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RE: 2BE-GOO0510/GA – Dundee Precious Metals Inc. – Goose Lake Exploration – Amendment – Type B

On behalf of Environment Canada (EC), I have reviewed the above mentioned application. 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*.

Project Description

Dundee Precious Metals Inc. is applying for a Type B licence for water use and waste disposal associated with exploration and camp operations in its Goose Lake Exploration Project. The proponent has entered a joint venture partnership with Kinross Gold Corp. to conduct mineral exploration within Nunavut and has taken the responsibility of acquiring all necessary permits and approvals. The Goose Lake Exploration water licence was previously assigned to Miramar Bathurst Ltd. who has agreed to transfer its licence to Dundee Precious Metals Inc. The proponent intends to conduct exploration activities within the Goose Lake claim in addition to its Boot Lake and Boulder Lake claims utilizing an established field camp situated in the Goose Lake property. This camp is located southeast of Bathurst Inlet, having a coordinate of 66˚32'40"N, 112˚25'37"W.

The proponent has requested a licence which allows a maximum use of 130 m^3 of freshwater per day with an expiration date of December 31, 2030. Approximately 35% (45 m^3) of this water will be used for domestic purposes and 65% (85 m^3) for diamond drilling operations. A total of 40 people are anticipated to work on the Goose Lake Exploration Project throughout a given field season. Camp gray water will be directed to a sump and sewage will be incinerated in electric toilets. Combustible wastes will be burned and their remaining ashes will be buried along with those ashes produced from the incineration of sewage. Waste oil will be burned on site. Scrap metal waste will be delivered to an appropriate recycling facility.

Scheduled exploration activities include diamond drilling and trenching operations. Drill rigs will be moved to selected work sites by helicopter and possibly cat-train when there is adequate snow cover. Water used to operate the drilling rigs will be acquired from nearby sources and will be re-circulated to minimize consumption. The proponent intends to direct the waste water produced from drilling operations into drill holes upon completion of drilling at each work site. Drill cuttings

and sludge will be removed from work sites to a designated disposal area. A series of trenches will be excavated for bulk sampling purposes. It is anticipated that a total area of one (1) hectare will be trenched in the project's exploration activities.

The proponent will have a fuel cache established within its project area. Liquid fuels will be stored in 205 L steel drums. A total of 18,000 L of diesel (88 drums), 4,000 L of gasoline (20 drums), 41,000 L of Jet-A fuel (200 drums), and two hundred (100) pound tanks of propane will be made available. Soils contaminated by hazardous material spills will be excavated and undergo remediation treatment in a designated area. Following this remediation process, the soil will be returned to excavation areas.

Environment Canada's Comments

Environment Canada requests that the proponent clarify how it intends to remediate contaminated soil. The proponent's reference to a designated remediation area for contaminated soil is characteristic of a landfarm facility. Environment Canada recommends that the proponent provide information related to the operation of such a facility. It is recommended that the following questions be answered:

- Where will this facility be located and what are its planned dimensions?
- Will the land farm be lined and bermed?
- What is the maximum depth of soil that the can be treated within the landfarm?
- Will nutrients be added to the contaminated soil as part of its treatment?
- What is the anticipated moisture content of the landfarm?
- How will surface runoff be treated and contained within the landfarm? A drainage management plan should be included in the landfarm design (e.g., lined sump). Collected runoff water must receive treatment before being released into the surrounding environment.
- Will any microbes be added to the landfarm? If yes, the *New Substance Notification Regulations* under the *Canadian Environmental Protection Act* may be triggered. Please see comment below for further information on these regulations.
- What level of hydrocarbon contamination will the soil be remediated to? What criteria will be adopted?
- How will the proponent monitor the landfarm? Groundwater monitoring wells should be installed up-gradient and down-gradient of the landfarm to ensure that groundwater quality is not diminished by the presence of this facility.
- How often will the landfarm be aerated?
- How will the landfarm be closed / abandoned?

The application makes reference to the potential use of a commercial bioremediation product, i.e., an oil sponge equipped with microbes. If such a product is used, the proponent 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, the proponent may be subject to the *New Substances Notification Regulations* (NSNR). The NSNR requires that before importing or manufacturing any new substance into Canada, notification must be submitted to Environment Canada. This ensures that new substances will undergo proper assessments of their potential effects to the environment and human health. 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.

