Aboriginal Affairs and Northern Development Canada
Affaires autochtones et Développement du Nord Canada

Nunavut Regional Office
Resource Management Directorate
P.O. Box 100
Iqaluit, NU X0A 0H0

November 9, 2012

Our reference
IQALUIT-#606509

Your reference
2AM-DOH0713

Ms. Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board
P.0. Box 119
Gjoa Haven, NU X0E 1J0

Sent via email

Re: Doris North Project – Hope Bay Mining Ltd. – Submission of 2012 Water Licence Renewal and Amendment Application – Completeness Review – Kitikmeot Region

---

Dear Ms. Beaulieu,

Thank you for your October 10, 2012 request for written representations on the above referenced water licence renewal and amendment application.

A Technical Review Memorandum is provided for the Board's consideration. Comments/ recommendations have been provided pursuant to the Department's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*.

Please do not hesitate to contact me by telephone at 867-975-4555 or email at David.Abernethy@aandc-aadnc.gc.ca to discuss this submission.

Regards,

David Abernethy
Water Resources Regional Coordinator

Encl.

c.c.: Murray Ball, Manager of Water Resources
Robin Aitken, A/Manager of Field Operations
Karen Costello, A/Director of Resource Management

Canada

TECHNICAL REVIEW MEMORANDUM

TO Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board

OUR REFERENCE
IQALUIT-#606509

YOUR REFERENCE
2AM-DOH0713

FROM David Abernethy
Water Resources Regional Coordinator
Aboriginal Affairs and Northern
Development Canada

DATE
November 9, 2012

SUBJECT **Doris North Project – Hope Bay Mining Ltd. – Submission of 2012 Water Licence Renewal and Amendment Application Completeness Review**

1. Description

On October 10, 2012 the Nunavut Water Board ("NWB" or "Board") distributed for review Hope Bay Mining Ltd.'s ("HBML") August 16, 2012 application to amend and renew their Doris North Project's Type A water licence, No. 2AM-DOH0713, along with supporting documentation.

Interested parties were asked to comment on the completeness of the submitted application based on an initial technical assessment, identifying any deficiencies requiring an additional response from HBML, and to comment on the type of hearing to be held. The NWB requested these comments/ recommendations by November 9, 2012.

2. Completeness of the submitted application

On behalf of Aboriginal Affairs and Northern Development Canada ("AANDC"), the following comments/ recommendations are provided for the Board's consideration. Issues are grouped by categories considered to be relevant to the scope of the Doris North Project. They are as follows:

a) Surface Water Quality;
b) Site Water Management (Surface Water);
c) Geotechnical;
d) Geochemistry;
e) Terrestrial Environment;
f) Site Water Management (Groundwater)
g) Waste Management;
h) Roads and Ports;
i) Closure and Reclamation;
j) Hazardous Waste Management; and,

k) Environmental Impact Assessment

a) Surface Water Quality

Issue SWQ1
Requested changes to allowable wastewater discharges may change loading in receiving environments.

Reference
Wastewater Management Plan - Referred to in document, “121005 2AM-DOH0713 Updated Management Plans for Care and Maintenance-IMLE,” (Newmont 2012 October 5) but not received.

Observation
Requested amendment to Section G Item 3: Treated wastewater will be discharged to a location north of the camp pad rather than to the Tailings Impoundment Area (TIA). The discharge location and the projected loading rates are not described, nor is comparable information on the receiving water (Doris Creek?). Comparisons of flows and loads of wastewater parameters to background loads in the creek may be important in assessing potential impacts to the creek and Doris Lake.

Information Request
1. Additional information related to the nature, extent and character of the receiving environment in relation to loading factors (i.e., fish bearing waterbodies/ watercourse) would be helpful in completing the technical review.

b) Site Water Management (Surface Water)

Issue SWM1
The existing (as built) drainage features are not identified and how these features will be incorporated into future plans (if any) is not described.

Reference
Interim Water Management Plan – Section 2.5

Observation
In examining the Interim Water Management Plan a plan or description of existing drainage features (ditches etc.) could not be found. The plan that has been provided does not clearly identify or describe the key features such as the Tail Lake or Doris Lake. While the planned design was reviewed and approved, knowledge of the constructed as-built design would be beneficial, particularly in the context of care and maintenance versus operations. Although these features may be identified in other documents they should also be included as part of the Interim Water Management Plan to provide a proper context for the project.

