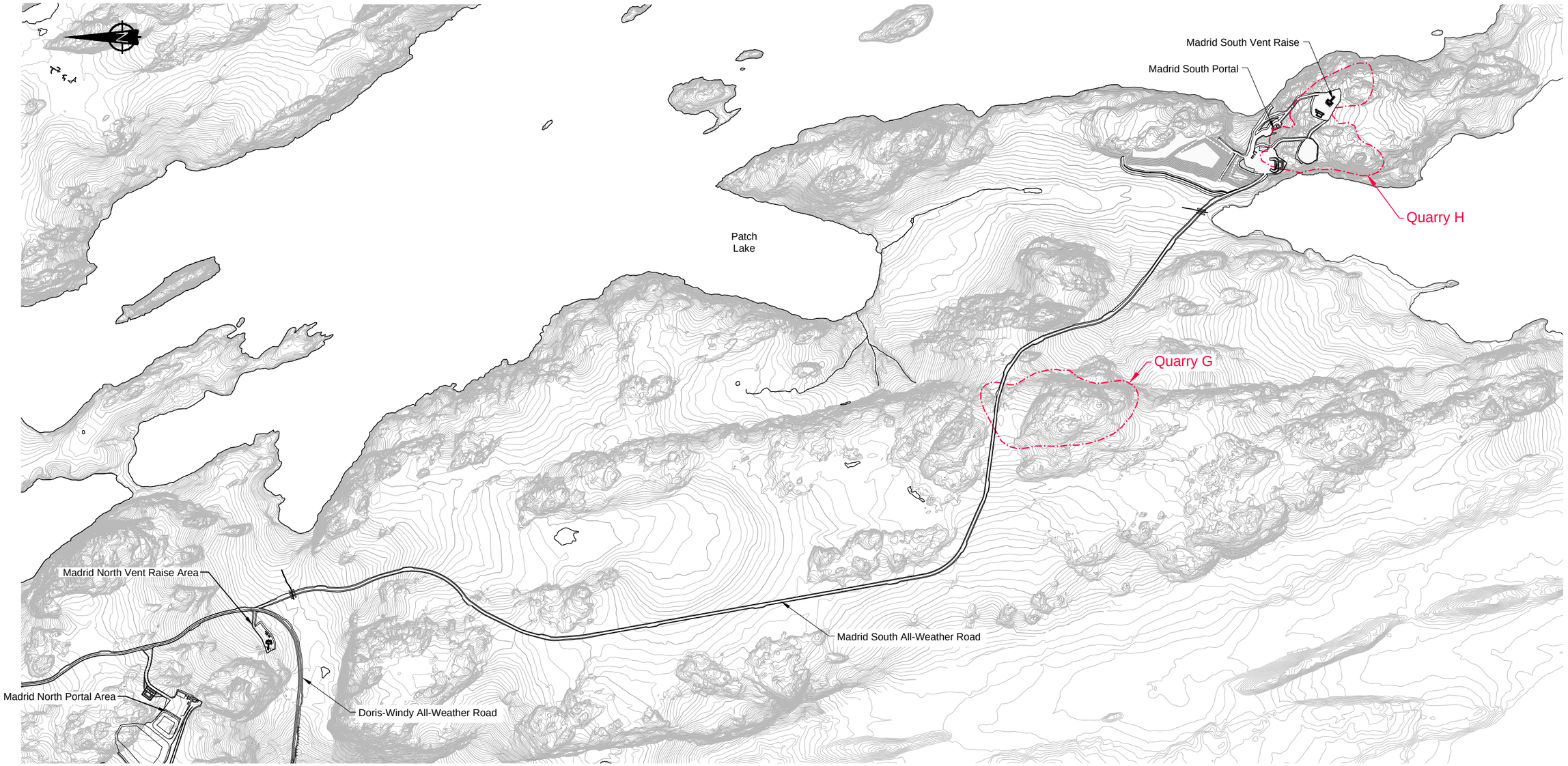

LEGEND

Permitted Quarry Boundary

NOTES

1. Topographic contour data for the terrain model were provided by Hope Bay Mining, and is based on 2007 Aerial Photography. Contour intervals are 0.5m.
2. The co-ordinate system is UTM NAD 83, Zone 13.
3. All dimensions are in metric units, unless specifically mentioned.

0 100 200 300 400 500
Scale in Metres

srk consulting

SRK JOB NO.: 1CH022.001
FILE NAME: 1CT022.001_Windy–Madrid South.dwg

TMAC RESOURCES

HOPE BAY PROJECT

Quarry Management Plan

Quarry G and H Locations

DATE:	APPROVED:	FIGURE:
June 2014	LW	3

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2 Background

2.1 Regulatory Approvals

Pursuant to the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada*, the Nunavut Water Board issued:

- Nunavut Water Board Type B Water Licence No. 2BE-HOP1222 to the Hope Bay Regional Exploration Project – Windy Camp; and
- Nunavut Water Board Type A Water Licence 2AM-DOH1323 to the Doris North Project.

Quarry operations also require approval by the Kitikmeot Inuit Association (KIA) to access Inuit Owned Lands (IOL). For example, Quarries A, B, and D are authorized by Quarry Permit Agreement KTP308Q010 and Quarries 2, 3, and 4 are authorized by Quarry Permit Agreement KTP307Q010.

TMAC are planning to submit applications to the Nunavut Water Board to amend the Type A water licence 2AM-DOH1323, and to obtain a Type B water licence for the Madrid North and South deposits, and applications to the Kitikmeot Inuit Association for quarry permit agreements for Quarry G, H, and I.

The existing licences and permits contain a number of specific conditions which apply to quarrying, infrastructure construction, management and monitoring. To ensure that the highest regulatory requirements for management of construction rock are uniformly applied throughout the Hope Bay Belt, the previous owner, HBML opted to implement Part D and Schedule D – Conditions Applying to Construction related to quarrying and placement of rock from the Type A Doris Water Licence 2AM-DOH0713 (renewed as 2AM-DOH1323) in their management plan for Quarry A, B and D (SRK 2010). TMAC have adopted this same approach in expanding the scope of the quarry management plan to include all of the quarries and has opted to implement Part D – Conditions Applying to Waste Disposal related to quarry drainage discharge from Type B Hope Bay Regional Exploration Project Water Licence 2BE-HOP1222 in their management plan. The relevant sections from 2AM-DOH1323 are Part D Items 9, 10, 20 and 21 and Schedule D a, b, c, f, k and n and from 2BE-HOP1222 are Part D Item 18 and Part J Items 5, 6 and 20.

This *Hope Bay Project Quarry Management and Monitoring Plan - Revision 02* has been prepared on behalf of TMAC to address the management and monitoring requirements related to quarrying, infrastructure and road construction – as specified in the aforementioned licences, and the applications that are currently under review.

2.2 Quarry Development and All-Season Road Construction

Figures 1 through 3 show the locations of all of the Quarries that have been developed, approved for development, or proposed at Hope Bay. The status of each of these quarries, including a description, and the approximate size is provided in Table 1.

In general, the amount of quarry rock that will be required from these areas is only a small proportion of the rock that could be extracted. Therefore, the actual size of most of these quarries is expected to be much smaller than indicated in Table 1.

