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Re: Technical Review of Application for NLCA 12.10.2(b) Exception and Type B Water licence for pre-development work associated with Baffinland Iron Ore Corporation's Mary River Project (NIRB: 08MN053).

Environment Canada (EC) would like to thank the Nunavut Impact Review Board (NIRB) and Nunavut Water Board for the opportunity to comment on Baffinland's NLCA 12.10.2(b) and Type B water licence applications; we hope that these comments and recommendations are useful.

Further EC appreciates that the proponent responded to the input that parties provided regarding Baffinland's 2011 pre development work application. EC is pleased to see that the 2012 workplan has been scaled back to focus on staging and related activities.

General Comments:

1. EC does not consider premeditated bulk fuel storage on barges in landfast ice to be a best practice. The freeze-in storage of fuel in this manner presents a higher degree of risk of accidents and could result in significant negative environmental effects should the integrity of a barge's tanks be compromised by the surrounding ice. As well, fuel barges are designed, licensed and regulated to transport fuel, not to be frozen in as long-term bulk storage facilities.

   However, if freezing in a fuel barge is unavoidable the proponent should ensure that comparable safeguards are in place as would be required if the fuel was to be stored on land. More specifically the proponent should ensure that: secondary containment will be in place; a spill contingency plan has been developed; and appropriate spill response equipment will be on hand. Furthermore it is incumbent upon the proponent to ensure that the vessel is appropriate for the purpose and that the site selected for anchoring the barge is suitable such that the spring breakup of the ice is predictable (i.e. the ice and current regimes are understood).

2. While EC understands that Shipboard Oil Pollution Emergency Plans (SOPEPs) are the responsibility of the ship operators, EC recommends that the proponent ensure that the SOPEPs

applicable to the overwintering fuel vessel(s) cover the conditions and risks the vessel is likely to encounter.

Specific Comments:

1. Baffinland's 2012 Work Plan involves undertaking activities that will create new areas of disturbance at Milne Inlet (up to 4 ha), the Mine Site (up to 3 ha) and Steensby Inlet (up to 20 ha). It is anticipated that activities may commence as early as May 2012 and will be completed by October 2012.

   Section 6 (a) of the *Migratory Birds Regulations* states that no one shall disturb or destroy the nests or eggs of migratory birds.

   The inadvertent, though reasonably predictable, disturbance or destruction of migratory bird nests and eggs by activities such as clearing vegetation, is known as "incidental take". Under the *Migratory Birds Convention Act, 1994* and associated regulations, EC cannot issue a permit to authorize the disturbance or destruction of nests in circumstances of incidental take. Proponents are thus responsible for implementing appropriate mitigative measures to ensure that they comply with the legislation and regulations and minimize the risk to migratory birds.

   EC recommends the following measures to help ensure that the Proponent remains in compliance with the *Migratory Bird Regulations:*

   - Ensure that you are aware of and understand the relevant provisions of the *Migratory Birds Convention Act, 1994* and the *Migratory Bird Regulations*;
   - Avoid engaging in potentially destructive or disruptive activities during key periods - including the breeding period - in order to reduce the risk of nest destruction or disturbance;
   - Determine the presence of migratory birds and their nests before activities are carried out using a scientifically sound approach.

   For further information on EC's approach to managing incidental take please visit the following website:
   http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=1AC34678-1

   In the northern Arctic region of the Northwest Territories and Nunavut, migratory birds may be found incubating eggs from May 31st until August 4th, and young birds can be present in the nest until August 28th.

   On Page 22 of the 2012 Work Plan, Baffinland indicated they will conduct nest searches prior to conducting activities and will avoid known nests or nesting areas. EC recommends that all crew members should be trained on how to recognize signs that a bird might be nesting in the area. If an active nest is found, the area should be avoided until nesting is completed (i.e. the young have left the vicinity of the nest).

   An appropriate sized buffer should be used to prevent flushing nesting birds. Flushing birds from the nest can increase the risk of predation of the eggs or young, or may cause the parent bird to abandon its nest. The following setback distances are recommended to minimize disturbance to nests for different bird groups nesting in tundra habitat (see footnotes for adjustments to setbacks for sensitive species and species at risk):

Species Group	Pedestrians /ATVs (m)	Roads / Construction / Industrial Activities (m)

Songbirds	30	100
Shorebirds	50[a]	100[a]
Terns/Gulls	200[b]	300[b]
Ducks	100	150
Geese	300	500
Swans/Loons/Cranes	500	750

[a] If project activities are within the breeding ranges of American Golden Plover or Ruddy Turnstone, these setbacks should be increased to 150 m for Pedestrians/ATVs and 300 m for Roads/Construction/Industrial Activities respectively. If project activities are within the breeding ranges of Black-bellied Plover, Whimbrel or Redknot (a Species at Risk), these setbacks should be increased to 300m for Pedestrians/ATVs and 500m for Roads/Construction/Industrial Activities. If field crew are trained in the identification of these species then these higher setbacks need only apply to these more sensitive species, and lower setbacks can be used for the remaining shorebird species. In areas where several species are nesting in proximity, setbacks for the most sensitive species should be used.

[b] If project activities are in proximity to breeding colonies of Ross's Gull (a Species at Risk) these setbacks should be increased to 500m Pedestrians/ATVs and 750m for Roads/Construction/Industrial Activities. For Ivory Gull (a Species at Risk) a buffer of 2 km around breeding colonies should be used for all activities.

2. 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 will often also eat eggs and young birds in the area. These predators can have significant negative effects on the local bird populations.

