



*Your file - Votre référence*  
2AM-DOH1323

February 3, 2016

*Our file - Notre référence*  
IQALUIT-#1023694

Licensing Department  
Nunavut Water Board  
GJOA HAVEN, NU  
X0E 1J0

*Sent via email:* [licensing@nwb-oen.ca](mailto:licensing@nwb-oen.ca)

**Re: Amendment Application No. 1 to Nunavut Water Board Water Licence No. 2AM-DOH1323. Status of Indigenous and Northern Affairs Canada Comments: INAC IR10; INAC IR12; INAC IR13; INAC IR16; INAC TC3; and INAC TC4**

To Whom It May Concern,

On January 29, 2016, Indigenous Affairs and Northern Development Canada (INAC or the Department) committed to update the Nunavut Water Board (NWB) on the resolution status of certain Information Requests (IR) and Technical Comments (TC) today. These commitments are based on discussions that occurred during the January 28-29, 2016 NWB Technical Meeting on TMAC Resources Inc.'s (the Proponent) application to amend its type A NWB Water Licence for the Doris North Gold Mine, No. 2AM-DOH1323. Updates for four Information Requests and two Technical Comments are provided below under categories organized by resolution status.

## **1. Resolved**

### **INAC IR12 – Underground Capacity for Disposal of Waste Rock and Detoxified Tailings**

The Department's concern regarding the Proponent's ability to place all of the excavated waste rock and detoxified tailings underground as backfill was addressed through a discussion between the Department's Impact Assessment Division and the Proponent (this concern was also raised under the Department's 15<sup>th</sup> Information Request to the Nunavut Impact Review Board (NIRB) concerning the Proponent's application to amend its project certificate). The Proponent satisfactorily responded to the remaining questions with respect to the compaction and backfilling of underground open stopes, and provided additional details on mining method and equipment to be used for backfilling and compaction. A separate technical memo is being prepared for the NIRB confirming that this information request has been resolved. It will also be provided to the NWB, upon its completion, for inclusion on the NWB public registry.

It should be noted that on December 8, 2015, the Department's Water Resources Division

informed the NWB that it was satisfied with the Proponent's October 8, 2015 response to its September 18, 2015 information request (INAC IR12). The Department requested an explanation of how all waste rock could be placed underground as backfill at closure taking into consideration that the volume of the excavated material would be much larger than the volume of the underground cavities. The Proponent referred the Department to Table A1 of Document P5-4, Waste Rock and Ore Management Plan, that was submitted with its application, to review the mining schedule including ore and waste rock production rates. The Proponent also provided information on void space requirements taking into consideration the in-situ density, quantity, and subsequent compaction of waste rock that will be placed underground.

From the Department's perspective, this Information Request has been resolved for the purposes of the environmental assessment and water licensing processes based on discussions between the Proponent and the Department's Impact Assessment Division and the Proponent's December 21, 2015 response to the Water Resources Division Information Request (INAC IR12). As discussed above, a separate technical memo that addresses this issue will be provided once it is available.

#### **INAC IR13 – Impact of Backfilled Material to Groundwater; and INAC TC3 – Groundwater Quality Post-Closure**

On January 28, 2016, at the NWB Technical Meeting, the Proponent provided a presentation on its further evaluation of water quality in the reflooded mine and the potential flux of groundwater into Doris Lake. A copy of this presentation is available for review on the NWB public registry. This presentation and the Proponent's December 21, 2015 responses to the Department's Information Request and Technical Comment satisfactorily address the Department's request for further information to support the conclusion that the project will not have an adverse effect on groundwater quality.

From the Department's perspective, this Information Request and Technical Comment have been resolved based on the information provided in the above referenced presentation and December 21, 2015 responses.

#### **INAC IR16 – Inclusion of Madrid Advanced Exploration Program in the Scope of the Doris North Gold Mine's Type A NWB Water Licence**

The Proponent's Madrid Advanced Exploration Program project proposal is not included in the scope of the type A water licence amendment application. The Proponent has submitted an application to the NIRB for consideration of this program pursuant to Section 12.10.2(b) of the *Nunavut Land Claims Agreement* (NLCA), which allows for exceptions for specific approvals to be granted for exploration or development activities related to a project under review by the NIRB where in the judgement of the NIRB the activities can be considered and approved independently of the review. This application is associated with the Proponent's Phase 2 Hope Bay Belt project proposal which is currently undergoing review by the NIRB Pursuant to Part 5,

Article 12 of the NLCA. The proponent's application to the NWB for a type B water licence specific to the Madrid Advanced Exploration Program is also being processed.

