

**Hatch Acres Incorporated** 

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November 8, 2006 H-323972

Nunavut Water Board P.O. Box 119 Gjoa Haven, NU X0E 1J0

Attention:

Mr. Joe Murdock,

Director of Technical Services

Dear Mr. Murdock:

Tahera – Jericho Diamond Project

Meeting In Edmonton – November 1-2, 2006

**Notes of Meeting and Comments** 

A technical meeting was held at the office of EBA Engineering Consultants Ltd. (EBA) in Edmonton on November 1-3, 2006. The meeting was attended by technical teams, which represent both Tahera Diamond Corporation (TDC) and Nunavut Water Board (NWB). This meeting was the second technical meeting to discuss issues related to the start-up operation of the Jericho diamond mine. The first meeting was held at the same venue on September 25-26, 2006.

The following are observations and discussion which were made by the undersigned during the first two days of the meeting (November 1 and 2, 2006).

**Topics of Meeting and List of Participants** 

The November 1, 2006 meeting commenced at approximately 09:15 h and adjourned at 16:30 h. This meeting discussed the issues of Jericho's Waste Rock Management Plan and the various dam/dyke structures constructed in the Processed Kimberlite Containment Area (PKCA). The participants at this meeting were as follows:

Greg Missal - Tahera Diamond Corp. (Tahera).

Dan Johnson - Tahera Diamond Corp. (Tahera).

Cheryl Wray - Tahera Diamond Corp. (Tahera).

Bruce Ott - AMEC (Amec).

Don Hayley - EBA Engineering (EBA).

Bill Horne - EBA Engineering (EBA).

Gordon Zhang – EBA Engineering (EBA) – part time.

Philippe diPizzo - Nunavut Water Board (NWB).

Joe Murdock - Nunavut Water Board (NWB).

Zhong Liu – Nunavut Water Board (NWB).

S. Lee Barbour (University of Saskatchewan) – part time (morning).

David Sego (University of Alberta) – part time (afternoon).

Lukas Arenson (University of Alberta) – part time (afternoon).

Jamie Van Gulck - Independent.

Ramli Halim - Hatch Acres (Acres).

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On November 2, 2006 the meeting commenced at approximately 9:00 h and adjourned at 12:00 h. This meeting dealt with issues related to the PKCA, Site Water Management Plan and Landfill Design. The participants at this meeting were as follows:

Greg Missal - Tahera Diamond Corp. (Tahera).

Dan Johnson - Tahera Diamond Corp. (Tahera) – part time.

Cheryl Wray - Tahera Diamond Corp. (Tahera).

Bruce Ott - AMEC (Amec).

Don Hayley - EBA Engineering (EBA).

Bill Horne - EBA Engineering (EBA).

Gordon Zhang – EBA Engineering (EBA) – part time.

Ken Armstrong – EBA Engineering (EBA) – part time.

Philippe diPizzo - Nunavut Water Board (NWB).

Joe Murdock - Nunavut Water Board (NWB).

Zhong Liu – Nunavut Water Board (NWB).

Jamie Van Gulck - Independent.

Ramli Halim - Hatch Acres (Acres).

## Day 1 - November 1, 2006

### 1. Waste Rock Management Plan

Part 1 of the Waste Rock Management Plan, which contains the management of disposal sites for waste rock and overburden materials from the mine excavation was introduced by Mr. Johnson. Tahera indicated that during the first year of mine operation, there has been no acid rock generation from the waste dump sites. Furthermore, they reported that there was almost no seepage runoff from the dump sites, which necessitates the construction of Pond A and B at this stage of mine operation. However, only one of the proposed two waste dump sites (Waste dump site No. 2) had been constructed and currently contains both the overburden and waste rock from the open pit excavation. Mr. Hayley provided input on the waste dump construction, based on their experience at Ekati. He indicated that their prediction models have been conservative, as thermistor readings on the waste dumps at Ekati and other mines have generally shown temperatures which are colder than anticipated.

Discussion on Part 2 of the Waste Rock Management Plan was initiated by Mr. Ott. Site geochemistry from water samples and some results of seep analysis (2006 report by SRK) were briefly discussed. It was indicated in the meeting, that most of the results of the water geochemistry testing were much lower than the minimum requirements for the water license at the PKCA discharge levels. These results were expected, as the mining operations have just commenced.

