Environment Canada **Environnement Canada**

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18 October 2012

EC file: 4704 004 005
NWB file: 2BE-CHI0813

Phyllis Beaulieu
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Gjoa Haven, NU X0B 1J0

Via email: licensing@nunavutwaterboard.org

RE: 120918: 2BE-CHI0813 Renewal Application Peregrine Diamonds Ltd. – Qikiqtani Region

Environment Canada (EC) has reviewed the above-mentioned renewal application submitted by Peregrine Diamonds Ltd. (Peregrine Diamonds) to the Nunavut Water Board (NWB). The following specialist advice has been provided pursuant to the *Canadian Environmental Protection Act 1999*, the pollution prevention provisions of the *Fisheries Act*, the *Migratory Birds Convention Act*, and the *Species at Risk Act.*

Peregrine Diamonds is applying to the NWB for the renewal and amendment of Type B water license 2BE-CHI0813 for its Chidliak Project. The renewal will allow continued exploration activities and the previously permitted bulk sample program. Five adjustments to the project components are submitted with the renewal application. They include an additional water source for drilling, use of approved equipment to transport kimberlite bags off site and bring fuel to site, an additional winter airstrip, and additional options for bore hole diameters.

Based on a review of the proposed renewal, EC provides the comments previously submitted to the Nunavut Impact Review Board for the Part 4 Screening of this project (as attached). EC would like to notify the proponent that the status and listing of certain species at risk present in the project area have changed. The following table has the most current information for the species at risk that may be found in the area, and updated information on the Red Knot is below.

Terrestrial Species at Risk [1]	**COSEWIC Designation**	**Schedule of SARA**	**Government Organization with Primary Management Responsibility** [2]
Ivory Gull	Endangered	Schedule 1	EC
Harlequin Duck (Eastern population)	Special Concern	Schedule 1	EC
Peregrine Falcon	Special Concern (*anatum-tundrius* complex[3])	Schedule 1	Government of Nunavut
Red Knot (*rufa* subspecies)	Endangered	Schedule 1	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* and *tundrius* subspecies of Peregrine Falcon were reassessed by COSEWIC in 2007 and combined into one subpopulation complex. This subpopulation complex was assessed by COSEWIC as Special Concern, and was added to Schedule 1 of SARA in July 2012.

- EC notes that the Red Knot (*rufa* subspcies) (a shorebird) was designated as Endangered by COSEWIC in April 2007. The Red Knot (*rufa* subspecies) breeding range overlaps with the location of the proposed project area. Although the major threats to Red Knot relate to habitat degradation in the wintering areas and decreases in food resources during spring migration, the proponent should ensure that extra precautions are taken to avoid any disturbance to the Red Knot or its habitat during the breeding season. Red Knots nest on barren habitats (often less than 5% vegetation) such as windswept ridges, slopes or plateaus. Nest sites are usually in dry, south-facing locations, and may be located near wetlands or lake edges, where the young are led after hatching. Nests are simple scrapes on the ground in small patches of vegetation. Nesting will occur in June with hatching in early July. If an active Red Knot nest is encountered during project activities, or observations of Red Knot in the area suggest that a nest could be nearby, the proponent should avoid all activities in the area until nesting is complete (i.e., likely only resume activities in the area until after mid-July).

If there are any changes to the 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.

Regards,

Paula C. Smith
Environmental Assessment Coordinator

cc: Carey Ogilvie (Head, Environmental Assessment-North, EPO, Yellowknife, NT)
James Hodson (Environmental Assessment Coordinator, CWS, Yellowknife, NT)

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25 November 2011

EC file: 4704 004 005
NIRB file: 11EA050

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Via email: info@nirb.ca

RE: Notice of Part 4 Screening for Peregrine Diamonds Ltd's "Bulk Sample at Chidliak" project proposal

Environment Canada (EC) has reviewed the information submitted with the above-mentioned project proposal as submitted to the Nunavut Impact Review Board (NIRB). 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*.

Peregrine Diamonds Ltd. is proposing to complete a bulk sample program at their Chidliak project, approximately 75 km north of Iqaluit and 133 km east of Pangnirtung. The proponent is proposing to amend its existing Aboriginal Affairs and Northern Development Canada land use permit (N2008C0005) to allow for a bulk sample program to occur between December 2011 and spring 2012 at five areas of interest. Proposed project activities include a 600 tonne bulk sample, movement to site and use of a large-diameter reverse-circulation drill to collect bulk sample materials, movement to site and use of heavy equipment, expansion of the existing Discovery camp from 24 to 40 people, establishment of a new 30-person camp, and expansion of the existing 3.6 km winter trail network by approximately 36 km.

