



March 10, 2011

Our reference  
IQALUIT-#451693

Sent by email: [licensing@nunavutwaterboard.org](mailto:licensing@nunavutwaterboard.org)

Your reference  
2AM-DOH0713/TR/G16-17

Phyllis Beaulieu  
Manager of Licensing  
Nunavut Water Board  
Gjoa Haven, Nunavut  
X0E 1J0

**Re: Type A Water Licence No. 2AM-DOH0713 – Doris North Project –  
Hope Bay Mining Ltd. – Kitikmeot Region – December 2010 Waste  
Rock and Ore Management Plan**

Dear Phyllis,

Thank you for your February 10, 2011 request for written representations on the above referenced submission.

A Technical Review Memorandum is provided for the Board's consideration.

Please do not hesitate to contact me by telephone at 867 975-4555 or email at [David.Abernethy@inac-ainc.gc.ca](mailto:David.Abernethy@inac-ainc.gc.ca) to discuss this submission.

Regards,

David W. Abernethy  
Water Resources Regional Coordinator  
Operations Directorate  
Nunavut Regional Office  
Iqaluit, Nunavut  
X0A 0H0

Encl.

c.c.: J. Rogers, Water Resources Manager  
P. Kusugak, Field Operations Manager

## Technical Review Memorandum

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|----------------|--|--|
| <b>TO</b>      | Phyllis Beaulieu<br>Manager of Licensing<br>Nunavut Water Board  | OUR REFERENCE<br>File #9545-2-1.2AM.DOHA<br>IQALUIT-#4516963         |
| <b>FROM</b>    | David Abernethy<br>Water Resources Regional Coordinator<br>Indian and Northern Affairs Canada  | YOUR REFERENCE<br>2AM-DOH713/TR/G16-17<br><br>DATE<br>March 10, 2011 |
| <b>SUBJECT</b> | <b>Type A Water Licence No. 2AM-DOH0713 – Doris North Project – Hope Bay Mining Ltd. – Kitikmeot Region – December 2010 Waste Rock and Ore Management Plan</b> |  |

### A. PROJECT DESCRIPTION

On February 10, 2011 the Nunavut Water Board (the Board) distributed the December 2010 *Doris North Waste Rock and Ore Management Plan* (the Plan) that has been prepared by Hope Bay Mining Ltd. (HBML) in accordance with their Type A Water Licence No. 2AM-DOH0713. This plan supersedes the 2007 *Waste Rock Management Plan* prepared by Miramar Hope Bay Ltd. in support of their application for the Water Licence. It takes into account an anticipated increase in waste rock generation (approximately 510,000 tonnes, formerly 200,000 tonnes) and the Part G Item 15 Water Licence requirement to file an updated waste rock management plan.

Your letter states that HBML is requesting allowances to Part G Items 16 and 17 of their Water Licence. Part G Items 16 and 17 are as follows,

Part G Item 16: The Licensee shall store all potentially acid generating rock at the Temporary Waste Rock Pad prior to ultimate disposal underground as mine backfill, unless otherwise approved by the Board; and,

Part G Item 17: All Waste Rock brought to surface from the underground shall be stored on the Temporary Waste Rock Pad and returned underground as backfill and is not to be used for any purpose unless otherwise approved by the Board.

As stated in the cover letter that was submitted with the Plan,

HBML is asking for the Board's approval pursuant to Part G Item 15 of the Water Licence to place waste rock in areas other than the Temporary Waste Rock Pad (i.e., Pad I) as follows,

- Board approval to temporarily place waste rock on adjacent Pads F and G. As noted in the Plan, HBML proposes to eventually consolidate the current Temporary Waste Rock Pad (Pad I) with immediately adjacent pads F and G. This minor site reorganization would not expand the footprint of the pads and is within existing pollution containment structures.
- Board approval to place non-acid generating waste rock for construction. HBML proposes that clean waste rock, mainly diabase, would be used as construction material. Any clean waste rock used for construction would be monitored as per Part D Item 21 and reported on as per Part D Item 22.