The quarrying, infrastructure and road construction activities consist of drilling, blasting, mucking crushing, haulage to usage locations (e.g. the advancing road limit), end dump and levelling. Detailed design and/or as-built drawings for approved quarries have been issued in various submissions to NWB.

Table 1: Location and Status of Hope Bay Quarries

Quarry	Status	Description	Approximate Size
1	closed	Site is currently used for the Fuel Tank Farm.	21,000 m^2
2	active	Located west of the Doris camp.	308,000 m^2
3	approved but not yet developed	Located east of Tail Lake. Material will be required for construction of the South Dam.	133,000 m^2
4	closed	Doris Camp is located on the former quarry site.	201,000 m^2
5	proposed	Located at the south apron of the Doris North Airstrip Expansion.	352,000 m^2
A	not active	Located at the northern end of the Doris Windy Road. Site is currently used for storage of explosives.	155,000 m^2
B	not active	Located on the Doris Windy Road. Site has been proposed for storage of explosives.	98,000 m^2
D	not active	Site has been approved for construction of a new camp.	117,000 m^2
G	proposed	Located on the proposed Madrid South All-weather Road.	125,000 m^2
H	proposed	Located on the proposed Madrid South All-weather Road at the Madrid South Portal.	106,400 m^2
I	proposed	Located at Proposed Doris Central Vent Raise.	27,000 m^2

3 Quarry Management

3.1 Pre-Development

3.1.1 Quarry Material Characterization

Geochemical characterization studies of all potential quarry sites for the Hope Bay Project have been carried out by AMEC (2005), and SRK (2007, 2008, 2011, and 2014).

The 2002-2007 characterization programs (AMEC 2005, SRK 2007) included over 90 samples from Quarries 1 to 4. The samples were subjected to acid-base accounting (ABA), elemental analyses, and shake flask extraction tests. Humidity cell tests (HCTs) and mineralogical analyses were also completed on three sample composites.

The 2008 characterization program included a total of 120 samples from Quarries A, B and D. The samples were subjected to ABA and elemental analysis. Eight (8) samples were subjected to shake flask extraction to assess mineral weathering and nine (9) samples were subjected to quantitative mineralogy by Rietveld-XRD in order to investigate carbonate composition.

The 2010 characterization program for Quarry G, H, and I made use of a backpack-type drill. Shallow drill core samples were obtained across the strike of the geology with the objective of examining geochemical variability according to lithology and/or sample location. Additionally, for Quarry H, two drillholes (SRK-GC-10-A2 and SRK-GC-10-A5) were located in overburden to determine the recessive geology. The program included a total of 36 samples, which were subjected to ABA analyses including paste pH, total sulphur, sulphate sulphur, TIC, and modified NP, and elemental analysis by aqua regia digestion with ICP-MS finish.

Based on these geochemical characterization programs, the material from all of the quarries is considered to have a low potential for acid rock drainage (ARD) generation based on NP/AP ratios and low sulphur content. Accordingly, material from these quarries is suitable to be used as construction material.

3.1.2 Archaeology Survey

Archaeological surveys of the quarries and the Doris-Windy and Madrid South all-weather road routes were conducted. Based on the results of the survey, buffers were established to ensure that the development of Quarry A, B, D, G, H, and I and the Doris-Windy and Madrid South all-weather roads do not impact any archaeological sites.

TMAC provides training on “chance-find” procedures to relevant field staff to ensure that any archaeological sites that were not identified during pre-development surveys are recognized and treated in an appropriate manner (i.e. SOP for Archaeological Site Protection, and Hope Bay Archaeology Awareness for Field Workers).

3.1.3 Notification of Intent to Enter Quarry Lands

Article 27 of the Quarry Permit Agreement KTP307Q010 issued by the Kitikmeot Inuit Association (KIA) for Quarry 2, 3 and 4, and Quarry Permit Agreement KTP308Q010 for Quarry A, B, and D, requires that the KIA be notified of intent to enter the lands defined in the licence at least ten (10) business days prior to the commencement of activities. For Quarry G, H and I, TMAC will adhere to the same notification process outlined in Article 27. TMAC will give the KIA notice of its intent to enter upon the lands defined in the licence at least ten (10) business days prior to the commencement of activities.

3.2 Operations

3.2.1 Residual Explosives

The majority of the rock fill will be blasted using a bulk form of Ammonium Nitrate (AN) and fuel oil mixture to make the blasting product ANFO. ANFO is soluble in water and nutrient rich in environmental terms. From a blasting perspective, ANFO is only ideally suited for dry hole application. In the event that ANFO is loaded into a wet borehole inadvertently, an incomplete detonation of the product may occur. In such instances, residual ammonium nitrate may remain in the rock fill and be inadvertently transferred with the infrastructure or road construction material, causing nutrient loadings to the receiving environment.

The potential for wet-holes in the quarries is considered to be low due to the land-based nature of the quarry sites and the presence of permafrost below the outcrops. However, even though the quarry area is assumed to be dry, a contingency will be available. The potential for wet holes will be assessed at the time of drilling and without fail at the time of loading each blast hole. The blaster responsible for loading and firing the drilled pattern begins the loading process by walking the entire pattern and checking the actual drilled depth of each hole versus the plan and noting any conditions such as water in each hole. This information is recorded on the blast pattern record sheet required by regulation to determine the amount and type of explosive required in each hole including the delay detonators used. The presence of water in any drill hole requires one of several approaches to be taken to ensure proper and complete explosive detonation. One way is to attempt to dewater the hole using a down hole dewatering pump and truck so that a poly borehole liner can be lowered into the hole and ANFO poured inside the bag.

In the event that an incomplete detonation of the product occurs, it is likely that an orange colour smoke plume would be observed rising from the affected area. The blaster is required by the regulations to make an inspection of the blasted area, make note of blast holes that may have experienced incomplete detonation and mark those locations with flagging.

Information from the blaster's inspection will be noted in the blast pattern log and the daily operations shift log communicated to all field supervision personnel. The flagged off area will remain until the excavation equipment advances up to within half the hole spacing distance at which time the suspect material would be more closely inspected for the presence of ANFO.

Contingency - Identification of Un-detonated or High ANFO Residue Areas

Material considered un-detonated or high in ANFO residue, which will contain potentially elevated level of nutrients (primarily ammonia) will be selectively excavated and hauled to an established waste rock management area with any runoff from the area reporting to Pollution Control Ponds for ultimate disposal in the Tailings Impoundment Area (TIA).

Contingency - Spill of ANFO

In the unlikely event that a spill of the ANFO occurs during the charging of the holes for blasting, all activities within the quarry will be suspended until the clean-up is complete. The clean-up of the spilled material will be initiated immediately and the material disposed of in accordance with the Explosives Management Plan.

3.2.2 Blast Management

The quarry sites have been deemed suitable for use providing that the archaeological site buffer zone is kept intact; therefore, due care will be taken in order to maintain the integrity of these sites. The blasts will be designed to shoot away from the archaeological sites. Prior to any blast, the rock face will be cleaned to minimize the potential of fly rock.

