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RE: NWB 2BE-MRY – Baffinland Iron Mines Corp. – Mary River Project Renewal and Amendment Application

On behalf of Environment Canada (EC), I have reviewed the information submitted with 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*.

Baffinland Iron Mines Corp. is proposing to renew and amend their water license for the Mary River Project. Proposed amendments to the current license include:

- Increased water consumption to 475 m^3/day
- initiation of mineral exploration activities on Deposit #4;
- expansion of the existing camp to accommodate 100 people;
- land-based geotechnical investigations of mine-related infrastructure at Mary River, potential transportation routes, potential hydro and wind power sites (including the installation of a small test wind tower), and port-related facilities at Milne Inlet and Steensby Inlet. This includes investigations of numerous water crossings along the proposed transportation routes including drilling within 30 m of the high water mark where investigations of found conditions for bridge abutments are required.
- on-ice geotechnical investigations of port-related facilities at Milne Inlet and Steensby Inlet; and
- temporary installation of fly-camps at Milne Inlet, Steensby Inlet and Deposit #4 to accommodate 8-12 people.

Environment Canada notes that the proponent is only applying for a Type B license under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*. Schedule 4 of the Northwest Territories Waters Regulations, Licensing Criteria for Industrial Undertakings, applicable to the Nunavut Water and Surface Rights Tribunal Act, states that the use of 300 m^3 or more freshwater per day requires a Type A license. Given the scope of work, and as per the Northwest Territories Waters Regulations, EC is of the opinion that this project will require a Type A license.

Baffinland makes reference to potential hydro and wind power sites and port-related facilities. EC requests further information in relation to these proposed activities of the Mary River Project (including but not limited to location, size, timelines…)

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

Drilling

- The proponent shall not deposit, nor permit the deposit of any fuel, chemicals, drill cuttings, 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.
- The *Canadian Environmental Protection Act* lists 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.

Section 19 of the submitted Supplementary Questionnaire states that diamond drilling will occur within 30 meters of freshwater sources.

- Land based drilling should not occur within 30 m of the high water mark of any water body. If drilling within 30 m of the high water mark is required to investigate the founding conditions for water crossings requiring bridges, EC recommends that all drill waste be directed to a properly constructed sump located above the high water mark of any water body and in such a manner as to prevent the drill waste from entering any water body frequented by fish. Once available, EC recommends that the proponent submit detailed maps indicating the locations where drilling within 30 m of the high water mark occurred.
- If an artesian flow is encountered, the drill hole shall be immediately plugged and permanently sealed.
- 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. Further, for "on-ice" drilling where drill additives are not being used, 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 for the Environment Guidelines for the Protection of Freshwater Aquatic Life (i.e. 10mg/L for lakes with background levels under 100 mg/L, or 10% for those above 100mg/L).
- Any sumps created for the disposal of drill wastes 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.

Camp

- The proponent shall not store materials on the surface ice of lakes or streams, except that which is for immediate use.
- Given the increased camp size and proposed duration of the license, EC recommends that the proponent be directed to implement a wastewater treatment system that is more suitable to the size and duration of the camp, such as a small, pre-package wastewater treatment system.
- Any sumps created for the disposal of camp sewage and grey water 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.
- The application currently states that a "high efficiency incinerator constructed of thick plate steel" is used on site. Environment Canada requires further information regarding the incinerator, including the manufacturing, make and model of the incinerator. The proponent shall ensure that

all non-combustible and hazardous wastes, including waste oil, receive proper treatment and disposal at an approved facility.

- Used oil and waste fuel are a major concern as a source of environmental contamination. EC recommends that waste oil be properly disposed of and not be used to fuel the camp incinerator.
- Used absorbent materials, oily or greasy rags, and equipment servicing wastes (such as used engine oil, antifreeze, hydraulic oil, lead acid batteries, brake fluid and other lubricants) should be safely stored and transported in sealed containers and safely transported to a facility that is authorized for the treatment and disposal of industrial hazardous wastes.
- EC recommends that a Waste Management Plan be consider and include:
    - Purchasing policies that focus on reduced packaging,
    - On-site diversion and segregation programs (i.e. the separation of non-food waste items suitable for storage and subsequent transport and disposal or recycling).
    - If incineration is required, ensure diligent operation and maintenance of the incineration device and ensure appropriate training is provided to the personnel operating and maintaining the incinerator.