Tahera also indicated that all of the questions which were raised by NWB staff prior to the meeting have been replied to in their written responses. Other discussion and comments brought forward during the meeting included:

- Tahera showed a drawing taken from the PKCA report, which has the various watersheds that determine the water runoff in the West dump and PKCA sites. NWB indicated that such a drawing should be included in the Waste Rock Management Plan document.
- C4 ditch was discussed, as Tahera indicated that water runoff from some portion of the Waste dump No. 1 will go to Lake C4 and part of the Lake C4 watershed.
- NWB required a clarification with regard to water runoff from the Waste dump sites to the Open pit. Tahera indicated that currently there is no seepage flow observed at the toes of the dump stockpiles; however, as the dump sites are developed, they intend to utilize collector ditches to direct the water runoff from the dump sites to the open pit as required.
- Tahera reported that to accommodate additional volumes of waste rocks/overburden from the open pit operations, the heights of the waste dump sites may be increased. Details will be provided prior to increasing the heights of these dump sites.
- In addition, Tahera also mentioned that in the future Waste dump site No 2 and Area 4 stockpile may be integrated into one structure. Detailed design and modifications will be provided when expansion of the stockpile and/or the dump site is required.
- EBA commented on the number of thermistors to be installed in the waste dump sites. Based on their experience at Ekati, they indicated that the proposed two thermistors per site would be adequate.
- EBA confirmed that the long and short term stability analysis results (as reported in Table 4.4 of the Part 2 report) for the Kimberlite ore stockpile are identical.
- Discussion was made with regard to parameters used in the stability analysis of the ore stockpile cohesion and friction angle values for the kimberlite ore. EBA confirmed that the 30° friction angle and the estimated ranges of cohesion values have been selected to reflect the long term potential degradation of the kimberlite ore.
- Ammonia, nitrate and nitrite from seep analysis were reported to be elevated, indicating that the blasting practice of using ANFO will need to be monitored and modified to ensure that their values will meet the requirements at the PKCA discharge level. Tahera indicated that emulsion has been utilized to reduce the wet holes, and misfiring during the blasting activities.
- Recovery circuit reject material has a relatively small quantity in comparison to the coarse and fine PK production, and will be stockpiled in Area 1 near the Southeast Dam. They may plan to bury this material inside the coarse PK stockpile. NWB stated that any deleterious material that will be entombed inside the stockpiles or dump sites will need to be defined, and their locations will be mapped.

# 2. Dam/Dyke Structures in the PKCA

Mr. Horne provided a Powerpoint presentation on the constructions of the various dam/dykes in the PKCA. Background information related to EBA's construction experience on permafrost and frozen dams were highlighted.

#### 2.1 West Dam Construction

The construction of the West Dam was built upon EBA's experience on frozen dam construction at Ekati. Photos which described the construction sequence were presented. The work was carried out between January and April 2006. The dam's core was not built to its final level, and additional work will be carried out to complete the dam's construction this coming winter.

Some of the critical activities as part of the QA/QC during the dam's construction included the percolation test to ensure frozen dam foundation, visual inspection of the dam's foundation and setting up a controlled temperature batch plant inside a dome, located approximately 2 km from site. The Batch plant was used to prepare and clean the construction materials and to raise their temperature prior to delivery to the site.

Geothermal modeling was completed on the structure. As a modification of the dam's cross section, till was used in the upstream portion of the dam to increase the likelyhood that the dam's core temperature will remain frozen when the reservoir water level is in contact against the granular fills on the upstream side of the dam. This modification was backed up with a geothermal modeling.

#### Discussion/Comments related to the West Dam:

- The constructed thermosyphon and its effectiveness was discussed during the meeting. EBA indicated that the thermal modeling with installed thermosyphon produced acceptable results, keeping the foundation of the dam below -2C.
- Foundation creep was not considered to be an issue, as EBA indicated that the overburden is relatively thin and it contains low excess ice. Movement of the dam will be monitored, as survey monuments were installed at the dam site.
- Completion of the dam's core to its final elevation for this coming winter was discussed. The partly constructed core was covered with fill for insulation and Tahera is currently in the process of removing the insulation cover fill prior to continuing to raise the dam's core this coming winter.

# 2.2 Divider Dyke Construction

EBA provided a powerpoint presentation, showing the construction of the Divider Dyke. Questions related to the filter design, riprap size and stability analysis that were previously asked by NWB staff were discussed during their presentation.

# Discussion/Comments related to the Divider Dyke:

 Filter criteria based on a report by Sherard and Dunnigan on granular filter materials was used and therefore the d50 ratio requirement is no longer applicable. Tahera indicated that the filter system is currently working, and migration of tailings fines across the divider dyke did not occurred.

- Discussion was made with regard to measurement of the filter effectiveness. NWB indicated that water samples on both sides of the divider dyke will need to be collected. Dr. Sego also added that a water sampling protocol should be used to ensure that the water samples from various water depths, rather than from one depth source, are selected.
- Stability analysis was carried out on the Divider dyke, utilizing a number of assumed phreatic water surfaces within the divider dyke. It was revealed that the critical phreatic water level was the one presented in the report (at approximately 1/3 to 1/4 of the dyke's height).
- Smaller riprap size was used for the dyke's slope protection and this was considered acceptable based on the small fetch length of the pond, the likely non catastrophic failure consequence (which can be repaired later), as well as the wave size generated over the life of the dyke.
- Freezing of the dyke was considered to be an issue. However, so far this was not a problem for Tahera and further monitoring will be observed in the coming winter.