The following blasting method will be applied for a 10 m bench using a 115 mm diameter borehole:

- Powder factor - 1.40 kg/m^3
- Stemming – 2.3 m (with 3/8” crushed rock)
- Pattern - 2.3 m x 2.3 m
- Delays - Single hole delay with offset timing, of 12 ms, will be used in order to limit the blasting to one hole at a time which will reduce the vibration to a minimum.

Single hole delays will also be used for maximum shot placement away from any identified archaeological sites and row timing will be increased to prevent back break and ensure all rock is moving in a forward motion away from the archaeological sites.

As an additional precaution, the blast limits will be set 60 m from the recommended 30 m buffers zones located in the quarries. This extra buffer will offer further protection from any possible disturbance to archaeological sites.

3.2.3 Precipitation/Snow Melt Water Management

The development of each quarry will proceed in a manner that, to the extent possible, ensures that all water entering the quarry as a result of precipitation or snow melt is retained within the quarry boundaries. Generally, this will be accomplished by ensuring that the quarry floors are sloped toward a natural low area of the quarry and, if required, the creation of a quarry sump to collect the waters and settle out suspended solids.

In the event that the quarry sump requires pumping, a sample of the ponded water will be collected, preserved in the appropriate manner, and submitted to an accredited laboratory for the analysis of specified parameters. These parameters are outlined in Part D Item 18 and Part J Item 6 of Water Licence 2BE-HOP1222 and the quarry effluent quality limits for these aforementioned parameters are listed at Part D Item 18 (reproduced herein as Table 2). Monitoring results will be reported as part of the monthly monitoring reporting.

Additionally, notification will be provided to the Inspector, at least fifteen (15) days prior to the planned pumping. The notification will include the volume proposed for discharge and the discharge location. Following receipt of the laboratory results, water meeting the discharge requirements will be discharged. As the governing permits for Quarry G, H and I are not presently defined, the discharge requirements are assumed to be the same as those outlined in Table 2.

Table 2: Quarry Effluent Quality Limits[1] (Part D Item 18 of Water Licence 2BE-HOP1222)

Parameter	Maximum Average Concentration	Maximum Concentration in Any Grab Sample
pH	6.0 to 9.0	9.0
Electrical Conductivity	500 µS/cm	500 µS/cm
Total Ammonia	2 mg/L	4 mg/L
Total Suspended Solids	15 mg/L	30 mg/L
Oil and Grease	5 mg/L and no visible sheen	10 mg/L and no visible sheen
Total Aluminum	1.0 mg/L	2.0 mg/L
Total Arsenic	0.05 mg/L	0.10 mg/L
Total Copper	0.02 mg/L	0.04 mg/L
Total Iron	0.30 mg/L	0.60 mg/L
Total Lead	0.01 mg/L	0.02 mg/L
Total Nickel	0.05 mg/L	0.10 mg/L
Total Zinc	0.01 mg/L	0.02 mg/L

Care will be taken not to disturb settled solids in the bottom of the sump and pumping of the sump will only take place when conditions are suitable. Care will also be taken to ensure that discharged water does not enter fish bearing waters and that the pump discharge is positioned in a manner that minimizes erosion and siltation of the area downstream of the discharge.

Contingency - Sump Water Requires Special Handling

In the event that the quarry water does not meet the discharge criteria, an inquiry of the cause of the noted exceedance will be conducted, and appropriate mitigation developed. Any non-compliant water that needs to be discharged would be transported to Pollution Control Ponds for management and/or transported directly to the Doris North TIA for disposal.

In previous versions of the Quarry Management Plan, the option of using the Pollution Control Ponds and/or the Doris North TIA to manage non-complaint water was not available. Therefore,

there was a requirement in the licence for investigating and reporting non-compliant quarry water to the Inspector. However, now that these alternatives are available, TMAC believes that this specific reporting requirement should be removed from the licence. Any non-compliant water that needs to be discharged from a quarry would be transported to Pollution Control Ponds for management and/or transported directly to the TIA. All compliant and non-compliant monitoring results are summarized in the monthly SNP reports to the NWB and a copy is provided to the Inspector. This monthly report would include details of the disposal of any non-complaint water.

3.2.4 Dust Management

The major source of dust generation during the operations of the quarries will be in the vicinity of the crusher while it is operating. Dust suppression, where required, will consist of using water as permitted by licences 2AM-DOH1323 and 2BE-HOP1222. A record of the volume of water used for this purpose will be maintained.

3.2.5 Materials Quarried and Removed

Article 25 of IOL Quarry Permit Agreement KTP308Q010 issued by the KIA for Quarry A, B, and D and Quarry Permit Agreement KTP307Q010 issued by the KIA for Quarry 2, 3, and 4, requires that a record of the quantity of granular materials quarried and the quantity of granular materials removed from each quarry will be maintained. It is assumed the reporting requirements for Quarry G, H and I will be the same as for the other quarries. TMAC will adhere to the same process outlined in Article 25 of KTP308Q010 and KTP307Q010 unless otherwise required by the quarry permit issued for Quarry G, H, and I.

3.2.6 Equipment Re-fuelling

In the event that re-fuelling of mobile equipment is required in one of the active quarries, it will be conducted in a location and at a time that will ensure that any spill of fuel or lubricants is effectively contained within the quarry area and clean-up is easily accomplished. During this activity, all re-fuelling equipment will be equipped with a Spill Kit suitable for the materials being handled and a functioning fire extinguisher suitable for the materials being transferred.

Contingency - Spill during Re-fuelling

In the unlikely event that a spill does occur during re-fuelling activities, clean-up of the spilled material will be initiated immediately and all activities within the quarry suspended until the clean-up is complete. The material will be disposed of in an appropriate manner as per the requirements specified in the Hope Bay Project Spill Contingency Plan.

3.3 Post-Operations

Once quarrying activities in each individual quarry are completed, all equipment, materials and supplies will be removed for appropriate reuse or disposal. Vertical walls within the mined out quarry will be inspected to ensure that they do not pose an unreasonable safety risk and, if required, remediation activities undertaken to address residual safety concerns.

The quarries may be used for laydown areas or for the development of other infrastructure components. In the event that a particular mined out quarry is to be re-commissioned or employed in a new role, appropriate applications will be made to the respective regulatory authorities.

4 Operational Inspections and Monitoring

4.1 Quarry Operations

4.1.1 Quarry Visual Inspections

During quarrying operations, a visual inspection of the quarry face to verify the geological characteristics of the rock will be conducted by a qualified field geologist or geochemist at least once per week. The purpose of the inspection will be to confirm the presence of the expected rock types and that disseminated sulphides only (e.g. not veins) are being exposed and therefore used in construction. A secondary objective of the inspection will be to confirm the absence of any fibrous forms of actinolite in the quarry material.

Prior to the inspections, site personnel will develop a traffic control plan to ensure that it is safe to work within the quarry and will inform any vehicle operators as to the location and timing of the inspection work.

The inspectors will walk from one side of the quarry around to the other side examining both the surface and the exposed bedding material along the side of the quarry for any anomalous rock types or significant amounts of sulphide. If present, these materials will be examined, described, and located on a map. In addition, at regular 100 metre intervals, the inspector will stop and complete a close inspection of the rocks, breaking open several rock clasts and describing what they see. The results of each inspection will be recorded on data sheets, and reported in the Construction Monitoring Report submitted by March 31 of the year following construction.

