Environment Canada Environnement Canada

Environmental Protection Operations Directorate (EPOD)
Prairie and Northern Region (PNR)
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April 23, 2015

EC file: 6100 000 008 /008
NWB file: 2BB-MAE----

Phyllis Beaulieu, Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Via e-mail: licensing@nwb-oen.ca

RE: TMAC Resources – Madrid Project – New – Type "B".

Attention: Phyllis Beaulieu

Please find below Environment Canada's (EC) representation to the Nunavut Water Board (NWB) with regard to the Type "B" Water Licence application for the Madrid Project, submitted by TMAC Resources Inc. (the Proponent), as per the NWB's correspondence dated March 24, 2015.

In addition to EC's comments, EC would like to remind the Proponent that they are still required to comply with the relevant legislation, including the *Canadian Environmental Protection Act, 1999*, the pollution prevention provisions of the *Fisheries Act*, the *Migratory Birds Convention Act, 1994*, and the *Species at Risk Act*.

General

1. Overall, EC was quite pleased with the extensive Application that the Proponent provided, and EC thanks the Proponent for their attention to detail.

Incineration of Toilet Wastes

2. Supplemental Report Section 4.2.11 states:

   "*If "Pacto"- type portable toilet facilities are used, these wastes will be returned to Doris North Project for incineration.*"

   EC discourages incineration of toilet wastes, and it is not likely that the Doris North site incinerator is operating nor designed to deal with sewage. EC would like to reiterate the request that the Tailings Impoundment Area (TIA) be used for the

storage of sewage effluent, as per correspondence from EC to the NWB dated September 10, 2008, which states:

"*Hope Bay Mining Ltd. (HBML) has stated that once the permanent camp and mine are operational, the sewage effluent will be deposited into the tailings impoundment area (TIA). HBML has also stated that sewage sludge will be incinerated in an appropriate incinerator in order to meet the Canada Wide Standards for Dioxins and Furans. In general EC does not recommend incineration of any type of biosolids, however is agreeable to HBML's current incineration commitments. Given that HBML will be utilizing the TIA for sewage effluent, EC requests that the proponent advise on feasibility of depositing the sewage sludge into the TIA (or another appropriate containment area) once the mine is operational.*"

Length of Licence Term

3. The Proponent has requested a Licence term of 10 years for a Type "B" Water Licence. This is unusual, and EC anticipates that there will be a "Hope Bay Phase 2" decision made before the proposed licence end date. A 10 year water licence seems more appropriate for a Type "A" licence, (i.e. of an operational mine site). EC suggests a licence length of 8 years, which will allow the Proponent to align this project with the water licence for the Doris North Project. While an 8 year length is longer than that of a typical Type "B" water licence, EC supports the plans and effluent criteria already in place that would be used for this project.

Kinetic Test Results

4. In Section 2.1.3 of Appendix 08B, the Proponent states that the pH levels for the barrel tests were alkaline, with field and lab values typically between 8 and 8.5. Antimony, arsenic, cobalt and nickel release rates were higher for the sample containing sedimentary units (5+1) and to a lesser degree for deformation zone (13a). The Proponent concludes that the kinetic test results suggest that arsenic and nickel leaching under neutral pH conditions is expected from materials containing the trace mineral gersdorffite. The Proponent further concludes that as there is no practical means of identifying gersdorffite during mining, and that waste rock cannot be segregated and managed according to arsenic and nickel leaching characteristics.

   It is not clear to EC why the wt. % concentration of gersdorffite cannot be used to identify the rock units that may potentially leach arsenic and nickel as these metals are related to gersdorffite just as wt. % of sulphide is used to identify rock units which may have acid potential. In addition, the preliminary economic classification in table 2 shows that high concentration of arsenic and nickel are in the "O" classification ((HC 26, HC-28 and HC-24) – Mafic Volcanics and Mafic metavolcanics), and rocks with >100% total sulphur (table 2, HC-20 and HC-21). Also, the samples HC-20 and HC-21) not in the "O" classification does show that the TIC/AP ratios are within the uncertain potentially acid generating (PAG) range. EC asks that the Proponent clarify why these indicators could not be used to attempt to separate rock units.

5. The Proponent also states that sulphate release rates were low (maximum 1 mg/kg/week) for the Mafic metavolcanic and late porphyry granitoid samples, indicating low rates of sulphide oxidation. If this is the case, the Proponent is asked

to clarify why high sulphate leachate in some samples does not indicate higher rates of sulphide oxidation.

For further clarification on any aspect of this submission, please contact Michael I. Mohammed at (867)-975-4981 or michael.mohammed@ec.gc.ca.

Sincerely,

Michael I. Mohammed
Senior Environmental Assessment Coordinator

cc: Loretta Ransom; Acting Head, Environmental Assessment North (NT & NU), PNR-EPOD
EC Internal Distribution