  The objective should be to ensure that only food waste and food-contaminated waste is burned (the use of paper, cardboard and clean wood as supplementary fuel is acceptable).

Fuel Storage and Spill Contingency Planning

EC recommends that the project's Spill Contingency Plan be revised. Baffinland must ensure that all information included in the Plan is current. The volumes of fuel resources required for project activities are not consistent with those presented in section 25 of the Supplementary Questionnaire.

- Environment Canada notes that the proponent proposes to store 18,000 L of diesel and Jet-A fuel at the Mary River camp. Given the large volume of fuel, EC recommends that fuel storage tanks capable of meeting the requirements of the CCME guidance document "Aboveground Storage Tank Systems for Petroleum and Allied Petroleum Products" (2003) be installed at the main campsite. Consolidating the fuel into larger tanks will help minimize the risk associated with the use of approximately 2000 individual drums of fuel.
- 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.
- **All spills** shall be documented and reported to the 24 hour Spill Line at (867) 920-8130.
- The Spill Response Plan currently lists Colette Spagnuolo as the appropriate contact person for Environment Canada. The Plan should be revised to list Jim Noble as the EC contact in the event of a spill. Mr. Noble can be reached at (867) 975-4644. Alternately, EC operates a 24-hour pager monitored by Emergencies and Enforcement personnel, which can be reached at (867) 920-5131.
- Preventative measures should be included in the Spill Contingency Plan. Drip pans, or other similar preventative measures, should be used when refueling equipment on site.
- EC recommends that copies of Material Safety Data Sheets for all hazardous materials to be used for project activities be appended to the Spill Contingency Plan.

Abandonment and Restoration Plan

- The Abandonment and Restoration Plan makes reference to a "closure landfill". Environment Canada recommends that additional details regarding this proposed landfill be obtained from the proponent prior to the approval of the Plan.
- The Abandonment and Restoration Plan currently states that at final closure, roads will be inspected to ensure that they are physically stable. Environment Canada recommends that upon final closure of the site, the existing roads be scarified and that all culverts, bridges and other water crossings be removed such that natural hydrology is returned.
- The Plan currently states a one-time follow-up inspection will be completed upon final closure to ensure that conditions are stable. Environment Canada recommends that decisions regarding monitoring not be made until specific details regarding potential residual contamination and remaining infrastructure (i.e. closure landfill) are available.

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, Environment Canada 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, Environment Canada 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 in the area until nesting is completed (i.e. the young have left the vicinity of the nest).
- In order to reduce disturbance to nesting birds, Environment Canada recommends that aircraft used in conducting project activities maintain a flight altitude of at least 610 m during horizontal (point to point) flight during the nesting season.
- In order to reduce disturbance to resting, feeding, or moulting birds, Environment Canada recommends that aircraft used in conducting project activities maintain a vertical distance of 1000 m and minimum horizontal distance of 1500 m from any observed concentrations (flocks / groups) of birds.
- Environment Canada 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.

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, Environment Canada asks that species listed on other Schedules of SARA and under consideration for listing also be included in this type of assessment. This recommendation for best practice includes all species designated as at risk by COSEWIC (Committee on the Status of Endangered Wildlife in Canada).

Species at Risk that may be encountered	COSEWIC Designation	Schedule of SARA	Government Organization with Expertise on Species
Peregrine Falcon (subspecies tundrius)	Special Concern	Schedule 3	Government of Nunavut
Wolverine (Western Population)	Special Concern	Pending	Government of Nunavut

Impacts could be disturbance and attraction to operations.

Environment Canada recommends:

- Species at Risk that could be encountered should be identified and any potential adverse effects noted. Refer to the Species at Risk registry at www.sararegistry.gc.ca for information on specific species.
- If Species at Risk are encountered, the primary mitigation measure should be avoidance. The proponent should avoid contact with or disturbance to each species.
- The proponent should consult with the Government of 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 proponent should record the locations and frequency of any observations of Species at Risk and note any actions taken to avoid contact or disturbance to the species.

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) 975-4631 or by email at cindy.parker@ec.gc.ca.

Yours truly,

Original signed by

Cindy Parker Environmental Assessment Technician

cc: (Colette Spagnuolo Environmental Assessment/Contaminated Site Specialist, Environment Canada,Iqaluit)