



2016-2017 Annual Monitoring Report for TMAC Resources Inc.'s Doris North Gold Mine Project

November 2017

Nunavut Impact Review Board File No. 05MN047

Report Title: The Nunavut Impact Review Board's 2016–2017 Annual Monitoring

Report for the Doris North Gold Mine Project (NIRB File No. 05MN047)

Project: Doris North Gold Mine Project

Project Location: Kitikmeot Region, Nunavut

Land Tenure: Inuit Owned Lands

Project Owner: TMAC Resources Inc.

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Cover Photo: 2017 Aerial View of the Doris North Gold Mine Site

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1.0 INTRODUCTION

Pursuant to Sections 12.7.1 and 12.7.2 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada* (Nunavut Agreement), the Nunavut Impact Review Board (NIRB or Board) is responsible for the post-environmental assessment monitoring of the Doris North Gold Mine Project (Doris North or the Project) and in accordance with Project Certificate No. 003. The objectives of the NIRB's monitoring program as indicated in Section 12.7.2 of the NA include:

- a) to measure the relevant effects of projects on the ecosystemic and socio-economic environments of the Nunavut Settlement Area;
- b) to determine whether and to what extent the land or resource use in question is carried out within the predetermined terms and conditions;
- c) to provide the information base necessary for agencies to enforce terms and conditions of land or resource use approvals; and
- d) to assess the accuracy of the predictions contained in the project impact statements.

This report provides findings that resulted from the Board's monitoring program for the Project from October 1, 2016 to September 30, 2017.

1.1 Project History and Current Status

In September 2006, the NIRB issued Project Certificate No. 003 (the Project Certificate) to Miramar Hope Bay Ltd. (Miramar) for the Doris North Gold Mine Project. The Project Certificate was issued by the NIRB following completion of its Review of the Project in accordance with Part 5 of Article 12 of the Nunavut Agreement. Doris North is located 110 kilometres (km) south of Cambridge Bay and 65 km east of Omingmaktok (Bay Chimo) near Melville Sound in the West Kitikmeot region of Nunavut. The site is accessed seasonally by sealift for fuel and supplies, and year-round by air for select freight and all personnel movements.

In early 2008, Newmont Mining Corporation purchased all interests of Miramar and its subsidiary properties in the Hope Bay Belt, including the Doris North holding. Following this acquisition, Hope Bay Mining Ltd. (HBML) was established for the purposes of operating Doris North and other properties in the Hope Bay Belt. In late 2008, construction of Doris North was suspended as HBML reevaluated the original mine development plan. In November 2009, HBML decided to proceed with the Project through a staged development strategy. HBML subsequently resumed infrastructure construction in the summer of 2010 and 2011 in support of the advanced exploration and in anticipation of commencement of mine operation in 2012. However, on January 31, 2012 HBML announced that it had decided to place the Project into care and maintenance, and that the mine camp would be open seasonally to maintain regulatory obligations.

In March 2013, HBML notified the NIRB that it was selling the Project to TMAC Resources Inc. (TMAC) and later that month TMAC notified the NIRB that it planned to re-open the camp to continue exploration activities while maintaining the site in care and maintenance. In April 2013, the NIRB

received notice that TMAC had completed the purchase of the Project from HBML and that the status of the Project would continue in care and maintenance while TMAC continued ongoing exploration. Later in December, TMAC notified parties that it would be maintaining a year round presence in order to operate essential Doris North Camp facilities and systems, conduct monitoring programs under applicable licences and permits, and continue exploration activities.

On December 9, 2013, TMAC filed an application with the NIRB and Nunavut Water Board (NWB) for a joint amendment/reconsideration of the Project Certificate to allow for Project modifications which would be required for TMAC to bring the Project out of care and maintenance. The NIRB commenced reconsideration of the Project Certificate pursuant to the Nunavut Agreement section 12.8.2 until April 22, 2014 when the NIRB and NWB received notice from TMAC that it planned to submit additional amendments for consideration as part of the application. On April 30, 2014 the NIRB and NWB provided joint direction to suspend the assessment until TMAC submitted a complete scope of proposed modifications. Through the summer of 2014, TMAC continued with ongoing exploration and site management activities while Doris North remained in care and maintenance, and in the winter of 2014 TMAC maintained its presence on site.

In March 2015, TMAC notified parties that the Project would be transitioning from care and maintenance into construction after that year's barge season. Further, on June 18, 2015 TMAC applied to the NIRB and NWB to approve a proposed Updated Waste Rock and Ore Management Plan which included the construction, operation, and decommissioning of a waste rock storage pad identified as Pad T. This optional pad had been included in the scope of activities within the Final Environmental Impact Statement (FEIS) for the Project. After completing a review of the information provided by TMAC, the NIRB was of the understanding that the proposed activities associated with Pad T did not change the general scope of the original project activities and concluded that the application was exempt from the requirement of screening pursuant to Section 12.4.3 of the Nunavut Agreement. As such, the activities remained subject to the terms and conditions recommended in the original Project Certificate.

On June 23, 2015 TMAC applied to extend the mine life for the Project from two (2) years to six (6) years through the mining of two (2) additional mineralized zones (Doris Connector and Doris Central) to be accessed via the existing Doris North portal. The expanded mining program would also increase the approved mining and milling rates to 2,000 tonnes per day, and would require the restructuring of the Tailings Impoundment Area for subaerial tailings deposition with treated effluent to be transported via a pipeline for discharge into Roberts Bay. The NIRB conducted a review of the proposed amendments to the Project and held a hearing on April 12 to 14, 2016. On June 13, 2016 the Board recommended the proposed project amendments be allowed to proceed subject to the modification of the Project Certificate as well as specific revisions to pertinent terms and conditions and removal of Term and Condition 9, i.e., the requirement for an on-site laboratory for water quality monitoring.

On August 29, 2016 the Honorable Carolyn Bennett, the Minister of Indigenous and Northern Affairs, accepted the Board's Public Hearing Report for TMAC's Amendment to Project Certificate No. 003. On September 20, 2016 the NIRB held a Project Certificate Workshop and issued the amended Project Certificate for the Doris North project (Project Certificate No. 003, Amendment 02) on September 23,

2016. Therefore, the NIRB's 2016-2017 monitoring year for the Project was informed by Project Certificate No. 003, Amendment 02.

1.2 Project Components

The original project proposal covered a physical footprint of 53 hectares, and included an ore processing capacity of 668 tonnes per day. The life of mine was two (2) years, processing 458,000 tonnes of ore to yield approximately 306,830 ounces of gold.

The major components of the original Project include a main camp, fuel tank farm, office complex, workshops, power generation plant, sewage treatment plant, portal with associated underground mine, and a crusher and mill at the main mine site. Tailings generated during the milling process would be deposited in Tailings Impoundment Area (TIA) at Tail Lake created through the construction of two (2) frozen core dams. The other major portion of the Project was at Roberts Bay with a jetty, fuel tank farm, and laydown area. A 4.8 kilometre (km) all-weather road with a section also proposed as an airstrip would link Roberts Bay, or the north end of the Project, to the main camp and mine site.

In 2011, HBML amended the Type "A" water licence for the Doris North project (File No. 2AM-DOH0713) to include an airstrip expansion/bypass road. On January 14, 2011 the NIRB determined that the aforementioned amendment was exempt from the requirement of further NIRB screening under Section 12.4.3 of the NLCA, which allowed construction to begin; however, the Project was placed in care and maintenance prior to completion of the airstrip expansion. In 2015, TMAC completed the expansion of the airstrip after recommencing construction.

The following Project modifications were approved under Project Certificate No. 003, Amendment 02:

- Extension of mine life by four (4) years;
 - Mining of Doris Central and Doris Connector zones via the existing Doris North portal instead of only mining the Doris Hinge zone;
- Increase of both mining and milling rates from 720 tonnes/day (t/day) and 800 t/day, respectively, to 2,000 t/day;
- Increase total volume of deposited tailings in the Tailings Impoundment Area (TIA) from 458,000 tonnes to 2.5 million tonnes;
 - Modification to the destruction of cyanide in process tailings from Caro's Acid (hydrogen peroxide and sulfuric acid) to the INCO process;
 - Change to the tailings deposition from subaqueous to subaerial at the south end of the TIA;
 - o Restructuring of the TIA:
 - Installation of an interim dam approximately midway in the TIA.

- Modification of south dam construction and operations from frozen core to frozen foundation.
- Discharge of up to 7,000 cubic metres/day (m³/day) directly into Roberts Bay:
 - Direct discharge of up to 3,000 m³/day of saline groundwater from underground year round.
 - O Discharge of up to 4,000 m³/day from the TIA during summer months.
 - Construction/installation, operation, and eventual decommissioning of a 550 metre (m) access road at Roberts Bay, a 5.64 kilometres (km) of overland pipeline, and a 2.3 km long marine outfall pipeline.
 - o Installation, operation, and eventual abandonment of a 95 m long marine diffuser and approximately 900 m long marine outfall berm.
- Alternative disposal option for saline groundwater from underground workings to the TIA prior to the deposition of TIA water in Roberts Bay;
- Construction, operation, and eventual decommissioning of two (2) additional vents (Doris Central Vent and Doris Connector) and associated spur roads;
- Construction, operation, and eventual decommissioning of Pad U, which would be a 31,000 m² pad and associated pollution control pond for use as ore storage and temporary laydown area;
- Increase camp capacity from 180 to 280 persons to accommodate project personnel;
- Replacement of existing sewage treatment plant with a new plant with an increased capacity for the larger camp and retrofitting of existing sewage treatment plant for backup;
- Use of existing quarries A, B, D, and 3 to supply foundation materials for additional proposed infrastructure;
- Relocation of proposed landfill from Quarry A to Quarry 3 once the resources have been exhausted;
- Construction, operation, and eventual decommissioning of three (3) additional laydown areas at Roberts Bay (Roberts Bay Extension Laydown Area West, Southwest, and Southeast);
- Relocation of explosives facility from pad adjacent to Quarry 3 to Quarry A;
- Over-wintering of fuel barges in Roberts Bay as required to support operations; and
- Removal of the requirement for TMAC to install and operate an on-site laboratory to test TIA water onsite in real time prior to release into Doris creek as previously required under Term and Condition 9 of the NIRB Project Certificate No. 003.

1.3 Completed Infrastructure at Doris Site

1.3.1 Tail Lake

The Project area around Tail Lake (*now* the Tailings Impoundment Area [TIA]) currently includes the frozen core North Dam which is located approximately one (1) km southeast of Doris Camp, and is accessible via a secondary road. The North Dam is a rock fill dam with a permanently frozen core constructed to contain the tailings in the TIA. The frozen core is maintained using thermosyphons, and the dam is monitored to ensure its integrity.

In 2016-2017 TMAC continued the construction of the access road to South Dam and completed construction of the frozen foundation. During this period, TMAC established infrastructure associated with the newly completed permanent explosives storage pad and converted the existing temporary explosives pad, constructed in 2015, to a reagent storage pad for the Project. TMAC also installed the tailings discharge line and associated discharge spigots at the south end of the TIA, constructed emergency catchment basins, and installed the reclaim water pipeline associated with the TIA. In addition, TMAC commenced subaerial deposition of tailings into the south end of the TIA.

1.3.2 Main Camp

The Doris Camp is located approximately five (5) km south of Roberts Bay, and includes the following completed infrastructure and facilities:

- Rock fill pads to support some above-ground facilities
- 180-person capacity accommodations
- Sewage treatment plant
- Bulk fuel storage area
- Helicopter operations and landing area
- Underground mining support facilities (e.g., portal)
- Landfarm
- Diversion berm upslope of the camp
- Core storage area
- Ore and waste rock storage facilities
- All-weather road/airstrip

- Mine offices
- Power plant
- Warehouses
- Vehicle parking
- Material laydown area
- Mill building and processing plant
- Open burn area
- Overburden storage pile
- Reagent storage pads
- Pollution control ponds

In 2016-2017 TMAC completed the construction of the crusher and mill building on the mill pad, assembled components of the processing plant, initiated the construction of the reagent and cyanide storage facility, replaced existing sewage treatment system with a new sewage treatment plant module, and constructed an apron on the south end of the airstrip.

Other construction activities within the Project area during this period included construction of an aircraft de-icing pad and expansion of laydown areas at Roberts Bay.

In 2016-2017 TMAC also continued with deposit definition drilling and underground mining activities at the Doris Portal, including the stockpiling of waste rock and ore above-ground. In January 2017 the Proponent officially commissioned the mill to process stockpiled ore to produce gold doré bars.

1.3.3 Roberts Bay

The Roberts Bay area includes the marine port and other ancillary facilities required for the Project on bedrock or rock fill pads. A rock fill jetty was constructed and underwent an upgrade in 2013 for barge operations, and two (2) bulk fuel storage facilities were established on site prior to the 2016-2017 monitoring period, one (1) containing a single five (5) million litre (ML) tank and the second facility containing three (3) five (5) ML tanks (for a total of 15 ML). A mechanical shop, vehicle repair complex, waste management facility, and laydown area were also completed prior to the 2016-2017 monitoring cycle.

In 2016-2017 TMAC constructed the Roberts Bay Discharge access road, commenced construction of some components of the Roberts Bay Discharge System, and expanded the Roberts Bay laydown areas.

2.0 MONITORING ACTIVITES

2.1 General Reporting Requirements

During the 2016-2017 monitoring period, TMAC demonstrated overall compliance with reporting requirements resulting from the NIRB's Review of the Doris North project, including commitments contained in related reports and plans as stipulated through the NIRB's Project Certificate. TMAC has provided the following items as required by the terms and conditions contained within the Project Certificate for the monitoring period of October 2016 through September 2017:

- Hope Bay Project Doris Aquatic Effects Monitoring Plan, January 2017
- Doris North Interim Closure and Reclamation Plan, January 2017
- Hope Bay Doris Tailings Impoundment Area Operations Maintenance and Surveillance Manual, January 2017
- Waste Rock and Ore Management Plan, Hope Bay Project, Nunavut, January 2017
- Water Management Plan, Hope Bay Project Nunavut, January 2017
- Hope Bay Project Hazardous Waste Management Plan, January 2017
- Hope Bay Project Human Resources Plan, January 2017
- Incinerator Management Plan, January 2017
- Hope Bay Groundwater Management Plan, January 2017
- Hope Bay Environmental Management System, January 2017
- Doris North Wildlife Mitigation and Monitoring Plan, January 2017
- Hope Bay Project Interim Non-Hazardous Waste Management Plan, January 2017
- Hope Bay Project Quality Assurance Quality Control Plan, January 2017
- Hope Bay Landfarm Management and Monitoring Plan, January 2017
- Hope Bay Project Spill Contingency Plan, January 2017
- Hope Bay Community Involvement Plan, January 2017
- Hope Bay Project Water Management Plan, February 2017
- Hope Bay Project Domestic Waste Water Treatment Plan Doris Project. February 2017
- Hope Bay Project Quarry Management and Monitoring Plan, February 2017
- Emergency Response Plan, February 2017
- 2016 Annual Report for Doris Project Certificate NIRB No. 003, May 5, 2017

- 2016 Wildlife Compliance Monitoring Report, May 2017
- 2016 Aquatic Effects Monitoring Program Report, May 2017
- Q1-Q3 2016 Atmospheric Compliance Monitoring Program Report, May 2017
- 2016 Archaeological Report, May 2017
- 2016 Waste and Quarry Rock Monitoring Report, May 2017
- 2016 Annual Roberts Bay Jetty Inspection, May 2017
- 2016 Socio-economic Monitoring Program, May 2017

On June 5, 2017 the NIRB invited interested parties to comment on TMAC's 2016 Annual Report for Doris North Gold Mine Project Certificate NIRB No. 003, Amendment 002 (the NIRB Project Certificate). On or before July 12, 2017 the NIRB received comments from the following parties:

- Kitikmeot Inuit Association
- Government of Nunavut
- Environment and Climate Change Canada
- Fisheries and Oceans Canada
- Indigenous and Northern Affairs Canada

Transport Canada and the Kugluktuk Angoniatit Association in separate correspondence to the NIRB on July 7, 2017 and September 25, 2017, respectively, noted that they had no comments or concerns regarding TMAC's 2016 Annual Report.

2.2 Compliance Monitoring

Compliance monitoring involves an assessment undertaken by regulators and other agencies to establish whether or not the Project is being carried out as required by relevant legislation, regulations, instruments, commitments and agreements. Compliance monitoring, as reported by authorizing agencies, is also a requirement of the NIRB's Monitoring Program for the Doris North Gold Mine Project.

2.2.1 Compliance with the NIRB Project Certificate

During the 2016-2017 reporting period, the Proponent was successful in meeting the requirements of the Project Certificate. Some terms and conditions may not be applicable to the Project as Doris North had transitioned into operation during the monitoring period (October 2016-September 2017). <u>Appendix A highlights TMAC's compliance achievements with the Project Certificate from 2016 to 2017.</u>

2.2.1.1 TMAC'S RESPONSE TO THE BOARD'S 2016 RECOMMENDATIONS

On November 4, 2016 the Board made a number of recommendations as a result of the 2015-2016 monitoring efforts and the 2016 site visit by NIRB staff. On February 3, 2017 TMAC provided responses to address each of the Board's 2016 Recommendations which are summarized in Table 1.

TABLE 1 - NIRB 2016 RECOMMENDATIONS AND TMAC RESPONSES

BOARD RECOMMENDATION	TMAC RESPONSE
1 - The Board requires that TMAC review Project Certificate No. 003 and the associated Post Environmental Assessment Monitoring Plan and provide a summary of new or updated reports or plans expected to be submitted during the next monitoring period to the NIRB as required for the Doris North Gold Mine Project that is in construction and moving toward operations. The Board requires a response within 30 days following the issuance of this recommendation.	 TMAC indicated that it planned to submit the following reports and plans to the NIRB in 2017: 2016 Annual Report for Project Certificate No. 003 2016 and 2017 Air Quality Monitoring Reports 2016 Wildlife Mitigation and Monitoring Plan Report 2016 Socio-Economic Monitoring Report 2016 Roberts Bay Jetty Geotechnical Inspection Report Wildlife Mitigation and Monitoring Plan Spill Contingency Plan Occupational Health and Safety Plan Emergency Response Plan Community Relations Plan Auditing and Continuous Improvement Plan TMAC also noted that it submitted correspondence to the NIRB in January 2017 that provided an update on all management plans for the Doris North Project Certificate No. 003.
2 - The Board requires that TMAC repair the damaged thermistor and continue reporting through operations. Should TMAC be unable to do so, the Board would be required to reconsider the term and condition after receiving a formal application made by TMAC to the Board. The Board requires a response within 30 days following the issuance of this recommendation.	TMAC indicated that the damaged thermistor has been deemed irreparable at this time following an evaluation by TMAC's team. TMAC also noted that permafrost conditions under the Jetty remain stable, as indicated in Annual Jetty Geotechnical Inspection Reports submitted to the NIRB to date. Hence, TMAC requested that the Board approve the discontinuation of the monitoring requirements under Condition 19 of Project Certificate No. 003, or that the Board limit applicable monitoring requirements to the single existing thermistor cable.

