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**RE: NWB1JER0410 – Tahera Diamond Corporation, Jericho Diamond Mine –
Submission of Landfarm & Contaminated Snow Containment Facility – Design
Report, Construction Specifications, and Operating Manual**

On behalf of Environment Canada (EC), I have reviewed the Design Report, Construction Specifications and Operating Manual for the Jericho Diamond Mine Landfarm and Snow Containment Facility, submitted with the above-mentioned water license. Tahera Diamond Corp. has submitted this information as required under Part D, Item 7, and Part H, Item 5 of the water license NWB1JER0410.

The following specialist advice has been provided pursuant to Environment Canada's mandated responsibilities for the enforcement of the *Canadian Environmental Protection Act*, Section 36(3) of the *Fisheries Act*, the *Migratory Birds Convention Act*, and the *Species at Risk Act*. Environment Canada recommends that the following recommendations be implemented during all phases of the project:

Design Report

- EC recommends that groundwater monitoring wells be included in the design of the facility. It is recommended that wells be located both upgradient and downgradient of the facility to monitor potential groundwater contamination. It is recommended that a monitoring program for the groundwater monitoring wells be developed and included in the Operating Manual.
- EC recommends that Tahera Diamond Corp. take precautions to ensure that the design of the facility is such that the freeboard within the sump is not utilized, as this would result in the landfarm area becoming temporary flooded. EC recommends that Tahera treat and discharge water within the sump if conditions indicate that the freeboard is being encroached upon.

Operating Manual

- Section 3.2 of the Manual indicates that concentrations of analyzed contaminants of concern in the soil at the landfarm will be compared to the Government of Northwest Territories Environmental Guidelines for Site Remediation. However, it is unclear why this guideline was chosen. The Government of Nunavut also has a Site Remediation Guidelines (2003) available, and the Canada-wide Standard (CWS) for Petroleum Hydrocarbons (2001) is also available. Tahera Diamond Corp. should also note that the CCME EQGs have recently been updated, and new soil quality guidelines (dated 2004) for benzene, toluene, ethylbenzene, and xylenes are also now available. Environment Canada



- recommends that Tahera chose remediation criteria that reflect current best practices and will ensure protection of the receiving environment.
- In relation to the chosen remediation guideline, EC requests clarification regarding the parameters that will be monitored at the landfarm. The Manual currently states that soils in the landfarm should be analyzed for BTEX parameters and F1-F4 petroleum hydrocarbons. However, while the GNWT Guideline identifies remediation guidelines for BTEX parameters, it does not provide criteria for individual hydrocarbon fractions (i.e. F1-F4). The CWS for Petroleum Hydrocarbons does, however, provide remediation criteria for individual fractions. EC recommends that Tahera clearly indicate the parameters that will be monitored and the level to which the soil will be remediated.
 - Environment Canada recommends that once the water within the sump has been treated to meet applicable discharge criteria, Tahera implement erosion control measures at the point at which water from the sump will be discharge to the land.
 - Section 3.4 of the Manual indicates that equipment must be thoroughly hosed down prior to leaving the landfarm to remove contamination from the equipment. Further, Section 3.5 discusses options for the treatment of oversized materials, such as rocks, segregated from the landfarm. At other northern landfarm facilities, such treatment included washing rocks to remove soil particles. Environment Canada requests that Tahera confirm that the volume of water resulting from washing requirements has been included in the calculations used to determine the size of the sump in the landfarm. Any water used in the washing of equipment or oversized material must be directed to a sump and treated prior to release to the environment. The Manual should also provide guidance regarding sampling requirements for material prior to their acceptance into the landfarm.
 - Section 3.5 states that soils with metals, chlorinated hydrocarbons, or polyaromatic hydrocarbons with four or more rings should not be accepted into the landfarm if they exceed adopted guidelines. However, it is not clear what guidelines are referred to. Section 3.2 of the Manual appears to reference remediation criteria rather than criteria for the acceptance of soils. Tahera should clearly indicate in the manual the criteria which will be used to determine what soils will be accepted to the landfarm.
 - There are discrepancies in the Manual regarding the frequency of aeration. For instance, Sections 3.6.2 and 4.3 indicate that the landfarm should be tilled every two weeks, while Sections 3.6.3 and 4.4 indicate that the landfarm should be tilled every week. The frequency of aeration will greatly affect the rate of remediation of the soil, and therefore, should be clearly indicated.
 - Section 4.2 makes reference to the potential use of a commercial bioremediation product in the landfarm. If such a product is used, Tahera Diamond Corp. must ensure that all substances found in the product are on the Domestic Substances List (DSL) under the *Canadian Environmental Protection Act (1999)*. If the substances in the product are not listed on the DSL, Tahera may be subject to the *New Substances Notification Regulations* (NSNR). The NSNR require that prior to the import or manufacture of any new substance into Canada, notification is submitted to Environment Canada. This ensures that a new substance is not introduced into Canada prior to an assessment of its potential effects on the environment and human health is completed. A new substance is one that is not found on the DSL and includes chemicals, polymers and animate products of biotechnology such as micro-organisms, or substances produced by micro-organisms such as proteins, enzymes or biopolymers.
 - Section 35 of the Migratory Birds Regulations states that no person shall deposit or permit to be deposited, oil, oil wastes, or any other substance harmful to migratory birds in any water or any area frequented by migratory birds. Section 4.3 of the Manual states that "The possibility of birds landing on ponded oil contaminated water in the landfarm and snow containment facility is a concern. This may be prevented by stringing rope at 2 m intervals across the ponded surface water areas and to place flagging at 1 m intervals on these ropes" (page 13). Environment Canada recommends that areas with contaminated water be monitored during the first year of operation of the land farm to ensure that this mitigation



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measure is effective in preventing birds from landing in these areas. Daily checks to ensure that birds are not using these areas should occur during spring and fall at the times when birds are migrating through the area. Regular checks should also occur during the summer months as well. If birds are using these areas despite the ropes with flagging, other mitigation measures to keep birds away may need to be used.

If there are any changes in the proposed project, EC should be notified, as further review may be necessary. Please do not hesitate to contact me with any questions or comments with regards to the foregoing at (867) 975-4639 or by email at colette.spagnuolo@ec.gc.ca.

Yours truly,

Original signed by

Colette Spagnuolo
Environmental Assessment / Contaminated Sites Specialist

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