   Several inconsistencies were noted in sections of Baffinland's 2012 Work Plan and Waste Management Plan, for example:

   - Page 8 of the 2012 Work Plan states that "Solid waste generated at Steensby will be stored temporarily at the Steensby site and transported off-site as required for disposal" but Section 5.3.1.3 - Atmospheric Environment of 2012 Work Plan suggests that waste will be treated on-site when it includes incineration of domestic waste as a potential impact on air quality at Steensby Inlet; These two sections conflict and there is no mention of installing an incinerator at Steensby for the 2012 program.

   EC suggests that Baffinland clarify the following and update the waste management plan accordingly:
   - What types of containers/facilities will be used to store domestic wastes, food wastes, non-combustible solid wastes, and waste oils/lubricants at the Steensby site before being shipped off-site?
   - By what means, how often and where will wastes be shipped for processing?
   - Will an incinerator be installed at the Steensby site for the 2012 program?

3. The waste management plan (document # H337697-7000-07-126-0001) that was referred to in Attachment 8 (index of management plans) is not up-to-date with the revised 2012 Work Plan as it still refers to a floating camp at Steensby Inlet in section 5.1.3 (pg. 12) of this document. The waste management plan should be updated to reflect this.

4. EC would like to take this opportunity to highlight that 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.

5. The proponent should also note that marine birds are vulnerable to oil spills and to pollution of their feeding areas. EC recommends that the proponent consider what steps would be taken to protect wildlife (including marine birds) in the event of a spill. This information could be incorporated into an existing emergency response and/or spill response plan. This could include a list of measures to

be used and the equipment available to keep wildlife out of spill contaminated areas; a listing of measures that would be taken if animals come in contact with the spill; and a framework of when such procedures should be used. Having this information outlined ahead of time not only benefits wildlife, but also gives clear direction to the field crew on what to do in a spill situation if wildlife is nearby.

6. Page 22 of the 2012 Work Plan description states that, to the extent possible, Baffinland will develop appropriate aircraft approach and departure flight paths to mitigate indirect habitat loss from aircraft disturbance. EC notes that such flight paths have not yet been developed and are not specified in the 2012 Work Plan description.

   In order to reduce aircraft disturbance to migratory birds, EC recommends the following:
   - Fly at times when few birds are present (e.g., early spring, late fall, winter)
   - If flights cannot be scheduled as suggested above, flight paths should be planed to 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 1,100 m (3,500 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.

7. 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 project effects, adverse effects on listed wildlife species and on their critical habitat must be identified; measures must be taken to avoid or lessen those effects; and the effects must be monitored. This section applies to all species listed on Schedule 1 of SARA. However, as a matter of best practice, EC 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 and attraction to operations.

Terrestrial Species at Risk [1]	COSEWIC Designation	Schedule of SARA	Government Organization with Primary Management Responsibility [2]
Ivory Gull	Endangered	Schedule 1	EC
Ross's Gull	Threatened	Schedule 1	EC
Harlequin Duck (Eastern population)	Special Concern	Schedule 1	EC
Peregrine Falcon (*tundrius* subspecies)	Special Concern (*anatum-tundrius* complex[3])	Pending	Government of Nunavut

Short-eared Owl	Special Concern	Pending	Government of Nunavut
Red Knot (*rufa* subspecies)	Endangered	Pending	EC
Red Knot (*islandica* subspecies)	Special Concern	Pending	EC
Polar Bear	Special Concern	Schedule 1	Government of Nunavut
Wolverine (Western population)	Special Concern	Pending	Government of Nunavut

1 The Department of Fisheries and Oceans has responsibility for aquatic species.
2 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.
3 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 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. At 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.

8. 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. EC 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.

9. 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.

10. If incineration is to be used as a waste management option, the Proponent should follow the guidance on appropriate equipment and best management practices provided in the EC Technical Document for Batch Waste Incineration available at:
http://www.ec.gc.ca/gdd-mw/default.asp?lang=En&n=F53EDE13-1.

11. **Hazardous Materials Management**
Under Section 4.2, EC notes that up to 3,000 tonnes of ammonium nitrate will be stored in 1 tonne tote bags placed within seacan containers. As a best management practice, EC recommends the seacans containing ammonium nitrate be placed within secondary containment, such as self-supporting insta-berms, to ensure no escape of ammonium nitrate in the event a seacan is punctured or tipped over.

12. **Baseline Sampling**
As indicated in Section 6.1 of the workplan, Baffinland intends to collect additional surface water and sediment quality baseline data to inform future aquatic effects monitoring design. EC is pleased that the reduced scale of pre-development works will allow the Proponent to collect more baseline water and sediment quality data over the next 2 field seasons. In particular, EC encourages Baffinland to take advantage of this opportunity to select and sample reference sites in the Project area, including identifying and sampling reference sites that will be compatible with each anticipated point of discharge subject to the Metal Mining Effluent Regulations. To that end, since marine discharges are expected during the life of the project, EC recommends the Proponent expand its baseline water and sediment quality collection to the marine environment. Furthermore EC encourages the proponent to take advantage of the next two field seasons to strengthen their baseline data along the two transportation corridors. As noted in earlier submissions, EC encourages the proponent to intensify sampling along the railway and road in locations that are outside the influence of proposed camps. The purpose of this sampling is to characterize the natural variability of water quality parameters so impacts associated with the transportation corridors can be identified when construction and operation activities commence. As always, EC is willing to review the Proponent's sampling plans as they become available.

13. Section 3.2.1.6 of the Emergency Response and Spill Plan indicates that if a persistent interruption in sewage disposal arises due to plant inoperability "an emergency or alternate disposal plan will be developed in consultation with applicable government agencies". EC suggests that this plan should be developed ahead of time to ensure that back-up procedures are available for implementation when needed.

If you require clarification of any of the above, please contact Mark Dahl at (204) 983 4815 or via email at mark.dahl@ec.gc.ca.

Sincerely,

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Environment Canada Mary River Review Team