



APPENDIX

Socio-Economic Comments

Archaeological Sites

Our site database indicates that no archaeological sites are recorded within the proposed study area. This however, does not preclude the presence of unidentified sites or cultural features as to this day no archaeological reconnaissance has ever been conducted in the areas proposed for explorations (Peter, Fox and Parker Lakes).

The project proposal puts forward geophysics activities, prospecting and on-land diamond drilling. The program is proposed to take place annually from May to November, 2016 through 2021.

CH would like to confirm that specific drill locations and associated layout locations be determined and archaeologically assessed ahead of the snow-covered season.

Activity and vehicle traffic during the snow-covered season may pose a threat to recorded and unrecorded archaeological resources.

The GN recommends, The Permittee shall have a professional archaeologist and/or palaeontologist perform the following Functions associated with the Types of Activities listed below or similar development activities:

Activity Types	Function
a) Large scale prospecting	Archaeological/Palaeontological Overview Assessment
b) Diamond drilling for exploration or geotechnical purpose or planning of linear disturbances	Archaeological/Palaeontological Overview Assessment and/or Inventory and Documentation and/ or Mitigation
c) Construction of linear disturbances, Extractive disturbances, Impounding disturbances and other land disturbance activities	Archaeological/Palaeontological Overview Assessment and/or Inventory and Documentation and/ or Mitigation

The above-mentioned activities require either a Nunavut Archaeologist Permit or a Nunavut Palaeontologist Permit.

The Government of Nunavut – Department of Culture and Heritage recommends that:

- (1) An overview assessment of the three exploration areas be conducted.
- (2) The archaeological permit and report for the proposed project be produced separately (not included with Meliadine for instance).
- (3) All land drill holes (including drill layout) and water-hose route be visually assessed by a qualified archaeologist prior to drilling (during the snow-free season).
- (4) All aircraft landing areas be visually inspected before landing or dropping any material as not to interfere with potential archaeological features.
- (5) The applicant provides details about the snow-covered travel routes that will be used for equipment transportation.

All archaeological and palaeontological sites in Nunavut are protected by law. The applicant must understand that it is their responsibility to ensure that no heritage resource sites are disturbed in the course of their activities. No person shall alter, or otherwise disturb an archaeological site, or remove any artifact from an archaeological site. Moreover, the building of inuksuit is not recommended.

Environmental and Human Health Comments

The Government of Nunavut (GN) has reviewed this project proposal and has serious concerns with portions of this multi-year exploration program. This Project spatially and temporally overlaps with critical calving and post calving caribou habitat, and the GN recommends prohibition on all development within calving grounds and key access corridors, with seasonal restrictions on activities within post-calving grounds. As such, the GN requests that the portions of the Parker Lake proposal that overlap core caribou calving grounds and the Caribou Protection Area (labelled Caribou “protection measure” on Proponent’s map) be omitted from the proposed Project (Please refer to Map 3).

The GN would like to acknowledge that each of the three proposed exploration areas are subject to the Provisions of Appendix H of the Keetwatin Regional Land Use Plan.

However, the GN is unable to conduct a review of potential impacts to wildlife as the Proponent has not provided a wildlife mitigation and monitoring plan.

The Proponent’s current application does not recognize the need to avoid the potential impacts of their operations on caribou calving grounds and they have not addressed key issues regarding caribou and caribou habitat.

Our detailed comments are as follows;

Qamanirjuaq Caribou Herd

Overview

The Parker Lake survey blocks spatially and temporally overlaps core calving and post-calving habitat of the Qamanirjuaq caribou herd. Current dates for Qamanirjuaq calving are June 9th – June 22nd with the post-calving period extending to July 3rd. The GN recommends removing the portion of the proposed Parker Lake project area that extends into core calving grounds (Please refer to Map 3).

For the portions of the Project spatially overlapping post-calving habitat of the Qamanirjuaq caribou herd, the GN recommends the seasonal restriction of project activities from approximately June 23 to July 3 when and where caribou are present. Portions of the Peter, Fox and Parker Lake exploration proposals are located within post-calving grounds (Please see Maps 1, 2, and 3).

Core habitat delineation is the product of multi-year Geographic Information System spatial analysis of collared caribou cows, monitoring data, and Inuit Qaujimajatuqangit. Scientific research (including telemetry) and Inuit Qaujimajatuqangit have clearly shown that barren

ground caribou annually and predictably use core calving and post-calving habitats, which offer spatial and temporal segregation from factors that may decrease survival, such as predation and industrial activities. Inuit Qaujimajatuqangit and the scientific monitoring of patterns of habitat use by caribou have supported the importance of critical calving and post-calving areas to the long-term survival of caribou and the maintenance of traditional lifestyles, including subsistence harvesting, that relies on these populations.