3 - The Board requires that TMAC clarify the status of the DNA data collection for both grizzly bears and wolverines and ensure that the NIRB is aware of all changes that have been made to the monitoring program. The Board requires a response within 30 days following the issuance of this recommendation.

TMAC noted that DNA data collection for grizzly bears and wolverine has been completed and no further DNA surveys are anticipated. Further, TMAC indicated that due to concerns about the limited ability of DNA population estimation as a tool in the Wildlife and Monitoring Plan (WMMP) Mitigation monitoring of Project-related effects, the Government of Nunavut, Kitikmeot Inuit Association, Environment and Climate Change Canada, and the Hope Bay Inuit Environmental Advisory Committee proposed and accepted that DNA-based surveys be replaced by camera-based monitoring for bears and wolverine. TMAC stated that these changes to survey methodology for bears and wolverine have been incorporated in the revised WMMP submitted to the NIRB in March 2016.

4 - The Board requires that TMAC provide an update on projected timelines for the development of outstanding infrastructure included within the Doris North Project Certificate by January 1st annually as required by Condition 5 of Project Certificate No. 003.

TMAC stated that it provided the NIRB with an update with respect to Condition 5 of the Project Certificate on January 30, 2017.

5 - The Board requires that TMAC provide a response to parties' information requests and technical comments as provided to the NIRB in relation to the 2015 Wildlife Mitigation and Monitoring Program Annual Report for Doris North. The Board requires a response within 30 days following the issuance of this recommendation.

TMAC indicated that it had provided the NIRB with its responses to parties' comments on the 2015 Wildlife Mitigation and Monitoring Program Annual Report for Doris North on February 3, 2017.

5 - The Board requires that TMAC provide A RESPONSE TO PARTIES' INFORMATION REQUESTS AND TECHNICAL COMMENTS AS PROVIDED TO THE NIRB IN RELATION TO THE UPDATED 2016 WILDLIFE **MITIGATION** AND**MONITORING** PROGRAM FOR DORIS NORTH. THE BOARD 30 REQUIRES RESPONSE WITHIN DAYS **FOLLOWING** THE*ISSUANCE* OF**THIS** RECOMMENDATION.

TMAC indicated that it had provided the NIRB with its responses to parties' comments on the 2016 Wildlife Mitigation and Monitoring Program for Doris North on February 3, 2017.

TMAC has responded to all of the 2016 Board recommendations, and provided the required plans, or committed to providing the requested material in subsequent reports once the material is available as noted in correspondence to the NIRB on January 30, 2017 and February 17, 2017, and in the 2016 Annual Report for Doris Project Certificate NIRB No. 003.

2.2.2 Compliance Monitoring by Authorizing Agencies

2.2.2.1 KITIKMEOT INUIT ASSOCIATION

On March 30, 2015 the Kitikmeot Inuit Association (KIA) and TMAC entered into a comprehensive Framework Agreement or Inuit Impacts Benefits Agreement (IIBA) for the development of the Hope Bay Greenstone Belt including the Doris North Gold Mine and the Madrid and Boston advanced exploration projects. KIA noted in its July 12, 2017 submission that it was adequately consulted by TMAC on socio-economic effects and the potential impacts on the rights of Inuit of Nunavut. KIA also noted that Inuit employment on the Project site averaged 12%. Further, the KIA outlined the future expectations in the implementation of the IIBA.

In its July 2017 submission, the KIA noted that it had conducted inspections of the Doris North project mine site from June 21 to 22, 2016 and on September 11, 2016. The KIA outlined the project areas that it had observed which included the Roberts Bay jetty and tank farm, the crushing and milling plant construction, sedimentation and pollution control ponds, the relocated explosives storage facility, the Tailings Impoundment Area, and associated infrastructure. The KIA stated that TMAC is generally in compliance with the terms and conditions of existing permits and a commercial lease issued by KIA to TMAC for the Project.

2.2.2.2 ENVIRONMENT AND CLIMATE CHANGE CANADA

In its July 2017 submission, Environment and Climate Change Canada (ECCC) stated that it had not issued any regulatory authorizations for the Project during the 2016-2017 monitoring period. ECCC also indicated that no compliance issues were noted during its onsite inspection of the of the Project site from August 9-12, 2016 to verify compliance under the following:

- The *Canadian Environmental Protection Act* Sulphur in Diesel Fuel Regulations and the Environmental Emergency Regulations.
- The *Fisheries Act* general prohibitions under subsection 36(3) and the Metal Mining Effluent Regulations.

2.2.2.3 FISHERIES AND OCEANS CANADA

In its July 2017 submission, Fisheries and Oceans Canada (DFO) stated that TMAC was in compliance with existing authorizations issued to date, including those related to impacts to fish and fish habitat associated with Roberts Bay and at Tail Lake. DFO also noted that it did not conduct any visits to the Project site in 2016, but that it would be conducting a site visit in 2017-2018.

2.2.2.4 INDIGENOUS AND NORTHERN AFFAIRS CANADA

In its July 2017 submission, Indigenous and Northern Affairs and Canada (INAC) reported that it had conducted two (2) inspections of the Doris North Project site in 2016 – the first on April 5-7, 2016 and the second on November 5-6, 2016 – to verify compliance with water licences issued by the Nunavut Water Board (NWB) for the Project. Based on the site visits, INAC provided TMAC with a number of instructions and/or recommendations to ensure continued compliance with applicable water licences issued for the Project, including the following:

- TMAC was instructed to not use waste rock from underground for any purpose, including the construction of any infrastructure, unless otherwise approved by the NWB.
- TMAC was directed to: (a) continue recording and reporting water used for all purposes, including ice road development, (b) resume seasonal backhauls of hazardous waste as per Hazardous Waste Management Plan, (c) monitor drainage function of and sediment resulting from newly constructed works, (d) monitor dustfall as per licence requirements, (e) ensure extensive sediment control measures during spring freshet, and (f) ensure that changes to licensed facilities are approved prior to implementation.
- TMAC was instructed to (a) notify the inspector with confirmation when waste backhaul begins and (b) ensure that secondary containment capacity is maintained by removing snow regularly throughout the winter.

INAC noted that it was generally satisfied with TMAC's response to concerns raised by INAC's inspectors during the 2016-2017 monitoring period for the Project.

1.1 Effects Monitoring

Effects monitoring is an assessment of the measurable change to a particular environmental or socio-economic component, as compared to the potential effects that were predicted to result from a proposed development. In the case of Doris North, impact predictions and mitigation measures were outlined and developed throughout the environmental review of the Project, and were recorded and presented through the Proponent's Final Environmental Impact Statement (FEIS), the 2015 Amendment Application for the Doris North Gold Mine project, and other related documents.

The following section provides a summary of the NIRB's review of TMAC's 2016 Annual Report for the Project and comments received from parties.

1.1.1 NIRB's Review of TMAC's 2016 Annual Report

Appendix D of the Project Certificate provides an outline of the requirements of what is expected within the Proponent's Annual Report for the Doris North project. Reporting should include a summary of the results from the post-environmental assessment monitoring program (PEAMP), including an analysis of the Project's impact to the environment with reference to the predictions and environmental and socio-economic indicators used throughout the FEIS and Final Hearing.

In its 2016 Annual Report, TMAC provided evidence of its general compliance with the terms and conditions in the Project Certificate and a summary of project-related baseline and monitoring data it collected in 2016. TMAC also provided a list of updated management plans used to inform mitigation measures for project activities in 2016 and demonstrated evidence of general compliance with licenses, authorizations, regulations, and guidelines applicable to the site. The summary also included an update on TMAC's compliance status with all authorizations and applicable regulations and guidelines. Finally, TMAC provided a summary of activities that took place on site and a summary of community consultations undertaken during 2016. Overall, TMAC concluded that the impacts of the Project on the biophysical environment were minimal in 2016 as the Project did not reach the operations phase and no milling or tailings deposition occurred in 2016.

In TMAC's 2016 Wildlife Mitigation and Monitoring Plan (WMMP) Compliance Monitoring Report, TMAC outlined studies it had undertaken in 2016. In Section 2.0 of the WMMP Compliance Monitoring Report, TMAC noted that the total project footprint to date was 83 hectares, and that project construction activities in 2016 accounted for 4.9 hectares of the total project footprint. TMAC indicated that project activities to date had resulted in direct loss of suitable habitat in the regional study area of 0.03% for caribou and grizzly bear, 0.04% for wolverine, 3% for upland breeding birds, 3.4% for water birds, and 2.6% for raptors. TMAC concluded that it considers this level of suitable wildlife habitat disturbance as minimal and below critical threshold levels.

1.1.2 Effects Monitoring by Authorizing Agencies

As a part of its annual monitoring program, the NIRB requested that authorizing agencies with jurisdiction over project components or activities, or those with specific expertise, provide comment regarding the effects assessment associated with the Project.

1.1.2.1 KITIKMEOT INUIT ASSOCIATION

In its July 2017 submission, the Kitikmeot Inuit Association (KIA) commented that it considered conclusions made by TMAC in its 2016 Annual Report regarding project effects on components of the environment to be valid. However, KIA noted that it had identified significant issues in TMAC's 2016 Wildlife Mitigation and Monitoring Plan (WMMP) report regarding areas of camera monitoring of caribou and the determination of zone of influence for raptors that needed to be addressed.

KIA made a number of recommendations on TMAC's 2016 Annual Report and the various associated reports and plans, including the 2016 WMMP and the 2016 Aquatic Effects Monitoring Program. A summary of KIA's recommendations regarding proposed changes to the monitoring program that may be required as the Project transitions to the operations phase is presented in Section 1.1.3.

1.1.2.2 GOVERNMENT OF NUNAVUT

In its July 2017 submission, the Government of Nunavut provided recommendations on project effects monitoring based on TMAC's 2016 Annual Report, including the following:

• Clarification on whether measures to reduce dust due to quarrying will be undertaken at future quarries in the project area to prevent exceedances of dust fall predictions.

- Investigation of reasons for prolonged outage of cameras at the waste facility and proposed measures to prevent future occurrences.
- Conducting regular incinerator stack testing to ensure dioxin and furan levels meet applicable Canadian Council of Ministers of the Environment standards.

1.1.2.3 ENVIRONMENT AND CLIMATE CHANGE CANADA

In its July 2017 submission, Environment and Climate Change Canada provided recommendations on project effects monitoring based on TMAC's 2016 Annual Report, including the following:

- Inclusion as an appendix to the Aquatic Effects Monitoring Program (AEMP) of data from completed additional baseline monitoring in the marine environment associated with the Environmental Effects Monitoring that would be required under the Metal Mining Effluent Regulations.
- Rational for the exclusion of outliers from analysis associated with the AEMP.
- Changes to the process conditions of incinerators to lower the concentrations of dioxins, furans and particulates as recorded during the 2016-2017 monitoring period.
- Report on dustfall concentrations, with emphasis on the two (2) dustfall stations closest to quarry
 and crusher activities, and document the cause and mitigation measures implemented to reduce
 dustfall levels.

1.1.2.4 FISHERIES AND OCEANS CANADA

In its July 2017 submission regarding TMAC's 2016 Annual Report, Fisheries and Oceans Canada noted that it had no concerns or suggestions regarding the conclusions reached by TMAC or areas requiring further studies with respect to its mandate.

1.1.2.5 INDIGENOUS AND NORTHERN AFFAIRS CANADA

In its July 2017 submission regarding TMAC's 2016 Annual Report, Indigenous and Northern Affairs Canada noted it did not identify any information that would invalidate the conclusions reached by TMAC in the 2016 Annual Report, nor note any areas of significance that would require further studies or changes to the monitoring program.

1.1.3 Areas Requiring Further Study or Changes to the Monitoring Program

1.1.3.1 WILDLIFE MITIGATION AND MONITORING PROGRAM

In their July 2017 submissions, the Kitikmeot Inuit Association (KIA) and the Government of Nunavut (GN) recommended a number of changes to the monitoring program associated with TMAC's 2016 Wildlife Mitigation and Monitoring Plan (WMMP) including the following:

• Adjustment to the wildlife camera monitoring methods to account for environmental conditions.

- Collection of additional caribou collar data from the GN to conduct applicable analyses.
- Revisions to analyses of predicted loss of suitable habitat for wildlife, including caribou, from the Project.
- Changes to survey and analytical methods to better understand bird community composition differences in the Project area and the zone of influence.
- Undertaking appropriate analysis to provide density estimates for the Bathurst caribou herd to inform mitigation measures for potential project effects on the caribou herd.

1.1.3.2 AQUATIC EFFECTS MONITORING PROGRAM

In their July 2017 submissions, the Kitikmeot Inuit Association and Environment and Climate Change Canada recommended a number of changes to TMAC's 2016 Aquatic Effects Monitoring Program including the following:

- Re-initiation of fish sampling in 2017 as the Project transitions to the operations phase.
- Inclusion of trend analysis across all post-baseline years and changes to temperature in both the marine and freshwater environment in the 2017 Aquatic Effects Monitoring Program.
- Provision of an assessment of the feasibility of meeting proposed changes to current Metal Mining Effluent Regulations (MMER) standards by the federal government in TMAC's 2017 Annual Report.
- Undertaking applicable statistical and graphical analysis of measured water quality data for any contaminants which may be expected to be increasing due to the Project, regardless of whether a monitoring and analysis of a particular contaminant is a requirement of MMER.

On August 23, 2017 TMAC stated it would be responding to interested parties comments on its 2016 Annual Report in its 2017 Annual Report and plans.

1.1.3.3 APPENDIX D AND THE ANNUAL REPORT

The 2016 Annual Report provided a minimal summary regarding the post-environmental assessment monitoring program (PEAMP) for the Project as required throughout the Project Certificate and Appendix D. However, a discussion detailing how conclusions about project impacts are arrived at is required in the Annual Report to enable parties to evaluate the accuracy of impact predictions made in the FEIS. Specifically, and in line with Appendix D of the Project Certificate, the Proponent's annual report should include a summary of conclusions made throughout the reporting period, an evaluation of the effectiveness of mitigation measures employed, and a description of any impacts or effects resulting from exceeded thresholds, if any. The NIRB is aware of the Proponent's position that the Project had not yet moved to the operations phase in 2016; however, without additional discussions, summaries and actual quantifiable results of monitoring programs related to project-environment interactions during each annual monitoring cycle, it is difficult to ascertain whether or not impacts are being observed at site and to determine whether impacts and/or data are in line with the predictions provided within the FEIS.

1.2 Other Actionable Items

1.2.1 Phase 2 Hope Bay Belt Project Review

1.2.1.1 PROCEDURAL HISTORY

TMAC has proposed the Phase 2 Hope Bay Belt Project, which would involve the development of Madrid North, Madrid South, and Boston deposits in the Hope Bay Greenstone Belt, and the use, including expansion, of some existing facilities associated with the Doris North Project. Table 2 highlights major milestones in the NIRB's ongoing Review of the Phase 2 Hope Bay Project.

TABLE 2 - PROCEDURAL HISTORY OF THE NIRB'S REVIEW OF THE PHASE 2 HOPE BAY PROJECT

Date	Procedural Event
December 8, 2011	The NIRB receives the "Phase 2 Hope Bay Belt" project proposal from Hope Bay Mining Ltd. (HBML).
January 12, 2012	The NIRB receives a referral to screen the project proposal from the Kitikmeot Inuit Association (KIA).
February 24, 2012	The NIRB conducts Screening of the project proposal as per Article 12, Part 4 of the Nunavut Agreement and issues its Screening Decision Report to the responsible Minister recommending a Review under Article 12, Part 5 or 6 of the Nunavut Agreement.
May 7, 2012	HBML issues correspondence to the NIRB that it is placing all Hope Bay Belt developments into care and maintenance, and requests that the NIRB continue with the Review Proposal up to the issuance of Environmental Impact Statement (EIS) Guidelines.
May 30, 2012	Responsible Minister issues decision in support of the NIRB's recommendation and refers the project proposal to the NIRB for a Review under Part 5, Article 12 of the Nunavut Agreement.
October 9-23, 2012	The NIRB undertakes Public Scoping Meetings in all five (5) Kitikmeot communities, with participation of seasonal residents of Bay Chimo and Bathurst Inlet.
November 16, 2012	The NIRB releases the Scoping Summary Report
December 14, 2012	The NIRB issues <i>Final</i> EIS Guidelines for the project to HBML and suspends its Review of the Project.
March 18, 2013	HBML notifies the NIRB of Change in Project Ownership to TMAC.

Date	Procedural Event
December 31, 2014	TMAC submits an Exception from Review Application to the NIRB pursuant to Section 12.10.2(b) of the Nunavut Agreement to allow specific exploration and/or development activities (the Madrid Advanced Exploration Program) to proceed.
June 24, 2016	The NIRB releases Determination Report approving activities associated with the "Madrid Advanced Exploration Program" project proposal.
December 28, 2016	The NIRB and the Nunavut Water Board (NWB) receive TMAC's <i>Draft</i> Environmental Impact Statement (DEIS) and Draft Type "A" Water Licence Application for the project. TMAC confirms its intention to continue the assessment as coordinated between the NIRB and NWB.
January 18, 2017	The NIRB, in consultation with the NWB, completes its Conformity Review of the DEIS and commences the NIRB's technical review period with a 30-day information request (IR) period related to the DEIS and the Draft Water Licence Application.
February 24, 2017	Interested Parties submit their IRs to the NIRB. IRs related to the Water Licence Application are forwarded by the NIRB to the NWB.
February 27 – March 22, 2017	The NIRB conducts Community Information Sessions in all five (5) Kitikmeot communities, with participation of seasonal residents of Bay Chimo and Bathurst Inlet.
March 24, 2017	The NIRB commences the 60-day technical review following TMAC's responses to IRs submitted to the NIRB by interested parties.
May 23, 2017	Interested Parties submit their technical review comments on the DEIS to the NIRB.
June 7, 2017	TMAC submits its responses to technical review comments to the NIRB.
June 12-16, 2017	The NIRB holds a Technical Meeting and Pre-hearing Conference (PHC) as part of the Review.
July 21, 2017	The NIRB issues its PHC Decision with instructions for the preparation of a <i>Final</i> EIS (FEIS) to TMAC. The NIRB anticipates TMAC's FEIS submission in December 2017.