The total waste rock generated from the underground mine is anticipated to be in the range of 510,000 tonnes. Approximately 400,000 tonnes of this material in addition to cyanide residue produced by milling operations will be backfilled in the underground mine. However, due to the larger ratio of waste rock to ore in HBML's current mine plan, the remainder of waste rock (approximately 110,000 tonnes) will remain on surface at the end of the mine life. There may be opportunities to deposit more waste rock underground if underground mining operations expand to include the Doris Lower, Connector, and Central deposits. If approved by the Board, waste rock that does not have metal leachate and acid rock drainage (ML/ARD) potential will be used in construction activities and be subject to the monitoring provisions in place for surface quarry rock used in construction (i.e., Part D Items 21 and 22 of the Water Licence). Any remaining amounts would be left in place on the Temporary Waste Rock Pad. Waste rock with elevated levels of sulphides, and/ or the potential for ML/ARD would remain on the Temporary Waste Rock Pad for eventual backfill placement in the underground mine.

## **B. RESULTS OF REVIEW**

On behalf of the Indian and Northern Affairs Canada (INAC) Water Resources Division I am providing the following comments / recommendations for the Board's consideration,

### **1. General Observations**

The submitted Plan provides a thorough description of how waste rock and ore generated from the Doris North Project will be managed. As stated in Section 1 of the Plan, "The Plan is intended primarily for use by HBML and its contractors to ensure that best practices for minimizing potential environmental impacts and potential environmental liabilities are followed, and that conditions of the Water Licence are met." This Plan should satisfy HBML's Part G Item 15 Water Licence requirement to submit a revised waste rock management plan and request to use waste rock (demonstrated to not have ML/ ARD potential) for surface construction and final placement on the Temporary Waste Rock Pad pursuant to Part G Item 17 of the Water Licence.

## **2. Allowance to Part G Item 16 of the Water Licence**

As referenced above, in your February 10, 2011 notice and request for comments from interested parties on the December 2010 Plan, the Board indicated that HBML had requested an allowance to Part G Item 16 of their Water Licence which addresses the storage of potentially acid generating rock at the Temporary Waste Rock Pad prior to ultimate disposal underground as mine backfill. Having reviewed the submitted Plan I cannot find any indication that HBML is requesting any other management provisions for this material. Waste rock generated by mining activities will be classified and segregated through visual inspection procedures and confirmatory sampling and testing procedures to characterize their ML/ARD potential for placement on the Temporary Waste Rock Pad and end use/ placement. As stated in Section 1 of the Plan,

Any subsurface rock used for surface construction would be subject to the monitoring plan in place for surface quarry rock used in construction. If either visual inspections indicate elevated amounts of sulphides, or testing shows that this material has potential for ML/ARD, it would remain on the Temporary Waste Rock Pad for eventual use as backfill in the underground mine.

If the Board believes that HBML is requesting an allowance to this Water Licence condition, the INAC Water Resources Division recommends that they confirm that this is correct. If yes, HBML should modify their Plan to include the type and quantity of (potentially acid generating) waste rock material, the planned disposal/ placement locations, the corresponding monitoring requirements, and the management measures that will be implemented to minimize potential environmental impacts and potential environmental liabilities associated with their final placement in areas other than the underground mine.

## **3. Proposed Waste Rock and Quarry Monitoring Report**

The INAC Water Resources Division is not opposed to HBML's request to combine the results of their inspection and monitoring programs related to waste rock and quarry rock in an annual "Waste Rock and Quarry Monitoring Report." This appears to be a practical and efficient means of providing information to the Board. As stated in Section 6 of the Plan, this report will address all the commitments made with respect to waste rock and quarry rock in the Water Licence Application and requirements specified in Water Licence and Quarry Permit Agreement No. KT307Q010. As a minimum, this report will include (a) A summary of the geotechnical inspections; (b) Results of the seep surveys; (c) Results of geochemical sampling and analysis; and (d) A summary of all mitigation activities undertaken as a result of monitoring.

Prepared by David Abernethy

c.c.: J. Rogers, Water Resources Manager  
P. Kusugak, Field Operations Manager