



Keeyask Generation Project Terrestrial Effects Monitoring Plan

Gray Wolf, Black Bear and other Wildlife: Den Survey Report TEMP-2018-18



KEEYASK GENERATION PROJECT

TERRESTRIAL EFFECTS MONITORING PLAN

REPORT #TEMP-2018-18

GRAY WOLF, BLACK BEAR, AND OTHER WILDLIFE: DEN SURVEY

Prepared for

Manitoba Hydro

By

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SUMMARY

Background

Construction of the Keeyask Generation Project (KGP or the Project) at Gull Rapids began in July 2014. The Keeyask Hydropower Limited Partnership (KHLP) was required to prepare a plan to monitor the effects of construction and operation of the generating station on the terrestrial environment. Monitoring results will help the KHLP, government regulators, members of local First Nation communities, and the general public understand how construction and operation of the generating station will affect the environment, and whether or not more needs to be done to reduce harmful effects.

The detailed rationale for this study is described in the KGP Terrestrial Effects Monitoring Plan (KHLP 2015), in Section 6.6.2 Den Surveys, under the Gray Wolf, Black Bear and Other Wildlife monitoring study. This report describes the results of pre-clearing black bear den surveys conducted during the fourth year of Project construction, in fall/winter 2017/18.

Black bear were a common species observed during pre-construction surveys conducted in 2001-2004. Black bear sign was widespread throughout various habitats that were surveyed using tracking transects and trail-camera traps.

Why is the study being done?

Black bear are a common mammal species found in the Keeyask region that require dens for the birthing and rearing of young, as well as for hibernating over winter.

Black bears are sensitive to human disturbance near active den sites. The objective of this survey was to identify any black bear dens in the areas of the Project footprint planned for clearing, to protect any bears in these areas from harm, such as abandonment or possible death of animals in dens. If any active bear dens are found during pre-clearing surveys, a setback distance of 100 m is established around the den for protection.

What was done?

Systematic ground surveys were conducted in October and November 2017 in areas within the Project footprint that were planned for clearing. Fieldwork was focused in habitat types where dens were most likely to occur. Up to 11 surveyors walked along parallel transects within the search area, 10 to 20 metres apart, and looked for black bear signs. Remote trail cameras were placed near any potential black bear dens to monitor use. In 2017, about 515 ha were searched within the a portion of the reservoir clearing area on the south side of the Nelson River and along a proposed access road and a future borrow area on the Ellis Esker.



