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**RE: 110328 2BE-CDP---- Shear Diamonds – New Application Kitikmeot Region**

Environment Canada (EC) has reviewed the information regarding the above-mentioned application, as submitted to the Nunavut Water Board (NWB). The following specialist advice has been provided pursuant to the *Canadian Environmental Protection Act 1999*, Section 36(3) of the *Fisheries Act*, the *Migratory Birds Convention Act*, and the *Species at Risk Act*.

Shear Diamonds (Nunavut) Corp (Shear Diamonds) is applying for a new Type B water license from the NWB to support exploration activities approximately 266 km southeast of Kugluktuk and 450 km southwest of Cambridge Bay. The objective of the exploration program is to discover new kimberlite sources adjacent to the Jericho Mine site as part of the feasibility study for reopening the Jericho Mine. Project activities will include drilling, fuel transport, staking, geological mapping, prospecting, ground geophysics, airborne geophysics, test pit trenching, a possible bulk sample program and fuel transport. Activities are planned to start in April 2011 and will continue through 2012 depending on results from the 2011 program.

Based on the information provided, EC provides the following comments for the NWB's consideration:

**General**

- The proponent shall not deposit, nor permit the deposit of chemicals, sediment, wastes, or fuels associated with the project into any water body. According to the *Fisheries Act*, Section 36 (3), the deposition of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any deleterious substance that results from the deposit of the deleterious substance, may enter any such water, is prohibited.

**Drilling**

- All drilling effluent should be directed to a sump that is properly constructed and adequately sized to ensure there is no runoff and that water bodies downstream of drilling activities are not affected. All efforts shall be made to prevent drill mud, drill additives, return water and cuttings from migrating from the drill site. The sump should be located away from surface waterbodies and drainage channels.

- A minimum setback of 30 m from the ordinary high water mark is recommended for drill setup.
- For lake-based winter drilling, the proponent may refer to the Interim Guidelines for On-Ice drilling. Return water released to the lake must be non-toxic. Return water release must not result in an increase in total suspended solids (TSS) in the waters of the lake that exceeds Canadian Council of Ministers of the Environment (CCME) Guidelines for the Protection of Freshwater Aquatic Life (i.e. 10 mg/L for lakes with background levels under 100 mg/L, or 10% above background for those lakes with TSS background levels above 100 mg/L).
- Drilling additives or mud shall not be used in connection with holes drilled through lake ice unless they are re-circulated, contained such that they do not enter the water, or are demonstrated to be non-toxic.
- If artesian flow is encountered, core-drill holes shall be plugged and permanently sealed upon project termination.
- Environment Canada assessed inorganic chloride salts and concluded that these salts in high concentrations are harmful to the environment. As a result, the proponent should ensure that when using calcium chloride (CaCl<sub>2</sub>) for drilling purposes that return water is contained in a properly constructed sump and located in such a manner as to ensure that the contents do not migrate out from the sump. Please note that the proponent should not rely on permafrost integrity to contain and isolate drilling wastes.

### **Spill Contingency Plan**

- Refuelling shall not take place below the high water mark of any water body and shall be done in such a manner as to prevent any hydrocarbons from entering any water body frequented by fish. EC recommends that drip pans, or other similar preventative measures, should be used when refuelling equipment.
- Please note that in section 5.3 Emergency Contact List - Spill Reporting and Response, the Environment Canada 24 hour emergency pager number should be removed as that phone number is no longer in service.
- In Section 6.1 Preventative Measures of the Spill Prevention and Response Plan it states: "Create fuel caches in natural depressions that are located a minimum of 31 metres from the normal high-water mark of any water body". EC recommends the use of secondary containment, such as self-supporting insta-berms, for storage of all barrelled fuel rather than relying on natural depressions to contain spills.
- Spills are to be documented and reported to the NWT/NU 24 hour Spill Line at (867)920-8130. EC recommends that all releases of harmful substances, regardless of quantity, are immediately reported where the release:
  - is near or into a water body;
  - is near or into a designated sensitive environment or sensitive wildlife habitat;
  - poses an imminent threat to human health or safety; or,
  - poses an imminent threat to a listed species at risk or its critical habitat.

### **Wildlife and Species at Risk**

- Section 6 (a) of the *Migratory Birds Regulations* states that no one shall disturb or destroy the nests or eggs of migratory birds. If active nests are encountered during project activities, the nesting area should be avoided until nesting is complete (i.e., the young have left the nest).
- EC recommends that food, domestic wastes, and petroleum-based chemicals (e.g., greases, gasoline, glycol-based antifreeze) be made inaccessible to wildlife at all times. Such items can attract predators of migratory birds such as foxes, ravens, gulls, and bears. Although these animals may initially be attracted to the novel food sources, they often will also eat eggs and young birds in the area. These predators can have significant negative effects on the local bird populations.
- Section 5.1 of the *Migratory Birds Convention Act* prohibits persons from depositing substances harmful to migratory birds in waters or areas frequented by migratory birds or in a place from which the substance may enter such waters or such an area.

