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Environment Canada  
Prairie and Northern Region  
#301 - 5204 - 50<sup>th</sup> Ave  
Yellowknife, NT X1A 1E2  
Ph. (867) 669-4772

June 8<sup>th</sup>, 2007

our file: 4703 003 013  
Your file: 2AM-DOH

Dionne Filiatrault  
A/Executive Director  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU X0B 1J0

*via email : [exec@nunavutwaterboard.org](mailto:exec@nunavutwaterboard.org)*

Dear Ms Filiatrault:

**Re: Doris North Project – Water Licence 2AM-DOH**

Environment Canada has completed a preliminary review of the revised water licence application for the Doris North Gold Project submitted by Miramar Hope Bay Ltd. to the Nunavut Water Board on May 3, 2007. As a result of the review Environment Canada has identified the following topic areas of concern, including outstanding issues raised by EC during the final public hearing for the Doris North Project in October, 2006.

**Water Quality**

- **Tail Lake Water Balance** – It is unclear as to whether mine water is included in the base case computations. This issue was initially identified in the final Environmental Assessment public hearings. Environment Canada recommended that mine water discharge should not be included in the base case computations of the water balance for Tail Lake.
- **Water Quality Modelling** – Environment Canada recommended in the public hearing that the MHL provide verification for estimated loading rates from the various mine components including average annual loadings from waste rock in the waste rock pile and in the mine. The modeling has been updated (March 2007) and these estimates of operational parameters for the Tail Lake facility should be compared to field observations as operations commence, to determine whether the facility is operating according to design. We note that the updated model includes predictions for major ions, and these parameters should be monitored during the life of mine.
- **Tail Lake Discharge Standards** – Environment Canada recommended that the proponent review guidelines from other jurisdictions for parameters which do not have CCME guidelines (such as chloride, TDS) and/or set management targets which will maintain ambient conditions, to ensure concentrations in the downstream aquatic environment will be protective of aquatic life. EC

recommends including monitoring of such parameters in the mine's surveillance network and aquatic effects monitoring programs to ensure adaptive management can be implemented should any trends develop that may be harmful to the receiving water body.

Discharge criteria will need to be developed which are consistent with the Environmental Assessment objectives, and are enforceable. These criteria should be at or below the concentrations used for modeling downstream water quality.

- **Nutrient predictions – Ammonia and Nitrate** – EC notes that the modeling has incorporated more realistic estimates for ANFO loss rates, and efforts have been made to validate the use of removal rates through natural degradation. EC will need further time to review the model inputs, and the explosives management plans.
- **Aquatic Effects Monitoring Program** – EC outlined in the final public hearing several areas that were lacking within the program, which focuses on Environmental Effects Monitoring requirements as set out in the Metal Mining Effluent Regulations. It appears that there have been no changes to this program since the initial development in 2003. Further discussion will need to take place on monitoring program development.

#### Air Quality

- **Open burning of wood waste** – EC has concerns related to the burning of wood exposed to sodium cyanide. Burning will not completely destroy cyanide and cyanide waste will likely be dispersed through fly ash or concentrated in resultant ash. EC is concerned that any resultant ash residues could easily reach surface waters if not carefully mitigated.
- **Incineration of Waste** – Environment Canada recognizes that timely disposal of camp waste - specifically food waste - is of critical importance to minimize safety risks associated with wildlife attraction. Timely disposal is usually achieved through burning. However, burning of waste products releases numerous contaminants to the air, many of them persistent, bioaccumulative and toxic (e.g. polycyclic aromatic hydrocarbons - PAH's - heavy metals, chlorinated organics – dioxins and furans). These contaminants can result in serious impacts to human and wildlife health through direct inhalation and they can also be deposited to land and water, where they bioaccumulate through food chains affecting wildlife and country foods. Therefore, burning should only be considered after all other alternatives for waste disposal have been explored.
  - EC supports the commitments made by the Proponent in section 3.1 of the Air Quality Management Plan. To ensure that these commitments are met and incineration emissions are minimized the Proponent should develop an incineration management plan in consultation with EC. The management plan should include an annual incineration report to demonstrate an ongoing commitment to minimizing emissions.

### Closure and Remediation

- **Site Characterization** - Given the circumstances of landfarm construction (i.e., an immediate reaction to a spill), no site characterization was carried out. This is important in order to determine parameters such as: soil hydraulic conductivity, microbial identification, distance from surface and groundwaters, geology, slope, and availability of top soil.
- **Reclamation Schedule** - There was little discussion about what progressive reclamation activities would take place over the proposed 24 month operating phase of the mine. Has MHL considered a scenario where significantly more time may be required post-closure to ensure remediation objectives have been met? (i.e. such as the need for additional time and equipment necessary for effective landfarming, or if extended water treatment of minewater post-closure is required.)
- **Underground Storage** – EC does not recommend storing contaminants (i.e. metal contaminated soil, hydrocarbon contaminated soil etc.) underground unless it is demonstrated to be a closed facility (i.e. no seepage, fractured bedrock, and with adequate plugs etc.)

Sincerely,

Savanna Levenson  
Environmental Assessment Specialist  
Environmental Protection Operations

cc: Care Ogilvie (Head, Assessment & Monitoring, EPO)  
Anne Wilson (Water Pollution Specialist, EPO)