There is direct overlap with the proposed locations of exploration activities and important caribou calving and post-calving habitat for the Qamanirjuaq caribou population. It is the GN's position that there is no effective way to mitigate activities in calving grounds that would reduce the negative impacts to levels necessary to maintain viable healthy caribou populations. The GN considers that any form of development within core calving areas and key access corridors will represent an extreme high risk to the long-term health and productivity of migratory caribou populations.

Additionally, the GN would like the Proponent to provide an activity suspension plan which outlines the means for detecting concentrations of caribou, chain of commands for suspension of work, length in time to implement activity suspensions etc. Since, the Proponent did not give the specific dates for exploration/drill activities it is difficult to adequately assess the total impact to caribou. Depending on the time frame for exploration/drilling activities it is highly likely that the Proponent will encounter caribou cows and calves outside of the seasonal timing window mentioned above for post-calving areas. Therefore it is necessary for the Proponent to develop and provide an appropriate activity suspension plan so that reviewers can determine if the Proponent is prepared to deal with activity suspensions.

Background

Qamanirjuaq caribou are one of eight mainland migratory barren-ground caribou herds that migrate seasonally across the Northwest Territories, Nunavut, Manitoba and Saskatchewan. It is the largest of all the herds in Nunavut occupying more than 300,000 km² of range. This herd is harvested by several jurisdictions which utilize more than 15,000 caribou per year worth an estimated \$12 million dollars in Nunavut alone. Recent surveys have shown declining population trends since 2000 estimates similar to those seen currently in other herds. As land use activities increase to meet the growing needs of a natural resource based economy, the maintenance of viable wildlife populations with high sustainable yields will require responsible management by all interested parties

Project-specific Activities

The Project proposal states exploration activity will overlap the calving and post-calving periods where drill rigs, equipment, camp supplies and workers will travel from existing Meliadine facilities to field sites by helicopter from May to November. However, the specific time frames for each activity were not indicated. The Proponent also did not indicate how many crews would be operational at any one time, depending on the number of crews occupying any one area, a large amount of aerial traffic could be expected in each area for extended periods. Aircraft activities have been shown to affect wildlife such as caribou, muskoxen and birds in behaviour, development and reproductive success. However, by raising

flight altitudes, studies have shown that it can alleviate some of the negative effects. Therefore, the GN recommends that the following protection measures are taken to reduce aircraft disturbance on wildlife.

Unless there is a specific requirement for low level flights, aircraft activities should maintain a minimum altitude of 610 meters above ground level in places where there are occurrences of wildlife. In areas where there are observed large concentrations of birds, flight level is restricted to 1,000 meters vertical distance and 1,500 meters horizontal distance from the birds. As a good practice, it is recommended to avoid critical and sensitive wildlife areas such as calving grounds at all times by choosing alternate flight corridors. Please see attached map for the location of calving grounds.

Additional Details

The GN recommends that the Proponent resubmit their application to include a detailed 'Caribou Mitigation and Monitoring Plan.' At a minimum this document should include:

- Detailed descriptions of project activities, timeframes, duration and intensity, field site locations and flight paths with associated shape files.
- The identification of caribou use and caribou habitat within the proposed footprint of the activity and its associated areas of influence. Information for these can be obtained from the GN-DoE Wildlife Research Section.
- The identification of project overlaps with known areas of ecological significance and their associated timing windows (ex. caribou calving, post-calving grounds and migration routes).
- The identification of potential impacts the proposed activities might have on caribou and caribou habitat use.
- A description of how impacts including cumulative impacts, will be avoided and/or minimized (ex. relocating activities, following timing windows, mitigation measures etc.).
- A description as to the mechanisms involved in detecting caribou in and around project activities.
- An activity suspension plan, should the Proponent choose to implement operation suspensions as mitigation measures.

Development and caribou

Given the proximity of the Proponent's activities to the Qamanirjuaq caribou herd calving grounds and the direct overlap of post calving grounds, the GN would like to inform the Proponent that any future resulting development that may lead to disturbances on calving grounds will have consequential long-term cumulative impacts to the Qamanirjuaq caribou herd. It is the position of the jurisdictions of NWT and NU and associated wildlife co-management partners that mitigation is not possible in such sensitive and critical areas and it is for these reasons that the GN prohibit any type of activity in caribou calving and key access corridors which are crucial to caribou productivity and ultimately the herds survival. The GN encourages the Proponent to consider these habitat and caribou values when planning future exploration activities within the range of the Qamanirjuaq caribou herd.