- In order to reduce aircraft disturbance to migratory birds, Environment Canada recommends the following:
  - Fly at times when few birds are present (e.g., early spring, late fall, winter)
  - If flights cannot be scheduled when few birds are present, plan flight paths that minimize flights over habitat likely to have birds and maintain a minimum flight altitude of 650 m (2100 feet).
  - Minimize flights during periods when birds are particularly sensitive to disturbance such as migration, nesting, and moulting.
  - Plan flight paths to avoid known concentrations of birds (e.g., bird colonies, moulting areas) by a lateral distance of at least 1.5 km. If avoidance is not possible, maintain a minimum flight altitude of 1100 m (3500 feet) over areas where birds are known to concentrate.
  - Avoid the seaward side of seabird colonies and areas used by flocks of migrating waterfowl by 3 km.
  - Avoid excessive hovering or circling over areas likely to have birds.
  - Inform pilots of these recommendations and areas known to have birds.
- The following comments are pursuant to the *Species at Risk Act* (SARA), which came into full effect on June 1, 2004. Section 79 (2) of SARA, states that during an assessment of effects of a project, the adverse effects of the project on listed wildlife species and its critical habitat must be identified, that measures are taken to avoid or lessen those effects, and that the effects need to be monitored. This section applies to all species listed on Schedule 1 of SARA. However, as a matter of best practice, Environment Canada suggests that species on other Schedules of SARA and under consideration for listing on SARA, including those designated as at risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), be considered during an environmental assessment in a similar manner. The Table below lists species that may be encountered in the project area that have been assessed by COSEWIC as well as their current listing on Schedules 1-3 of SARA (and designation if different from that of COSEWIC). Project impacts could include species disturbance, attraction to operations, and destruction of habitat.

Terrestrial Species at Risk potentially within project area <sup>1</sup>	COSEWIC Designation	Schedule of SARA	Government Organization with Primary Management Responsibility <sup>2</sup>
Peregrine Falcon	Special Concern ( <i>anatum-tundrius</i> complex <sup>3</sup> )	Schedule 3 – Special Concern ( <i>tundrius</i> )	Government of Nunavut
Short-eared Owl	Special Concern	Schedule 3	Government of Nunavut
Grizzly Bear	Special Concern	Pending	Government of Nunavut
Wolverine (Western population)	Special Concern	Pending	Government of Nunavut

<sup>1</sup>The Department of Fisheries and Oceans has responsibility for aquatic species.

<sup>2</sup>Environment Canada (EC) has a national role to play in the conservation and recovery of Species at Risk in Canada, as well as responsibility for management of birds described in the Migratory Birds Convention Act (MBCA). Day-to-day management of terrestrial species not covered in the MBCA is the responsibility of the Territorial Government. Populations that exist in National Parks are also managed under the authority of the Parks Canada Agency.

<sup>3</sup>The *anatum* subspecies of Peregrine Falcon is listed on Schedule 1 of SARA as threatened. The *anatum* and *tundrius* subspecies of Peregrine Falcon were reassessed by COSEWIC in 2007 and combined into one subpopulation complex. This subpopulation complex was listed by COSEWIC as Special Concern.

- For any Species at Risk that could be encountered or affected by the project, the proponent should note any potential adverse effects of the project to the species, its habitat, and/or its residence. All direct, indirect, and cumulative effects should be considered. Refer to species status reports and other information on the Species at Risk registry at [www.sararegistry.gc.ca](http://www.sararegistry.gc.ca) for information on specific species.
- If Species at Risk are encountered or affected, the primary mitigation measure should be avoidance. The proponent should avoid contact with or disturbance to each species, its habitat and/or its residence.
- Monitoring should be undertaken by the proponent to determine the effectiveness of mitigation and/or identify where further mitigation is required. As a minimum, this monitoring should include recording the locations and dates of any observations of Species at Risk, behaviour or actions taken by the animals when project activities were encountered, and any actions taken by the proponent to avoid contact or disturbance to the species, its habitat, and/or its residence. This information should be submitted to the appropriate regulators and organizations with management responsibility for that species, as requested.
- For species primarily managed by the Territorial Government, the Territorial Government should be consulted to identify other appropriate mitigation and/or monitoring measures to minimize effects to these species from the project.
- Mitigation and monitoring measures must be taken in a way that is consistent with applicable recovery strategies and action/management plans.
- All mitigation measures identified by the proponent, and the additional measures suggested herein, should be strictly adhered to in conducting project activities. This will require awareness on the part of the proponents' representatives (including contractors) conducting operations in the field. Environment Canada recommends that all field operations staff be made aware of the proponents' commitments to these mitigation measures and provided with appropriate advice / training on how to implement these measures.
- Implementation of these measures may help to reduce or eliminate some effects of the project on migratory birds and Species at Risk, but will not necessarily ensure that the proponent remains in compliance with the *Migratory Birds Convention Act*, *Migratory Birds Regulations*, and the *Species at Risk Act*. The proponent must ensure they remain in compliance during all phases and in all undertakings related to the project.

If there are any additional changes in the proposed project, EC should be notified, as further review may be necessary. Please do not hesitate to contact the undersigned with any questions or comments with regards to the foregoing at (867) 975-4631 or by email at [Paula.C.Smith@ec.gc.ca](mailto:Paula.C.Smith@ec.gc.ca).

Yours truly,



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