Environment Canada Environnement Canada

Environmental Assessment North
Environmental Protection Operations (EPO)
Qimugjuk Building 969 P.O. Box 1870
Iqaluit, NU X0A 0H0
Tel: (867) 975-4631
Fax: (867) 975-4645

23 March 2012

EC file:
NWB file: 2BE-MVP----

Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Via email: licensing@nunavutwaterboard.org

RE: 1200223 2BE-MVP---- New Application – Vale Exploration Canada Inc. – Melville Project – Qikiptani and Kivalliq Regions

Environment Canada (EC) has reviewed the information regarding the above-mentioned water license 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*.

Vale Exploration Canada Inc. (Vale) is applying to the NWB for a new Type B water licence to support exploration activities at their Melville Project, located approximately 172 km northwest of Repulse Bay. Proposed project activities include a prospecting, geophysics and drilling program from 2012 through 2017; and the establishment of a 30-person camp potentially at the Mackar Inlet/CAM-5 Dew Line site if permission is obtained for its use. Operations are proposed to initially occur during summer months with the potential for future winter drilling programs depending on prospecting results.

Based on a review of the license application, 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.

- 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.
- 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.
- 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.
- All sumps, spill basins, and fuel caches should be located in such a manner as to ensure that their contents do not enter any water body, are to backfilled, and re-contoured to match the surrounding landscape when they are no longer required.

Waste Disposal

- The proponent states in their Exploration/Remote Camp Supplementary Questionnaire that sewage will be disposed of through Pacto toilets, incineration toilets or equivalent. Raw sewage has a high moisture content and low heat content that will increase operating costs dramatically and can lead to poor incinerator performance. It is unlikely that the sewage will be completely combusted and could lead to the release of pathogens into the environment. The high moisture materials can leak from the incinerator hearth leading to equipment damage and presenting health hazards to workers. Raw sewage should not be burned in batch incinerators that are typically used in the north. Raw sewage should only be burned in incineration equipment designed for this type of waste. If the proponent decides to pursue sewage sludge incineration, it should provide the Board with the design specifications of the incinerator and a letter from the manufacturer stating that this equipment is suitable for burning this type of waste.
- The burning of waste products releases numerous contaminants to the air, many of them persistent, bio-accumulative and toxic (e.g. polycyclic aromatic hydrocarbons - PAH's - heavy metals, chlorinated organics – dioxins and furans). These contaminants can result in harmful impacts to human and wildlife health through direct inhalation and they can also be deposited to land and water, where they bio-accumulate through food chains affecting wildlife and country foods. Therefore, burning should only be considered after all other alternatives for waste disposal have been explored and the devices used for incineration meet the emission limits established under the CCME Canada-wide Standards (CWS) for Dioxins and Furans and the CWS for Mercury Emissions. The Government of Canada, the Governments of the Northwest Territories, Nunavut and the Yukon are signatories to these standards and are required to implement them according to their respective jurisdictional responsibilities.
- EC recommends the use of an approved incinerator for the disposal of combustible camp wastes. EC has developed a Technical Document for Batch Waste Incineration, and is available at the following web link:
  http://www.ec.gc.ca/gdd-mw/default.asp?lang=En&n=F53EDE13-1
  The technical document provides information on appropriate incineration technologies, best management and operational practices, monitoring and reporting. This information should be

incorporated into an incineration management plan for the camp. EC would like the opportunity to review this plan prior to implementation.

- 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/default.asp?lang=En&n=684B44DD-1
- The proponent states that ash and unburned residue, waste oil, and bulky items/scrap material will be shipped off-site for disposal, EC suggests that confirmation and authorization be obtained from the intended community landfill (i.e., Repulse Bay) prior to shipment.
- 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 (odour-free to prevent animal attraction) and safely transported to a facility that is authorized for the treatment and disposal of industrial hazardous wastes.
- A waste manifest form must accompany all hazardous waste in transit and all parties will be properly registered as per the Environmental Protections Service (EPS) of the Department of Sustainable Development of the Government of Nunavut.

Spill Contingency Plan

- EC recommends that when a remote field camp is established, a map of the camp with marked locations of fuel storage sites and spill kits should be attached to the Spill Contingency Plan and be posted in an area visible and accessible to camp occupants.
- EC recommends the use of secondary containment, such as self-supporting insta-berms, for storage of all barreled fuel rather than relying on natural depressions to contain spills.
- 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.
- Spill kits, including shovels, barrels, absorbents, etc. should be readily available at all locations where fuel is being stored or transferred in order to provide immediate response in the event of a spill and should accommodate 110% of the capacity of the largest fuel storage container.
- 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 vicinity of 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 he 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 [1]	COSEWIC Designation	Schedule of SARA	Government Organization with Primary Management Responsibility [2]
Peregrine Falcon	Special Concern (*anatum-tundrius* complex[3])	Schedule 3 – Special Concern (*tundrius)*	Government of Nunavut
Short-eared Owl	Special Concern	Schedule 3	Government of Nunavut
Red Knot (*rufa* subspecies)	Endangered	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 *tundruis* 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. 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.

- Environment Canada 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).
- The Canadian Wildlife Service of Environment Canada is interested in observations of birds, especially observations of birds identified as Species at Risk (e.g. Red Knots). Observations can be reported 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.

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.

Yours truly,

Paula C. Smith
Environmental Assessment Coordinator

cc: Carey Ogilvie (Head, Environmental Assessment-North, EPO, Yellowknife, NT)
Allison Dunn (Sr. Environmental Assessment Coordinator, EPO, Iqaluit, NU)
James Hodson (Environmental Assessment Coordinator, CWS, Yellowknife, NT)
Ron Bujold (Environmental Assessment Officer, EPO, Yellowknife, NT)