Other Wildlife

Muskox

Muskox occur throughout the majority of Nunavut with the exception of Baffin Island. Muskox may be in a weakened condition by late winter and increased energy expenditure resulting from frequent harassment could have negative consequences for both breeding adults and young. Please do not approach muskox closer than ~200 meters during calving season (**April-June**). Approaching a muskox herd during this time may cause the herd to break up and/or stampede. Displacement from calving areas could have negative effects on muskox breeding. Also, please note that male muskox can become increasingly agitated during breeding season (**Aug-Sept**) and it is advised to be vigilant during this period when in areas frequented by Muskox.

Grizzly Bears

Grizzly bears occur throughout the project area and may be disturbed by activities. More specifically, the area of interest is identified as having very high wildlife sensitivity for grizzly bears. Grizzly bears have very low reproductive rates and require large tracts of habitat in order to meet their ecological requirements. Breeding takes place from Mid-May until early July but will only be successful if the female has enough fat reserves built up over the summer feeding period to sustain her and the developing fetus over the winter.

There is a high probability of encounters with grizzly bears in the project area. Grizzly bears can be easily attracted to human installations and waste management is especially important in such conditions. Potential human-bear encounters can result in injury or death to either the bear or the humans. Increased bear-human contact can lead to an increase in defense-of-life-and-property kills. Cumulatively these impacts could threaten the long-term viability of this species. All possible efforts to avoid these conflicts must be made. The Proponent must plan to:

- avoid human-bear conflict
- have a bear deterrent and waste management strategy
- have a human safety strategy

The Proponent is strongly advised to meet with local hunters to discuss local traditional knowledge of bears in the region. All camp members should be fully aware and trained in the human-bear encounter avoidance plans. The applicant is strongly encouraged to meet with the Wildlife Officer in the nearest community in order to receive a briefing on proper procedures to avoid bear encounters, proper procedures should a bear be encountered and proper procedures to follow should any kind of an incident related to such an encounter occur. Also, if a defense kill does occur, the Proponent should be aware that an investigation by a Wildlife Officer will follow any incident related to the death of a bear; the investigation will try to determine how the incident occurred, whether the Proponent was acting responsibly, whether human and bear safety was adequately addressed, whether bear deterrents and human safety

measures were met, and whether the Proponent acted negligently. The Proponent should be made aware that pursuant to Section 74(1) of the *Wildlife Act*:

Pursuit of wild animal

74 (1) No person shall chase, weary, harass or molest a wild animal.

Raptors

Nesting raptors occur throughout this area and may be disturbed by activities. SARA listed species in the area include Peregrine Falcon, *anatum-tundrius* complex (Special concern, Schedule 1) and Short-eared Owl (Special Concern, Schedule 1). The GN recommends that the Proponent refrain from approaching nesting raptors during the critical timing window (**May – July 15**). Nesting raptors are extremely vulnerable during this period and may abandon nests if perceived to be at risk. Breeding raptors disturbed at this stage of nesting may not have sufficient time to re-nest. Avoiding nesting raptors during this timeframe minimizes the risk of destroying active nests, birds or their eggs etc. and reduces the likelihood of contraventions under the *Wildlife Act*:

Bird's nests

72(2) Unless lawfully harvesting down, no person shall injure, molest or destroy
(a) the nest of a bird when the nest is occupied by a bird or its egg; or
(b) the nest of any bird of prey or prescribed bird.

Significant disturbance

73(1) No person shall, unless authorized by a licence,
(a) engage in any activity, other than harvesting, that is likely to result in a significant disturbance to a substantial number of wildlife; or
(b) break into, destroy or damage any abode of a bear, fox, beaver, muskrat, weasel, wolf or wolverine outside any municipality or prescribed area.

Approaching the nest site near the time of fledging (where chicks fly from the nest) often leads to premature nest departure. During the last few weeks of nesting, disturbance at the nest often causes young raptors to jump out of the nest, leading to death from exposure, predation, starvation, or trauma from the fall itself. Maintain field sites at a distance of at least 100 meters from a nest site during the latter part of the nesting stage (**August 15 – September**).

Additionally, do not disturb nesting birds of any kind during conditions of poor weather (rain, snow, high winds) which can stress chicks since their ability to thermoregulate may not be adequately developed to fully protect them from cold weather.