Contingency - Identification of Inappropriate Quarry Rock

In the unlikely event that the visual inspection identifies potentially acid generating rock, the geologist will “tag” the material for avoidance or removal. If the material is excavated, it will be hauled back to one of the previously mined-out quarries. The rock fill will then be placed within the quarry and covered with a minimum of 2 metres of the more typical Mg-theolite basalt that was approved for construction use or temporarily stored in an appropriate manner prior to eventual disposal underground. In the quarry stored rock, permafrost is expected to slowly aggrade into the rock fill, slowing the rates of sulphide oxidation substantially, and eventually shutting off seepage pathways. The clean rock cover would act as a thermal blanket to keep the active freeze/thaw zone away from the more reactive rock.

In the unlikely event that the visual inspection identifies fibrous actinolite, the geologist will “tag” the material for avoidance or removal. If the material is excavated, it would be hauled back to one of the previously mined-out quarries and covered with a 1.0 m layer of benign rock and a record of the location maintained.

4.1.2 Quarry Rock Sampling

During quarrying activities blast material from each quarry will be collected at two different stages of quarry development and samples will be submitted to an accredited external lab for sulphur analysis. Two samples of the same material will be collected: a whole rock sample and a sample

sieved to pass a -2 mm screen. This sampling method and frequency will result in up to 4 samples from each quarry. The sample locations will be pre-determined to ensure that they reflect a random selection of the rock fill material used in road construction. In the event that the results return a sulphur value of greater than (>) 0.1 % sulphur, the samples will be subjected to ABA and other confirmatory test work including shake flask extraction tests on a representative subset of samples.

The objective of this program will be to confirm previous rock characterization results and to assess the ARD potential of the fine fraction, which tends to concentrate sulphide minerals.

The following information will be recorded for each sample collected:

- Location of sample point;
- GPS coordinates of the sample point;
- Name of the quarry from which the rock fill originated;
- The name of the person who performed the sampling;
- Date and time of sampling;
- Date of analysis;
- Name of person who performed the analysis;
- Analytical method or techniques used; and
- Results of analysis.

The results of the analysis will be reported in the Waste Rock and Quarry Monitoring Report (which is referenced in the Construction Monitoring Report) and submitted by March 31 of the year following construction. The report will include a discussion and interpretation of the geochemical data collected.

4.1.3 Quarry Sump Monitoring

The development of each quarry will proceed in a manner that, to the extent possible, ensures that all water generated as a result of precipitation or snow melt is retained within the quarry boundaries. Generally this will be accomplished by ensuring that the quarry floors are sloped toward the centre and, if required the creation of a quarry sump to collect the waters and settle out suspended solids.

After significant precipitation events, the quarry area will be inspected and the water level in the quarry sump assessed. In the event that the quarry sump requires pumping, the procedures or contingencies outlined in Section 3.2.3 of this plan will be followed.

4.1.4 Blast Vibration Monitoring

Shock waves from blasting in close proximity to fish bearing water can lead to potential for causing detrimental shock wave effects on fish. Guidelines for the use of explosives in or near Canadian fisheries waters (Wright and Hopky 1998) indicate that "*no explosive shall be detonated in or near fish habitat that produces, or is likely to produce, an instantaneous pressure change (i.e., overpressure) greater than 100 kPa (14.5 psi) in the swimbladder of a fish*". The guidelines also provide specific methods for calculating the setback distance required to stay below this threshold based on different amounts of explosive and the type of substrate. To ensure that there are no detrimental effects on fish from quarry activities, these guidelines will be used to establish final setback distances for each of the quarries. Additionally, blast vibration monitoring will be undertaken to avoid potential effects when detonation distances approach the recommended setbacks to ensure appropriate vibration thresholds that are protective of fish and vulnerable life stages of fish are maintained.

4.1.5 Dust

The major source of dust generation during the operations of the quarries will be from the crusher when it is operating. Passive (observation) dust monitoring after blasting in all quarries and during operations of the crusher will be limited to an assessment conducted during the other regularly scheduled visual inspections of operations (i.e. the pre-blast inspection, the post blast inspection, and regular environmental personnel inspections). The results will be recorded by the site personnel. Dust suppression will be limited to the application of clean water to affected areas and a record of the volume of water used for this purpose will be maintained.

4.2 Infrastructure and All-Weather Roads

4.2.1 Visual Inspection

During all construction activities a visual inspection by site personnel will be conducted of the quarries, equipment storage and re-fuelling areas, construction areas and the advancing area of road construction activity at least once per week. The inspection will focus on identification and removal of foreign and/or spilled materials, assessing the extent of erosion and sedimentation resulting from rock placement (particularly during periods of precipitation), the extent of dusting and the transport of dust onto the surrounding tundra.

In addition, an inspection of each watercourse crossing along the all-weather roads throughout the annual ice-free period will be conducted in order to confirm structural integrity, confirm soil and permafrost stability in the immediate area and to confirm that the crossings have been located adequately with respect to the watercourses.

A record of the time, place and results of each inspection will be maintained as will a photographic record of "items of interest" (i.e. dusting, wildlife encounters, spilled material, etc.) identified during the inspection.

5 Post-Construction Inspections and Monitoring

5.1 Quarry

A visual inspection of each mined out quarry will be completed at least once per year in order to ensure that the site remains safe and no environmental or public health and safety concerns have developed. In the event that potentially acid generating waste rock has been placed in one or more of the mined-out quarries, the area will be inspected to ensure that the 2 metre cover remains intact and that seeps from the material are not in evidence.

In the event that the inspection identifies ponded water within the mined out quarry in sufficient volume to require pumping, the procedures or contingencies outlined in Section 3.2.3 of this plan will be followed.

Records of the inspections and findings of each will be maintained and reported in the appropriate manner.

5.2 Infrastructure and All-Weather Roads

5.2.1 Road Seep Survey and Sampling

During the spring freshet in the year following completion of the construction of the road and pad areas, an inspection will be conducted by a qualified field geologist or geochemist in order to characterize the rock used in construction and to identify and sample ephemeral seeps occurring through the road construction material. The objective of this program will be to confirm that an environmentally-significant level of metal leaching (ML) is not occurring from the road materials.

Seeps will be located by walking along the downstream side of the roads and looking and listening for signs of flowing water. In low lying areas where the direction of surface water flow is not evident, both sides of the structure will be inspected. Where surface flows are identified, the upstream side will be inspected to determine whether the flow originates from the upstream side or whether it is likely to originate from within the rock fill material. Most samples will target the latter, more ideal type of seep. However, a modest number (maximum of one location for every two km of road) will be collected at locations where there is moderate upstream flow component. In these cases, samples will be collected from both upstream and downstream of the roads.

A survey stake will be installed to mark the location of each seep sampled and the following information recorded:

- Description of the seep location;
- GPS location of the seep;
- A photographic record of the seep;
- A description of the flow pattern and magnitude of flow;
- Field pH, EC, Eh and temperature readings; and

- Field pH, EC, Eh and temperature measurements at a reference site located away from the influence of the road or other mine related activities.

At a minimum, a water sample will be collected from 10% of the identified ephemeral seeps (regardless of the field measurement values) appropriately preserved and submitted for laboratory analysis. The following information will be recorded:

- The name of the person who performed the sampling;
- Date and time of sampling;
- Date of analysis;
- Name of person who performed the analysis;
- Analytical method or techniques used; and
- Results of analysis.

