Indian and Northern Affairs Canada | Affaires indiennes et du Nord Canada

Nunavut Regional Office
Operations Directorate
Water Resources Division
P.O. Box 100
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File #329632
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7 May 2009

Via Email

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

Subject **Water License #2BB-BOS0712, Hope Bay Mining Ltd., Boston Advanced Exploration Project, Kitikmeot Region, Notice of Modification (Installation of A New SaniBrane Treatment Unit) and Submission of an Updated Operation and Maintenance Manual for the Boston Camp's Sewage Treatment Plant**

Dear Phyllis,

Please be advised that on behalf of Indian and Northern Affairs Canada, I have completed a review of the above referenced Hope Bay Mining Ltd. submissions to the Nunavut Water Board.

A Technical Review Memorandum (attached) is provided to the Board for consideration.

Should you have any questions regarding this submission, feel free to contact me at 867-975-4555 or David.Abernethy@inac-ainc.gc.ca.

Regards,
David W. Abernethy

Cc. Kevin Buck, Water Resources Division Manager

Canada

Technical Review Memorandum

Date: May. 7/09

To: Phyllis Beaulieu, Nunavut Water Board

From: David Abernethy, Indian and Northern Affairs Canada

Re: Water License #2BB-BOS0712 – Hope Bay Mining Ltd. – Boston Advanced Exploration Project – Notice of Modification (Installation of a New SaniBrane Treatment Unit) and Submission of an Updated Operation and Maintenance Manual for the Boston Camp's Sewage Treatment Plant

A. DESCRIPTION

On Apr. 15/09 and Apr. 22/09 the Nunavut Water Board (NWB) distributed Hope Bay Mining Ltd.'s (HBML) Notice of Modification and Updated Operation and Maintenance (O&M) Manual for their Boston Camp's Sewage Treatment Plant (STP). Such notices and updates are required by the site water license.

Due to performance issues, HBML will replace the existing ROTORDISK rotating biological contactor unit with a SaniBrane membrane technology unit to treat sewage generated at the Boston Camp. This change in sewage treatment methods will allow for the camp's accommodation capacity to increase from 45 to 180 people. HBML anticipates having at least 100 people on-site in the near future.

INAC has reviewed the following documents that were submitted by HBML to the NWB:

- Hope Bay Mining Ltd., Chris Hanks. *Water Licence 2BB-BOS0712 – Notice of Modification*. Letter to the Nunavut Water Board. North Vancouver, BC: Apr. 8/09;

- Hope Bay Mining Ltd., Chris Hanks. *Water Licence 2BB-BOS0712 – Part E, Item 5 – Submission of an Updated Operation and Maintenance Manual for the Waste Water Treatment Facility for the Sewage Treatment Plant at the Boston Camp, Hope Bay.* Letter to the Nunavut Water Board. North Vancouver, BC: Apr. 14/09; and,

- SRK Consulting Engineers and Scientists. *Boston Advanced Exploration Project: Operation and Maintenance Manual for the Waste Water Treatment Facility*. April 2009.

B. RESULTS OF REVIEW

The following comments / recommendations are provided for the Board's consideration,

1. Notice of Modification to the Waste Water Treatment Facility

Please be advised that INAC considers the installation of the SaniBrane treatment unit to be consistent with the meaning of "modification" as stated in Part G, Item #1 of Water License #2BB-BOS0712 . Accordingly INAC supports the installation of this unit.

2. Submission of an Updated Operation and Maintenance Manual for the Boston Camp's Sewage Treatment Plant Vs. Current License Conditions

a) Tundra Discharge, Existing Effluent Discharge Point

Section 4.5 of the Updated O&M Manual states:

"Grey-water effluent from the Boston Camp is currently discharged via pipeline from the ROTORDISK sewage treatment plant (STP) on to the tundra approximately 100 m north of the camp facility in an area closer to the centre of the peninsula on which the camp is located. The flow from the discharge point is toward Aimaoktatuk (Spyder) Lake down slope and downstream from the camp."… "A monitoring point BOS-3 has been established (required) to ensure the quality of the discharge water is monitored and the results reported. A second monitoring station, BOS-4 has also been established and is monitored (required) to assess the quality of the runoff water from the discharge point prior to its entry into the lake downstream of the site."

The current license states the following with respect to discharge location and monitoring,

- Part D, Item #1: The Licensee shall locate areas designated for waste disposal at a minimum distance of thirty (30) metres from the ordinary high water mark of any water body such that the quality, quantity or flow of water is not impaired, unless otherwise authorized by the Board.

- Part D, Item #17: All Sewage discharged from the Sewage Disposal Facility at Monitoring Station BOS-3 shall not exceed the following quality standards:

PARAMETER	MAXIMUM AVERAGE CONCENTRATION
BOD5	80 mg/L
Total Suspended Solids	100 mg/L
Faecal Coliform	10,000 CFU/100 mL
Oil and Grease	no visible sheen
pH	between 6.0 and 9.5

- Part D, Item #18: The Licensee shall ensure that effluent discharged from monitoring station BOS-4 is demonstrated to be acutely-non toxic.

b) Spyder Lake Discharge, Possible New Discharge Point

Section 5.3.5 and of the Updated O&M Manual references the possible discharge of treated effluent directly to Spyder Lake. It states:

"A three-inch diameter permanent HDPE pipeline has been laid from the STP to the Spyder Lake discharge point as shown in Figure 2. The currents in Spyder Lake flow in a north / northwest direction. This takes effluent away from the shoreline and away from the potable water intake. The shoreline is poorly vegetated, gravel washed, lacustrine environment with unsorted granular sizes ranging up to large cobbler. Such cobble would be used in engineering practice as shoreline protection. Therefore, an effluent discharge into this environment is unlikely to cause erosion. A SaniBrane plant is one of only a few sewage treatment processes capable of meeting the Fisheries Act. and would have little influence on water quality on not need to be diluted."

INAC recommends that the Board advise HBML that a direct discharge to Spyder Lake as described above would require an amendment to the current water license. Appropriate discharge criteria would have to be determined by the Board.

c) Incineration of Sludge

The current water license requires the following in regard to site sewage treatment sludge disposal,

- Part D, Item #12: The Licensee shall dispose of sludge removed from the Sewage Disposal Facility in a sump located a minimum of thirty (30)

metres from the normal high water mark and such that they do not enter any water body.

- Part D, Item #13: If the Licensee contemplates the disposal and treatment of sludge on land, it shall submit to the Board for approval at least four (4) months prior to the disposal of sludge a proposal which shall address, but not be limited to:

  – Location of disposal area;
  – Quantities and composition of sludge;
  – Mitigation measures to control run-off and restrict access;
  – A program for water quality monitoring;
  – An implementation schedule; and,
  – An executive summary of the proposal in English and Inuktitut.

Section 5.3.6 of the Updated O&M Manual states:

"In the absence of an approved sludge disposal location at the Boston camp, all sludge will be placed into drums, sealed and held in storage pending an alternative approved sludge disposal method. Sludge could be incinerated at Doris Camp in the approved incinerator."

INAC suggests that the Board advise HBML that an amendment to both the Doris Project and Boston Advanced Exploration Project would be required if sludge is to be transported, stored, and incinerated (disposed) at the Doris Camp. Otherwise, it is expected that sludge will be disposed of at the Boston Camp in accordance with the current water license conditions noted in this section.

d) Contact Information

Section 1.3 of the Updated O&M Manual indicates that the HBML Exploration Manager is responsible for overseeing its implementation. This individual's contact information is not included in the submitted manual. INAC recommends that the NWB require that the Updated O&M Manual be revised accordingly.