2.0 SITE VISIT

As an integrated part of the NIRB's continuous monitoring of the Project, the NIRB's Monitoring Officer for the Doris North Project and accompanying staff visited the Doris North site on August 28, 2017. The site visit included visual inspections of the recently constructed and commissioned mill, the Doris North portal, vent raises, service road, Roberts Bay port facilities, laydown area, landfarm, the two (2) fuel tank farms, main camp and administration facilities, and the tailings impoundment area (TIA),

including the advancing tailings beach following commencement of subaerial tailings deposition in the TIA. The NIRB's Site Visit Report has been included as Appendix B of this report.

Observations made during the visit to the Doris North project site indicate that TMAC has commenced milling, gold production, and tailings deposition. TMAC appears to be operating the Project within the approved plans and procedures as provided through the NIRB Project Certificate and as committed to by the Proponent in the FEIS, 2015 Amendment Application, and supporting documentation. The NIRB also observed TMAC's efforts at maintaining general tidiness and cleanliness of the Project site. It was noted that as the Project progresses with transitioning to full operations, additional reporting may be required to ensure that all parties are aware of activities at site, and that all applicable plans are being adhered to.

3.0 SUMMARY

TMAC has generally moved the Project towards overall compliance with the requirements of the Project Certificate, as it continued with some construction activities and commenced operations during this monitoring year, and is in general compliance with the terms and conditions contained therein which apply to the current stage of development. However, several specific items require additional attention as noted in the Board's recommendations under a separate cover.

As part of its efforts to maintain full compliance with regulatory requirements, TMAC has reported most major Project changes to the NIRB and in obtaining the necessary approvals and licenses from authorizing agencies prior to the execution of Project activities. The objectives of TMAC's plans as indicated to the NIRB are to follow its previously approved plans and goals, which included the establishment of stable chemical and physical conditions that protect the environment and human health.

The NIRB is encouraged by TMAC's attention to detail on site, the general tidiness and cleanliness of the site, as well as the ongoing monitoring and reporting programs it manages as the Project transitions from construction to full operations. As in the previous NIRB monitoring reports, TMAC may encounter unique environmental challenges with its shift in Project activities and the NIRB will continue to depend on TMAC's established procedures in openly engaging with the Board.

Pursuant to Nunavut Agreement Sections 12.7.2 and 12.7.3, the NIRB will continue to work with TMAC and other agencies in order to provide the required evaluation of the monitoring efforts, results, and compliance of this project-specific monitoring program in accordance with the requirements set out in the NIRB Project Certificate No. 003.

Prepared by: Kofi Boa-Antwi, M.Sc., R.P.Bio. Reviewed by: Kelli Gillard, P.Ag.

Title: Technical Advisor II/Monitoring Officer Title: Acting Director, Technical Services

Date: November 2017 Date: November 2017

Signature:

APPENDIX A: COMPLIANCE WITH THE PROJECT CERTIFICATE

TABLE 3 - COMPLIANCE WITH PROJECT CERTIFICATE NO. 003, AMENDMENT 02

TERM AND CONDITION	COMPLIANCE ACHIEVEMENT
TERM AND CONDITION 1: THE COMMITMENTS IN THE FINAL HEARING REPORT AS APPENDIX A (SEE APPENDIX A OF PROJECT CERTIFICATE): THE PROPONENT COMMITMENTS FROM THE FINAL ENVIRONMENTAL IMPACT STATEMENT REVIEW ARE INCORPORATED HEREIN AND MUST BE MET.	In its 2016 Annual Report, TMAC indicated it was in compliance with this term and condition and all commenting parties have also provided confirmation.
COMMENTARY: THE COMMITMENTS IN THE FINAL HEARING REPORT AS APPENDIX A INCLUDES THE ADDENDUM TO THE FINAL HEARING REPORT DATED JUNE 22, 2006 AND THE COMMITMENTS MADE IN THE 2015 AMENDMENT APPLICATION AND ASSOCIATED PUBLIC HEARING REPORT DATED JUNE 13, 2016.	
TERM AND CONDITION 2: THE COMMITMENTS IN THE FINAL HEARING REPORT AS APPENDIX B (SEE APPENDIX A OF PROJECT CERTIFICATE): THE PROPONENT COMMITMENTS FROM THE FINAL HEARING AND ANY PROJECT AMENDMENTS, ARE INCORPORATED HEREIN AND MUST BE MET.	In its 2016 Annual Report, TMAC confirmed that its current operations are in compliance with this term and condition.
TERM AND CONDITION 3: THE PROPONENT MUST OBTAIN ALL REQUIRED FEDERAL AND TERRITORIAL PERMITS AND OTHER APPROVALS AND SHALL COMPLY WITH SUCH PERMITS AND APPROVALS.	In its 2016 Annual Report, TMAC confirmed that it had received all permits and authorizations required for current project activities and that it was in compliance with all permits issued to date.
TERM AND CONDITION 5: THE PROPONENT SHALL REPORT BY JANUARY 1ST OF EACH CALENDAR YEAR TO NIRB ON ITS DEVELOPMENT PLAN FOR FUTURE PHASES OF THE HOPE BAY BELT, INCLUDING IDENTIFYING DEVELOPMENT PLANS THAT MAY AFFECT THE SELECTION OF TAILING IMPOUNDMENT AREA AS THE PREFERRED ALTERNATIVE FOR TAILINGS MANAGEMENT. COMMENTARY: THE LOCATION OF THE TAILINGS IMPOUNDMENT AREA FOR THE PROJECT HAS BEEN SELECTED AND INCLUDED IN THE METAL MINING EFFLUENT REGULATIONS.	TMAC provided updates to the NIRB on further development plans on January 30, 2017.
TERM AND CONDITION 6: THE PROPONENT SHALL IMMEDIATELY NOTIFY NIRB OF ANY FURTHER ALTERNATIVES ASSESSMENT UNDERTAKEN FOR THE TAILINGS IMPOUND AREA, IF THAT ANALYSIS CONCLUDES THAT TAIL LAKE MAY NO LONGER BE THE PREFERRED OPTION FOR TAILINGS DISPOSAL OR ANY	In its 2016 Annual Report, TMAC confirmed that Tail Lake is still the preferred option.

TERM AND CONDITION	COMPLIANCE ACHIEVEMENT
MODIFICATIONS TO THE PHYSICAL AREA, TAILINGS VOLUMES, OR METHOD OF CONTAINMENT.	
COMMENTARY: TAIL LAKE HAS BEEN SELECTED AS THE TAILINGS IMPOUNDMENT AREA FOR THE DORIS NORTH PROJECT. THE NIRB WOULD EXPECT THAT THE PROPONENT, AS SOON AS REASONABLE, WOULD NOTIFY IT OF MODIFICATIONS TO THE TAILINGS IMPOUNDMENT AREA. FURTHER, DUE TO THE PHASED NATURE OF PROJECT DEVELOPMENT ALONG THE HOPE BAY BELT, THE APPLICABILITY OF THIS CONDITION MAY BE CONSIDERED IN RELATION TO SUBSEQUENT DEVELOPMENT APPLICATIONS.	
TERM AND CONDITION 7: THE PROPONENT SHALL MEET IMMEDIATELY WITH ENVIRONMENT AND CLIMATE CHANGE CANADA AND FISHERIES AND OCEANS CANADA TO ENSURE THE INFORMATION REQUIRED FOR SCHEDULE 2 OF THE METAL MINING EFFLUENT REGULATIONS CAN BE PROCESSED ACCORDING TO LAW. COMMENTARY: TAIL LAKE WAS ADDED TO METAL MINING EFFLUENT REGULATIONS AS A TAILINGS IMPOUNDMENT AREA UNDER SCHEDULE 2.	TMAC confirmed that Schedule 2 to the Metal Mining Effluent Regulations was amended on July 9, 2008 to authorize the use of Tail Lake as a Tailings Impoundment Area. Responsible Authorities also confirmed that TMAC was in compliance with this term and condition in this monitoring period.
TERM AND CONDITION 8: THE PROPONENT WILL FUND AND INSTALL A WEATHER STATION AT THE MINE SITE TO COLLECT ATMOSPHERIC DATA, INCLUDING AIR TEMPERATURE AND PRECIPITATION. THE DESIGN AND LOCATION OF THIS STATION SHALL BE DEVELOPED IN CONSULTATION WITH ENVIRONMENT AND CLIMATE CHANGE CANADA (ECCC) OFFICIALS.	In its 2016 Annual Report, TMAC confirmed that a weather station has been in operation at the site since TMAC took over ownership of the Project.
COMMENTARY: PRIOR TO CLOSURE AND RECLAMATION, THE NIRB EXPECTS THE PROPONENT TO UNDERTAKE CONSULTATION WITH APPROPRIATE AGENCIES INCLUDING ENVIRONMENT AND CLIMATE CHANGE CANADA, TO DISCUSS THE POSSIBILITY OF THE CONTINUED OPERATION OF THE STATION, INCLUDING TRANSFER OF OWNERSHIP, FOR THE COLLECTION OF REGIONAL METEOROLOGICAL DATA. INSTALLATION AND OPERATION OF THE REAL TIME WEATHER STATION HAS OCCURRED.	
TERM AND CONDITION 9	No longer applicable to the Doris North project.
TERM AND CONDITION 10: SHOULD WATER FROM THE TAILINGS IMPOUNDMENT AREA BE DISCHARGED INTO DORIS CREEK, THE PROPONENT SHALL ENSURE THAT MONITORING OF TAIL LAKE AND DORIS CREEK WATER QUALITY OCCURS, ABOVE	In its 2016 Annual Report, TMAC confirmed that water quality monitoring in Doris Creek is conducted in accordance with the requirements of the Nunavut

TERM AND CONDITION	COMPLIANCE ACHIEVEMENT
AND BELOW THE WATERFALL, AND IS VERIFIED BY AN INDEPENDENT, THIRD PARTY LABORATORY. THE PROPONENT MUST PROVIDE COPIES OF THE RESULTS DIRECTLY TO THE NIRB AND NIRB'S MONITORING OFFICER.	Water Board Type "A" Water Licence 2AM-DOH1323 when discharges to Doris Creek occur.
COMMENTARY: AS THE PROPONENT COLLECTS ITS OWN SAMPLES, THE SAMPLING SHALL BE CONDUCTED IN ACCORDANCE WITH A METHODOLOGY APPROVED BY THE NUNAVUT WATER BOARD THROUGH A QUALITY ASSURANCE/QUALITY CONTROL ("QA/QC") PLAN AND MUST BE SUBMITTED TO AN INDEPENDENT THIRD PARTY LABORATORY FOR ANALYSIS.	
TERM AND CONDITION 11: MONITORING INFORMATION COLLECTED UNDER THIS APPROVAL SHALL CONTAIN THE FOLLOWING INFORMATION:	In its 2016 Annual Report, TMAC confirmed that it was in compliance with this term and condition.
a) The Person(s) who performed the sampling or Took measurements	
b) Date, time, and place of sampling or measurement;	
c) Date of analysis	
d) Name of the laboratory who performed the analysis;	
e) Analytical methods or techniques used; and	
f) RESULTS OF ANY ANALYSIS	
TERM AND CONDITION 12: THE RESULTS AND RECORDS OF ANY MONITORING, DATA, OR ANALYSIS SHALL BE KEPT FOR A MINIMUM OF THE LIFE OF THE PROJECT INCLUDING CLOSURE AND POST CLOSURE MONITORING. THIS TIME PERIOD SHALL BE EXTENDED IF REQUESTED BY THE NUNAVUT IMPACT REVIEW BOARD, THE NUNAVUT WATER BOARD, ENVIRONMENT AND CLIMATE CHANGE CANADA, AND FISHERIES AND OCEANS CANADA.	In its 2016 Annual Report, TMAC confirmed that sampling results from water quality monitoring activities are archived on site for the life of the Project.
COMMENTARY: THE NIRB'S MONITORING OFFICER, CONSULTING WITH GOVERNMENT OFFICIALS, WILL PROVIDE GUIDANCE ON HOW RESULTS AND RECORDS OF ANY MONITORING, DATA, OR ANALYSIS WILL BE PRESENTED.	

TERM AND CONDITION	<u>COMPLIANCE ACHIEVEMENT</u>
TERM AND CONDITION 13: THE PROPONENT SHALL COLLECT ADDITIONAL WATER QUALITY DATA FOR THE 2006 FIELD SEASON AND INCORPORATE IT INTO A REVISED WATER QUALITY MODEL TO BE SUBMITTED TO THE NWB AS PART OF THE WATER LICENCE APPLICATION. TO ENSURE THE PROTECTION OF THE RECEIVING ENVIRONMENT AT THE POINT OF DISCHARGE, THE PROPONENT WILL MEET DISCHARGE CRITERIA:	In its 2016 Annual Report, TMAC demonstrated compliance with this term and condition and noted that no discharges of mining and milling effluent to the external receiving environment had been made.
a. Where discharge is to the freshwater environment, on a site specific basis set by the Nunavut Water Board (NWB) where possible and as set by the Metal Mining Effluent Regulations (MMER); and,	
b. Where discharge is to Roberts Bay, discharge criteria set by the MMER and the Arctic Waters Pollution Prevention Act.	
COMMENTARY: COLLECTION AND INCORPORATION OF THE ADDITIONAL WATER QUALITY DATA FOR THE 2006 FIELD SEASON FOR THE WATER QUALITY MODEL WAS COMPLETED.	
TERM AND CONDITION 14: THE PROPONENT SHALL COLLECT ADDITIONAL PRECIPITATION, EVAPORATION AND RUNOFF DATA AND INCORPORATE IT INTO A REVISED WATER BALANCE TO BE SUBMITTED TO THE NUNAVUT WATER BOARD (NWB) AS PART OF THE WATER LICENCE APPLICATION.	In its 2016 Annual Report, TMAC confirmed that requirements under this term and condition have been met.
COMMENTARY: THIS OBLIGATION WAS FULFILLED AND INFORMATION WAS INCLUDED IN THE APPLICATION TO THE NUNAVUT WATER BOARD.	
TERM AND CONDITION 15: THE PROPONENT SHALL NOT PERMIT THE WATER DISCHARGED INTO DORIS CREEK TO EXCEED THE CRITERIA SET BY THE NWB. COMMENTARY: THIS DOES NOT PRECLUDE THE PROPONENT	In its 2016 Annual Report, TMAC confirmed that no site water discharges into Doris Creek occurred during the 2016-2017 monitoring period.
FROM MEETING REQUIREMENTS OF THE METAL MINING EFFLUENT REGULATIONS.	
TERM AND CONDITION 16: THE PROPONENT SHALL TAKE ALL REASONABLE STEPS TO PREVENT ANY DISCHARGE THAT IS NOT IN COMPLIANCE WITH APPLICABLE REGULATORY APPROVALS OR REQUIREMENTS. IF SUCH A SITUATION IS ENCOUNTERED, THE PROPONENT SHALL TAKE IMMEDIATE ACTION TO ADDRESS THE NON-COMPLIANT DISCHARGE.	In its 2016 Annual Report, TMAC confirmed that no discharges from the Tailings Impoundment Area occurred during the 2016-2017 monitoring period.

TERM AND CONDITION	COMPLIANCE ACHIEVEMENT
TERM AND CONDITION 17: THE PROPONENT SHALL REPORT ANY UPSET, EXCEEDANCES, OR COMPLIANCE PROBLEM NOT ONLY TO REGULATORY AGENCIES AS REQUIRED BY LAW, BUT SHALL ALSO REPORT THE SAME TO THE NUNAVUT IMPACT REVIEW BOARD'S MONITORING OFFICER.	In its 2016 Annual Report, TMAC confirmed that it reports compliance issues to the applicable regulatory authorities as required.
TERM AND CONDITION 18: THE PROPONENT SHALL SUBMIT TO THE NUNAVUT WATER BOARD (NWB), AS PART OF THE WATER LICENCE APPLICATION, A PROGRAM DETAILING THE METHODOLOGY FOR TESTING QUARRIED ROCK FOR ACID GENERATION AND METAL LEACHING POTENTIAL. THE SAMPLING, TESTING, AND ANALYSIS MUST BE DONE BY A PROFESSIONAL GEOLOGIST REGISTERED IN NUNAVUT. COMMENTARY: THE NUNAVUT IMPACT REVIEW BOARD (NIRB) EXPECTS ANY METHODOLOGY TO BE CERTIFIED BY A REGISTERED PROFESSIONAL AND APPROVED BY THE NUNAVUT WATER BOARD. THE NIRB EXPECTS THAT ANY ANALYSIS OF LABORATORY RESULTS MUST ALSO BE DONE BY A REGISTERED PROFESSIONAL. THE DESIGNATION OF REGISTERED PROFESSIONAL REFERS TO ALL THOSE PROFESSIONALS REGISTERED WITH THE NORTHWEST TERRITORIES AND NUNAVUT ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS, AND GEOPHYSICISTS (NAPEGG). THIS OBLIGATION IS COMPLETE BUT SHOULD CONTINUE TO BE UPDATED AS REQUIRED.	In its 2016 Annual Report, TMAC confirmed that it continues to meet the requirements of this term and condition by providing updates of relevant management plans (including the Hope Bay Project, Quarry Rock Management and Monitoring Plan - January 2017) to the NIRB.
TERM AND CONDITION 19: THE PROPONENT SHALL INSTALL THERMISTOR CABLES AND TEMPERATURE LOGGERS IN THE JETTY FOUNDATION AS WELL AS THE NEW JETTY FOUNDATION. THE PROPONENT SHALL MONITOR THE EFFECTS OF THE JETTY ON SHALLOW WATER PERMAFROST THROUGH OPERATIONS, UNTIL SUCH TIME AS THE NUNAVUT IMPACT REVIEW BOARD (NIRB) DETERMINES THAT SUCH MONITORING IS NO LONGER NECESSARY, AND REPORT THE RESULTS OF THE MONITORING COLLECTION TO NIRB'S MONITORING OFFICER. COMMENTARY: THE NEW JETTY IS DEFINED AS THE MARINE OUTFALL BERM.	TMAC has installed thermistor cables and temperature loggers in the jetty foundation as required. However, TMAC is yet to repair damaged thermistor cables. During the site visit in 2017 the NIRB Monitoring officer enquired about the repairs to the thermistor and TMAC noted that they had not yet undertaken the repairs.
TERM AND CONDITION 20: TO PREVENT OR LIMIT POTENTIAL FOR ECOSYSTEMIC EFFECTS IN THE EVENT OF FUEL OR WASTE SPILLS THE PROPONENT SHALL ENSURE SPILL KITS ARE AT HAND AT THE ROBERTS BAY OIL HANDLING FACILITY AT ALL TIMES, AND THAT APPROPRIATE CONTAINMENT MEASURES ARE USED IN	During the Monitoring Officer's site visit, the NIRB confirmed that appropriate spill kits were in place at Roberts Bay. In its 2016 Annual Report, TMAC confirmed that it has a Transport Canada approved

THE EVENT OF A SPILL IN ACCORDANCE WITH THE MOST RECENT

VERSION OF THE OIL POLLUTION EMERGENCY PLAN AND OIL

Oil Pollution Preparedness/Oil Pollution

Emergency Plan for the Project.