All of the samples collected will be preserved in an appropriate manner, labelled and submitted to an accredited laboratory for analysis of pH, TDS, acidity and/or alkalinity, sulphate, total ammonia, nitrate, and a full suite of dissolved metals by ICP-MS. The results of the seep survey will be reported in the Waste Rock and Quarry Monitoring Report (which is referenced in the Construction Monitoring Report) and submitted by March 31 of the year following construction. The Addendum will include a discussion of the interpretation of the geochemical data collected.

5.2.2 Road Material Sampling

Once the construction of the road and pad areas is complete, an inspection of these facilities will be conducted by a qualified field geologist or geochemist to characterize the rock used in construction. That inspection will include collection of in situ rock fill from pre-determined points along the road route (approximately 1 sample per 0.5 kilometres of road, and five samples from each of the pad areas). At each sample location, a whole rock sample will be collected as well as a -2 mm sieved sample when available. The sample locations will be pre-determined to ensure that they reflect a random selection of a representative sample of the in situ rock fill from each quarry used to construct the road and pad areas.

All of the samples will be submitted to an accredited external lab for sulphur analysis. In the event that the results return a sulphur value of greater than (>) 0.1 % sulphur, the samples will be subject to ABA and shake flask extraction tests on a representative subset of samples. Testing will be completed on both the fines and the whole sample.

The objective of this program is to confirm previous rock characterization results and assess the ARD potential of the fine fraction, which tends to concentrate sulphide minerals.

The following information will be recorded for each sample collected:

- Description of the sample point;

- GPS Coordinates of sample point;
- An estimate of which quarry the rock fill originated from;
- The name of the person who performed the sampling;
- Date and time of sampling;
- Date of analysis;
- Name of person who performed the analysis;
- Analytical method or techniques used; and
- Results of analysis.

The results will be reported in the Waste Rock and Quarry Monitoring Report (which is referenced in the Construction Monitoring Report) and will include a discussion and interpretation of the geochemical data collected.

5.2.3 Infrastructure Seep Survey and Sampling

In the event that clean quarry rock from any of the quarries is used in the construction of any other infrastructure, the area in which the rock is used will be incorporated in the ongoing seep and rock sampling program currently established for the project. This includes, at a minimum, incorporating the requirements specified in Part D and Schedule D - Conditions Applying to Construction in the Type A Water Licence 2AM-DOH1323 related to quarrying and placement of rock. The monitoring and sampling will be completed in order to ensure that the highest regulated requirement for the management of construction rock is uniformly applied throughout the Hope Bay Belt.

5.2.4 Contingency - Inappropriate Construction Material Identified

In the unlikely event that the results of the seep monitoring/sampling program or the road material sampling program indicate the presence of potential ML or ARD further investigations will be undertaken to define the extent and assess the potential impacts of the material. If warranted, and after discussion with the appropriate regulatory agencies, the material will be excavated and hauled to one of the previously mined-out quarries or temporarily stored in an appropriate manner prior to eventual disposal underground. The quarry stored rock fill will be placed within the quarry and covered with a minimum of 2 m of the more typical Mg theolite basalt. Permafrost is expected to slowly aggrade into the rock fill, slowing the rates of sulphide oxidation substantially, and eventually shutting off seepage pathways. The clean rock cover will also act as a thermal blanket to keep the active freeze/thaw zone away from the more reactive rock.

5.3 Summary of Inspections and Monitoring

Table 3 provides a summary of the monitoring required during and after quarry mining and construction of the new roads or infrastructure areas.

Table 3: Hope Bay Quarry & All-Weather Road Monitoring Summary

Aspect	Monitoring Activity	Monitoring Type	Data Management & Reporting
Pre-development	Geochemical characterization of quarry material.	Sample and analysis of rock.	Complete (see summary in Section 3.1).
	Archaeological survey.	Field inspections and establishment of buffers.	Survey report kept on file.
Quarry Operations	Pre-blast inspection.	Identify "wet holes" and clean spilled ANFO	Maintain field notes.
	Post-blast inspection.	Confirm ANFO consumption (minimal misfires).	Maintain field notes.
	Weekly visual inspection by field geologist or geochemist.	Confirm rock types (no fibrous actinolite) and presence of disseminated sulfides (not veins).	Maintain field notes. Report results in subsequent Waste Rock and Quarry Monitoring Report.
	Representative samples of blast material (two from each quarry) during quarry operations (whole rock and screened), sampled twice during quarry development.	Sulphur analysis and, if required, ABA and shake flask extraction analysis of representative subset of samples.	Maintain field notes. Report results in subsequent Waste Rock and Quarry Monitoring Report.
	Weekly inspection by site personnel.	Visual inspection	Maintain field notes on inspection time and results.
	Amount of material quarried and amount removed.	Amount of material quarried in m^3. Amount of material removed in m^3.	Maintain record and monthly reporting to Kitikmeot Inuit Association.
Post-precipitation Event	Inspect quarry for ponded water (sump).	If ponded water is present and in quantities requiring discharge, collect sample for discharge criteria screening.	Maintain field notes. Report results in monthly monitoring reports.
	Prior to pumping and discharge of sumps.	Water sample collected for analysis of parameters outlined in Table 2 (pH, EC, Eh, Total Suspended Solids, Total Sulphate, Total Ammonia, Nitrate, Alkalinity, ICP Metals Scan (including Total Aluminum, Total Arsenic, Total Copper, Total Iron, Total Lead, Total Nickel & Total Zinc) and Oil and Grease).	Notification of Inspector at least fifteen (15) days prior to the planned pumping – Notification will include the volume proposed for discharge and the discharge location. Results of water quality sampling reported in monthly monitoring reports.
Post-Construction	Representative samples of *in situ* construction material (1 per 0.5 km, and 5 per pad area). Samples to include whole rock and screened (-2 mm) samples, where possible).	Sulphur analysis and, if required, ABA and shake flask extraction analysis of representative subset of samples	Maintain field notes. Report results in subsequent Waste Rock and Quarry Monitoring Report.
	Field identification of seeps &/or runoff from road and pads during spring freshet (2 years).	Field pH and EC of seeps and runoff Field pH and EC at reference site.	Maintain field notes. Report results in subsequent Waste Rock and Quarry Monitoring Report.
		Water sample submitted for pH, TDS, Total Sulphate, Total Ammonia, Nitrate, Alkalinity, ICP-MS Dissolved Metals Scan.	Maintain field notes. Report results in subsequent Waste Rock and Quarry Monitoring Report.
	Annual inspection of mined out quarries. If ponded water is present.	Sample and analysis of pH, EC, Eh, Total Suspended Solids, Total Sulphate, Total Ammonia, Nitrate, Alkalinity, ICP Metals Scan (including Total Aluminum, Total Arsenic, Total Copper, Total Iron, Total Lead, Total Nickel & Total Zinc) and Oil and Grease).	Maintain field notes. Results of water quality sampling reported in monthly monitoring reports.
	Inspection of watercourse crossings along the all-weather road during ice-free period.	Structural Integrity, soil and permafrost stability and confirmation of appropriate location.	Maintain field notes. Report results in Annual Geotechnical Inspection Report.

