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Nunavut Water Board
P.O. Box 119
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Attention: Ms. Dionne Filiatrault, P.Eng.,
Manager of Technical Services

Dear Dionne:

Lupin Mine
Review of 2005 Geotechnical Inspection - Perimeter Tailings Dams

At the request of the Nunavut Water Board (NWB), Acres International Limited (Acres) has reviewed the 2005 Geotechnical Inspection Report for the Perimeter Tailings Dams at the Lupin Mine, Nunavut. The inspection report was prepared by BGC Engineering Inc. (BGC) for Kinross Gold Corporation (Kinross) in October 2005. The Lupin Mine (The Mine) is owned by Echo Bay Mines Limited (Echo Bay), a subsidiary of Kinross. Echo Bay is the registered holder of the Nunavut Water Board Water License No. NWB1LUP0008 (Water License). The inspection report was prepared as partial fulfillment of Part D, Item 6(g) of the Water License.

Background

Mr. James Cassie, P.Eng. of BGC conducted the inspection of The Mine's Tailings Containment Area (TCA) between August 10 and 11, 2005. An on-site project memorandum, containing the initial findings of the inspection and comments on the required maintenance work to be completed by The Mine, was issued by BGC on August 11, 2005. The final report, titled "Kinross Gold Corporation - 2005 Geotechnical Inspection - Perimeter Tailings Dams" was issued on October 7, 2005.

The Mine utilizes a number of low embankment dams which form five containment cells for solid accumulation of tailings deposits. Pond 1 acts as the supernatant storage accumulation, and the adjacent Pond 2 contains and allows conditioning of the water prior to discharge into the surrounding environment.

The perimeter dams at The Mine's TCA consists of Dams 1A,1B and 1C to the west of Pond 2; Dam 2 to the north of Pond 2; Dam 3 on the east end of the tailings area which borders with Boomerang Lake; and Dams 4, 5 and 6 to the south of the TCA. Dams 1A, 2 and 4 have heights of 8 m, 5.5 m and 6 m above the surrounding tundra at its downstream end, respectively. The remaining perimeter dams have maximum heights varying between 1.5 and 2.5 m. BGC inspected all of the aforementioned dams and provided a summary report with photographs for each dam.

The inspection of the internal tailings dams within the TCA, which consist of J Dam, K Dam, L Dam, M Dam, Dam 3D and a few other minor dams, were not included in the 2005 geotechnical inspection report.

Review and Comments on BGC Inspection Report

We generally concur with the findings and recommendations indicated in BGC's inspection report. Based on the field observations and photographs presented in the report, there were no significant concerns related to the performance of the perimeter tailings dams. We would, however, make the following comments:

- Erosion Gullies (Dams No. 4 and No. 6)
  Observations on Dams No. 4 and No. 6 indicate that some erosion gullies occurred as a result of water runoff during rainfall events. These observations show the importance of the dam inspection, as progressive erosion may occur if these erosion gullies are not immediately repaired. In their letter dated October 24, 2005 to NWB, Kinross indicated that these erosion gullies had been repaired. It would be useful if some photos were taken after the completion of the remedial work for proper documentation.

- There was no discussion or observation made in regards to the internal tailings dams. While the stability of the internal tailings dams may not be as critical as the perimeter dams, failures of these dams may result in slumping of the materials into Pond 1 or Pond 2, or water being discharged from one pond to another. Unless it can be shown that under a worst case scenario, the unexpected increase of water level in these ponds would not result in overtopping of the perimeter tailings dams, then the inspection on internal tailings dams must be included. Breaching of J Dam will drain the water from Pond 1 to Pond 2. Such an incident may result in reduction of the perimeter tailings dams' freeboard, or overtopping of these dams. If analyses or discussions have been provided in a separate report to show that the internal tailings dams are not critical under the worst possible scenario, then a reference to this report should be made.

- We also want to emphasize the importance of BGC's recommendation on routine inspections to be carried out by site personnel during critical times of the year, such as during freshet, significant rainfall events, water discharge from Pond 1 to Pond 2, etc. It is important that site personnel would have basic knowledge about the information that is critical for the stability of the dam during their routine inspections. Observations, such as increase of seepage flow, minimum freeboard, erosion, slumping, cracking and development of any sinkholes along the dams that raise concerns or suspicions to their stability must be recorded and reported immediately. If necessary, it must be further followed up by a review from a qualified geotechnical engineer.

- A minor point, Section 2 of the report on page 3 indicated that the high water mark in Pond 2 on July 11, 2005, was reported to be more than 4 m below the crest of Dams 1A and 2. If the approximate crest elevation of these dams is el 486.3 m, then the high water mark as reported

by Kinross on July 11, 2005 (Table 1) is 3.11 m below the crest of the dams, and less than the 4 m value as stated in the report. Figure 2 of the report shows the high points at Dam 1A and 2 as el 486.4 and el 486.0, respectively.

We trust that the above review and comments are 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,

RAH:sep

R. A. Halim, P.Eng.
Senior Geotechnical Engineer

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