TERM AND CONDITION	COMPLIANCE ACHIEVEMENT
POLLUTION PREVENTION PLAN REVIEWED BY TRANSPORT CANADA. COMMENTARY: THE NIRB NOTES THAT TERM AND CONDITION 20 AND TERM AND CONDITION 33 ARE EXPECTED TO WORK TOGETHER AS ONE REFERS TO THE ROBERTS BAY JETTY AND ONE THE TRANSFER AND HANDLING OF FUEL ON SITE.	
TERM AND CONDITION 21: THE PROPONENT SHALL CONSULT WITH ELDERS, THE KITIKMEOT INUIT ASSOCIATION AND NUNAVUT TUNNGAVIK INCORPORATED TO DETERMINE IF THE JETTY SHOULD BE DISMANTLED. THE FINAL CLOSURE AND RECLAMATION PLAN, IF IT PROCEEDS, MUST EXPLAIN THE CONSULTATION PROCESS USED FOR THE JETTY AND PROVIDE A SUMMARY OF THE ISSUES USED FOR THE JETTY AND PROVIDE A SUMMARY OF THE ISSUES IDENTIFIED DURING CONSULTATION. COMMENTARY: NIRB HAS ALREADY CONSIDERED THESE COMPONENTS AND AS QUOTED BY THE MINISTER IN HIS LETTER TO NIRB DATED JULY 28, 2006 "FURTHER REVIEW UNDER ARTICLE 12 WOULD ONLY BE REQUIRED IF SUBSTANTIVE CHANGES WERE PROPOSED THAT WOULD SIGNIFICANTLY MODIFY THE PROJECT." ALSO, THE PROPONENT IS EXPECTED TO SUBMIT THE SUMMARY OF ISSUES IDENTIFIED DURING CONSULTATION TO NIRB'S MONITORING OFFICER.	In its 2016 Annual Report, TMAC indicated that, when appropriate, it will consult with local Elders, Kitikmeot Inuit Association, and Nunavut Tunngavik Inc. on the closure plan for the Roberts Bay jetty.
TERM AND CONDITION 22: THE PROPONENT, IN CONSULTATION WITH GOVERNMENT OF NUNAVUT-DEPARTMENT OF ENVIRONMENT AND KITIKMEOT INUIT ASSOCIATION, SHALL IMMEDIATELY BEGIN THE DESIGN AND IMPLEMENTATION OF BASELINE DATA COLLECTION METHODS TO ESTABLISH BOTH THE WOLVERINE AND GRIZZLY BEAR POPULATION OF THE HOPE BAY BELT REGION. ANY BASELINE DATA RESULTS SHALL BE REPORTED TO NIRB'S MONITORING OFFICER. COMMENTARY: THE PROPONENT HAS COLLECTED THE BASELINE DATA AND CONTINUES TO COLLECT ONGOING MONITORING DATA AND THE RESULTS ARE INCORPORATED AS APPROPRIATE INTO THE PROPONENT'S WILDLIFE MITIGATION AND MANAGEMENT PLAN.	In its 2016 Annual Report, TMAC confirmed that the grizzly bear and wolverine monitoring program was modified in consultation with the Government of Nunavut and Kitikmeot Inuit Association, and in 2010 and 2011 DNA studies were completed. Results of the baseline data collection were presented in the Annual Wildlife Mitigation and Monitoring Plans reports.
TERM AND CONDITION 23: THE PROPONENT SHALL DESIGNATE ONE OF ITS EMPLOYEES AS A PRIMARY WILDLIFE CONTACT FOR THE MINE, WHO WILL WORK WITH THE NUNAVUT IMPACT REVIEW BOARD'S MONITORING OFFICER AND REGULATORY OFFICIALS IN COMMUNICATING ON-SITE ACTIVITIES AND TO	TMAC confirmed in its 2016 Annual Report that the Site Environmental Coordinator is responsible for this function.

TERM AND CONDITION	<u>COMPLIANCE ACHIEVEMENT</u>
FULFILL REPORTING REQUIREMENTS.	
TERM AND CONDITION 24: AS PART OF THE TRAINING FOR THE PROPONENT'S ON-SITE WILDLIFE SPECIALIST, THE PROPONENT SHALL PROVIDE TRAINING TO THAT PERSON IN AREAS OF BEAR ENCOUNTERS AND SAFETY, EFFECTS OF NOISE ON WILDLIFE, RECORDING WILDLIFE SIGHTINGS, WASTE MANAGEMENT, RECORDS MANAGEMENT, AND REPORTING TO THE NUNAVUT IMPACT REVIEW BOARD'S MONITORING OFFICER AND REGULATORY OFFICIALS.	TMAC confirmed in its 2016 Annual Report that staff are provided with the training requirements as per this term and condition.
TERM AND CONDITION 25: TO ASSESS THE IMPACTS OF THE PROJECT ON THE WILDLIFE AND COMPARE THESE EFFECTS TO THE IMPACT PREDICTED IN THE 2005 FEIS AND THE 2015 AMENDMENT APPLICATION THE PROPONENT SHALL FILE A MONITORING PLAN FOCUSED ON ASSESSING AND MITIGATING INTERACTION BETWEEN WILDLIFE AND HUMANS AT THE MINE SITE, INCLUDING ASSOCIATED INFRASTRUCTURE SUCH AS THE TIA (TAILINGS IMPOUNDMENT AREA), ROADS, AND ACTIVITY AT THE WATERFALL AND ROBERTS BAY. AN ANNUAL REPORT MUST BE SENT BY MARCH 30 EACH YEAR TO NIRB'S MONITORING OFFICER ON INTERACTIONS THAT HAVE OCCURRED, ANY EFFECT THE INTERACTION MIGHT HAVE HAD ON HUMANS AND WILDLIFE, AND MITIGATION MEASURES TAKEN TO AVOID SIMILAR INTERACTIONS IN THE FUTURE. THE PROPONENT SHALL FILE A REPORT TO NIRB WITHIN 48 HOURS SHOULD ANY INCIDENT OCCUR WHICH RESULTS IN WILDLIFE MORTALITY. COMMENTARY: THE NIRB WOULD EXPECT THAT THE	TMAC confirmed compliance with this term and condition. An annual Wildlife Mitigation and Monitoring Report was submitted on March 30, 2017 to the NIRB. Wildlife incidental sightings, interactions and any mitigative measures, as well as incidents concerning wildlife, were also reported to the NIRB Monitoring Officer as required.
REPORTING BE COORDINATED WITH THE LEGISLATED REQUIREMENT FOR TMAC RESOURCES INC. TO REPORT MORTALITIES OF GRIZZLY BEAR, POLAR BEAR, MUSKOX, CARIBOU, WOLF, AND WOLVERINE TO THE LOCAL CONSERVATION OFFICER IN CAMBRIDGE BAY.	
TERM AND CONDITION 26: THE PROPONENT SHALL CONSULT WITH LOCAL ELDERS, KITIKMEOT HUNTERS AND TRAPPERS ORGANIZATIONS, THE NUNAVUT WILDLIFE MANAGEMENT BOARD, GOVERNMENT OF NUNAVUT-DEPARTMENT OF ENVIRONMENT, ENVIRONMENT AND CLIMATE CHANGE CANADA, AND THE NUNAVUT IMPACT REVIEW BOARD'S MONITORING OFFICER TO REVIEW AND DISCUSS THE RESULTS OF WILDLIFE MONITORING AND DEVELOP MITIGATION MEASURES, INCLUDING MEASURES TO DISCOURAGE WILDLIFE AND BIRDS FROM COMING INTO CONTACT WITH THE TAILINGS IMPOUNDMENT AREA AND CONTAMINATED AREAS OF THE MILL SITE. THE PROPONENT	In its 2016 Annual Report, TMAC indicated that in its opinion the current operations are in compliance with this term and condition, and highlighted measures in the annual Wildlife Mitigation and Monitoring Report to address these concerns. The Proponent also noted that the Tailings Impoundment Area was not used as a tailings management area in 2016, and consequently did not constitute a risk to

TERM AND CONDITION	COMPLIANCE ACHIEVEMENT
SHALL INCORPORATE A PLAN FOR THIS CONSULTATION INTO A REVIEWED WILDLIFE MONITORING AND MITIGATION PLAN.	wildlife and birds. During the NIRB's annual site visit in 2017, the Monitoring Officer recorded signs of contact of wildlife, including migratory birds, with tailings deposited in the TIA in 2017.
TERM AND CONDITION 27: THE PROPONENT SHALL UPDATE AND REVISE THE WILDLIFE MITIGATION AND MONITORING PLAN (WMMP) TO REFLECT PROJECT TERMS AND CONDITIONS AND SHALL REVISE THE WILDLIFE MITIGATION AND MONITORING PLAN AND SUBMIT TO THE NUNAVUT IMPACT REVIEW BOARD (NIRB) FOR REVIEW. THE NIRB MAY CONSULT WITH RELEVANT GOVERNMENT DEPARTMENTS AND THE NUNAVUT WILDLIFE MANAGEMENT BOARD PRIOR TO APPROVING THE REVISED WMMP. THE REVISED WMMP MUST BE SUBMITTED WITHIN THREE (3) MONTHS AFTER THE UPDATED PROJECT CERTIFICATE IS ISSUED. THE PROPONENT MUST ALSO SUBMIT AN UPDATED PLAN ON AN ANNUAL BASIS WHICH MUCH ALSO BE APPROVED BY NIRB. COMMENTARY: MONITORING MEASURES INCLUDED IN THE WILDLIFE MITIGATION AND MONITORING PLAN SHOULD BE APPROPRIATE TO CONFIRM IMPACT PREDICTIONS, MONITORING IMPACTS, AND TO SUPPORT ADAPTIVE IMPLEMENTATION OF	In March 2017 TMAC submitted the 2016 WMMP annual report as part of its Annual reporting submission which contained information on wildlife management at site over 2016. Quarterly wildlife reports were also submitted to the NIRB.
MITIGATION MEASURES. SPECIFIC TO CARIBOU, DURING CONSTRUCTION AND OPERATIONS THE PROPONENT MUST ANNUALLY REVIEW RELEVANT AVAILABLE DATA FROM ON SITE AND CARIBOU COLLAR DATA AND SHALL CONSIDER REVISIONS TO THE WILDLIFE MITIGATION AND MONITORING PLAN.	
TERM AND CONDITION 28: THE HOPE BAY BELT SOCIO- ECONOMIC MONITORING COMMITTEE IS CONTINUED AND RENAMED AS THE HOPE BAY SOCIO-ECONOMIC WORKING GROUP. THE INVITED MEMBERS OF THE HOPE BAY SOCIO- ECONOMIC WORKING GROUP SHALL INCLUDE THE PROPONENT, THE GOVERNMENT OF NUNAVUT, INDIGENOUS AND NORTHERN AFFAIRS CANADA, AND THE KITIKMEOT INUIT ASSOCIATION AND ANY OTHER INVITEES THE MEMBERS OF THE WORKING GROUP	TMAC confirmed in its 2016 Annual Report that a Socio-Economic Monitoring Plan was submitted to the NIRB as part of the previous Project Certificate but that it was yet to provide an updated Hope Bay Socio-Economic Monitoring Plan Report for 2016.
MAY, FROM TIME TO TIME INVITE TO PARTICIPATE. THE CENTRAL FOCUS OF THE HOPE BAY SOCIO-ECONOMIC WORKING GROUP SHALL BE ON COLLABORATING TO ENSURE THAT THE HOPE BAY SOCIO-ECONOMIC MONITORING PLAN PROVIDES FOR APPROPRIATE PROJECT-SPECIFIC SOCIO-	The NIRB notes that TMAC did not provide an updated Hope Bay Socio-Economic Monitoring Plan Report in the 2016-2017 monitoring period as required in Project Certificate 003, Amendment 02.

PROVIDES FOR APPROPRIATE PROJECT-SPECIFIC SOCIO-ECONOMIC EFFECTS MONITORING AS REQUIRED THROUGHOUT

TERM AND CONDITION	COMPLIANCE ACHIEVEMENT
THE LIFE OF THE PROJECT. THE HOPE BAY SOCIO-ECONOMIC MONITORING PLAN SHALL APPLY TO THE PROJECT AS DESCRIBED IN BOTH THE 2005 FEIS AND THE 2015 AMENDMENT APPLICATION.	
THE PROPONENT, REFLECTING THE INPUT OF THE HOPE BAY SOCIO-ECONOMIC WORKING GROUP SHALL PRODUCE AN ANNUAL HOPE BAY SOCIO-ECONOMIC MONITORING PLAN REPORT.	
COMMENTARY: THE NIRB STRONGLY SUGGESTS THE USE OF A STANDARDIZED REPORTING TEMPLATE TO ENSURE CONSISTENT DATA COLLECTION AND TRACKING OF DATA TRENDS IN A COMPARABLE FORM TO BE SHARED UPON REQUEST AT THE REGIONAL LEVEL AND TO MINIMIZE THE DUPLICATION OF EFFORTS.	
TERM AND CONDITION 29: THE PROPONENT SHALL DEVELOP AND IMPLEMENT A NOISE ABATEMENT PLAN TO PROTECT PEOPLE AND WILDLIFE FROM MINE ACTIVITY NOISE, INCLUDING BLASTING, DRILLING, EQUIPMENT, VEHICLES AND AIRCRAFT. THE NOISE ABATEMENT PLAN WILL BE DEVELOPED IN CONSULTATION WITH THE GOVERNMENT OF NUNAVUT-DEPARTMENT OF ENVIRONMENT, ENVIRONMENT AND CLIMATE CHANGE CANADA, AND HEALTH CANADA, AND SHOULD BE UPDATED ON AN AS REQUIRED BASIS.	TMAC has met this term and condition with the current Noise Abatement Plan.
COMMENTARY: THE LOCAL STUDY AREA REFERS TO THE COMBINED SPATIAL BOUNDARIES SET BY THE PROPONENT IN ITS FINAL ENVIRONMENTAL IMPACT STATEMENT FOR EACH SENSITIVE VALUED ECOSYSTEMIC COMPONENT INCLUDING ARCTIC CHAR, LAKE TROUT, LAKE WHITEFISH, NINESPINE STICKLEBACK, CARIBOU, GRIZZLY BEAR, WOLVERINE, UPLAND BREEDING BIRDS, WATERFOWL, AND RAPTORS. ALSO THE NOISE ABATEMENT PLAN WILL CONSIDER POTENTIAL BLASTING TIME RESTRICTIONS WITH FISHERIES AND OCEANS CANADA'S (DFO) GUIDELINES FOR THE USE OF EXPLOSIVES IN OR NEAR CANADIAN FISHERIES WATERS (WRIGHT AND HOPKY, 1998) AS MODIFIED BY DFO FOR USE IN THE NORTH. THE PROPONENT SHOULD ALSO CONSULT WITH HEALTH CANADA, THE GOVERNMENT OF NUNAVUT-DEPARTMENT OF ENVIRONMENT, AND THE WORKERS COMPENSATION BOARD IN LOCATING AND DESIGNING THE SOUND METERS.	
TERM AND CONDITION 30: TO ASSESS AIR QUALITY IMPACT OF THE PROJECT IN THE PROJECT AREA AND COMPARE THESE EFFECTS TO THE IMPACT PREDICTIONS IN THE 2005 FEIS AND	TMAC has met this term and condition as there is monitoring at site and it reported on it in the 2015 Meteorological Report

TERM AND CONDITION	COMPLIANCE ACHIEVEMENT
THE 2015 AMENDMENT APPLICATION. THE PROPONENT WILL INSTALL AND FUND AN ATMOSPHERIC MONITORING STATION. THIS STATION AND ITS LOCATION SHALL BE DEVELOPED IN CONSULTATION WITH ENVIRONMENT AND CLIMATE CHANGE CANADA AND HEALTH CANADA AIR QUALITY OFFICIALS AND FOCUS ON PARTICULATES OF CONCERN GENERATED AT THE MINE SITE. THE RESULTS OF AIR-QUALITY MONITORING ARE TO BE REPORTED EVERY SIX (6) MONTHS TO THE NUNAVUT IMPACT REVIEW BOARD THROUGH THE MONITORING OFFICER, AND FROM THERE TO ALL OF THE PARTIES.	during the recent care and maintenance period of the Project. TMAC plans to commence semi-annual reporting in 2017.
COMMENTARY: INSTALLATION OF THE ATMOSPHERIC MONITORING STATION WAS COMPLETED.	
TERM AND CONDITION 31: THE PROPONENT SHALL MAINTAIN A COMPLETE CLOSURE AND RECLAMATION PLAN ON FILE WITH THE NUNAVUT WATER BOARD PREPARED IN ACCORDANCE WITH REQUIREMENTS OF THE NUNAVUT WATER BOARD AND OTHER REGULATORS.	TMAC filed an updated June 2015 Closure and Reclamation Plan and associated September 2016 Addendum with its Project Certificate amendment application.
TERM AND CONDITION 32: PRIOR TO THE COMMENCEMENT OF OPERATION THE PROPONENT SHALL HAVE A COMPLETE ENVIRONMENT, HEALTH AND SAFETY MANAGEMENT SYSTEM IN PLACE WHICH INCLUDES THE FOLLOWING: WILDLIFE MITIGATION AND MONITORING PLAN; ENVIRONMENTAL PROTECTION PLAN; EMERGENCY RESPONSE AND SPILL CONTINGENCY PLAN; OCCUPATIONAL HEALTH AND SAFETY PLAN; HUMAN RESOURCES PLAN; COMMUNITY RELATIONS PLAN; MONITORING AND FOLLOW-UP PLAN; AND AUDITING AND CONTINUOUS IMPROVEMENT PLAN. WHEN COMPLETE, THESE PLANS SHALL BE FORWARDED TO THE NUNAVUT IMPACT REVIEW BOARD'S MONITORING OFFICER. COMMENTARY: THE PROPONENT IS EXPECTED TO CONTACT	TMAC provided updated versions of Management Plans to the NIRB on January 30, 2017 and in subsequent correspondence on February 17, 2017. TMAC also confirmed timelines for subsequent updates of Management Plans in the correspondence.
FEDERAL AND TERRITORIAL GOVERNMENT DEPARTMENTS IMMEDIATELY REGARDING THE PREPARATION OF THESE PLANS. THE GOVERNMENT OF NUNAVUT, IN PARTICULAR, IS INVOLVED WITH THE APPROVAL OF MANY OF THE PLANS AND IS ENCOURAGED TO DESIGNATE AN OFFICIAL TO APPROVE THE PLANS AS APPLICABLE. PLEASE SEE APPENDIX E FOR A LIST OF GOVERNMENT OF NUNAVUT CONTACTS.	
NIRB CONSIDERS THE ENVIRONMENTAL, HEALTH AND SAFETY MANAGEMENT SYSTEM TO BE COMPLETE ONCE MHBL HAS	