Monitoring

The GN requests that the Proponent monitor and report on any wildlife sightings in the area of operations during the time of operation. These reports may be sent to the Ecosystems Biologist, Wildlife Research Section, BOX 209, Igloolik, Nunavut, X0A 0L0 or via email at mwilson@gov.nu.ca.

Impacts on wildlife habitat or Inuit harvest activities

The GN cannot provide comment on whether the Project is likely to cause significant adverse impacts on wildlife habitat or Inuit harvest activities as no assessment has been provided.

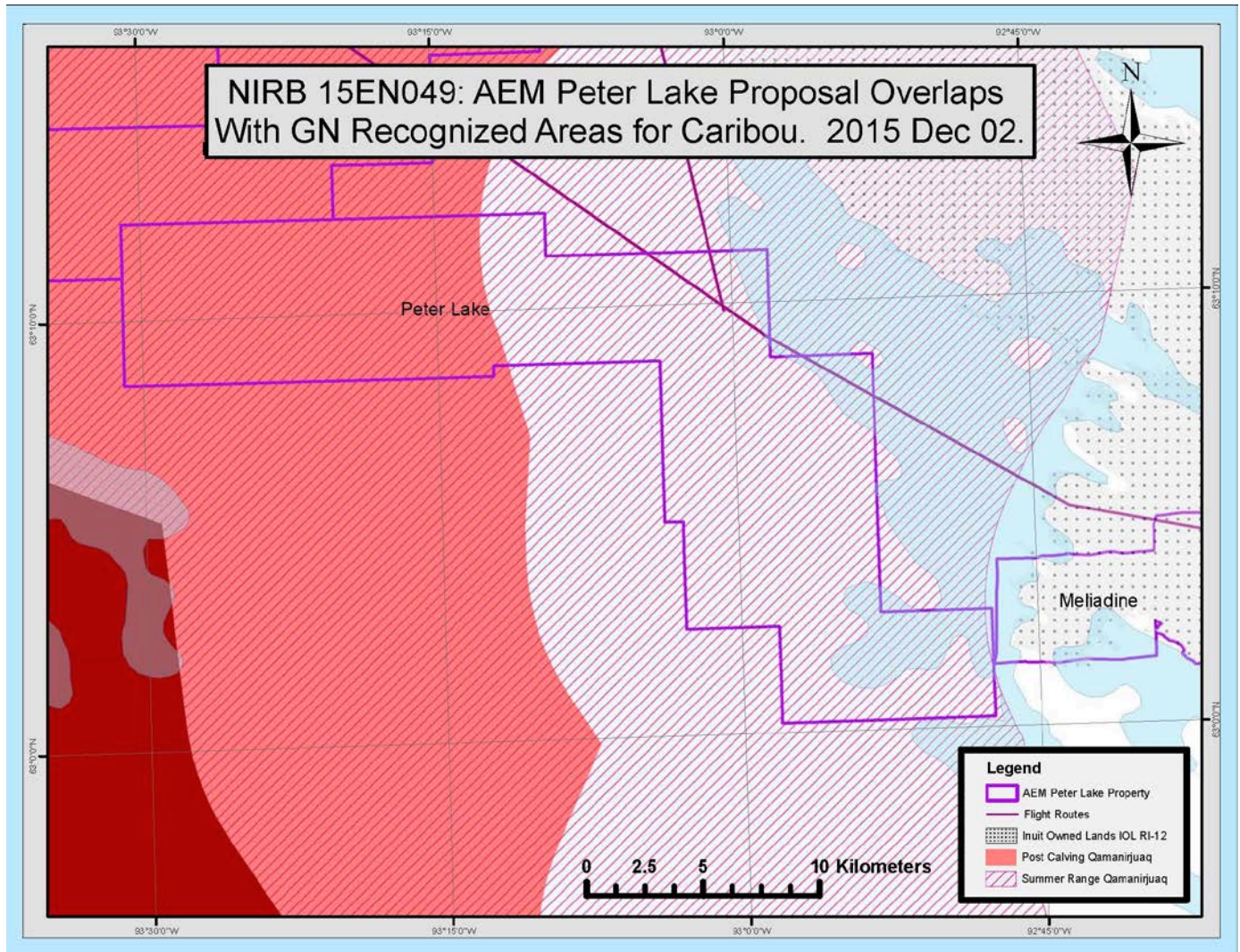
Public Concern

The GN cannot provide comment as to whether the proposed Project is likely to arouse significant public concern as no record of community consultations have been provided. However, through participation at NIRB Community Information Sessions in Kivalliq communities, the GN has observed community members express concerns regarding development activity near sensitive caribou habitat.