Upon review of the supporting documents, EC provides the following comments and recommendations for the NIRB'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

- Land-based drilling should not occur within 30 m of the high water mark of any water body.

- 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.
- EC notes that ~200 tonnes of drill waste will be generated from the bulk sampling program. The *Bulk Sampling Monitoring Plan* suggests 3 possible disposal locations for drill waste (i.e. CH-6 basin, CH-7 basin, flat plateau). Given the lack of permanent containment offered by the flat plateau, EC does not recommend disposal of drill cuttings in this area. Consistent with our standard advice, EC recommends the Proponent limit drill cutting disposal to properly constructed sumps or containment areas.
- The addition of lime to the sumps or the use of other suitable treatment measures to neutralize acids and precipitate metals should be considered where appropriate.
- The proponent shall not erect camps or store materials on the surface ice of lakes or streams, except that which is for immediate use.
- Chemical additives or drilling muds used in connection with this drilling program shall be disposed of such that they do not enter any water body either by surface or ground water flows.
- Regardless of the type of drilling conducted, the following conditions will apply:
    - Drilling wastes from land-based drilling should be disposed of in a sump such that they do not enter any body of water.
    - 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 immediately. EC requests that, if encountered, coordinates and depth of artesian flows be provided to the NWB.
- EC 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 ($CaCl_2$) 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 and all sumps are to be located a sufficient distance from the high water mark of any water body and are constructed such that the contents do not migrate out from the sump.

Water Quality

- EC understands from the supporting information for the proposal that the Proponent plans to undertake baseline water quality sampling this summer. Given the advanced stage of this project (i.e., 2nd bulk sampling program), EC recommends the Proponent consider selecting some reference sites for this project and include reference site sampling as part of their freshwater sampling plan for the upcoming field season. Collection of such information early in the process will allow for a more robust study design for detecting project-related impacts going forward, should the project proceed to development. EC would be pleased to discuss sampling program details and provide feedback to the proponent.

Abandonment & Restoration Plan

- In the Plan the proponent states that there is a potential for on-site burning of non-reusable items. In principal, EC does not encourage the open burning of combustible waste as a means of disposal. As a best practice, EC recommends the Proponent pack their supplies with a view to reduce the amount of combustible waste requiring this disposal method. Further, before employing open burning for disposal of any wastes EC recommends the proponent heed the following guidance:
    - Solid wastes that are conditionally suitable for open burning are paper products, paperboard packaging and untreated wood. Plywood, painted wood or other treated wood should not be disposed of in this manner. For reference, below is a link to the Nunavut Municipal Open Burning Policy: http://www.gov.nu.ca/env/Open%20burning.pdf
      and below is a link to information from EC regarding open burning:
    - http://www.ec.gc.ca/gdd-mw/684B44DD-5780-4F73-BC58-A97E31A19EDC/COM1170_Open_Burning_Brochure_e_v6_for%20web.pdf

Spill Contingency Planning/Fuel Management

- Under Contact List – Spill Response/Assistance, EC's contact information should be updated to: EC Inspector, (867)975-4644.
- 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.
- 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.
- Please note the new CEPA *Storage Tank System for Petroleum Products and Allied Petroleum Products Regulations* that came into force on June 12, 2008. These regulations apply to both outside, aboveground and underground storage tank systems (including the piping and other tank associated equipment) under federal jurisdiction containing petroleum and allied petroleum products that have a capacity greater than 230 litres. This includes tanks located on federal or Aboriginal lands. Exceptions are pressurized tanks, mobile tanks, tanks regulated by the National Energy Board, and outdoor, aboveground storage tank systems that have a total combined capacity of 2500 litres or less and are connected to a heating appliance or emergency generator. All storage tank system owners must identify their tank systems to EC and installation of new systems must comply with the regulation's design requirements. Further information on these regulations can be found at www.ec.gc.ca/st-rs.