Labelling of existing plan is unclear for several features including the sedimentation berm, discharge apron and location of silt fence.

Information request

1. Complete plan for existing site features as constructed including drainage features and receiving water courses.
2. Identification of how these existing features are to be incorporated into future plans.

Issue SWM2

A review of the Interim Water Management Plan does not indicate there is a management plan for an extreme event even though an extreme observed event is noted in other correspondence. A management plan for extreme events would assist in addressing effects from climate change.

> *Question from AANDC: HBML has not specifically answered the question. Does the 2008 Hydrology Baseline*
> *Update include the July 2007 storm event in Kugluktuk?*
>
> *Response from HBML: The July 2007 precipitation event in Kugluktuk is discussed in the 2008 Hydrology Baseline Update. The following is from page 22 of 2008 Hydrology Baseline Update:*
> *"It is noted that while high intensity events are rare in the North, events greater than those presented in Table*
> *2.16 have been recorded in the region. An extreme event took place in Kugluktuk on 21 July 2007, with a 24-hour rainfall of 118.3 mm (Hopkinson 2007). This eclipsed the previously recorded 24-hour maximum values of 63.5 mm (8 June 1948) and 57.2 mm (1 August 1973) recorded at Coppermine and 53.7 mm (12 August 1982) recorded at Kugluktuk A. The 48-hour rainfall for the 2007 event recorded 173.5 mm of rainfall. Environment Canada reports annual rainfall normals of 133.4 mm for Kugluktuk (normals refer to average measurements over a set amount of time.*

Reference

Interim Water Management Plan – Section 3.3.1

> *The Plan (facilities and mode of operation) was designed to manage site runoff and underflow for the 1:20 wet year, during which a 1 in 25 year, 24 hour storm occurs during the month with the highest base flow. The maximum runoff volume (i.e. a runoff coefficient of 1) for this storm from Area 2 (84,000 m2) and Area 3 (128,000 m2) are 3,200 m3 and 4,900 m3, respectively.*

Observation

Most water management plans for mine projects include contingencies for extreme events, especially in cases where Acid Rock Drainage (ARD) is of concern. For

example Quebec requires sufficient storage to contain the 1:2000 year event in cases where the ponds contain ARD.

Information request

1. Additional information is required regarding how an extreme event will be managed, and whether or not that analysis has been completed.

c) Geotechnical

The available information provided in the documents accessible on the Public Registry is sufficient to complete the technical review.

d) Geochemistry

The available information provided in the documents accessible on the Public Registry is sufficient to review the current status of the project from a geochemistry perspective. An initial review suggests that there are no substantial geochemistry issues associated with this licence application amendment. This will be confirmed.

e) Terrestrial Environment

Issue TE1

Clarification of commitment to ensure that best available mitigation and management revegetation practices are implemented in the Revised Closure and Reclamation Plan (RCRP) and that the plan will comply with the requirements of the *Nunavut Wildlife Act* and the *Nunavut Scientists Act* for any research to be undertaken.

Reference

Revised Closure and Reclamation Plan (RCRP), Preliminary Closure and Reclamation Plan (PCRP)

Observation

In Section 3.2.3 Vegetation (page 34, PCRP) the Proponent pointed out the richness of plant species in the project area -190 species of subartic tundra vegetation *"19 shrubs, 92 herbs, 18 grasses,32 sedges and rushes, 21 mosses and 8 species and/or genera of lichen"*. In Section 7.6.3 Terrain (Page 96, PCRP) the Proponent argues that *"re-establishment of natural vegetation will take many years, probably decades."* To overcome this, the Proponent made a commitment "*Arctic environment re-vegetation research will be looked at through the life of the mine and at closure to ensure that best available mitigation and management revegetation practices are implemented during mine closure."*

However, this commitment seems to be counter what was proposed by the Proponent in Section 8.2.2 Post-Closure Revegetation Considerations (Page 102, PCRP) *"It is unlikely that this type of vegetation can be restored in the short term using conventional revegetation techniques. There are no stockpiles or areas at the Project site where growth media can be obtained in sufficient quantity to realistically provide a suitable growth media to be placed over the building pads, roadways, etc. to allow for revegetation using conventional seeding techniques. There are no readily available sources for seed stock for the native plant species common to this area……Consequently MHBL does not have the technology to assure successful revegetation of the site."* (i.e., to the exclusion of any effort to do research about active revegetation, and to claim natural revegetation is the best available mitigation and management revegetation practice for the project area).

