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April 18, 2006  
H-322387

Nunavut Water Board  
P.O. Box 119  
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**Attention:** Mr. Philippe di Pizzo,  
Executive Director

Dear Mr. di Pizzo:

**Lupin Gold Mine  
Tailings Containment Area (TCA)  
Follow Up Technical Meeting in Yellowknife,  
April 11, 2006  
NWB Water License NWB1LUP0008**

On behalf of Hatch Acres Incorporated (Hatch Acres), I would like to thank you for the opportunity to participate in the technical discussion on the Lupin Gold Mine's Abandonment and Restoration Plan (A&R Plan), held in Yellowknife on April 11, 2006. I believe that productive discussions were undertaken among the participants during the meeting that include staff from Nunavut Water Board (NWB), Kinross Gold Corporation (KGC) and their technical team and other parties including INAC, DFO, Environmental Canada (EC), Government of Nunavut and Hatch Acres.

Subsequently after the meeting, you recommended that each party provide the NWB a brief report, identifying issues which remain outstanding and need to be responded by KGC. Based on the technical meeting, as well as our review of the Abandonment and Restoration documents submitted to NWB to date, remaining issues which need to be responded are as follows:

**1. Final Breaching of the Dam at Discharge Point to Seep Creek**

During the meeting, KGC provided an alternative final location of the controlled breach from Pond 2. The 2005 A&R Plan identified Dam 1A as the location where a spillway structure would be built. However, a report prepared by Dr. Holubec (Water Management After Closure Report, Volume II of the Seepage and Water Quality for Reclaimed Tailings Containment Area, March 2006), and presented during the technical meeting indicated that KGC plans to utilize Dam 2 as the location for the breach. Discussion was made during the meeting regarding the two alternatives. Both alternative plans would have a controlling spillway at el 480 m. There was also a discussion of another alternative, which would keep the water level at Pond 2 to the original water level at el 477.9 m. In view of the above, KGC should provide a further detailed analysis, including the pros and cons for each of the above three alternatives. The DFO also has some interest with regards to this issue, as it will affect the EEM monitoring station location, as well as the fish and aquatic habitat downstream of Pond 2. It is important that KGC carryout additional survey along the channel

downstream of Dam 2, identifying areas which may be affected by water flow diversion into this channel, instead of the past practice to discharge into the channel located downstream of Dam 1A.

## **2. Elevations of Ponds 1 and 2**

The 2005 A& R indicated that there will be a 1 m water level difference between Pond 1 and Pond 2 at the end of the closure period. A spillway will be built to accommodate flows from Pond 1 to Pond 2. In contrast, The Water Management After Closure Report, as well as Dr. Holubec's presentation during the technical meeting, indicated that the dam separating the two ponds will be breached and both ponds will have the same water level elevation.

KGC is required to provide further details, justifications and any implications between the two presented scenarios. It is understood that Dr. Holubec's concept of maintaining a simple one level pond will be desirable, as it will eliminate any water retaining dam between the two ponds. However, consideration will need to be made to ensure that the lowering of Pond 1 by another meter will not create other impacts, such as water quality in both ponds. Two level ponds may be required if an additional residency time (for settlement of suspended solids, etc.) will be required following surface water flows from the surrounding cells and/or the catchment area to Pond 1. Such information, justification and discussion will need to be presented.

## **3. Water Level at Cell 4**

Section 4.3 of The Water Management After Closure Report indicated that the water level after closure at Cell 4 will be at el 485.7 m. Figure A6 of the Report showed that the water level before breaching of the dike at Cell 4 would be at el 486.3 m. It is not clear on how the culvert dike will be breached and how to maintain the water level at Cell 4. Additional information needs to be provided, including any impact of lowering water level at Cell 4 and how it will impact on the existing tailings in Cell 3 and at the L Dam.

## **4. Discharge Channels from Cells 1 and 5 Into Pond 1**

Sections 4.5, 4.6 and 4.7 of The Water Management After Closure Report provide conceptual information on the potential location for the breaches from Cell 1 and 5 into Pond 1, as well as from Cell 2 to Cell 5. Hatch Acres agrees that changing the water retaining dams into dry embankment would be beneficial for providing long-term stability of these structures. However, the discharge channels or breaches must be located so that they will not impact the existing dams, or provide lateral drainage movement during the summer. This impact could result in lowering of the saturation depth cover and eventually exposing the tailings surfaces in the Cells for oxidation process to occur. Additional analysis will be required to ensure that the breach or discharge channel can practically be built, without further disturbing the current conditions of the tailings in the Cells. For example, it was mentioned during the technical meeting that the portion of the Dam between Cell 5 and Pond 1 has a bedrock outcrop at the Pond 1 site. If the discharge channel will need to be founded on bedrock, extensive excavation and design modifications to the existing tailings in Cell 5 may be required.