Further information regarding the Domestic Substances List can be found at the CEPA Registry website (http://www.ec.gc.ca/CEPARegistry/) under the "Substances" tab. You can also access the New Substances Program homepage (http://www.ec.gc.ca/substances/nsb/eng/sub_e.htm), which has an online search engine for the DSL, allowing you to type in the CAS number and find out whether the substance is on the DSL.

Environment Canada recommends that the proponent submit a project specific Spill Contingency Plan for review. This Plan should indicate a chain of command for responding to fuel spills, spill response procedures for relevant environmental conditions (i.e., spills on land, water, snow, and ice), a description of the main fuel cache location, a map which displays the fuel cache area in relation to camp facilities, a list of emergency contacts, and an inventory of spill response equipment. All project personnel should be familiarized with this Plan and copies should be made available at the Goose Lake camp and with spill response equipment. It is also advised that appropriate Material Safety Data Sheets be appended to this Plan.

Environment Canada recommends that its Environmental Enforcement Officer, Jimmie Noble Jr., be included in a Spill Contingency Plan contact list. Noble can be reached by office telephone (867) 975-4644, cell phone (867) 975-1925, and secure fax-line (867) 975-4594.

The proponent should be advised that drilling wastes, i.e., drill cuttings and sludge, shall either be removed from the project area for proper disposal or be disposed within sumps that prevent their contents from entering any water body. Environment Canada has noted that the proponent intends to place drill cuttings and sludge in a designated disposal area. If such an area will be used, it should be a sump capable of containing the acquired drilling waste and be situated at least 30 m from the normal high water mark of nearby water bodies.

Environment Canada requests that Dundee Precious Metal Inc. provide additional information on its planned trenching operations. In particular, Environment Canada requests that the distance of trenching locations from nearby water bodies and natural drainage areas, their dimensions, the method of conducting trenching operations, and the handling of excavated ground material be submitted for review. It is recommended that trenched areas be contoured to match the surrounding landscape upon completion of the field season.

Environment Canada reminds the proponent that land based drilling should not occur within 30 m of the high water mark of any water body. Waste water produced from drilling operations must be disposed of in such a manner that it will not enter any water body frequented by fish. If drill holes cannot accommodate this waste water, the water should be directed to an appropriate natural depression or man-made sump.

Environment Canada recommends the following conditions be applied throughout all stages of the project:

GENERAL

- The proponent shall not deposit, nor permit the deposit of any fuel, drill cuttings, chemicals, wastes, or sediment 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 other deleterious substance that results from the deposit of the deleterious substance, may enter any such water, is prohibited.

DRILLING

- Environment Canada would like to inform the proponent that the *Canadian Environmental Protection Act* has listed CaCl as a toxic substance. The proponent shall therefore ensure that if CaCl is used as a drill additive, all sumps containing CaCl are properly constructed and located in such a manner as to ensure that the contents will not enter any water body.
- Drilling additives or muds shall not be used in connection with holes drilled through lake ice unless they are re-circulated or contained such that they do not enter the water, or demonstrated to be non-toxic.
- For 'on-ice' drilling, return water released must be non-toxic, and not result in an increase in total suspended solids in the immediate receiving waters above the Canadian Council of Ministers of the Environment Guidelines for the Protection of Freshwater Aquatic Life (i.e., 10 mg/L for lakes with background levels under 100 mg/L, or 10% for those above 100 mg/L).
- If an artesian flow is encountered, the drill hole shall be immediately plugged and permanently sealed.

CAMPS

- The proponent shall not store materials on the surface ice of lakes or streams, except that which is for immediate use.
- Environment Canada recommends the use of an approved incinerator for the disposal of combustible wastes.
- The proponent shall ensure that any-non combustible waste is disposed of appropriately at an approved facility.
- Ashes produced from the incineration of combustible waste should be raked to remove any material that has not been incinerated (e.g., iron nails and tinfoil). The proponent shall ensure that this material is removed from the project area and disposed of appropriately at an approved facility.
- Any sumps, including those created for the disposal of drill cuttings, shall be located above the high water mark of any water body and in such a manner as to prevent the contents from entering any water body frequented by fish. Further, all sumps shall be backfilled upon completion of the field season and contoured to match the surrounding landscape.