In Section 4 Post-Closure Monitoring and Maintenance (Page 17, RCRP), the Proponent adds another commitment "*The site should be inspected by an Arctic vegetation specialist to confirm suitability of the re-vegetation efforts".* This commitment seems to require more information that that available about revegetation in the project area to perform an adequate inspection. The best available mitigation and management revegetation practices seems not been adequately addressed for the species-rich project area (i.e., current projects in similar areas are proactively doing more than just natural revegetation, no location map of areas subject to natural re-vegetation, no table of areas subject to natural revegetation, no description of native vegetation test plot trials, no list of key species during natural revegetation, no description of progressive revegetation activities, no strategy to avoid weeds during natural revegetation, no active revegetation methods, no key indicators to measure success during the natural revegetation, etc.)

Information Request

1. AANDC requests the Proponent clarify its commitment to ensure that best available mitigation and management revegetation practices are implemented in the RCRP and/or that appropriate research is undertaken to support revegetation of the site at a later date.

f) Site Water Management (Groundwater)

The available information provided in the documents accessible on the Public Registry is sufficient to complete the technical review.

g) Waste Management

The available information provided in the documents accessible on the Public Registry is sufficient to complete the technical review.

h) Roads and Ports

The available information provided in the documents accessible on the Public Registry is sufficient to complete the technical review.

i) Closure and Reclamation

Issue CR1
Relationship of existing AMEC 2005 closure plan and new SRK 2012 closure plan in the permit.

Reference
Cover Letter for submittal of HBML revised Closure Plan for the Doris North Project from Chris Hanks, Newmont to Phyllis Beaulieu, NWB dated August 23, 2012-11-06.

Doris North Closure and Reclamation Plan Prepared for Hope Bay Mining Ltd, SRK Consulting, August 2012 (SRK 2012) including Appendix A – Miramar 2005 Doris North Closure Plan prepared by AMEC October 2005 (AMEC 2005).

Appendix F – Type A Water Licence 2AM-DOH713 (Marked to Show Past Amendments and Suggested Changes)

Observation
The referenced cover letter states: *"The attached plan updates a previous plan submitted by Miramar to NIRB in 2005…"*

The introduction section (Section 1, page 1) of the SRK 2012 closure plan states: *"This plan differs from the Closure Plan submitted by Miramar in 2005 (AMEC 2005, Appendix A)…This plan focuses on the closure of the site as it currently exists."*

The schedule section (Section 5, page 17) of the SRK 2012 closure plan states: *"Closure of the Doris North Site will occur during the care and maintenance period or upon closure of the entire Hope Bay Project"*

Neither Part M nor Part L of the Appendix F (marked-up licence) indicate the relationship of the SRK 2012 closure plan and the AMEC 2005 plan. The AMEC 2005 closure plan submitted previously to regulators includes both interim and final reclamation measures for the mine site once fully constructed. The AMEC 2005 closure plan contains a more detailed description of closure activities (such as waste rock characterization, post-closure monitoring) that could be referenced in the SRK 2012 if the AMEC 2005 closure plan is still part of the permit.

It is not clear if the SRK 2012 closure plan is intended to replace or augment the AMEC 2005 closure plan. Is the Proponent intending to keep the AMEC 2005 closure plan as part of the water licence in case the project is built in the future?

Information Request
Clarification is required on the following items:

1. Does the SRK 2012 closure plan replace the AMEC 2005 closure plan?
2. Does the AMEC 2005 closure plan continue to apply to the site if it were constructed in the future, or would a new closure plan need to be developed and submitted to regulators in the case of the project going forward in the future.
3. When will a a decision be made to implement the SRK 2012 closure plan vs the implementation of the interim reclamation plan presented in the AMEC 2005 closure plan.

