Ammonia by pH and site location

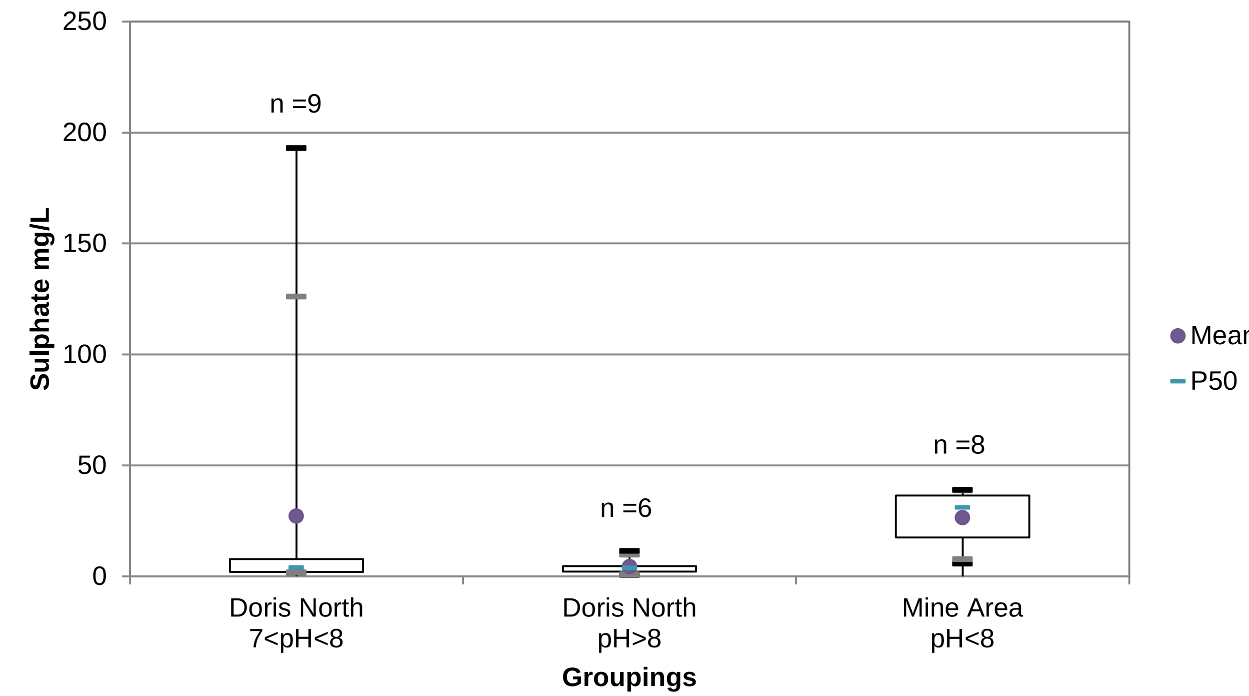

Figure 12: Percentile Distribution of Sulphate by pH and site location

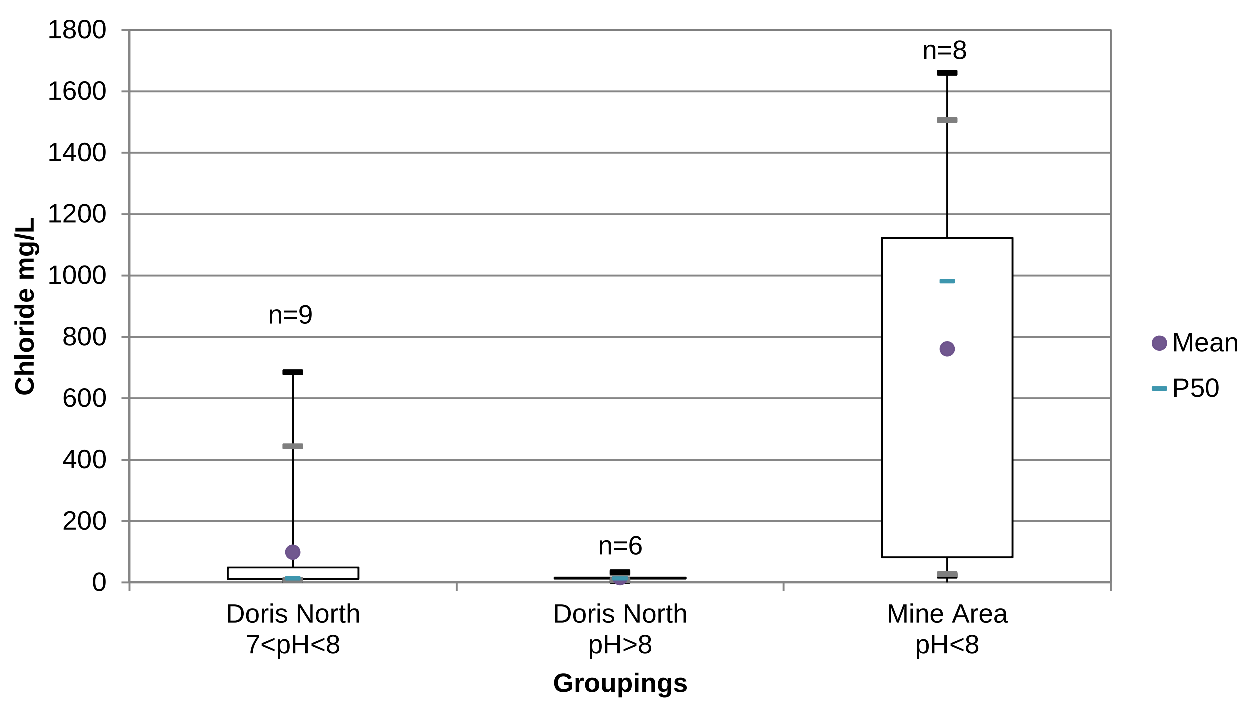

Figure 13: Percentile Distribution of Chloride by pH and site location

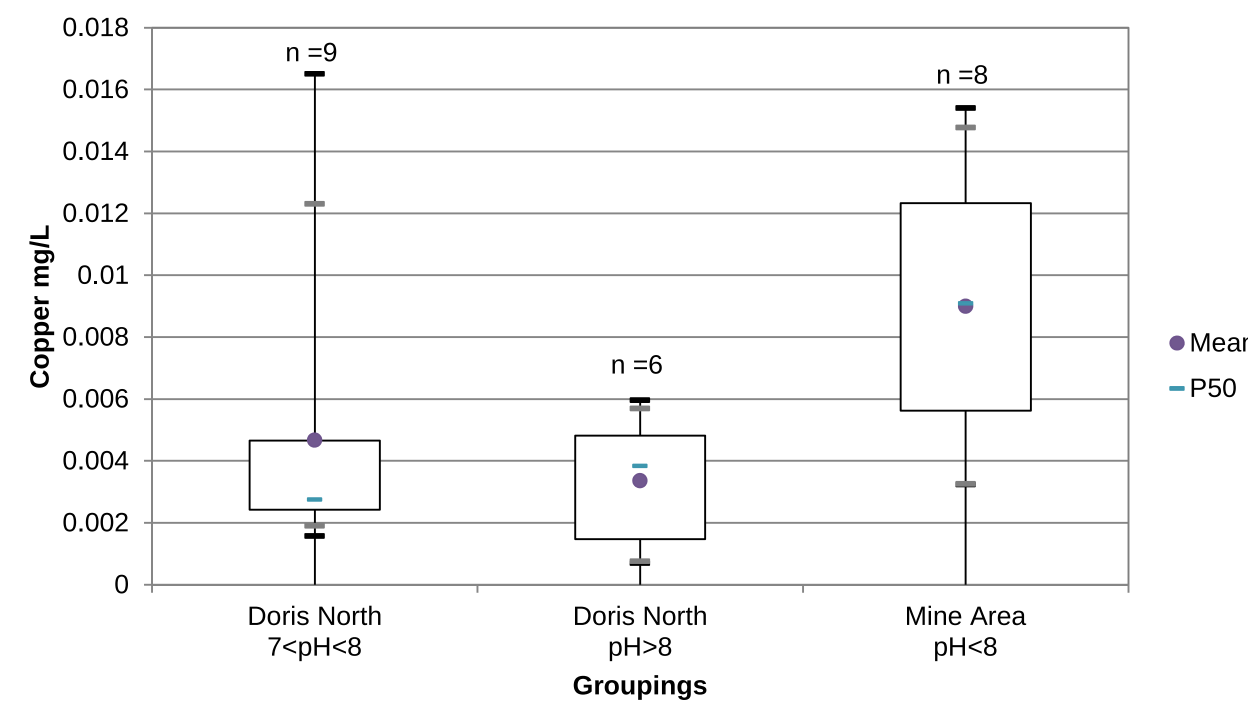

Figure 14: Percentile Distribution of Copper by pH and site location

(These plots are conventional box and whisker graphs, with the upper and lower extremes showing the minimum and maximum values, tick marks outside of the box showing the 5th and 95th percentiles, outer margins of the box showing the 25th and 75th percentiles and central division in the box showing the median value