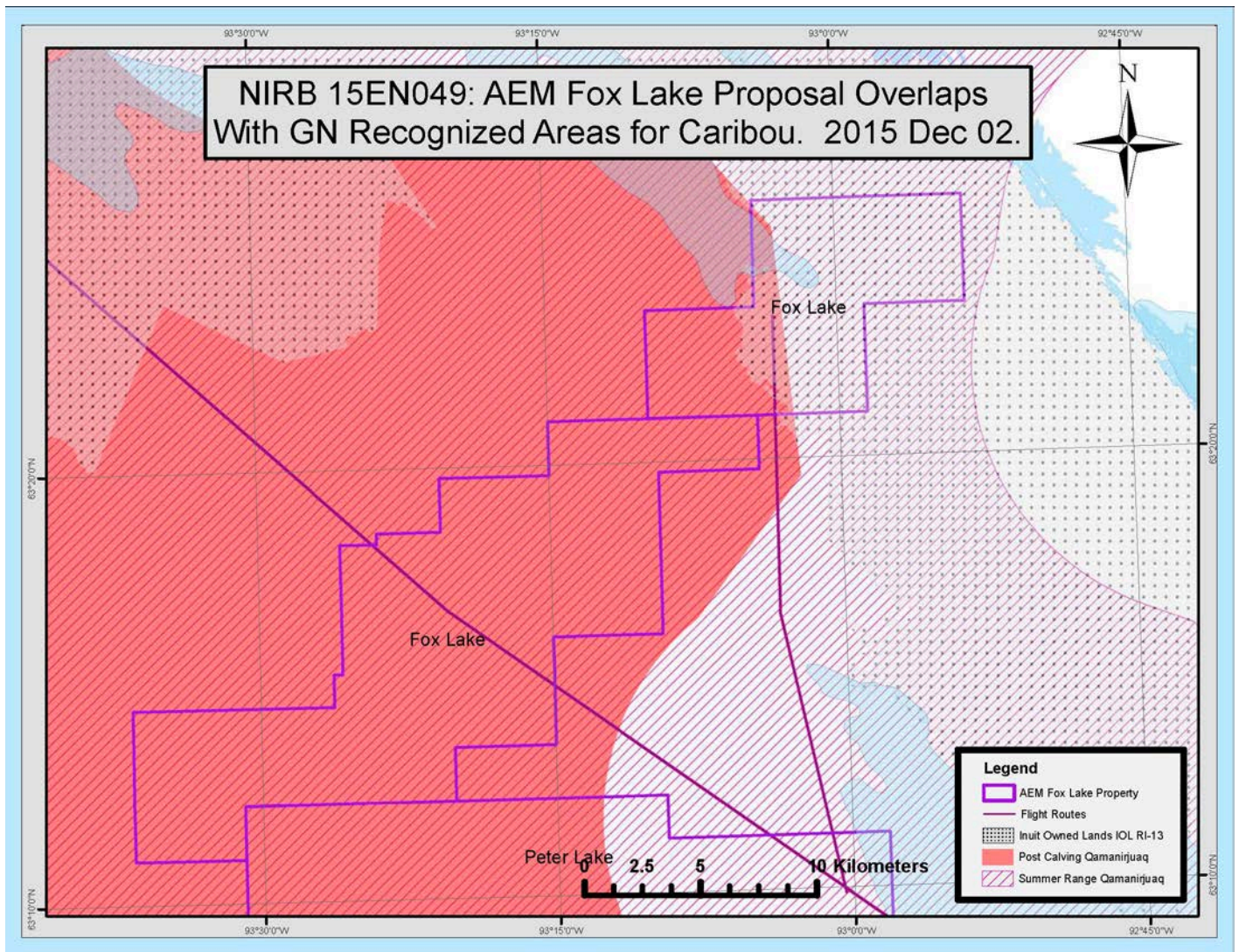
Cumulative Effects

As no cumulative effect assessment was provided with the Project proposal, the GN cannot provide specific comments. However, the GN is concerned that multiplying exploration activities in the Meliadine region can cumulatively lead to significant environmental change. In particular, multiple, interacting development actions can lead to the fragmentation of the core Qamanirjuaq range.

Map 1: Peter Lake



Map 2: Fox Lake



Map 3: Parker Lake