SUBMITTED ALL REQUIRED PLANS. NIRB EXPECTS THE ENVIRONMENTAL HEALTH AND SAFETY MANAGEMENT SYSTEM

TERM AND CONDITION	COMBITANCE A CHIEVEMENT
TO BE COMPLETED BRIGH TO THE COMMENCEMENT OF	<u>COMPLIANCE ACHIEVEMENT</u>
TO BE COMPLETED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.	
TERM AND CONDITION 33: THE PROPONENT SHALL ENSURE SPILL KITS ARE AT HAND AT THE ROBERTS BAY OIL HANDLING FACILITY AT ALL TIMES, AND THAT APPROPRIATE CONTAINMENT MEASURES ARE USED TO PREVENT, CONTAIN AND RESPOND TO A SPILL IN ACCORDANCE WITH THE MOST RECENT VERSION OF THE OIL POLLUTION EMERGENCY PLAN AND OIL POLLUTION PREVENTION PLAN REVIEWED BY TRANSPORT CANADA. COMMENTARY: THE NIRB EXPECTS THAT TERM AND CONDITION 33 WOULD WORK TOGETHER WITH TERM AND CONDITION 20.	During the Monitoring Officer's site visit, the NIRB confirmed that appropriate spill kits were in place at Roberts Bay. In its 2016 Annual Report, TMAC confirmed that it has a Transport Canada approved Oil Pollution Preparedness/Oil Pollution Emergency Plan for the Project.
TERM AND CONDITION 34: THE PROPONENT SHALL GIVE NOTICE OF ANY PLANNED SIGNIFICANT CHANGES TO THE MINE FACILITY, INCLUDING THE TAILINGS IMPOUNDMENT AREA, MINING INFRASTRUCTURE SUCH AS THE MILL, TO THE REGULATORY AUTHORITIES AND THE NUNAVUT IMPACT REVIEW BOARD (NIRB) THROUGH ITS MONITORING OFFICER, IN A TIMELY BASIS. COMMENTARY: "PLANNED CHANGES" REFERS TO CHANGES THAT MAY CAUSE AN ENVIRONMENTAL EFFECT. SIGNIFICANT MEANS ANY CHANGE TO THE MINE FACILITIES, WHICH WOULD REQUIRE A RECONSIDERATION OF THE PROJECT CERTIFICATE OR AN AMENDMENT OF THE TYPE "A" WATER LICENCE. PLEASE SEE RELATED TERMS AND CONDITIONS #17, #5, AND #6.	In its 2016 Annual Report, TMAC confirmed that it intends to continue to notify the NIRB of planned changes to the mine facility. During the 2017 site visit, the NIRB Monitoring Officer noted that TMAC has commenced subaerial deposition of tailings in the Tailings Impoundment Area (TIA) but is yet to construct the interim dam in the TIA, which was part of the Project Scope under NIRB Project Certificate No. 003, Amendment 02. The NIRB Monitoring Officer further noted that TMAC has yet to formerly engage applicable authorities, including the NIRB, about any potential change to approved infrastructure associated with the TIA for Project.
TERM AND CONDITION 35: THE PROPONENT SHALL COMPLY WITH ALL TERMS AND CONDITIONS AND ANY NONCOMPLIANCE CONSTITUTES A VIOLATION OF THE APPROVAL AND IS GROUNDS FOR NIRB'S RECONSIDERATION AND RECOMMENDATION TO THE MINISTER UNDER ARTICLE 12, PART 8 OF THE NLCA. TERM AND CONDITION 36: THE PROPONENT SHALL CONTINUE YEAR-ROUND MONITORING AND RECORDING OF DORIS LAKE WATER LEVELS DURING CONSTRUCTION AND OPERATIONS. THIS	In its 2016 Annual Report, TMAC confirmed that its current operations are generally in compliance with the requirements of this term and condition. In its 2016 Annual Report, TMAC confirmed that it monitors and records Doris Lake water levels.
WILL ALLOW FOR DETECTION OF ACTUAL DORIS LAKE DRAW DOWN BELOW THE SILL LEVEL; COMPUTATION OF THE AMOUNT OF DRAWDOWN, QUANTIFICATION OF THE PROJECT IMPACT, AND	

TERM AND CONDITION	COMPLIANCE ACHIEVEMENT
IMPLEMENTATION OF ADAPTIVE MITIGATION AND MANAGEMENT	
MEASURES AS APPROPRIATE.	
TERM AND CONDITION 37: THE PROPONENT SHALL DEVELOP	TMAC confirmed in its 2016 Annual
AND SUBMIT A DETAILED GROUNDWATER MANAGEMENT PLAN	Report that it filed the Hope Bay Project
FOR REVIEW DURING THE WATER LICENSING PROCESS AND TO	Ground Water Management Plan in
THE NUNAVUT IMPACT REVIEW BOARD AS PART OF THE PLANS	August 2016 with the NWB and NIRB.
AVAILABLE ON THE DORIS NORTH PROJECT. THE PLAN SHALL	
ACKNOWLEDGE UNCERTAINTIES PERTAINING TO PREDICTIONS	
OF GROUNDWATER QUANTITY AND QUALITY AND INFORM THE	
GROUNDWATER MANAGEMENT PLAN. INDIGENOUS AND	
NORTHERN AFFAIRS CANADA SHOULD BE CONSULTED WITH	
RESPECT TO THE CONTENTS OF THE PLAN AND ANY REQUIRED	
MITIGATION MEASURES.	
TERM AND CONDITION 38: AT LEAST SIX (6) MONTHS PRIOR TO	TMAC confirmed in its 2016 Annual
CONSTRUCTION OF THE EFFLUENT PIPELINE AND DIFFUSER	Report that it would meet the
SYSTEM THE PROPONENT SHALL PROVIDE THE NIRB WITH A	requirements of this term and condition
DETAILED DESIGN FOR THE SYSTEM THAT INCLUDES THE	when applicable. TMAC anticipates
LOCATION OF THE PIPELINE IN RELATION TO THE EXISTING	commencing this work in 2018.
ROADWAY, THE LOCATION OF THE SMALL JETTY SUPPORTING THE PIPELINE AND THE DESIGN OF THE DIFFUSER.	
TERM AND CONDITION 39: AT LEAST SIX (6) MONTHS PRIOR TO	TMAC confirmed in its 2016 Annual
OPERATION OF THE EFFLUENT PIPELINE AND DIFFUSER SYSTEM,	Report that a hazard and operability study
THE PROPONENT SHALL CONDUCT AND SUBMIT TO THE BOARD A	of the pipeline and marine outfall system
HAZARD AND OPERABILITY STUDY OF THE PIPELINE AND MARINE	will be submitted to the NIRB as per
OUTFALL SYSTEM AS PART OF THE LAND AUTHORIZATION	required timeline.
PROCESS.	required unichie.
The edge.	
COMMENTARY: THE JETTY IS ALSO DEFINED AS THE MARINE	
OUTFALL BERM.	
TERM AND CONDITION 40: WITHIN ONE (1) YEAR OF THE	TMAC confirmed in its 2016 Annual
ISSUANCE BY THE NIRB OF AN AMENDED PROJECT	Report that a Socio-Economic Monitoring
CERTIFICATE, THE PROPONENT WILL SUBMIT AN UPDATED	Plan was submitted to the NIRB as part of
DORIS NORTH SOCIO-ECONOMIC MONITORING PLAN FOR THE	the previous Project Certificate but that it
REVIEW OF THE HOPE BAY SOCIO-ECONOMIC WORKING GROUP	was yet to provide an updated Hope Bay
REVIEW AND COMMENT THAT IDENTIFIES ANY UPDATES,	Socio-Economic Monitoring Plan Report
CHANGES AND AMENDED TERMS OF REFERENCE FOR THE HOPE	for 2016.
BAY SOCIO-ECONOMIC WORKING GROUP REQUIRED TO	The NIRB notes that TMAC did not
REFLECT THE AMENDMENTS TO THE PROJECT AS OUTLINED IN THE 2015 AMENDMENT APPLICATION. ANY CHANGES AS	provide an updated Hope Bay Socio-
THE 2015 AMENDMENT APPLICATION. ANY CHANGES AS AGREED TO BY THE HOPE BAY SOCIO-ECONOMIC WORKING	Economic Monitoring Plan Report in the
GROUP SHALL BE SUBMITTED TO THE NUNAVUT IMPACT REVIEW	2016-2017 monitoring period as required
BOARD.	in Project Certificate 003, Amendment 02.
	TDAAG C 1 2 2016
TERM AND CONDITION 41: TWO (2) YEARS PRIOR TO THE	TMAC confirmed in its 2016 Annual
PLANNED FINAL CLOSURE OF THE PROJECT, THE PROPONENT	Report that it will meet this term and

TERM AND CONDITION	COMPLIANCE ACHIEVEMENT
SHALL, IN COLLABORATION WITH THE HOPE BAY SOCIO-	condition two (2) years prior to final
ECONOMIC WORKING GROUP SUBMIT AN UPDATED DORIS	closure of the Project.
NORTH SOCIO-ECONOMIC MONITORING PLAN TO THE	
KITIKMEOT SOCIO-ECONOMIC MONITORING COMMITTEE (K-	
SEMC) THAT WILL ALSO INCLUDE DETAIL REGARDING SPECIFIC	
MEASURES THAT MAY MITIGATE THE POTENTIAL FOR NEGATIVE	
EFFECTS AS A RESULT OF PROJECT CLOSURE.	
TERM AND CONDITION 42: WITHIN SIX (6) MONTHS	TMAC confirmed in its 2016 Annual
FOLLOWING AN UNANTICIPATED TEMPORARY OR FINAL CLOSURE	Report that it will meet this term and
OF THE PROJECT THE PROPONENT SHALL, IN COLLABORATION	condition within six (6) months following
WITH THE HOPE BAY SOCIO-ECONOMIC WORKING GROUP	an unanticipated temporary or final
SUBMIT AN UPDATED DORIS NORTH SOCIO-ECONOMIC	closure of the Project.
MONITORING PLAN TO THE K-SEMC THAT WILL ALSO INCLUDE	
DETAIL REGARDING SPECIFIC MEASURES THAT MAY MITIGATE	
THE POTENTIAL FOR NEGATIVE EFFECTS AS A RESULT OF THE	
PROJECT'S TEMPORARY OR PERMANENT CLOSURE.	
TERM AND CONDITION 43: TWO (2) YEARS PRIOR TO THE	TMAC confirmed in its 2016 Annual
PLANNED FINAL CLOSURE OF THE PROJECT, THE PROPONENT	Report that it will meet this term and
SHALL SUBMIT TO THE NIRB AN UPDATED HUMAN RESOURCE	condition two (2) years prior to final
PLAN AND WELLNESS STRATEGY FOR THE PROJECT THAT	closure of the Project.
INCLUDES A WORKFORCE TRANSITION STRATEGY DESIGNED TO	
MITIGATE THE POTENTIAL NEGATIVE EFFECTS OF PROJECT	
CLOSURE ON THE AFFECTED COMMUNITIES OF NUNAVUT.	
COMMENTARY: FOR GREATER CLARITY, UNDER THIS TERM AND	
CONDITION THE UPDATE TO THE HUMAN RESOURCES PLAN AND	
WELLNESS STRATEGY FOR THE PROJECT (INCLUDING A	
WORKFORCE TRANSITION STRATEGY) IS REQUIRED TO BE FILED	
AT LEAST TWO (2) YEARS PRIOR TO THE PROPONENT'S PLANNED	
FINAL CLOSURE OF THE PROJECT, REGARDLESS OF WHETHER	
THE PROJECT HAS, AT THAT TIME, ALREADY CEASED	
OPERATIONS, IS BEING MAINTAINED IN A TEMPORARILY CLOSED	
PHASE OR HAS ALREADY ENTERED THE FINAL CLOSURE PHASE.	
TERM AND CONDITION 44: WITHIN SIX (6) MONTHS	TMAC confirmed in its 2016 Annual
FOLLOWING AN UNANTICIPATED TEMPORARY OR FINAL CLOSURE	Report that it will meet this term and
OF THE PROJECT THE PROPONENT SHALL SUBMIT TO THE NIRB	condition within six (6) months following
AN UPDATED HUMAN RESOURCE PLAN AND WELLNESS	an unanticipated temporary or final
STRATEGY FOR THE PROJECT THAT INCLUDES A WORKFORCE	closure of the Project.
TRANSITION STRATEGY DESIGNED TO MITIGATE THE POTENTIAL	
NEGATIVE EFFECTS OF PROJECT CLOSURE ON THE AFFECTED	
COMMUNITIES OF NUNAVUT.	
TERM AND CONDITION 45: TO THE EXTENT THAT SUCH	TMAC confirmed in its 2016 Annual
COMMUNICATIONS ARE CONSISTENT WITH AND NOT LIMITED BY	Report that it had engaged with the
THE PROPONENT'S OBLIGATIONS UNDER THE 2015 HOPE BAY	Government of Nunavut - Department of
THE I NOT OTHER TO OBEIGHT ON OTHER THE 2010 HOTE BAT	So termient of Italiavat Department of

TERM AND CONDITION	COMPLIANCE ACHIEVEMENT
INUIT IMPACT AND BENEFIT AGREEMENT (IIBA), THE PROPONENT SHALL SHARE INFORMATION WITH THE GOVERNMENT OF NUNAVUT, DEPARTMENT OF EDUCATION WITH RESPECT TO THE PROPONENT'S YOUTH EMPLOYMENT INITIATIVES IN THEIR HUMAN RESOURCES PLAN, AND OTHER PROGRAMS THAT MAY RELATE TO EDUCATION AND WILL, TO THE EXTENT POSSIBLE INTEGRATE THE PROPONENT'S ACTIVITIES INTO THE EXISTING DEPARTMENT OF EDUCATION PROGRAM, AND COMMUNICATION AND DELIVERY PLANS.	Education and other relevant Nunavut Departments on youth employment on a number of occasions in 2016.
TERM AND CONDITION 46: TO THE EXTENT THAT SUCH COMMUNICATIONS ARE CONSISTENT WITH AND NOT LIMITED BY THE PROPONENT'S OBLIGATIONS UNDER THE 2015 HOPE BAY INUIT IMPACT AND BENEFIT AGREEMENT (IIBA), THE PROPONENT SHALL PROVIDE THE GOVERNMENT OF NUNAVUT (GN) AND THE NIRB INFORMATION REGARDING THE LABOUR FORCE NEEDS OF THE PROJECT AS IT PROCEEDS: THE TITLE AND NUMBER OF POSITIONS REQUIRED BY DEPARTMENT OR WORK AREA; THE POTENTIAL START DATES; AND TO THE LEVEL OF EDUCATION REQUIRED (WITH REFERENCE TO THE SPECIFIC POSITIONS); WHETHER ON-THE-JOB OR OTHER FORMS OF TRAINING AND CERTIFICATION WILL BE REQUIRED (WITH REFERENCE TO THE SPECIFIC POSITIONS).	TMAC noted in its 2016 Annual Report that it provided the Government of Nunavut with a Construction and Production Manpower Plan that contained the information pertaining to this term and condition.
TERM AND CONDITION 47: TO THE EXTENT THAT SUCH COMMUNICATIONS ARE CONSISTENT WITH AND NOT LIMITED BY THE PROPONENT'S OBLIGATIONS UNDER THE 2015 HOPE BAY INUIT IMPACT AND BENEFIT AGREEMENT (IIBA), THE PROPONENT SHALL SHARE RELEVANT DATA (QUANTITATIVE AND QUALITATIVE) CONCERNING THE IMPLEMENTATION AND SUCCESS OF TRAINING AND EDUCATION PROGRAMS, WITH OTHER SOCIO-ECONOMIC MONITORING INITIATIVES INCLUDING THE HOPE BAY SOCIO-ECONOMIC WORKING GROUP AND THE KITIKMEOT SOCIO-ECONOMIC MONITORING COMMITTEE.	TMAC noted that it reports workforce training annually as part of the Hope Bay Project Socio-economic Monitoring Program, and discusses the subject during annual meetings of the Hope Bay Socio-economic Working Group and the Kitikmeot Socio-economic Monitoring Committee. TMAC noted that its compliance with this term and condition is an ongoing exercise.
TERM AND CONDITION 48: BY FEBRUARY 28TH OF EACH YEAR WHEN THERE ARE SIGNIFICANT FOOTPRINT CHANGES TO THE PROJECT DEVELOPMENT AREA OR AN ARCHAEOLOGICAL PERMIT IS REQUESTED, THE PROPONENT WILL PROVIDE THE GN-DCH WITH A SERIES OF MAPS AND TABLES INDICATING THE CURRENT STATUS OF ALL ARCHAEOLOGICAL SITES WITHIN THE PROJECT DEVELOPMENT AREA. THE PROPONENT SHALL CONSULT WITH	TMAC noted in its 2016 Annual Report, that it had satisfied the term and condition in consultation with GN-Department of Culture and Heritage.