Issue CR2
The current Closure plan support information on PAG, non-PAG materials and reclamation materials quantity balance appears incomplete.

Reference
Doris North Closure and Reclamation Plan Prepared for Hope Bay Mining Ltd, SRK Consulting, August 2012 (SRK 2012) including Appendix A – Miramar 2005 Doris North Closure Plan prepared by AMEC October 2005 (AMEC 2005)

Observation
Section 2.2 Facility Closure Strategies (page 8) states that *"all material used for reclamation will be source from existing stockpiles. Stockpiled run of quarry and crushed rock are from Quarry #2. A detailed geochemical characterization of Quarry #2 was previously performed (SRK 2007)."* The SRK 2007 document reference details are provided in the reference section of the SRK 2012 closure plan.

Existing geochemical characterization information would assist in understanding Potentially Acid Generating (PAG) risk for long term closure. Additionally, it would be helpful to review any existing reclamation soil balances to understand if there is a surplus or deficit of reclamation materials existing on site.

Information Request
1. Provide a copy of the SRK 2007 report and any other background information available on PAG, non-PAG material on site.
2. Provide information such as existing stockpile quantities of PAG and non-PAG material currently available that would be used to implement the actions described in the SRK 2012 closure plan.

j) Hazardous Waste Management

Issue HWM1
Current inventory of hazardous materials stored onsite is not outlined in the documents provided.

Reference
Part G, Item 13 of Water Licence No: 2AM-DOH0713, Nunavut Guideline for the General Management of Hazardous Waste, Section 3.1

Observation
It is understood that the Hazardous Waste Facility is registered as a Hazardous Waste Storage Facility. As indicated in the Nunavut Guideline for the General Management of of Hazardous Wastes, storage is considered as a temporary measure and is not acceptable for the long-term management of hazardous waste. According to the Proponent's Hazardous Waste Management Plan, a record will be maintained of the type and amount of waste in storage.

Information Request
1. The proponent is requested to provide an inventory of all hazardous materials stored including; types of materials, quantities, information on the type of storage container, location of stored waste (inside/outside), description of the container labels as well as the expected offsite shipping date.

Issue HWM2
Confirmation of Hazardous Waste Storage Area Design is required.

Reference
Part G, Item 13 of Water Licence No: 2AM-DOH0713, Nunavut Guideline for the General Management of Hazardous Waste, Section 3.1

Observation
During Care and Maintenance there is the potential that spills could go un-noticed for extended periods of time. As required by Part D, Item 2 of the water licence, the proponent shall ensure that any chemicals, fuels or wastes do not enter any water body.

Information Request
1. The Nunavut Guideline for the General Management of Hazardous Waste indicates that storage facilities are to be inspected at least once every week. Since during Care and Maintenance, the site will not be inspected on a weekly basis, the proponent is requested to provide specific information on how the storage area has been constructed to prevent the release of hazardous materials to the environment. Provide details on methods of spill containment, underlying materials, surface grading, capacity of containment sumps, as well as specific details on the types of spill kits/emergency response equipment that are available onsite. The Spill Contingency Plan and Emergency Response Plan will need to be updated to reflect the change to care and maintenance.

Issue HWM3
Confirm methods utilized to secure Hazardous Waste Storage Area and Fuel Storage Compounds.

Reference
Part D, Item 2 of Water Licence No: 2AM-DOH0713, Nunavut Guideline for the General Management of Hazardous Waste, Section 3.1

Observation
During Care and Maintenance the site will be left for considerable lengths of time. Due to the changes in on-site personnel, these facilities will not be maintained and operated in the same manner as they were originally designed.

Information Request
1. During Care and Maintenance, the site will not be inspected on weekly basis and it is understood that the Site will be abandoned for considerable length of time. Provide information on the methods that have been utilized to help secure the site from vandalism and tampering.

k) Environmental Impact Management

The available information provided in the documents accessible on the Public Registry is sufficient to complete the technical review.

3. Type of hearing to be held

Based on the nature of the submitted application AANDC recommends that the NWB hold a pre-technical meeting and pre-hearing conference by audio-conference and a final hearing in written format.