FUEL STORAGE / SPILL CONTINGENCY / HAZARDOUS MATERIALS

- **All spills** are to be documented and reported to the 24-hour Spill Report Line at (867) 920-8130.
- All fuel caches shall be located above the high water mark of any water body. Further, EC recommends the use of secondary containment, such as self-supporting insta-berms, when storing barreled fuel on location rather than relying on natural depressions.
- The proponent shall ensure that any hazardous materials, including waste oil, receive proper treatment and disposal at an approved facility.

The Canadian Wildlife Service (CWS) of Environment Canada has reviewed the above-mentioned submission and makes the following comments and recommendations pursuant to the *Migratory Birds Convention Act* (the *Act*) and *Migratory Birds Regulations* (the *Regulations)*, and the *Species at Risk Act* (SARA).

- Section 6 (a) of the Migratory Birds Regulations states that no one shall disturb or destroy the nests or eggs of migratory birds. Therefore, CWS recommends that all activities be conducted outside the migratory bird breeding season, which extends from approximately May 15 to July 31. These dates are approximate, and if active nests (i.e.,nests containing

eggs or young) are encountered outside of these dates the proponent should avoid the area until nesting is complete (i.e., the young have left the vicinity of the nest).

- If activities are permitted to occur during the breeding season, CWS recommends that the proponent confirm there are no active nests (i.e., nests containing eggs or young) in the vicinity of their operations before activities commence. If active nests of migratory birds are discovered, the proponent should halt all activities until nesting is completed (i.e., the young have left the vicinity of the nest).

- In order to reduce disturbance to nesting birds, CWS recommends that aircraft used in conducting project activities maintain a flight altitude of at least 610 m during horizontal (point to point) flight.

- In order to reduce disturbance to resting, feeding, or moulting birds, CWS recommends that aircraft used in conducting project activities maintain a vertical distance of 1000 m and minimum horizontal distance of 1,500 m from any observed concentrations (flocks / groups) of birds.

- CWS recommends that camp waste be made inaccessible to wildlife at all times. Camp waste can attract predators of migratory birds (e.g., foxes and ravens) to an area if not disposed of properly. Incineration of camp waste is a recommended option.

- 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 waters or any area frequented by migratory birds.

- 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, but will not necessarily ensure that the proponent remains in compliance with the *Migratory Birds Convention Act* (the *Act*) and *Migratory Birds Regulations (*the *Regulations)*. The proponent must ensure they remain in compliance with the *Act* and *Regulations* during all phases and in all undertakings related to the project.

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, EC asks that species listed on other Schedules of SARA and under consideration for listing also be included in this type of assessment.

Species at Risk	Category of Concern	Schedule of SARA
Grizzly Bear	Special Concern	Pending
Wolverine (Western Population)	Special Concern	Pending
Peregrine Falcon (subspecies tundrius)	Special Concern	Schedule 3
Short-eared Owl	Special Concern	Schedule 3

Impacts to these species could be disturbance and attraction to operations.

Environment Canada recommends:

- The primary mitigation measure for each species should be avoidance. The proponent should avoid contact with or disturbance to each species.
- The proponent should consult with the Government of the Nunavut and appropriate status reports, recovery strategies, action plans, and management plans to identify other appropriate mitigation measures to minimize effects to these species from the project.
- The proponents should develop monitoring plans for each species in accordance with any applicable status reports, recovery strategies, action plans, and management plans and in consultation with Government of Nunavut and Environment Canada.

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 if you have any questions or comments with regards to the foregoing at (867) 975-4631 or by email via david.abernethy@ec.gc.ca.

Sincerely,

David W. Abernethy
Environmental Assessment Technician

cc. Colette Spagnuolo – Environmental Assessment / Contaminated Sites Specialist, Environment Canada, Iqaluit
Myra Robertson – Environmental Assessment Coordinator, Canadian Wildlife Service of Environment Canada, Yellowknife