## **5. Physical Properties of Quarry Materials to be Used for Rockfill Material in the Dams**

Both physical and geochemical tests were carried out for the cover esker material (Section 5, Golder Supporting Report - Report on Studies Related to Water Licence Requirements and in Support of Reclamation Planning, December 2004). The physical tests consisted of grain size analysis and cyclic wetting and drying to assess the physical stability of the material. However, there were only geochemical tests available for the quarry materials. KGC should provide detail information about the rock material encountered in the proposed quarry area, as well as provide explanation on how to exploit the quarry site, as one of the geochemical tests (Sample 50133) showed that its buffering potential is more limited than the other three tested samples (presented in Section 7, 2005 A&R Report). Physical tests similar to the one carried out for the esker material (or soundness and/or LA abrasion tests) are required to ensure that the riprap material is durable and will not easily breakdown with time. KGC needs to elaborate on the rock description of the quarry, including its mineralogy. The report briefly indicated the rock as phyllite. Some phyllite rocks contain mica schist and may breakdown very quickly if exposed.

## **6. Monitoring of Saturation Cover Depths During Post Closure Period**

KGC's Supplement Report to the 2005 Abandonment and Restoration Plan provided responses to the technical review comments provided by the various parties. Section 2.2.4, p. 10 of the report indicated that KGC is not planning to monitor the saturation zone for more than 2 years after the cover installation. Observations carried out between 2002 and 2005 were included in the report.

Hatch Acres understands that KGC has provided data which shows that saturated zone cover can be an adequate cover at the Lupin's TCA. However, as this tailings cover method will remain for a long time after the mine closure, Hatch Acres feels that monitoring of the saturated zone cover should go beyond the first 2 years of the closure period. Readings should be continued similar to the water quality observations during the full post closure period. Similar to water sampling to be conducted during the post closure period, monitoring of saturated cover thickness is only applicable during the summer period. Subject to results of the monitoring, readings may be reduced to one month during the summer, rather than the three month readings over the summer.

## **7. Climatic Change and Effects on Site Hydrology**

Based on the presentation provided by Dr. Holubec in the technical meeting, Hatch Acres agrees that the proposed saturated zone cover method will provide a solution to the effect of global warming on the permafrost for Lupin.

Section 5.5 of the A&R Plan discussed the implication from the climate and hydrology studies. It indicated that the probability of moisture deficit from the water balance analysis will likely not vary more than 50 mm. The study was based on a monthly water balance prepared from the 21-year series of monthly precipitation and evaporation data derived from the study area. It is understood that technical information dealing with the future site hydrology, taking into account the climatic change

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are very limited. KGC needs to provide further discussions about the likelihood that the climate change for the area will result in wetter environment, thereby preventing the saturated zone cover from completely drying out during the summer months. It is understood that the Golder Supporting Report has included some discussion about the probability that surface moisture deficit for two consecutive months is relatively low. If possible, this should be expanded to include the effects of potential future climatic change on the site's hydrology.

## **8. Geochemistry and Water Quality**

A general comment about the predicted geochemistry concentrations in discharged water from the ponds is that some concentrations (copper and arsenic) exceed the surface water quality objectives. It was indicated that the probability of exceedance is low because of the conservatism built in the prediction. KGC should, however, provide some discussion on what remediation activities which need to be carried out, if the actual data after closure are proven to exceed the water quality objectives.

## **9. EEM Study Report to be Made Available**

It is understood that the EEM Field Study report was completed in late March 2006, and a copy has been forwarded to EC. This report should be made available for review by other parties.

We trust that this report is suitable for your purpose. Should you have any further questions or concerns regarding the above, please do not hesitate to contact me.

Yours very truly,

A handwritten signature in black ink, appearing to read 'R. A. Halim', with a long horizontal stroke extending to the right.

RAH:sep

R. A. Halim, P.Eng.  
Supervising Engineer - Geotechnical

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