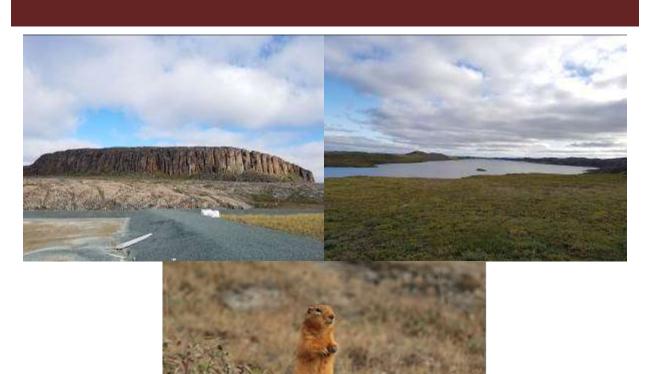
TERM AND CONDITION	COMPLIANCE ACHIEVEMENT
THE GN-DCH TO ESTABLISH THE CONTENTS OF THE MAPS AND TABLES THAT MUST BE SUBMITTED. TERM AND CONDITION 49: IF THE GOVERNMENT OF NUNAVUT AND THE NUNAVUT HOUSING CORPORATION DEVELOP AN ANONYMOUS VOLUNTARY HOUSING SURVEY, THE PROPONENT SHALL MAKE THE SURVEY AVAILABLE TO NUNAVUMMIUT SITE PERSONNEL AND THE PROPONENT WILL RETURN ANY COMPLETED SURVEYS TO THE GOVERNMENT OF NUNAVUT. COMMENTARY: IT SHOULD BE NOTED THAT INTERPRETATION OF THE RESULTS, MODIFICATIONS TO THE SURVEYS AND ANY REPORTING OF THE RESULTS REMAIN THE RESPONSIBILITY OF THE AUTHORS OF THE SURVEY, THE GOVERNMENT OF NUNAVUT AND NUNAVUT HOUSING CORPORATION.	TMAC confirmed in its 2016 Annual Report, that it intends to meet requirements of this term and condition, when required.
TERM AND CONDITION 50: THE PROPONENT SHALL REMOVE THE SUBSEA PIPELINE AND DIFFUSER IN ROBERTS BAY WHEN THE PIPELINE IS NO LONGER IN USE UNLESS IT CAN BE DEMONSTRATED TO THE SATISFACTION OF THE NUNAVUT IMPACT REVIEW BOARD THAT THIS INFRASTRUCTURE WILL PROVIDE A NET POSITIVE ENVIRONMENTAL EFFECT TO THE LOCAL ECOSYSTEM.	TMAC confirmed in its 2016 Annual Report, that it will review options with the NIRB at the time when the pipeline and diffuser in Roberts Bay are no longer in use.





2017 Site Visit Report

for the Nunavut Impact Review Board's Monitoring of TMAC Resources Inc.'s Doris North Gold Mine Project



Full Report Title: 2017 Site Visit Report for the Nunavut Impact Review

Board's Monitoring of TMAC Resources Inc.'s Doris North

Gold Mine Project (NIRB File No. 05MN047)

Project: Doris North Gold Mine Project **Project Location:** Kitikmeot Region, Nunavut

Land Tenure: Inuit Owned Land

Project Owner: TMAC Resources Inc.

40 King Street West Suite 2100

Toronto, ON M5H 3C2 Tel: (416) 628-0216

Proponent Contact: John Roberts, Vice President Environment Affairs

Proponent Personnel: Sarah Warnock, On Site Environmental Coordinator

Oliver Curran, Director, Environmental Affairs

Alex Buchan, Director of External and Community

Relations

Visit conducted by: Kelli Gillard, Manager, Project Monitoring

Kofi Boa-Antwi, Technical Advisor II Mia Otokiak, Junior Technical Advisor Talia Maksagak, Junior Technical Advisor

Site visit date: August 28, 2017 Last site visit: August 26, 2016

Community Information Session: September 13, 2017

Photos by: NIRB Staff

Cover photos: 1) Top Left – Doris North Butte

2) Top Right – Tailings Impoundment Area

3) Bottom – Siksik (Ground Squirrel)

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1 INTRODUCTION

The Nunavut Impact Review Board (NIRB or Board) was established through Articles 10 and 12 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada* (Nunavut Agreement) and is responsible for post environmental assessment monitoring of projects pursuant to Sections 12.7.1 and 12.7.2 of the Nunavut Agreement. The NIRB is responsible for post environmental monitoring of projects in accordance with Part 7 of Article 12 of the Nunavut Agreement.

1.1 Objectives & Purpose of Site Visit

In September 2006, pursuant to Section 12.5.12 of the Nunavut Agreement, the NIRB issued Project Certificate No. 003 for the Doris North Gold Project (the Project), allowing the Project to proceed in accordance with the Terms and Conditions issued therein. In April 2013, the NIRB formally amended the Project Certificate No. 003 to change the name of the holder of the Project Certificate No. 003 from Newmont Mining Corporation to TMAC Resources Inc. (TMAC). In September 2016, the NIRB formally amended the Project Certificate No. 003 to include modifications to the Doris North Project (NIRB 2016).

The objective of the NIRB's August 28, 2017 site visit was to determine whether, and to what extent, the land or resource use in question is being carried out within the predetermined terms and conditions of the NIRB's Doris North Gold Project Certificate [Section 12.7.2(b) of the Nunavut Agreement].

The observations resulting from this site visit shall, wherever possible, be incorporated into the measurement of the relevant effects of the Project, provide the information necessary for regulatory authorities to enforce terms and conditions of land or resource use approvals, and will further be used to assess the accuracy of the predictions contained in the project impact statements in accordance with Section 12.7.2 of the Nunavut Agreement.

1.2 Doris North Project History

In 2008, Newmont Mining Corporation completed acquisition of the Doris North/Hope Bay Belt property and established Hope Bay Mining Ltd. (HBML) as a separate business entity to operate the Project. HBML suspended construction in 2008 and 2009 while it revisited the development of Doris North project, then resumed infrastructure construction in 2010, while also continuing advanced exploration. On January 31, 2012 Newmont announced its plan to put the Project into care and maintenance.

On February 3, 2013 the NIRB received notice that TMAC had entered into an agreement to purchase the Doris North Gold Mine and assets from HBML. On April 11, 2013 TMAC completed the purchase and notified the NIRB that it would continue to operate the site under care and maintenance. After parties confirmed that the transition was complete, the NIRB issued an amended cover page for Project Certificate No. 003 to TMAC Resources Inc. and TMAC reopened the camp and continued with exploration while maintaining the site in care and maintenance.

TMAC maintained the Project in care and maintenance through 2014, and in the spring of 2015 notified parties that the Project would begin construction following the 2015 barge season. In addition to recommencing construction, TMAC applied to construct a laydown area (Pad T) as an ore and temporary waste rock storage pad to provide sufficient storage capacity for waste rock in order to initiate mining of the Doris zone. TMAC also completed construction of infrastructure that was postponed while the Project was in care and maintenance.

On June 23, 2015 TMAC applied to extended the mine life for the Project from a four (4) year period of operations to six (6) years through mining two (2) additional mineralized zones (Doris Connector and Doris Central zones) to be accessed via the existing Doris North portal. The expanded mining program would also increase the approved mining and milling rates to 2,000 tonnes per day, and require the restructuring of the Tailings Impoundment Area to be managed as subaerial tailings with treated effluent being transported via a pipeline for discharge into Roberts Bay. The NIRB conducted a review of the proposed amendments to the Project and held a Public Hearing on April 12 to 14, 2016. On June 13, 2016 the Board recommended the proposed project amendments be allowed to proceed subject to 34 amended project certificate terms and conditions in addition to 15 new terms and conditions which were officially incorporated into Project Certificate No. 003 on September 23, 2017.

1.3 Doris North Project Description

Doris North is located 110 kilometres (km) south of Cambridge Bay and 65 km east of Omingmaktok (Bay Chimo) near Melville Sound in the West Kitikmeot region of Nunavut. The Project involves the construction, operation, and eventual decommissioning of an underground gold mine located on Inuit-owned surface lands.

The mine site is comprised of a camp, airstrip, associated mining infrastructure including fuel storage, jetty, laydown areas, and a single ramp access. The 2015 Amendment Application extended the mine life for the Doris North Project from a four (4) year period of operations to six (6) years through mining two (2) additional mineralized zones (Doris Connector and Doris Central zones) to be accessed via the existing Doris North portal. The site is accessed by sealift for fuel and supplies, and by air for select freight and all personnel movements (see Figure 1).

1.4 Preparations for the Site Visit

Following a review of the documents listed in <u>Table 1</u> in preparation for the 2017 site visit, the NIRB's Monitoring Officer for the Doris North Project (the Monitoring Officer) and NIRB staff visited the project components listed in <u>Table 2</u> during the 2017 site visit.

Table 1 - List of Documents Reviewed for the Site Visit

i.	Revised NIRB Project Certificate No. 003 (September 2016),	ii.	NWB Water Licence No. 2AM-DOH1323 (August 2013),
iii.	NIRB's 2015 and 2016 Annual Monitoring Report and Board Recommendations,	iv.	Tundra Reclamation Work Plan (April 2014),
V.	TMAC's Response to Comments regarding NIRB's 2016 Annual Monitoring Report and Board Recommendations (February 2017),	vi.	TMAC's 2016 Annual Report for Doris North Gold Mine Project Certificate No. 003 (May 2017),
vii.	Q1-Q3 2016 Atmospheric Compliance Monitoring Program Report which included Meteorological information (May 2017),	viii.	2016 Annual Roberts Bay Jetty Inspection (May 2017),
ix.	2016 Doris North Socio-Economic Monitoring Report (May 2017),	х.	2016 Wildlife Compliance Monitoring Report (May 2017),
xi.	2016 Waste Rock and Quarry Monitoring Report (May 2016),	xii.	2016 Final Archaeological Investigations Permit Reports (May 2017), and
xiii.	Other correspondence relating to the Doris North project.		

Table 2 – Project Components Viewed at Site

	Roberts Bay area		All-weather road and airstrip area
0	Jetty;	0	Aircraft refuelling station and apron
0	5 ML fuel farm;		expansions;
0	Roberts Bay fuel tank facility (20 ML); and	0	Quarry 2 and Burn Pan area;
0	Waste and metal sorting facilities along	0	Sewage outcrop and disposal area; and
	with incineration area.	0	Spill treatment facilities for soil, snow, and
			water and core storage area.
	Camp site and mine facilities area		Tailings Impoundment Area
0	Power plant;	0	Vent Raise;
0	Portal;	0	North frozen core dam on Tail Lake;
0	Mill building;	0	Water intake and meteorological station at
0	Ore stock and waste rock piles Pad T;		Doris Lake;
0	Power plant footprint and fuelling station;	0	Reagent pad;
0	Water diversion berm(s);	0	Explosives pad;
0	Mine site pollution and sedimentation	0	Road to South Dam
	ponds;	0	South Dam; and
0	Water intake at Doris Lake, and	0	Subaerial tailings deposition.
0	Overburden stockpile.		

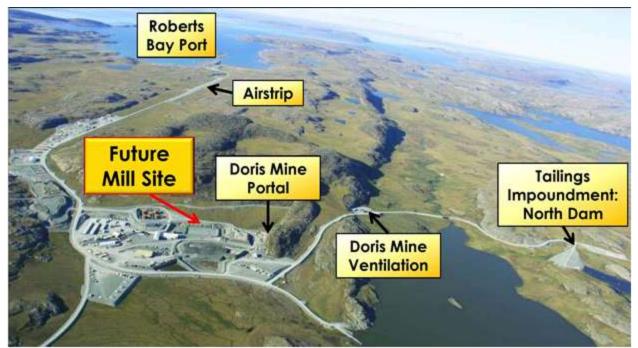


Figure 1 – General Site Photo¹

2 SITE VISIT

Ms. Kelli Gillard, Monitoring Officer, Mr. Kofi Boa-Antwi, Technical Advisor II, Ms. Mia Otokiak, Junior Technical Advisor, and Ms. Talia Maksagak, Junior Technical Advisor conducted the 2017 NIRB site visit on August 28, 2017 by flying from Cambridge Bay, Nunavut to the Doris North Gold Mine Project site. Upon landing at site, NIRB staff were met by Ms. Sarah Warnock, TMAC Onsite Environmental Coordinator, Mr. Oliver Curran, TMAC Director, Environmental Affairs, and Alex Buchan, TMAC Director of External and Community Affairs.

Once at Doris North, TMAC briefed the NIRB staff on site health and safety protocols, environmental procedures, and then led a tour of the surface infrastructure. Throughout the site visit, the NIRB and TMAC staff discussed the infrastructure in place and the mine now that it has moved into the operational stage, as well as additional development expected to be finalized in the near future.

2.1 General Observations

The following are general observations made during the site visit and do not pertain specifically to any terms or conditions of the Project Certificate.

2.1.1 Roberts Bay

The Roberts Bay area serves as the Project's marine access hub and is linked to the main camp and mine site by a 4.8 km all-weather road. The area is used for staging of fuel and supplies as the Project transitions from the construction phase to operations phase (see Photo 1). The major

¹ TMAC Resources Inc. 2016. Final Hearing Presentation Intro Slide 5.

facilities at Roberts Bay include the jetty, a tank farm holding three (3) five (5) million litre (ML) fuel tanks known as the Roberts Bay tank farm, a separate empty five (5) ML fuel tank located in the abandoned Quarry 1, multiple laydown areas, waste management facilities, and incinerators.



Photo 1 – Aerial view of Roberts Bay

The Roberts Bay area was quiet during this site visit with minimal activity as the NIRB site visit was between deliveries of the fuel and dry goods barge. TMAC staff indicated that the dry goods barge were expected to arrive on site the day after the site visit.

2.1.2 All-Weather Road and Airstrip

The combined all-weather road and airstrip was constructed in 2008 and in 2011 HBML was approved to expand the airstrip for health and safety concerns. In the fall of 2015, TMAC completed the expansion of the airstrip section (see Photo 2).

During the site visit, TMAC staff noted an extension to the shoulder of the airstrip/all-weather access road and an additional apron repurposed the former explosives manufacturing plant to a second apron for the airstrip (see Photo 3). This additional apron contained a bermed area where de-icing of planes would occur (see Photo 4). TMAC staff continue to use site vehicles to block traffic on the north and south ends of the airstrip during take offs and landings to manage traffic. Posted signs are at either end of the airstrip to caution site staff entering the airstrip portion of the all-weather road, and radio protocols remain in place to maintain site safety (see Photo 5).



Photo 2 – Looking north along the airstrip



Photo 3 – Transition between runway/road and mine road



Photo 4 - New Apron and deicing berm



Photo 5 – Signs at the north end of the airstrip

2.1.3 Quarry 2, Open Burn Pan, and Sewage Discharge

Quarry 2 is adjacent to the all-weather road and the sewage discharge outfall is approximately 60 metres west of the all-weather road adjacent to the laydown area south of Roberts Bay (see Photo 6 and Photo 7 Error! Reference source not found.). During the 2017 site visit, the quarry was in operation and there was activity at a new burn pan and a mine-site fire training area in proximity to the quarry (see Photo 8, Photo 9, and Photo 10). A sewage discharge area was adjacent to Quarry 2, but due to time constraints, the NIRB staff were unable to observe the site in person.



Photo 6 – Panorama of Quarry 2

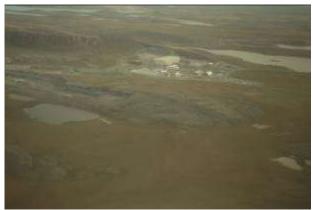


Photo 7 - Aerial view of Quarry 2



Photo 8 – Crusher at work in Quarry 2



Photo 9 – Newly constructed burn pan in Quarry 2



Photo 10 - Mine Rescue training in Quarry 2

2.1.4 Rimpull Trials

In 2012, the NIRB noted that tracks were left on the tundra adjacent to the laydown area nearest Quarry 2 by HBML when it conducted experiments using various equipment, which the NIRB recommended should be monitored and reported on an annual basis by the Proponent. In 2013, the NIRB requested that TMAC develop a monitoring and/or remediation plan for these tracks, which was submitted to the NIRB in April 2014. TMAC began monitoring the tracks and during the 2014 site visit expressed concern that full remediation (e.g., filling them in with gravel) could cause more damage to the tundra than the initial trails as machinery would need to be used to

access the site. TMAC staff has continued to monitor the tracks, which are delineated by staking, and has undertaken active remediation of one (1) staked area in 2015/2016, as monitoring showed it required filling to allow recovery of the tundra (see Photo 11). NIRB staff was unable to visit the area during the 2017 site visit due to time constraints.



Photo 11 – Staked permafrost monitoring site 2015

2.1.5 Laydown Area with Landfarm and Contaminated Water or Snow Cell, Wood Sorting Area, and Core Storage

The laydown area contains the combined landfarm, contaminated water or snow cells, wood sorting area, and core storage are located north of the Doris North camps on the west side of the all-weather road adjacent to Quarry 2 (see Photo 12), all in isolated cells but are within one (1) defined area. It was noted during the 2017 site visit that contaminated water or snow cell continues to have some surficial damage due to discharge of water at high pressure. Water transferred into the cell swirls along the bottom at the discharge point making a depression and, as the Monitoring Officer noted during the previous site visits, the liner of the cell was not visible (see Photo 13).

Through observation of the landfarm cell, NIRB staff noted that vegetation were growing in the medium. TMAC noted that the testing of remediated materials that was to be undertaken last year had not yet been conducted due to construction activities. TMAC stated that they were hoping to work on the landfarm in 2017 as the bags from the Elu spill that occurred in 2015 were still in bags at the landfarm awaiting remediation. Further, bags which contained historical contaminated materials from the Boston site were to be brought to this landfarm from the Boston camp in 2017 for remediation (see Photo 14).

During the site visit, it was noted that the wood sorting area which is now located at the former burn pan area is a mix of treated and untreated wood (see Photo 15). TMAC staff noted that once the final annual barges have been received, and prior to the first snowfall, TMAC would be cleaning up the area and disposing of the wood appropriately.



Photo 12 – Contaminated snow cell of the three (3) cell unit which includes contaminated water and landfarm cells



Photo 13 - Contaminated water cell



Photo 14 – Landfarm



Photo 15 – Unsorted wood pile

2.1.6 Camp Site, Portal, and Mine Facilities

The camp and mine facilities are located approximately five (5) km south of Roberts Bay along the north shore of Doris Lake. In addition to the campsite, which has been in operation since

2008, the Doris North mine site hosts additional infrastructure associated with the underground mine operations as well as ore and waste rock stockpiles (see Photo 16).