Transportation

- The proponent states that transportation surrounding the core-drilling programmes will be via equipment travelling over snow-covered and groomed winter trails rather than helicopters. EC recommends that travel should only be conducted on frozen, snow packed ground. Transport to drill sites should cease if early warming occurs, and/or if the program has not been completed by spring. Travel via tracked vehicles on soft ground may disturb the vegetative mat, compact and rut the soils and damage the permafrost areas. Off-road traffic activity should not occur outside of winter months. The duration of drilling activity should be kept as short as possible to minimize overall impact.
- In order to lessen the overall footprint of project activities, EC strongly urges the proponent and Boards to look at minimizing the width of transportation corridors used in association

with drilling activity. The creation of trails and access roads and camps impact the Arctic and subarctic environment: the vegetative mat may be damaged, soils may be compacted and permafrost may melt, resulting in subsidence and erosion.

Wildlife and Species at Risk

- The proposed area for the project is near or possibly overlaps the area of the Western Cumberland Sound Archipelago that has been identified as a Key Migratory Bird Site (See Figure 1 from Latour, P.B., Leger, J., Hines, J.E., Mallory, M.L., Mulders, D. L., Gilchrist, H.G., Smith, P.A., and Dickson, D.L. 2008. Key migratory bird terrestrial habitat sites in the Northwest Territories and Nunavut (3rd edition). Canadian Wildlife Service Occasional Paper no. 114.). This site is an important breeding area for Common Eiders, Black Guillemots, and Iceland Gulls. Several thousand Common Eiders also concentrate along the coasts and fiords in August and September. Birds are particularly sensitive to disturbance at these times. The proponent should avoid activities during June to September in the area identified as the Key Migratory Bird Site. This includes ensuring no low-level flights over this area at the times when birds are present.
- Section 6 (a) of the *Migratory Birds Regulations* states that no one shall disturb or destroy the nests or eggs of migratory birds. The best mitigation measure to ensure compliance is to conduct activities with a risk of disturbing or destroying nests or eggs outside of the migratory bird nesting season. High risk activities include disturbance of large amounts of habitat during the nesting season or conducting activities in areas with large concentrations of nesting birds.
- Other mitigation measures may help reduce the risk of accidental disturbance or destruction of nests or eggs during the nesting season, but will not necessarily completely eliminate the risk. Flushing nesting birds also increases the risk of predation of the eggs or young, or may cause the parent bird to abandon its nest. If project activities are conducted during the nesting season, areas should be checked for nests before work begins and 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).
- In the northern Arctic region of the Northwest Territories and Nunavut, migratory birds may be found incubating eggs from May 31 until August 4, and young birds can be present in the nest until August 28.
- 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.
- 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 and attraction to operations.

Terrestrial Species at Risk	COSEWIC Designation	Schedule of SARA	Government Organization with Primary Management Responsibility
Harlequin Duck (Eastern population)	Special Concern	Schedule 1	EC
Peregrine Falcon (*anatum-tundrius* complex)	Special Concern	Schedule 1 (*anatum*) Schedule 3 (*tundrius)*	Government of Nunavut
Polar Bear	Special Concern	Pending	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 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. Thus, for species within their responsibility, the Territorial Government is best suited to provide detailed advice and information on potential adverse effects, mitigation measures, and monitoring.

- 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. 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.
- Harlequin Ducks spend most of the year in coastal marine environments, but they move inland each spring to breed along fast-flowing turbulent streams. Their nests are usually built on the ground along the stream banks. Harlequin Ducks are tolerant of moderate levels of disturbance, but they will abandon a site when the disturbance becomes chronic. Disturbance events can include boating and chronic human presence. If a Harlequin Duck nest or a hen with ducklings is encountered, the proponent should avoid activities in the area until nesting is complete and the brood has moved beyond the range of disturbance.
- Observations of Harlequin Ducks should be reported to the Canadian Wildlife Service of Environment Canada through the NWT/NU Bird Checklist program.

  NWT/NU Bird Checklist Survey
  Canadian Wildlife Service, Environment Canada
  5019 - 52 Street, 4th Floor
  P.O. Box 2310
  Yellowknife NT, X1A 2P7
  Phone: 867.669.4773
  Email: NWTChecklist@ec.gc.ca

  Blank checklist survey forms are available at:
  http://www.ec.gc.ca/reom-mbs/default.asp?lang=En&n=D19D8726-1
- 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.

