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May 13, 2005 Our file: 4702 025

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Dear Mr. diPizzo

**RE: Tahera Diamond Corporation, Jericho Diamond Project – Aquatic Effects Monitoring Plan**

Thank-you for the opportunity to provide input to the Nunavut Water Board (NWB) regarding the Aquatic Effects Monitoring Plan (herein referred to as "the AEMP") developed by Tahera Diamond Corp. for the Jericho Diamond Project. The AEMP is required under Part L, Item 10 of the water license NWB1JER0104. This submission is being provided as requested by the NWB in their letters dated March 23, 2005 and April 12, 2005, indicating that a written hearing will be held on this plan.

## 1.0 Introduction

The mandate of Environment Canada (EC) is defined by the *Department of the Environment Act*. This *Act* provides the Department with a general responsibility for environmental management and protection in terms of the need to foster harmony between society and the environment for the economic, social, and cultural benefit of present and future generations of Canadians. The Department shares this responsibility with the provinces and territories. Environment Canada is also responsible for providing specialist or expert information and knowledge for the preservation and enhancement of environmental quality.

The operation of the Jericho Diamond Mine is subject to the following statutes administered by Environment Canada: Section 36(3) of the *Fisheries Act*, the *Canadian Environmental Protection Act (CEPA 1999)*, the *Migratory Birds Convention Act*, and the *Species at Risk Act*.

Environment Canada's review of the AEMP is based primarily on its mandated responsibility for the administration and enforcement Section 36(3) of the *Fisheries Act*. The *Compliance and Enforcement Policy for the Habitat Protection and Pollution Prevention Provisions of the Fisheries Act* states that compliance with the federal *Fisheries Act* is mandatory. Subsection 36(3) of the *Fisheries Act* specifies that unless authorized by federal regulation, no person shall deposit or permit the deposit of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter any such water. Proponents should note that only a federal regulation under the *Fisheries Act* or another Act of Parliament can authorize a discharge of a deleterious substance; no federal permit, provincial, territorial or

municipal regulatory permit or approval allows for exemption from these provisions of the *Fisheries Act*.

**2.0 Specific Comments**

Environment Canada's review of the AEMP included both the *Jericho Diamond Project Aquatic Biota AEMP* and the *Jericho Diamond Project Aquatic Effects Monitoring Plan.* Environment Canada provides the following comments for the Nunavut Water Board (NWB) for consideration in the review of this document. The comments are organized by document, page number and section number for ease of comparison.

Comments on "Jericho Diamond Project AEMP" dated March 2005:

Page 6, Section 2.3 - AEMP Approach

- Bullet 1 states that "...exceedance of water quality criteria will indicate a Project effect...". This should be better defined to state in the receiving environment beyond the initial mixing zone, and to specify which criteria will be used (presumably CCME guidelines for the protection of freshwater aquatic life). Where guidelines don't exist, or where pre-project conditions were near or above guidelines, changes from baseline would indicate project effects.
- The third paragraph discusses adaptive management. It would be more proactive to state that management action would be triggered by a biologically significant effect and/or an increase in parameter concentrations. The natural variability of the biotic parameters being monitored is such that an effect may be masked until some time after sediment quality and/or water quality changes are detected. If water or sediment quality changes are detected the company should not wait until biological changes are observed to take action. The management action could be as simple as tracking changes and identifying what steps or investigations would be taken if trends continue.

Page 31, Section 5.3 – Frequency and Replication

- Table 5.2 appears to have the wrong title.

Comments on the "Jericho Diamond Project Aquatic Biota AEMP 2004" dated March 2005:

Page 25, Section 4.3 - Phytoplankton

- Footnotes in Tables from Section 4 onward refer to Section 3.8 for description of statistical methods; this should be Section 3.9. However, Section 3.9 does not provide enough description for people who are not familiar with the literature for the specific methods referenced. For example, the comparison of means among stations is mentioned, but no explanation is given of the letters used in the tables to identify "like" vs "different" means.
- It is not clear what the difference is between "group overall" and "total densities", and why these don't match for densities and biovolume? (There seems to be an order of magnitude difference in favour of the former).

Page 29, Section 4.4 Zooplankton

- Table 4.3 presents standard deviation values for total density, total biomass, and cladoceran density which range from 1.1 to 1.6 for data values which are in the hundreds to tens of thousands. Were the standard deviations for the back-transformed log scale data presented? If so, this is not so helpful in showing an idea of the variability.
- Figure 4.3 seems to have scale errors on the left axis of the total and group density graphs.

Page 31, Section 4.3 - Phytoplankton

- The paragraph discussing major taxa states that biomass was evenly distributed among groups. The group biomass graph in Figure 4.3 does not support this statement, nor does the fact that there were three sites were significantly different for cladoceran biomass (Table 4.3). It does not even look like the community proportions were consistent among lakes.

Page 32, 4.5 Benthic - Macroinvertebrates

- Table 4.5 presents standard deviation values for total density, chironomid density, and oligochaete density which appear very low and may represent standard deviations for the back-transformed log scale data?

Page 37, Section 4.6 – Fish Tissue

- Table 4.9 has a footnote error; there are two "b"s. Also, for cadmium the standard deviations seem disproportionate – have transformed values been used?

**Section 3.0 Summary**

The sampling locations, frequency, parameters, QA/QC and proposed data analyses will form the basis of the aquatic effects monitoring program, and therefore should be rigorous enough to detect changes associated with the project.

Environment Canada would like to thank the NWB for the opportunity to participate in the review of the various documents required under the water license for the Jericho Diamond Project. If there are any significant changes in the proposed plan, EC should be notified, as further review may be necessary. Please do not hesitate to contact Anne Wilson with any questions or comments with regards to the foregoing at (867) 669-4735 or by email at anne.wilson@ec.gc.ca.

Yours truly,

***Original signed by***

C.A. (Chuck) Brumwell
Manager, Northern Division

cc: (Stephen Harbicht, Head, Assessment and Monitoring, Environment Canada, Yellowknife)
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