6 Concordance with Licence 2AM-DOH1323 and 2BE-HOP1222 Items

Tables 4 and 5 provide concordance tables to demonstrate where the applicable conditions of Licence 2AM-DOH1323 and 2BE-HOP1222 have respectively been incorporated into the *Hope Bay Project Quarry Management and Monitoring Plan – Revision 02, December 2014.*

Table 4: Concordance Table for Licence 2AM-DOH1323

Licence 2AM-DOH1323	*Quarry Management and Monitoring Plan – Revision 02*
Part D: Conditions Applying to Construction	-
Item 9	Section 4.1.2 & 5.2.2
Item 9b	Section 4.1.2 & 7
Item 10	Section 4.1.1
Item 20	Section 5.2.1 & 5.2.3
Item 21	Section 5.2.1 & 7
Schedule D, Conditions Applying to Construction	-
Item a	Section 4.1.4
Item b	Section 4.2.1
Item c	Section 4.2.1
Item f.i.	Section 4.1.1, 5.2.1, 5.2.2, 5.2.3 & 7
Item f.ii.	Section 5.2.1, 5.2.3 & 7
Item f.iii.	Section 4.1.2, 4.1.3, 5.1, 5.2.2 & 7
Item f.iv.	Section 5.2.4
Item k	Section 4.2.1 & 7
Item n	Section 5.2. 1 & 7

Table 5: Concordance Table for Licence 2BE-HOP1222

Licence 2BE-HOP1222	*Quarry Management and Monitoring Plan – Revision 02*
Part D: Conditions Applying to Waste Disposal	-
Item 18	Section 3.2.3 & 5.1
Part J: Conditions Applying to the Monitoring Program	-
Item 5	Section 3.2.3 & 5.1
Item 6	Section 3.2.3 & 5.1
Item 20	Section 3.2.3, 5.1 & 7

7 Reporting

To address the requirements specified in Nunavut Water Board Type A Water Licence 2AM-DOH1323, Nunavut Water Board Type B Water License No. 2BE-HOP1222 and Nunavut Water Board Type B Water Licence for Madrid Advanced Exploration Program when it is issued, the following reports will be prepared:

- Construction Monitoring Report;
- Waste Rock and Quarry Monitoring Report;
- Construction Summary Report;
- Monthly Monitoring Report; and
- Annual Geotechnical Inspection Report.

All of the aforementioned reports are to be submitted no later than March 31 of the year following construction, with the exception of the Monthly Monitoring Report, which is submitting on a monthly basis.

Generally, these reports will include, but not necessarily be limited to:

- A summary of all inspections conducted during quarry activities and road construction;
- A summary of all monitoring conducted;
- All data generated from the analysis of monitoring samples;
- The results of all samples collected and submitted for analysis;
- A summary of all mitigation activities undertaken as a result of monitoring;
- The results of the follow-up geochemical sample analysis of quarried rock used in construction to verify that the rock used is non-acid generating as predicted;
- The results of monitoring of dust generation and use of water by the contractor to manage dust emissions from crushing and construction activity;
- A summary of post-operational activities and condition of each quarry; and
- Updated “As-built” drawings of the constructed infrastructure and all-weather roads.

This report, Hope Bay Quarry Management and Monitoring Plan – Revision 02, was prepared by SRK Consulting (Canada) Inc.

Lisa Barazzuol, PGeo (BC)
Senior Consultant (Geochemistry)

and reviewed by

Kelly Sexsmith, PGeo (BC)
Principal Consultant

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.

8 References

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Appendix 9

(for Chapter 9, Reclamation and Closure)

SRK, October 2014 Memo – Hope Bay Project: Madrid Advanced Exploration Project: Conceptual Closure and Reclamation Plan

SRK Consulting (Canada) Inc.
2200–1066 West Hastings Street
Vancouver, BC V6E 3X2

T: +1.604.681.4196
F: +1.604.687.5532

vancouver@srk.com
www.srk.com

Memo

To:	John Roberts, TMAC	**Client:**	TMAC Resources Inc.
From:	Lowell Wade Peter Luedke	**Project No:**	1CT022.001.410
Cc:	Maritz Rykaart, SRK	**Date:**	October 31, 2014
Subject:	Hope Bay Project: Madrid Advanced Exploration Program: Conceptual Closure and Reclamation Plan		

1 Introduction

SRK Consulting (Canada) Inc. (SRK) was retained by TMAC Resources Inc. (TMAC) to prepare a conceptual Closure Cost Estimate and Reclamation Plan for all facilities associated with the Madrid Advanced Exploration Program (MAEP).

The basis for the MAEP Closure Cost Estimate and Reclamation Plan is the same as was used for the Doris North Mine Closure and Reclamation Plan (SRK 2014a, 2014b).

The remediation and closure cost estimate of drill sites, associated with surface exploration drilling has been provided in SRK (2013).

1.1 Background

TMAC is currently in the process of constructing their Doris North Project (Project) in the Kitikmeot region of Nunavut, Canada. Concurrent with this, TMAC is carrying out regional exploration and have identified Madrid North and Madrid South as potential high quality exploration targets.

The Madrid North area is located about 9 km south of the Doris North Camp, along the Doris-Windy All-Weather Road. The portal pad haul road will turn off the Doris-Windy All-Weather Road at kilometre 8+600 and head west up to the portal upper and portal lower pads as well as the waste rock pad and ore stockpile pad. At kilometre 9+000 an access road will turn off, on the west side, the Doris-Windy All-Weather Road, will lead to the vent raise pad. Complete details of the Madrid North surface infrastructure are described in SRK (2014c).

The Madrid South area is located about 15 km south of the Doris North Camp. Currently there is no permanent access to this area; and therefore TMAC proposes to construct a 4.7 km long all-weather road which will branch off from the southernmost end of the existing Doris-Windy All-Weather Road at kilometre 9+000 (SRK 2014d). At the end of the Madrid South All-Weather

Road are a series of pads (portal, upper portal, vent raise, infrastructure, laydown, waste rock, and ore stockpile) that are linked by two road alignments (infrastructure access road, haul road and vent raise access road) used to haul waste rock and ore, from the bulk sample, as well as provide access around the Madrid South site (SRK 2014e).

1.2 Closure Objectives

The infrastructure for the MAEP have been designed with closure in mind, and throughout operations every effort to apply progressive reclamation will be evaluated and implemented where practical to do so.

The overall objectives of this Conceptual Closure and Reclamation Plan are to:

- Establish stable chemical and physical conditions;
- Ensure the future use and aesthetics of the two sites, and following reclamation;
- Meet the requirements of Aboriginal, Federal and Territorial Governments, landowners, local communities, and regulatory authorities.

The closure objectives and the closure and reclamation strategies presented herein have been developed in accordance with the Nunavut Mine Site Reclamation Policy (DIAND 2002) and the 2007 Northwest Territories Mine Site Reclamation Guidelines (INAC 2007).

In terms of future use, some of the infrastructure associated with the MAEP is a substantial contribution to the development of Nunavut and could be left in place after closure, following consultation with all interested parties. For example, the fuel storage, roads, and pads can be used as a base for other projects. For the purposes of this memorandum, it has been assumed all infrastructure and facilities will be reclaimed and/or removed to acceptable standards which is reflected in the supporting cost estimate.