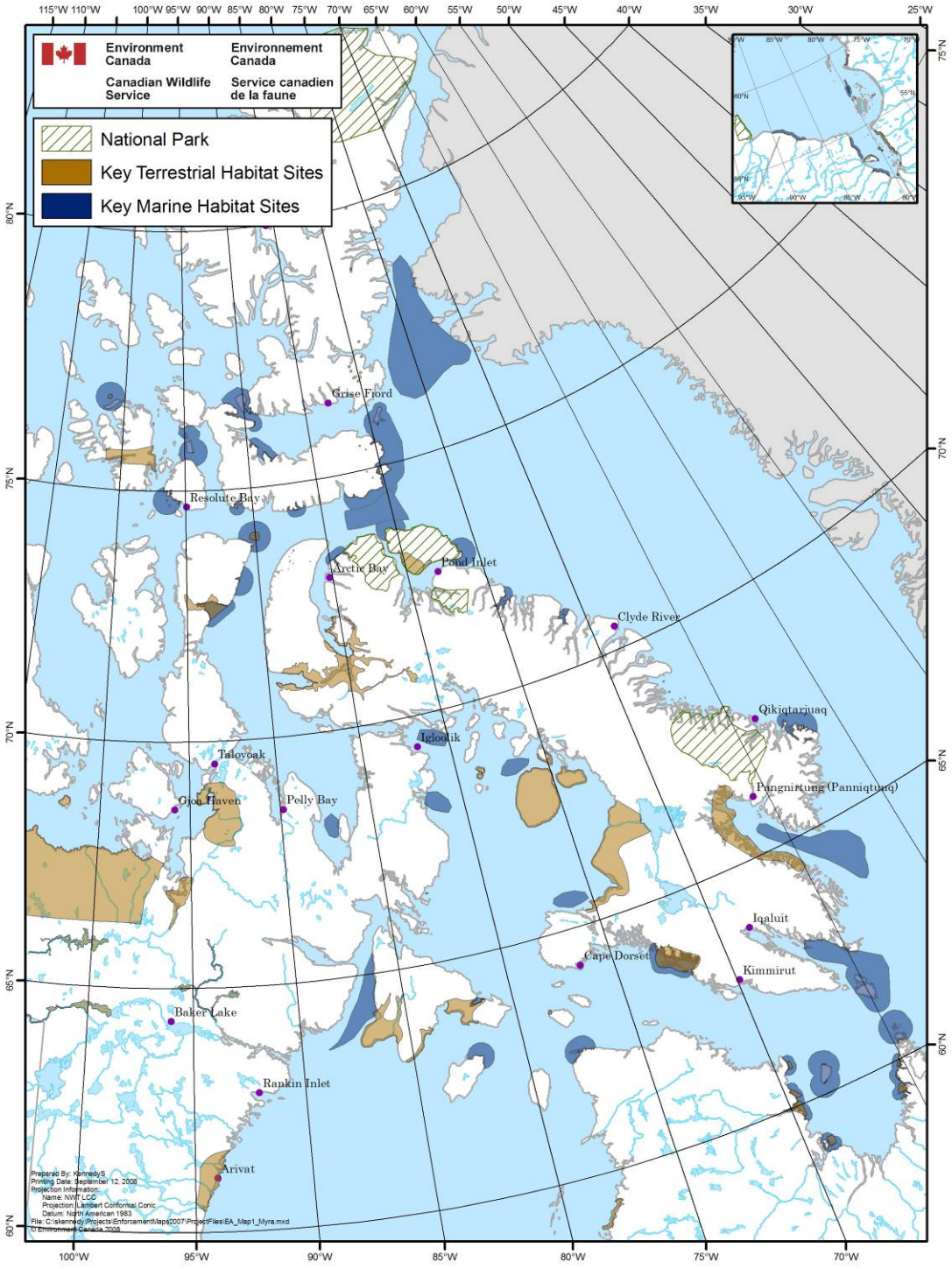

Figure 1. Key Migratory Bird Habitat Sites in the Western and Central Canadian Arctic.

EC does not have any additional comments at this time regarding this amendment, beyond those noted above, so long as the proponent is in compliance with the conditions of their existing land use permit, N2008C0005. Comments previously submitted on behalf of EC regarding this project would still apply. If there are any further changes to the 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.

Yours truly,

Paula C. Smith
Environmental Assessment Coordinator

cc: Carey Ogilvie (Head, Environmental Assessment-North, EPO, Yellowknife, NT)
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