Concerns raised by the Department, regarding the cumulative effects of the Madrid Advanced Exploration Program to the Doris North Gold Mine, are being addressed through the Proponent's s. 12.10.2(b) NLCA exception application and type B water licence application. The NIRB has not yet provided a final determination on the s. 12.10.2(b) NLCA exception application recognizing that the Proponent will respond to additional comments submitted by interested parties by February 16, 2016. The NWB distributed the Proponent's type B water licence application for review on April 24, 2015 and has since collected comments from interested parties, a response from the Proponent, and subsequent comments from interested parties concerning the Proponent's response. On September 22, 2015, the Department submitted its most recent correspondence to the NWB on the water licence application.

This Information Request is considered to be resolved, recognizing that the Madrid Advanced Exploration is not included in the Proponent's application to amend its Doris North Gold Mine NIRB project certificate and type A NWB water licence.

#### **INAC TC4 – Water and Load Balance Sensitivity Analysis of Flotation Tailings Release Rates**

On January 27, 2016, the Proponent provided a memo<sup>i</sup> to the NWB that details the results of a recent Site-Wide Water and Load Balance Model sensitivity analysis. This memo is posted on the NWB public registry. As part of this sensitivity analysis, the Proponent used 75<sup>th</sup> percentile input values for background water quality, pollution control and sedimentation pond concentrations, ore and waste rock source terms, and the tailings beach source terms. This additional analysis was provided to address the Department's December 8, 2015 request for additional detail on the basis for selecting source terms for waste rock and ore stockpiles and what can be expected in the future. The additional analysis was also undertaken to address the concerns of other interested parties.

The Department has reviewed the submitted memo and is satisfied with the Proponent's selection of source terms for tailings beaches.

The water licence should require a reasonable post-closure monitoring frequency of water reporting from the Tailings Impoundment Area into Doris Lake after the North Dam has been breached to determine whether the concentrations of certain parameters associated with tailings beach remain at stable concentrations (e.g., Arsenic). At a minimum, a monitoring frequency similar to the Department's 2008 *Abandoned Military Site Remediation Protocol*'s requirements for landfill monitoring should be followed. The post-closure monitoring would be divided into three phases as summarized in Table 1 below.

**Table 1 - Post-closure Monitoring of Tailings Impoundment Area Water Quality**

<b>Phase</b>	<b>Monitoring Years</b>
<b>Phase I – Monitoring of conditions to confirm equilibrium or stability has been achieved in Tailings Impoundment Area water quality. This monitoring phase may be extended, if needed.</b>	Year 1, Year 3, and Year 5
<b>Phase II – Verification of equilibrium conditions established in Phase 1</b>	Year 7, Year 10, Year 15, and Year 25
<b>Phase III – Re-evaluation of the monitoring program prior to initiating Phase III</b>	To be determined

From the Department's perspective, this technical comment has been resolved based on the Proponent's submission of the above referenced memo to the NWB. The Department will provide further comment on post-closure monitoring frequency of water reporting from Tail Lake to Doris Lake in its final written submission.

## **2. Outstanding**

### **INAC IR10 – Underground Disposal of Ammonium Nitrate Fuel Oil (ANFO) and Petroleum Hydrocarbon Impact Materials**

The Department is evaluating the Proponent's December 21, 2015 assertion that the underground placement of petroleum hydrocarbon and ANFO impacted materials is an environmentally and technically acceptable way to eliminate possible surface impacts that could result from leaving such materials on surface. The Proponent correctly stated that Part L, Item 6(l) of the water licence allows for the placement of hydrocarbon-impacted materials underground. This condition requires that the Interim Closure and Reclamation Plan include a protocol for the disposal of any contaminated soil into the underground mine at closure.

On January 28, 2016, at the NWB Technical Meeting, the Proponent provided a presentation on the potential effects to water quality in the reflooded mine from backfilling activities and the expected flows from the reflooded mine to Doris Lake. A copy of this presentation is available for review on the NWB public registry. The Department will further consider the presented information, relevant information provided in the water licence amendment application, and methods of disposing petroleum hydrocarbon and ANFO impacted materials in other mining operations before providing additional recommendations to the NWB. As a result, this Information Request remains outstanding.

Please don't hesitate to contact me by telephone at (867) 975-4555 or email at [David.Abernethy@aandc-aadnc.gc.ca](mailto:David.Abernethy@aandc-aadnc.gc.ca) for further information.

Sincerely,

David Abernethy  
Regional Coordinator  
Water Resources Division  
Resource Management Directorate  
Indigenous and Northern Affairs Canada  
IQALUIT, NU X0A 0H0

Cc. Scott Burgess, A/Manager, Water Resources Division, INAC Nunavut  
James Neary, Manager, Impact Assessment Division, INAC Nunavut  
John Roberts, TMAC Resources Inc.

---

<sup>i</sup> SRK Consulting (Canada) Inc. *Subject: Document P6-10b, Water and Load Balance Model – Results of Sensitivity Analysis*. Memo from S. Portelance of SRK Consulting to John Roberts of TMAC Resources Inc. Project No. 1CT022.002. January 22, 2016.