2 Description of Existing Facilities

The geographic locations of Madrid North and Madrid South in relation to the existing Doris North Mine are shown in Figures 1 and 2. The infrastructure and facilities from Madrid North to Madrid South have been grouped by location and are shown in Figures 3 through 6:

- Madrid North Site Layout Portal (Figure 3);
- Madrid North Site Layout Vent Raise (Figure 4);
- Madrid South All-Weather Road (Figure 5); and
- Madrid South Site Layout (Figure 6).

The infrastructure and facilities, within each location, have been grouped to create a Work Breakdown Structure (WBS) and alpha-numerically labelled to organize the closure cost estimate provided in Attachment 1. A summary of the WBS is provided in Table 1.

Table 1. Work Breakdown Structure

Location	Facility	WBS Code
Madrid North Surface Infrastructure		
Upper Portal Area		
	Shop	MN-001
	Diesel Generator	
	Office & Support Complex	MN-003
Lower Portal Area		
	Brine Mixing Facility	MN-004
	Portal and Underground Works	MN-005
Fuel Storage Facility		
	Fuel Storage Facility	MN-006
Pond Access Road		
	Pond Access Road	MN-007
Pollution Control Pond		
	Pollution Control Pond	MN-008
Portal Pad Road		
	Portal Pad Haul Road	MN-009
	Pipe Culvert	MN-010
	Dual Water Line - Discontinued	MN-011
Ore Stockpile Pad		
	Ore Stockpile Pad	MN-012
Waste Rock Pile		
	Waste Rock Pile	MN-013
Madrid North Vent Raise		
	Vent Raise	MN-014
	Ventilation and Heating Facilities	MN-015
	Offices & Support Complex	MN-016
	Diesel Generator	MN-017
	Fuel Containment Area	MN-018
	Vent Raise access road	MN-019
	Pipe Culvert	MN-020
Madrid South All-Weather Road		
Madrid South All-Weather Road		
	Madrid South All-Weather Road	MR-001
	Crossing #1	MR-002
	Crossing #2	MR-003

Madrid South Surface Infrastructure		
Infrastructure Pad Area		
	Shop	MS-001
	Fuel Storage Facility	MS-002
	Offices & Support Complex	MS-003
	Fresh Water Pipelines Leg 2 - Discontinued	MS-004
	Diesel Generator	MS-005
Laydown Pad		
	Laydown Pad	MS-006
Portal Area		
	Portal and Underground Works	MS-007
	Brine Mixing Facility	MS-008
Primary Pollution Control Area		
	Primary Pollution Control Pond	MS-009
Haul Road and Water Supply Infrastructure		
	Secondary Pollution Control Pond	MS-010
	Haul and Access Roads	MS-011
	Pumphouse - Discontinued	MS-012
	Freshwater Pipeline Leg 1 - Discontinued	MS-013
Infrastructure Access Road		
	Infrastructure Access Road	MS-014
Waste Rock Pile		
	Waste Rock Pile	MS-015
Ore Stockpile Pad		
	Ore Stockpile Pad	MS-016
Madrid South Vent Raise Area		
	Vent Raise	MS-017
	Ventilation and Heating Facilities	MS-018
	Fuel Containment Area	MS-019
Additional Direct Costs		
Off-site Shipping for Disposal	Ship Off-site for Disposal by Barge	DN-001
Off-Site Disposal Fees	Disposal Fees in Licensed Facility	DN-002
Water Management	Madrid North Water Management - Discontinued	WM-001
	Madrid South Water Management - Discontinued	WM-002

3 Closure and Reclamation Strategies

In accordance with the Nunavut Mine Site Reclamation Policy (DIAND 2002) and the 2007 Northwest Territories Mine Site Reclamation Guidelines (INAC 2007) the following closure and reclamation strategies will be used to fulfill the closure obligations.

3.1 Cover Materials

All material used for reclamation will be sourced from existing stockpiles of Run-of-Quarry and crushed rock. This stockpiled material will come from local approved and permitted rock quarries along the Doris-Windy All Weather Road (Quarry A, B, and D), as well as quarries along the Madrid South All-Weather Road (Quarry G and H). SRK (2008) contains complete details pertaining to geochemical characterization of the Doris-Windy All-Weather Road Quarries A, B, and D while SRK (2014f) provides the geochemical characterization of the Madrid South All-Weather Road Quarries G and H confirming the suitability of all these quarries for use.

Where overburden soils, stockpiled during quarry development, will be used for reclamation, a sampling and testing program will be carried out to ensure no chemical or hydrocarbon contamination exists within the overburden stockpiles. The Canadian Council for Ministers of the Environmental Soil Quality Guidelines (CCME 2007) provides guidance to the acceptability of overburden material for reclamation covers.

3.2 Rock Fill Pads (Pads)

The reclamation objective is to ensure long-term physical stability and to protect the permafrost. Reclamation of the pads will be limited to regrading to ensure positive drainage and prevent the ponding of water. Since construction, the permafrost will have migrated into the pads resulting in the loss of the underlying vegetation and soils. Removal of the pads is not practical because it would accelerate permafrost degradation due to lack of well-established vegetation, which provides a thermal cover to preserve the permafrost. Re-vegetation of the pads is not practical because the rock fill will not support vegetation growth.

3.3 All-Weather Roads

The all-weather roads are built using rock fill that will be left in place to protect the permafrost, as described in Section 3.2. The surface of the all-weather roads will be crowned or graded to prevent permanent ponding of water. The stream crossings will be removed for safety.

3.4 Fuel Storage Areas

At Madrid North there is a 75,000 L fuel tank in the fuel storage facility located along the haul road to the portal upper pad and a 60,000 L fuel tank, in the fuel containment area, located on the vent raise Pad.

At Madrid South there is a 75,000 L fuel tank, in the fuel storage facility, located on the infrastructure pad and a 60,000 L fuel tank, in the fuel containment area, located on the vent raise pad.

The fuel tanks will be decommissioned, drained, and hauled to Roberts Bay to be removed from the site for reuse or disposal in a licensed facility. The granular protective cover, over the geosynthetic liners, will be tested for the presence of hydrocarbons. If required, this material will be remediated onsite or removed offsite for disposal. The geosynthetic liners will be cleaned, removed, cut into pieces, and disposed of as non-hazardous waste. The containment berms will be levelled to prevent permanent ponding of water.

3.5 Buildings and Facilities

3.5.1 Salvage

SRK understands that TMAC is currently planning to complete the work at Madrid North and at Madrid South sequentially. As a result, there is the potential to re-use buildings and equipment at both sites. This potential cost savings, in closure, have not been factored into the estimate. Reusable furniture, utilities, equipment, and supplies will be salvaged prior to demolition and prepared for shipping off-site to a point of sale. Where possible, salvageable structures will be moved intact, or they will be carefully dismantled and catalogued for re-assembly. Unusable or unwanted buildings will be demolished. For the purpose of the closure cost estimate none of the buildings and facilities are assumed to have salvage value.

3.5.2 Demolition

All utilities will be dismantled and the structures emptied prior to demolition. Fuel tanks used for heating fuel will be drained and removed. Non-hazardous and hazardous waste will be segregated and disposed of as discussed in Sections 3.12 and 3.13.