#### 2.3 Construction of East and Southeast Dams

Both dams are intended as lined dams, with the liner keyed into the frozen ground foundation. They will retain the fine tailings and will have tailings deposition building up against the upstream slope of the dams. Only The East Dam was built during the winter 2005/2006 construction period. In contrast, the foundation of the Southeast dam was stripped, but the dam was not constructed. Photos taken during construction of the East Dam were presented in the meeting.

#### Discussion/Comments Related to East and Southeast Dams:

- During the presentation, it was indicated that a 60 mil HDPE liner was utilized, instead of the initially proposed 40 mil thickness liner. This question was raised by Acres in their review report dated May 16, 2006. In addition, Acres' question related to the use of a geotextile to sandwich the HDPE liner had been answered, as EBA reported that the HDPE liner was sandwiched by 542 g/m² geotextile layer.
- The use of HDPE liner, instead of polypropene liner was proposed by the Contractor, as the liner material depended on Contractor's supply and availability of the material at the time of construction.
- Tahera reported that there is currently no sign of seepage on the downstream side of the East Dam, and tailings materials have built-up against the upstream slope of the dam. They indicated that monitoring will continue to verify that the East Dam will not leak, and the single geomembrane liner is effective.
- A question was raised about the status of the Southeast Dam's foundation, as it was left open for the summer. EBA indicated that percolation test will be carried out on the existing foundation to ensure that the dam foundation remains frozen, prior to the dam construction this coming winter. Additional preparation work, such as removal of a portion of the exposed foundation, etc. may be required if the percolation test fails.

## **Day 2 – November 2, 2006**

#### 1. PKCA

A powerpoint presentation was provided by EBA on the processed kimberlite containment area. The presentation showed the PKCA scheme, which divides the Long Pond into three cells – Cell A, B and C. EBA briefly discussed the construction of the West Dam, the Divider dyke, and the plan to increase the tailings disposal area in the PKCA by constructing an additional divider dyke and perimeter berms. The fine tailings materials that accumulate in the PKCA will reduce the volume of the tailings pond available to hold water prior to discharge (retention time) from a maximum of 2.2 years in 2006 to 1.2 years in 2011. Tahera plans to raise the divider dyke, and to construct perimeter berms on the east portion of the PKCA in order to allow for the placement of tailings materials to el. 527m

Discussions and comments brought forward in the meeting included:

- Design details for the construction of the second divider dyke, increasing the current divider dyke and the construction of perimeter berms have not been finalized. The details need to be presented and approved prior to their construction.
- Tahera still has a contingency plan to build another settling pond to the west of the West Dam, in case water quality of the tailings pond does not meet requirements for discharge during the remaining part of the mine life (i.e. as the tailings area increases and the pond becomes smaller).
- To meet the license requirements, NWB requested that a report containing stamped drawings, construction records and other design modifications to date, be submitted on the dam and dyke constructions in the PKCA. NWB indicated that an interim report will be acceptable. This report could then be revised or added to, as the construction of the facilities evolve with time. Tahera agreed to provide the report/interim report.

# 2. Site Water Management Plan

Mr. Ott provided a powerpoint presentation on Jericho's site water management. The presentation included the discussion on the schematic water routing and quantities of water balance during the mining operations, and the plan to construct and manage Pond A, B and C as required.

Discussions and comments brought forward in the meeting included:

- Current status of the water balance on Long Pond as a result of its dewatering in the fall 2005, and subsequent discharge of tailings water and materials during the 2006 mine operation.
- NWB requested that detailed information regarding any surface water runoff from the waste dump sites, through the collector ditches, to the mine open pit, the ponds, or the East sump, as well as any pumped water through a pipeline to the PKCA be clearly identified and presented.

- Discussion was made with regard to the need to compile a list any structures that were eliminated, have not yet built, or have been modified at the site. This would allow any difference between the water balance predicted in the model, and submitted for the water license, and the actual water balance from the mine operation to be recognized.
- Other questions which were raised by NWB staff have been replied to by Tahera in their written responses.

## 3. Landfill Design

A brief introduction on Jericho's site water management plan was presented by Mr. Armstrong. He indicated that a draft report has been submitted to Tahera, and is currently under review. EBA also plans to provide revised second draft report, and Ms. Wray confirmed that the report will be submitted to NWB within the next few weeks.

We trust that this information is suitable for your purpose. If you have any questions, please contact the undersigned.

Yours very truly,

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RAH:sep

R. A. Halim, P.Eng.

Supervising Engineer - Geotechnical

cc: Mr. P. diPizzo, NWB

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