Photo 16 – Aerial photo of main Doris Camp site and Mine Facilities

In the summer of 2014, TMAC partially commissioned the power plant, and in 2015, TMAC continued construction of the facility in preparation for mining (see <u>Photo 17</u>). The plant was running with three modules by 2015, and as per the 2016 site visit, TMAC is awaiting the installation of the fourth and final module with the final module to be installed by the end of 2017 before fully commissioning the plant (see <u>Photo 18</u>).

TMAC also noted during the site visit that the mill is currently heated by the waste heat generated at the power plant via a glycol loop from the power plant into the mill. TMAC indicated that the system is working effectively, and hopes to be able to maintain this throughout operations to reduce the amount of fuel used at site.



Photo 17 – West side of power plant 2016



Photo 18 – East side of power plant 2017

During the site visit, it was noted that the mill building is in operations; however, TMAC was awaiting the final pieces of the mill due on the barge in 2017 before commissioning the plant. TMAC is currently using the lower quality stockpiled ore on Pad T to test the mill output and

prepare the system for full operations (see Photo 19). TMAC took NIRB staff inside the mill building to observe the mill in operations and gain a better understanding of the system design and processing. TMAC noted that tailings from the cyanide leach process are neutralized and then deposited directly underground. Flotation tailings are transported to one (1) of three (3) outfall locations at the tailings impoundment area (TIA) and the recycled water from the TIA is transported back into the plant via pipelines. TMAC noted that the recycling of water has been successful to date as TMAC has not had to supplement the mill process with water from Doris Lake as originally proposed.



Photo 19 – Temporary stockpile of low quality ore for commissioning of mill 2015

In order to access the ore, TMAC continues to transport waste rock to the surface in temporary storage piles (see Photo 20). In addition, TMAC continues to stockpile ore in order to maintain operations of the mill and TMAC noted that it now has enough areas mined for backfilling of treated tailings, and that waste rock at the surface will also be moved back underground as soon as feasible (see Photo 21 and Photo 22).



Photo 20 – Traffic from the Portal to the waste rock pile







Photo 22 – Looking East toward waste rock pile

During the site visit, TMAC and NIRB staff drove around the area associated with the operating mill and mining as the high traffic area is not safe to walk and NIRB staff were able to observe the conveyor belt and sedimentation and water ponds for the mill and camp pads (see Photo 23).



Photo 23 – Conveyor belt on east side of mill

TMAC and NIRB staff also discussed the overall camp layout, and that all the buildings are now in operations. TMAC further noted that at the laydown area adjacent to the Roberts Bay Tank farm are a number of ATCO trailers that had been purchased from the contractors for the construction of the Canadian High Arctic Research Station (CHARS) and it is anticipated that the trailers would be incorporated into the existing camp in the future. TMAC staff also noted where surplus seacans on site have been turned into arctic corridors or covered walkways to replace the wooden walkways to allow site staff to move through the camp and mill site safely (see Photo 24).



Photo 24 - Red Arctic corridor created from recycled seacans

During the site visit, TMAC staff also pointed out the new pad and access road approximately one (1) km from the Doris Camp along the Windy Lake road that has a wind data collection tower (see Photo 25).



Photo 25 - A wind data collection tower adjacent to the Windy Lake Road

2.1.7 Overburden Pile and Diversion Berm

During the 2017 surface tour of the Doris North site, the NIRB staff observed the overburden storage pile but did not specifically go into the area as cursory ground inspection showed no major changes in the pile (see Photo 26). TMAC noted that the materials from the overburden pile were used in the remediation of drill sites, but since TMAC was not conducting exploratory drilling in 2017, the materials were not required.

During the 2017 site visit, the diversion berm along the north side of the camp used to divert water from the Doris North outcrop was visually inspected and TMAC staff indicated that the berm was again successful in diverting non-contact water over the last monitoring period (see Photo 27).



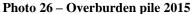




Photo 27 – Aerial view of diversion berm between camp and Doris butte

2.1.8 Helicopter Pad

The NIRB staff visually observed the helicopter pad and noted no changes from previous years; the pad was inactive at the time of the site visit.

2.1.9 Vent Raise

In 2016 the emergency escape ladder in the Doris vent was installed to prepare for mining (see Photo 28) and during the 2017 site visit TMAC staff were working underground (see Photo 29). As noted in previous years, the location of the pad and vent stack have created issues for proper drainage and TMAC staff prevented water from draining into the vent via a trench and in 2015 created a sump in 2015, this was not as successful as expected and TMAC continues to actively pursuing a solution to drainage on the pad. During the 2017 site visit, it was noted that the area remained the same with minimal changes.



Photo 28 – Doris vent raise 2016



Photo 29 – Doris vent raise

While at the vent raise, TMAC and the NIRB staff discussed the pipelines that run along the road going to the TIA and noted that the larger diameter pipeline were for the transport of tailings and the smaller diameter pipeline was for the transport of water from the TIA back to the plant.

NIRB staff noted site staff working along the road on either side of Doris Creek, and TMAC explained that those were the emergency ponds for emergency discharge of the pipelines if the pipes plugged up and/or a pipeline required repairs (see <u>Photo 30</u>).



Photo 30 – Looking east from vent raise towards Doris Creek and the construction of the pipeline emergency ponds

2.1.10 Reagent Storage Pad

During the 2017 site visit, the NIRB staff observed the final preparations of the reagent pad (formerly the explosives storage pad) and TMAC indicated that it was going to be moving the reagents onto site in the next coming weeks (see Photo 31).



Photo 31 – Reagent storage pad construction

2.1.11 Permanent Explosives Storage Pad

The NIRB staff observed the completed explosives storage pad that was under construction in 2016 (see Photo 32 and Photo 33) and noted that the seacans filled with rocks were in place to be used as soundwave barriers as was discussed during the previous year's site visit (see Photo 34). The Monitoring Officer noted that there was spill equipment in a barrel and an emergency bear kit at the gate entrance to the explosive storage pad as well as signage indicating what the area was used for (see Photo 35).



Photo 32 – Permanent explosives pad

Photo 33 – The gate at explosives pad



Photo 34 – Shockwave barrier on the explosives pad

Photo 35 – Bear scare kit at explosive pad

2.1.12 Road to South Dam and South Dam

As TMAC had obtained the approvals for the design changes to the South Dam, in 2017 TMAC began construction of the road to South Dam as well as construction of the South Dam. During the 2017 site visit, TMAC and NIRB staff drove along the newly constructed road to the South Dam; but were not able to closely visually inspect the first level of the South Dam given the road requires final finishing (see Photo 36).



Photo 36 – Areal view of the Tailings Impoundment Area

2.1.13 Tailings Impoundment Area

As noted previously, TMAC obtained the approvals to undertake the required design changes to the Doris North project, and has received and installed the majority of the mill. During the fall and winter of 2016 TMAC installed pipelines for the transport of tailings from the mill to the TIA and to bring the recycled water from the TIA to the mill. The station for withdrawing the recycled water is at the north end of the TIA close to the North Dam (see Photo 37).



Photo 37 – Water intake at the Tailings Impoundment Area for recycled water at the mill

TMAC and NIRB staffs discussed the three (3) discharge areas, stopped at the second outfall, and observed how tailings were deposited. TMAC noted that tailings are deposited through outfalls/spigots along the embankment of the TIA and then natural segregation is allowed to occur (see Photo 38). Heavier larger particles in the tailings tend to deposit first with the lighter smaller particles carried further down the embankment before being deposited. The numerous outfall areas, and when and where deposition of the tailings occurs, are controlled and thus the geometry and the location of the supernatant pond are controlled within the TIA. This deposition means that the TIA would be eventually surrounded by beached tailings and outfall locations

would be changed via the deposition plan to promote bleeding and drying prior to further tailings deposition (see <u>Photo 39</u> and <u>Photo 40</u>).

The NIRB staff during the site visit examined the draining, bleeding, and drying of tailings as it moved down the embankment to the TIA (see Photo 41). From this location, the third outfall near the newly constructed base of South Dam was observed from a distance, but as the road to South Dam has yet to be finalized, NIRB staff did not visit the site in person.



Photo 38 – Panorama view of the second spigot at the TIA

The Monitoring Officer noted that the insulation which surrounds the TIA line was cracked or damaged in select locations along the pipeline (see Photo 42 and Photo 43). TMAC stated that it would be addressing this in the fall before freeze up.

While at the TIA, the NIRB staff noted that the Interim Dam was yet to be constructed and TMAC explained that a re-design of the TIA was being considered as part of the Phase 2 Hope Bay Belt proposal.



Photo 39 – Sediment delta at the second spigot location at TIA

Photo 40 – View from below of the second spigot



Photo 41 – View of the sorting of tailings while draining down the embankment



Photo 42 – Cracked insulation on TIA line adjacent to water intake

Photo 43 – Damaged insulation on TIA line near spigot 2

2.2 Observations based on NIRB's Project Certificate No. 003

The NIRB used Project Certificate No. 003 version 2 that was in place at the time of the site visit.

NIRB Project Certificate Condition 19

"MHBL shall install thermistor cables and temperature loggers in the jetty foundation. MHBL shall monitor the effects of the jetty on shallow water permafrost through operations and report the results of the monitoring collection to NIRB's Monitoring Officer."

Commentary: NIRB's Monitoring Officer will provide guidance to MHBL on data reporting requirements and will, in consultation with MHBL, distribute MHBL's data to interested Parties including NRCan.

As the jetty was actively being used by TMAC, it was not accessible for inspection (see Photo 44). TMAC staff noted that the jetty still only has one (1) operating thermistor cable. TMAC staff confirmed that the small motorized boat continues to be at the jetty during barge season to allow for a quick response in the event that a spill or accident occurs as well as for research and monitoring activities.



Photo 44 – Roberts Bay jetty

NIRB Project Certificate Condition 20

"HBML shall ensure the use of containment booms and berms to control potential spills whenever fuel and or waste is transferred between a barge and the shore. HBML shall ensure spill kits are at hand at these locations at all times."

As the fuel barge had been to site before the site visit, NIRB staff were unable to access the emergency sea cans but were informed that the contents had not changed and all the fuel tanks in the Roberts Bay tank farm were full.

2.2.1 Fuel Storage

NIRB Project Certificate Condition 33

"HBML shall ensure that areas used to store fuel or hazardous materials are contained using the safest methods practically available."

TMAC and the NIRB staff were unable to observe the five (5) ML fuel tank located in abandoned Quarry 1 (see Photo 45) as there was a lot of activity occurring in the area during the site visit and as in previous years, TMAC and the NIRB staff discussed the inadequacy of the current berm to contain the full volume of the tank should a rupture happen and that the tank is not typically used for fuel. This year, TMAC noted it had tried to use the tank as part of the fuel transfer system as it is inspected annually and could be used for this type of activity. However, during the start of the transfer some liquid was noted in the bottom of the bermed area and the transfer was discontinued and TMAC decided to fill the tanks using the previous method. After this incident, TMAC noted that the fuel tank in the abandoned quarry would remain locked out until further notice and any liquid that collected in the berm would be disposed of appropriately.



Photo 45 - Five (5) ML fuel tank and berm located in Quarry 1 2015

As TMAC and NIRB staff discussed as the area was too active to inspect this year, Jet B fuel barrels continue to be stored in the Quarry 1 berm area (see Photo 46). TMAC indicated during the site visit that the barrels at the helipad continued to be accessed when required for refueling and once empty were stored adjacent to the fuel tank farm. The NIRB noted that the empty barrels had not been taken out last year and enquired as to whether or not they would be shipped out this year. TMAC stated that it would be shipping barrels and other site materials in the coming years but noted, as indicated to other inspectors, everything is stored properly (see Photo 47).



Photo 46 – Empty fuel barrels 2015



Photo 47 – Seacans adjacent to Quarry 1 2015

2.2.1.1Roberts Bay Tank Farm

As previously noted, TMAC had received its fuel barge prior to the site visit and the transfer of fuel to the fuel tanks were successful with no incident. The berms surrounding the Roberts Bay Tank Farm (15 ML) were in place and well maintained. The Jet B fuel storage tank is now operational and TMAC noted that there is a reduced dependence on the aviation fuel barrels stored in Quarry 1 (see Photo 48Error! Reference source not found.). NIRB staff observed that appropriate emergency equipment was available for spills and fire suppression adjacent to the tank farm (see Photo 49Error! Reference source not found.).



Photo 48 – Completed Jet B fuel tank in Roberts Bay Tank Farm

Photo 49 – Firefighting equipment on berm at entrance to Roberts Bay Tank Farm

2.2.2 Waste Management Facilities

NIRB Project Certificate Condition 30

"HBML will install and fund an atmospheric monitoring station. This station and its location shall be developed in consultation with EC and HC air quality officials and focus on particulates of concern generated at the mine site. The results of air-quality monitoring are to be reported every six (6) months to NIRB through the Monitoring Officer, and from there to all parties.

Commentary: NIRB expects the Canada Wide Standards for Dioxins and Furans and the Canada Wide Standards for Mercury will apply and should be followed including stack testing of incinerators"

The waste management facilities at Roberts Bay handle all combustible and non-combustible wastes from the Project and ongoing exploration activities throughout the Hope Bay Belt (see Photo 50).

During the 2015 site visit, TMAC staff stated that the large incinerator on site had stopped operating and would be replaced in 2016 with two (2) incinerators used on a rotational basis (see Photo 51). At the time of the NIRB's 2017 site visit, the large incinerator was being inspected to determine what parts were required to get it to function again or whether a new incinerator would be required as the two (2) smaller incinerators were unable to keep up with the site's demands. In addition, the 2016 incinerator stack testing showed that dioxins and furans were greater than the Canada-wide standards and a response plan was being developed with Environment and Climate and Change Canada (ECCC).

It was noted during the 2017 site visit that the recycled seacan wall around the incinerators as a protective barrier continue to be effective with two (2) red seacans on the south side of the incinerators labelled 'drop off' and 'food' are used to store the materials prior to incineration.



Photo 50 – Laydown/sorting area adjacent to incinerators



Photo 51 – Two (2) incinerators at site

2.2.3 Monitoring Stations

NIRB Project Certificate Condition 8

MHBL will fund and install a weather station at the mine site to collect atmospheric data, including air temperature and precipitation. The design and location of this station shall be developed in consultation with Environment Canada officials.

Commentary: Prior to closure and reclamation, NIRB expects MHBL to undertake consultation with appropriate agencies including INAC and EC, to discuss the possibility of the continued operation of the station, including transfer of ownership, for the collection of regional meteorological data

NIRB Project Certificate Condition 14

MHBL shall collect additional precipitation, evaporation and runoff data and incorporate it into a revised water balance to be submitted to the NWB as part of the water licence application.

NIRB Project Certificate Condition 30

MHBL will install and fund an atmospheric monitoring station. This station and its location shall be developed in consultation with EC and HC air quality officials and focus on particulates of concern generated at the mine site. The results of air-quality monitoring are to be reported every six (6) months to NIRB through the Monitoring Officer, and from there to all of the parties.

Commentary: NIRB expects the Canada Wide Standards for Dioxins and Furans and the Canada Wide Standards for Mercury will apply and should be followed including stack testing of incinerators.

During the 2017 site visit, the NIRB staff noted that the meteorological station adjacent to Doris Lake remained in place and no operational malfunctions were raised by TMAC staff (see Photo52).



Photo 52 - Meteorological station

Through discussions of the locations of the dust fall monitors around site, it was noted that the monitoring stations were on site and had detected some changes in readings in the vicinity of Quarry 2 and TMAC was investigating the issue and mitigation measures to be put in place. Due to issues of accessibility, NIRB staff were unable to directly observe the dustfall stations on site, but were able to photograph the dust monitoring station by the Tailings Impoundment Area (TIA) east of spigot 2 (see Photo 53).



Photo 53 – Air monitoring stations across from the TIA spigot 2 location

2.2.4 Tailing Impoundment Area

NIRB Project Certificate Condition 2

The commitments in the Final Hearing Report as Appendix B (see Appendix A of Project Certificate): MHBL Commitments from the Final Hearing, are incorporated herein and must be met.

Appendix A – List of Commitments from the Final Hearing EC [Environment Canada] first bullet

• Miramar has committed to monitoring of permafrost in the vicinity of the North and South dams, monitoring thermistors as long as they are operational, and monitoring seepage conditions to ensure design criteria are met. These monitoring measures will be further defined in the regulatory phase.

Tail Lake is located on the east side of Doris Lake and is the site of the TIA. As noted previously, the TIA is now in operations with tailings transported via pipeline installed along the service road at the eastern shore of Tail Lake to connect the north dam with the South Dam. In addition, water from the TIA is withdrawn and recycled into the mill with no additional water withdrawn from Doris Lake to supplement operations of the mill.

As in previous site visits, TMAC and the NIRB staff viewed the North Dam of Tail Lake (see Photo 54). TMAC noted that it continues to observe for movement and settlement of the dam by completing monthly surveys of monitoring points and larger surface monitoring points (boulders with survey posts).

During the 2017 site visit, NIRB staff were able to observe the South Dam as construction has recently commenced. The South Dam is a frozen base dam, and is different from the North Dam and will be built up through levels as the subaerial tailings become higher (see Photo 55). In 2017 the third (3rd) spigot was located adjacent to the South Dam.



Photo 54 – North Dam

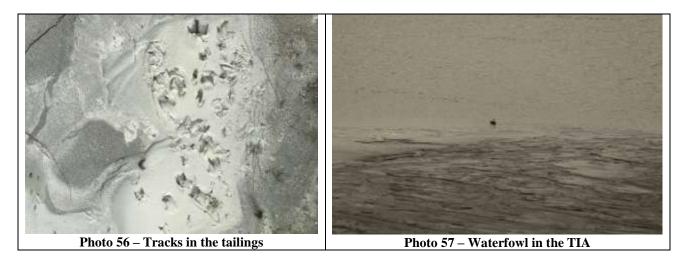


Photo 55 – South Dam

NIRB Project Certificate Condition 26

The Proponent shall consult with local Elders, Kitikmeot Hunters and Trappers Organizations, the Nunavut Wildlife Management Board, Government of Nunavut-Department of Environment, Environment and Climate Change Canada, and the Nunavut Impact Review Board's Monitoring Officer to review and discuss the results of wildlife monitoring and develop mitigation measures, including measures to discourage wildlife and birds from coming into contact with the Tailings Impoundment Area and contaminated areas of the mill site. The Proponent shall incorporate a plan for this consultation into a reviewed Wildlife Monitoring and Mitigation Plan.

During the site visit, the Monitoring Officer observed tracks in the tailings and saw waterfowl in the water of the TIA (see Photo 56 and Photo 57). In discussions with TMAC, they indicated that the tracks have been observed previously and as the tailings are non-toxic they do not have a concern.