3.6 Water Management Structures

All existing water management structures (pollution control ponds) will be maintained at Madrid North and at Madrid South until post-closure water quality objectives are met. Water collected in the pollution control ponds will be transported to Tail Lake for disposal as described in SRK (2014g). Discharge from Tail Lake must meet the water quality criteria for the Doris North Type “A” Water License 2AM-DOH1323.

When post-closure water quality objectives are met, the pollution control ponds will be decommissioned and breached to restore the natural drainage paths where possible. For all pollution control ponds, the downstream berm will be breached and the liner within the pollution control pond will be entirely removed and disposed of as non-hazardous waste.

Where a natural drainage path cannot be restored, measures will be taken to prevent accumulation and permanent ponding of water in order to prevent permafrost degradation. Erosion protection and sediment control measures will be installed where necessary.

All sumps will be decommissioned and backfilled with crushed rock.

3.7 Ore Stockpile and Waste Rock Pile

It is assumed that all ore from the MAEP will have been processed through the Mill at Doris North Mine. The top surfacing layer of the ore stockpile pads will be removed and processed through the Mill at Doris North Mine as well. The remaining clean rock fill will be regraded to prevent the permanent ponding of water.

Waste rock will be used for sealing the underground workings. A portion of the waste rock at Madrid North is known to be potentially acid generating (PAG). Furthermore, specific waste rock lithologies are known to leach arsenic (As) and nickel (Ni). All of the waste rock will leach ammonia (from the blasting residue) and salts (from the drilling brine). The waste rock at Madrid South is known to be non-PAG and the As and Ni leaching is less significant, compared to the waste rock at Madrid North. Like the waste rock at Madrid North, all of this waste rock will leach ammonia (from the blasting residue) and salts (from the drilling brine).

For the purpose of the closure cost estimate it has been assumed the remaining waste rock, on surface at both Madrid North and Madrid South, will be consolidated, reshaped to prevent the ponding of water with the final side slopes of 3H:1V, and covered with an HPDE liner with a 0.3 m thick protective layer of crushed rock.

3.8 Portal and Underground Workings

All underground utilities and installations will be removed and disposed of as appropriate. The entrance of the two underground portals will be sealed with 15 m thick rock fill plugs, according to regulations. The pads in front of the portals will be regraded to promote positive drainage away from the portal entrances, and prevent the permanent ponding of water.

3.9 Vent Raise

Duct works, pipes, and cables entering into the vent raises will be removed. A 0.5 m thick reinforced concrete plug will be installed to seal each vent raise.

3.10 Rock Quarries

All rock quarries will be decommissioned and reclaimed. The vertical faces, in the quarries, will be scaled and the safety berms left in place. The area of each quarry will be inspected by a qualified inspector, to ensure there are no loaded blast holes remaining on-site.

The quarries will be managed and monitored according to SRK (2014h). Quarries will be developed such that precipitation or snow melt is retained within the quarry boundaries. Generally this will be accomplished by ensuring that the quarry floors are sloped toward a natural low area and, if required, the creation of a quarry sump to collect the waters and settle out suspended solids. In the event the quarry sump requires pumping, a sample of the ponded water will be tested and the inspector will be notified at least fifteen (15) days prior to the planned

pumping to the discharge location. Should the quarry water not meet discharge criteria, a vacuum truck will remove the water to Tail Lake.

3.11 Collection and Disposal of Demolition Debris and Non-Hazardous Waste

Structures and facilities that are to be demolished will have non-hazardous waste segregated into wood waste and other non-hazardous waste.

Wood waste will either be chipped or burned. Wood waste suitable for burning will be transported to an approved burn pan location. Prior to on-site burning, appropriate approvals and permissions will be obtained from the NWB. Chipped wood may be used for reclamation activities such as being mixed with drill cuttings, overburden or other material and used to back fill depressions in the tundra caused by permafrost degradation.

All remaining non-hazardous waste will be loaded into seacans to be shipped off-site and disposed of in a licensed facility in accordance with appropriate Federal, Provincial, Territorial, or Municipal non-hazardous waste regulations.

3.12 Collection and Disposal of Hazardous Waste

Hazardous wastes and chemicals, remaining on-site, will be collected and stored in suitable sealed containers and/or empty drums. This includes any remaining fuel, hydraulic oil, antifreeze, batteries, other lubricating fluids, and chemicals. Reusable items will be shipped off-site to a third party destination. Unusable items will be packaged and manifested at the Waste Management Facility, located at Roberts Bay, for transport to a licensed facility in accordance with Federal, Provincial, Territorial, or Municipal non-hazardous waste regulations.

4 Post-Closure Monitoring and Maintenance

Post-closure monitoring will take place until such time as the objectives of the closure and remediation activities, described above, have been met to the satisfaction of the regulatory authorities and all affected parties. The extent of post-closure monitoring may vary given that the MAEP have been designed with closure in mind.

The following post-closure monitoring will be required to ensure the closure and remediation objectives are met:

- Madrid North, Madrid South All-Weather Road, and Madrid South will be inspected annually by a Professional Engineer for three consecutive years to ensure that any permafrost degradation areas have stabilized.
- Post-closure monitoring of all covers will be performed every two years for a ten year period or until it is confirmed the areas are physically stable. These inspections will be completed by a Professional Engineer to ensure the physical integrity of the cover is maintained. Maintenance will be performed on areas that monitoring identifies as needing repairs.
- An annual seep sampling program, carried out in accordance with the Type “B” Water Licence, will be continued to detect any changes in the leachate chemistry downstream of the remediated areas for a period of five years or until the leachate is confirmed to be chemically stable and consistent with the closure criteria in the Type “B” Water License.

The post-closure monitoring requirements may require additional activities following the implementation of the Madrid Advanced Exploration Program Final Closure and Remediation Plan and the subsequent Madrid Advanced Exploration Program Reclamation Completion Remediation Report.

In addition, the monitoring requirements may change as a result of the Madrid Advanced Exploration Program Performance Assessment Report. This report will be prepared and submitted to the NWB for their review following the initial post-closure monitoring period which will be defined in consultation with NWB as part of the Madrid Advanced Exploration Program Final Closure and Remediation Plan.

5 Cost Estimate

The basis for the closure cost estimate is the same as the one used for the Doris North Mine Closure and Reclamation Plan (SRK 2014a, 2014b). The closure cost estimate is presented in 2014 CAD. These costs were developed using an NWB approved MS Excel spreadsheet based cost estimating process that is consistent with the principles of RECLAIM6.1 (SRK 2014i). The details of the estimated costs for closure of the MAEP are provided in Attachment 1 with a summary provided in Table 2.

Table 2. Summary of Closure Cost Estimate

Location	Cost
Direct Cost	
Madrid North Surface Infrastructure	$ 1,834,000
Madrid South All-Weather Road	$ 17,000
Madrid South Surface Infrastructure	$ 1,757,000
Additional Direct Costs	$ 817,000
Total Direct Costs	**$ 4,425,000**
Indirect Cost	
Total Indirect Costs	**$ 2,706,000**
Total Closure Cost	
Total Closure Costs	**$ 7,131,000**

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Figures