2.2.5 Doris Creek

NIRB Project Certificate Condition 15:

"MHBL shall not permit the water discharged into Doris Creek to exceed the criteria set by the NWB."

As in previous years during the site visit, NIRB staff observed the hydrological station along Doris Creek; TMAC indicated that the station is in place to collect daily flow measurements as water leaves Doris Lake through Doris Creek on its way to Roberts Bay via Little Roberts Lake (see Photo 58).



Photo 58 – Doris Creek monitoring 2015

2.3 Operations

NIRB Project Certificate Condition 2

The commitments in the Final Hearing Report as Appendix B (see Appendix A of Project Certificate): MHBL Commitments from the Final Hearing, are incorporated herein and must be met.

Appendix A – List of Commitments from the Final Hearing Proponent – Vegetation – third bullet

• Implement dust suppression methods (i.e., spraying water) on the airstrip and roads during the snow/ice free period;

TMAC and NIRB staff discussed dust control on the roads and TMAC noted that it is currently using dust suppressant (EK-35) on its haul roads to control the dust at the mine site.

Appendix A – List of Commitments from the Final Hearing Proponent – Health Services – eighth bullet

• Miramar will provide government inspected country food periodically at the mine site. During operations the medical staff will be able to provide information on diet and nutrition.

During the site visit, TMAC explained how it serves government inspected country food in the main kitchen as often as possible. In addition, TMAC has provided staff with an Inuit Cultural Room which contains freezers for country food individuals bring to site. The room also contains traditional games that staff can use during their off-time (see Photo 59 and Photo 60). TMAC has also been developing a social committee to allow more traditional activities to be done on site that incorporates traditional language. TMAC also had a large celebration at site in 2017 for Nunavut Day and plans continuing this in the future.



Photo 59 – Inside the Inuit Cultural Room

Photo 60 - Door to Inuit Cultural Room

Appendix A – List of Commitments from the Final Hearing Proponent – Social Services – seventh bullet

• Alcohol and drug education will be provided to all employees and the site will continue to be an alcohol and drug free operation.

While at site, TMAC staff discussed random checks that occur at site with the assistance of a drug sniffing dog and regular inspections of luggage.

Appendix A – List of Commitments from the Final Hearing Proponent – Grizzly Bear – bullets 3, 5, 8, 9, and 10.

- Implement appropriate waste management protocols, including burning all food wastes in an oilfired incinerator
- *Separation of food waste and non-food waste at the source.*
- Designate contained areas for worker lunch and coffee breaks
- Educate people on the risk associate with feeding wildlife and careless disposal of food garbage
- Ongoing review of the efficacy of the waste management program and adaptive improvement.

For as long as TMAC has operated the site, it has worked diligently on these items and reducing wildlife attractants at site. The NIRB staff observed again the separation of food waste at the kitchen and how it is placed in seacans at the incinerator to reduce the access of the bags to wildlife. This year TMAC brought in a consultant to evaluate its practices for bear attractants and the study was done this spring with results of the study to be made available this fall.

3 SUMMARY

Throughout the 2017 site visit, TMAC and NIRB staff discussed how the Doris North site will be changing as TMAC continues with construction activities and commences operations. TMAC has completed most items that were approved as part of the original project certificate and has

begun to work on items as approved in the amendment as it has commenced operations. The site visit discussions focused on TMAC's experience during the previous year of construction and also TMAC's expectations as it conducts operations at site.

The Monitoring Officer notes that overall TMAC has generally complied with the amended Project Certificate No. 003 Terms and Conditions, and the site remains in good condition as TMAC progresses construction in preparation for operations.

As part of Condition 30, the Proponent is required to conduct stack testing of the incinerators. The current two (2) small incinerators during the 2016 stack testing indicated that dioxins and furans were greater than the Canada-wide standards and TMAC is currently working with Environment and Climate Change Canada on a response plan. Further, it was noted during the site visit that the two (2) small incinerators are not able to keep up with the site's waste demands and a larger incinerator would be needed.

Further, Condition 30 requires that the Proponent install atmospheric stations to monitor air particulates of concern generated at site. TMAC noted during the site visit that the dust fall monitoring stations around site detected some changes in the samples collected in the vicinity of Quarry 2 and TMAC would be investigating the issue further.

Condition 33 requires that the Proponent use safe, environmentally protective methods at areas used to store fuel or hazardous materials. The Monitoring Officer noted that the fuel tank located in the abandoned Quarry 1 is not suitable for fuel transfer due to leakage that occurred during a fuel transfer in the summer of 2017. TMAC noted that the fuel tank would remain locked and any liquid in the bermed area would be disposed of appropriately until further notice.

Observations made during the site visit did not include components related to TMAC's proposed Phase 2 Hope Bay Belt project, which is currently under review by the Board.

Prepared by: Kelli Gillard, P.Ag.

Title: Acting, Director, Technical Services

Date: November 27, 2017

Signature:

Reviewed by: Sophia Granchinho

Title: Manager, Impact Assessment

Date: November 27, 2017

Signature:

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Nunavut Impact Review Board

Community Information Session on TMAC Resources Inc.'s Doris North Gold Mine Project NIRB File No.: 05MN047

September 13, 2017



Report Title: Community Information Session Summary Report September 13, 2017 for

the NIRB's Monitoring of TMAC Resources Inc.'s Doris North Gold

Mine Project (NIRB File No. 05MN047)

Report prepared by: Kelli Gillard, Manager, Project Monitoring

Photos by: NIRB staff

Cover photo: Photo from 2014

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1.0 NIRB PUBLIC INFORMATION SESSION

Pursuant to Section 12.7.2 of Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada (Nunavut Agreement) and the Doris North Gold Mine Project Certificate No. 003, the Nunavut Impact Review Board's (NIRB or Board) monitoring responsibilities include providing periodic updates regarding its Monitoring Program for the communities most affected by TMAC Resources Inc.'s (TMAC) Doris North Gold Mine Project (the Project). To further ensure ongoing awareness of Project-specific terms and conditions, and encourage effective participation throughout the Board's monitoring process, the NIRB scheduled an open house and a community information session in Cambridge Bay on September 13, 2017 at the Luke Novoligak Community Hall.

Both sessions provided a general update of the NIRB's monitoring programs for the Project and specifically outlined the ways in which the public can participate in the Board's monitoring process.

A summary of the comments and concerns related to the Project that were received from community members are categorized by the NIRB in <u>Section 2</u> of this report. .

1.1 Setup of NIRB Public Information Meetings

Both the open house and community information session were open to all members of the public. Refreshments and snacks were provided for both sessions along with door prizes during the evening session. The open house took place from 2:00 pm to 5:00 pm with a recorded attendance of seven (7) individuals and the information session took place from 7:00 pm to 9:00 pm with the doors opening at 6:30 pm with a recorded of five (5) in attendance. All in attendance were asked to sign in and identify the community or organization they represented (Appendix A).

For the open house, the NIRB monitoring presentation ran continuously in the background and presentation was in both English and Inuinnaqtun (<u>Appendix B</u>). The public was encouraged to comment and ask questions relating to the NIRB's process, activities undertaken, project effects, and any concerns related to the Project throughout the afternoon. Both written and verbal comments were accepted at the open house and public information meeting, and verbal comments were recorded by the NIRB staff members.

During the evening, the NIRB gave a PowerPoint presentation (see <u>Appendix B</u>) that included a discussion of the NIRB process, with a focus on the NIRB's monitoring programs, an update on the Doris North Gold Mine, including an overview of Project activities and key components, and events and/or issues identified through the project specific monitoring program.

The presentation concluded with a discussion as to how interested parties and community members could participate in the NIRB's processes. The presentation was shown in both English and Inuktitut, discussed in English, with simultaneous interpretation provided in Inuktitut. The public was encouraged to comment and ask questions relating to the NIRB's process, activities undertaken, project effects, and any concerns related to the Project and current proposals. Both written and verbal comments were accepted at the public information meeting,

and verbal comments were recorded by the Proponent. The interpreter provided consecutive translations for the comments presented in Inuinnaqtun.

1.2 Meeting Materials

At the public meeting, the following materials were provided by the NIRB:

- The NIRB's PowerPoint presentation (in English and Inuinnaqtun)
- The Nunavut Land Claims Agreement (in English)
- The NIRB's 2015-2016 Annual Monitoring Report for TMAC's Doris North Gold Mine Project (in English)
- TMAC's Doris North Gold Mine Project Certificate Amendment 2 (in English)
- TMAC's Doris North Gold Mine 2016 Annual Report (in English)
- Comment Forms (in English)
- NIRB's Public Hearing Report Doris North Project: 2015 Amendment Application
- Maps of Project Areas

Copies of consultation materials, including the presentation, advertisements and sign-in sheet, can be obtained from the NIRB's online public registry at www.nirb.ca and by searching any of the following:

Project Name: Doris North Mine

NIRB File No.: 05MN047Application No.: 123632

1.3 Advertisements

Public notification is an essential tool used to engage the public in effective consultation. The NIRB utilized a number of notification methods to advertise the public information meeting held in Cambridge Bay. The following public notification methods were used to advertise the NIRB's public information meeting:

Flyers

Prior to September 13, 2017, NIRB staff members posted flyers around Cambridge Bay, which outlined the dates, times, and purpose of the NIRB meeting (Appendix C).

2.0 MEETING NOTES FROM THE NIRB'S PUBLIC INFORMATION MEETING

The following is a list of the comments and concerns that were raised verbally at the public information session for the monitoring of Doris North Gold project (no written comments were received). These comments will help to identify items that need to be addressed or considered throughout the monitoring process.

- The Doris North site and what wildlife utilize the area and how TMAC has been incorporating Inuit Qaujimajatuqangit;
- A community member questioned the NIRB's role in Monitoring of sites such as the Doris North project;
- A community member noted that terminology that the NIRB uses (e.g., cumulative impacts) and the use of plain language during presentations. It was stated that it is

important to ensure a definition to go with scientific terms that the NIRB and the proponents use to ensure everyone understands what is being discussed;

- Asked questions on the employment at the Doris North Site and what training can be received;
- Have there been any big spills at site?
- Questions asked on what are some common issues that are seen at all projects that the NIRB monitors and whether there is there a way to learn more about those projects at sessions like this.

3.0 SUMMARY AND CONCLUSION

Community members from Cambridge Bay who attended the open house and evening session raised questions, provided concerns and comments on the monitoring being conducted by the NIRB, and had minimal questions related to the Doris North Gold Mine project. The comments and concerns raised during the two meetings will aid in the identification of items that need to be addressed or considered throughout the Doris North Gold Mine project monitoring program and through the NIRB's impact assessment of similar projects in Nunavut.

Appendix A: Sign in Sheet

Nunavut Impact Review Board TMAC Resources Inc. – Doris North Gold Mine Project Community Information Session 2017 SIGN-IN SHEETS

Name (Please Print)	Organization or Community	Signature
WHY HANKIAK	EH10	NID
fail Gilland		Ful July
welca Pangun		Indon Hanguan
Locary Kulikture		Stean Ku Altera
Helen Arlanak		Haipanak
tour five large	POLAR	10W
wester large	POLAR	- Const
7		

Nunavut Impact Review Board TMAC Resources Inc. – Doris North Gold Mine Project Community Information Session 2017 SIGN-IN SHEETS

Name (Please Print)	Organization or Community	Signature
hytheinitiak	Can-Pring	RR.O.
MINT HAWKIAK	SHTO	716
		Sty Com Mama
Illen Kninger		a ext
VADIL KUDGAR	ComBorg	Marca
		17.

Appendix B: NIRB Presentation



DORIS NORTH GUULIT UYAGAKHIUQVIK DORIS NORTH GOLD MINE PROJECT

- o September 2006-mi, NIRB-kut aittuqhivaktut Havaaghanut Ditaqhitjutinik
- o 2013-mi TMAC-kut (TMAC) nanminiriligiait Doris North Kulunik Uyaraghiuqviat.
- o In September 2006, NIRB issued Project Certificate
- o In 2013 TMAC Resources Inc. (TMAC) acquired the Doris North Gold Mine.







IHUAQHAQTAUHIMAYUT HAVAAGHANUT ILITAQHITJUTIT NAPPAA 003 AMENDED PROJECT CERTIFICATE NO. 003

- o 34 nutaannguqtiqhimayut o 34 revised Terms and Uqauhiit Maliktaghallu Conditions
- o Atauhiq (1) ungavaqtauhimayuq Uqauhiq Maliktaghaqlu
- o 1 removed Term and Condition
- o 14 nutaat Uqauhiit Maliktaghallu
- Conditions







o 14 new Terms and







Boberta Kangiqhea Boberta Begi

Hippfoqtasqhinayur Kilisetalingsii Totquanavist

DORIS NORTH GUULIT UYAGAKHIUQVIK DORIS NORTH GOLD MINE PROJECT



MUYARAGHIUQVIFT MINING ZONES

DORIS NORTH GUULIT UYAGAKHIUQVIK

DORIS NORTH GOLD MINE PROJECT

DORIS NORTH GUULIT UYAGAKHIUQVIK

DORIS NORTH GOLD MINE PROJECT

o In 2016, the NIRB

recommended that the

proposed amendment to

the Project be approved

Project Certificate

Issued amended PC

 Minister of INAC accepted. the NIRB's recommendation

Workshop to amend Project Certificate No. 003

o 2016-mi, NIRB-kut

pitquhimayut taimaa

pitquhimayaat

Aittughiyat

nutaannguqtauniaqhimayuq

Havaaghanut angiqtauluni

Ministauyoq INAC-kunnut angiqhimayaat NIRB-kut

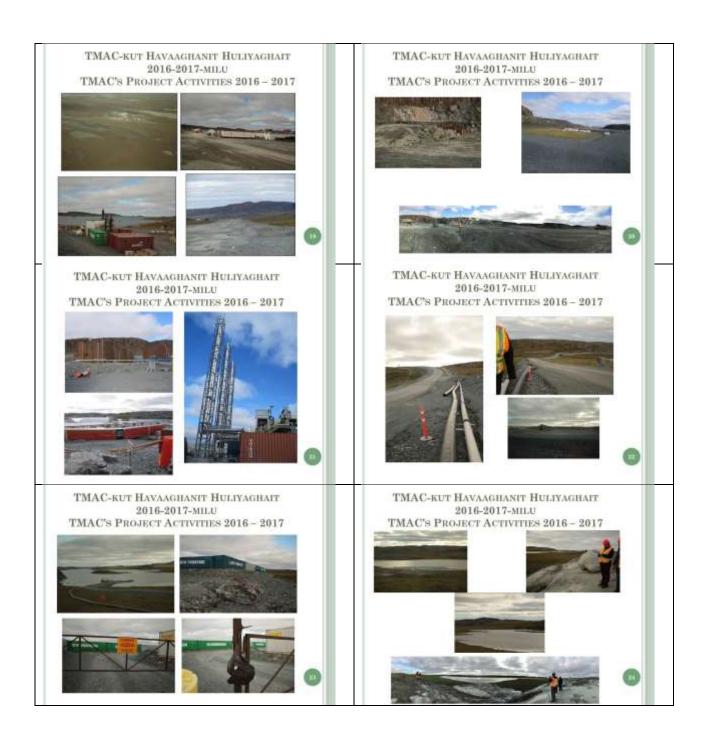
Havnaghanut Bitaghitjutinut

ihusqhoqtsuhimsyomik Havasghanut Ilitaqhitjutinik

Katimapkaiyut ihuaqharahuaqhugu Havaaghamit Ilitaqhitjutit Nappa 003







IHUMAGIYATIT IHUMAGIYAULLUAQTUT! 2017-MI UYARAGHIUQVINGNIK PULAAQTUT YOUR IDEAS ARE IMPORTANT! ILITTURIHIMAYAIT AMERICA BAUGATELTIT BOTT QALUMALATUQANET BETLAGUVALLILIAGUT NIRUSUU Generial deprindation and Indit Qalumalatuqangat ie important to the NIRSI 2017 SITE VISIT OBSERVATIONS o Hanayut o Construction on site Qanuq ilaunginnarialiuvit? How can you get involved? uyaraghiuqvingnit o Annual resupply Thivriuglogit TMAC-kut uking . Review TMAC's annual o Ukiuq tamaat o Well maintained fuel nunngutaanut naunaitkutait reports Hunaqutighaqtaqtut storage facilities Tunilugit titireqhimayut uqaubiit apiqhuutillu · Submit written o Aulapkaittiaqtauyuq o Well organized site Hivayaqlugu NIRB-kut havakvint akiittukkut hivayautaat comments and questions uqhughanut tutquumaviit . Phone the NIRB's office o Parnaihimattiaqtuq Havanghat mighangut unipkaarutigilugu havakviit toll-free to talk about the havaktiptingnut Project with our staff QANUQ ILITPAALLIQNIAQQIT NIRB-KUT QAUYIHAQTAINIK? QUANAQQUTIT! HOW CAN YOU LEARN MORE ABOUT NIRR'S ASSESSMENTS? THANK YOU! Dublic Registry Inuit Titiraqviat Qiniqluhi havaaghaqnik titiraqmikluuniit · Search for project or document Atiliqtuqtauluhi · Register to receive naunaitkutanik notifications tuniyauqattariami o Calendar Tatqiqhiat Active projects and deadlines · Aulayut havaaghat umikvighaillu oApiqquutit? oQuestions? man.n.

Appendix C: NIRB Flyer



Nunavut Avatiliriyit Katimayiit

The Nunavut Impact Review Board is holding

Inungnik Tuhaqtittiniaqtut

Igaluktuuttiami

Public Information Session

in Cambridge Bay



Doris North Guulhiurvingmi
Apitilirvik 13, 201

Luke Novoligak Community Hall

Doris North Gold Mine

September 13, 2017

Luke Novoligak Community Hall



Pulaarvikhaq

2:00mit-5:00mut unnukpat

Tuhagakhat

7:00mit 8:30mut unnukpat

Open house

2:00-5:00pm

Presentation

7:00-8:30pm



Tamualukakhaqarniaqtuq niuqqagak haniglu katimanini

Uqaqtiqarniaqtuq

llitturiyumirumaguvit HIVAYARLUGU: 983-4600 QARITAUYAKKUT TITIGARVIAT: info@nirb.ca Pularlugu afisikput 29 Mitik Streetmi Snacks and refreshments provided for all sessions

Simultaneous interpretation provided

For more information CALL: 983-4600 EMAIL: info@nirb.ca Visit our office at 29 Mitik St.