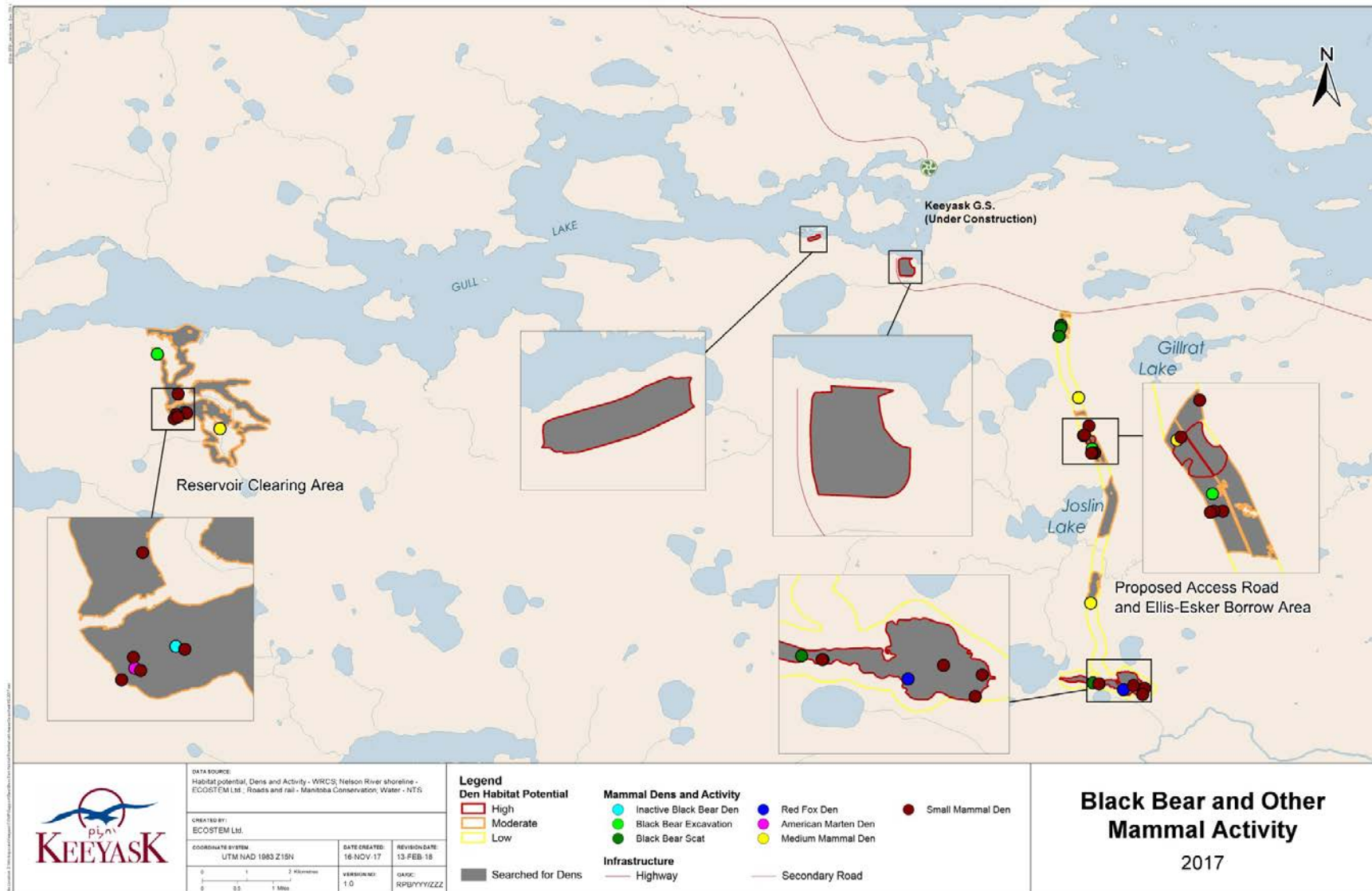
Survey Staff Searching for Bear Dens

What was found?

No active black bear dens were located during the 2017 survey. One inactive black bear den and two black bear excavations were observed. The inactive den and excavations appeared to be old and were partially collapsed and filled with water. Additional observations included a red fox den, an American marten den, four medium-sized mammal (likely red fox) dens, and 15 small mammal dens.



Inactive Black Bear Den Observed During Pre-clearing Surveys in 2017



Black Bear Dens and Activity in the Project Footprint Areas Searched in 2017

What does it mean?

As no active black bear dens were observed during the 2017 surveys, no setback buffers were required within the proposed clearing footprints. The inactive den and excavations observed during 2017 appeared to be old and were unlikely to support a black bear due to the presence of water inside. As a result, these areas did not require protection and were not buffered.

What will be done next?

No further pre-clearing bear den surveys are planned at this time. Additional pre-clearing surveys will be conducted if new areas are identified for vegetation clearing in fall/winter 2018.

STUDY TEAM

Biologists and other personnel who designed, participated in, and drafted the survey results included:

- Robert Berger (M.N.R.M) – Design, analysis, and reporting
- Mark Baschuk (M.Sc.) – Design, analysis, and reporting
- Kate McCormick (B.Sc.) – Crew leader
- Kelsey O'Brien (M.Sc.) – Survey personnel
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- Kevin McRae (B.Env't.Sc) – Survey personnel
- Leslie Flett (TCN) – Survey personnel
- Clayton Flett (TCN) – Survey personnel
- Terry Kitchkeesik (TCN) – Survey personnel
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- Darcy Wastesicoot (YFFN) – Survey personnel
- Colin Brightnose (YFFN) – Survey personnel
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1.0 INTRODUCTION

Construction of the Keeyask Generation Project (the Project), a 695-megawatt hydroelectric generating station (GS) and associated facilities, began in July 2014. The Project is located at Gull Rapids on the lower Nelson River in northern Manitoba where Gull Lake flows into Stephens Lake, 35 km upstream of the existing Kettle GS.

The *Keeyask Generation Project: Response to EIS Guidelines* (the EIS), completed in June 2012, provides a summary of predicted effects and planned mitigation for the Project. Technical supporting information for the terrestrial environment, including a description of the environmental setting, effects and mitigation, and a summary of proposed monitoring and follow-up programs is provided in the *Keeyask Generation Project Environmental Impact Statement: Terrestrial Environment Supporting Volume* (TESV).

As part of the licensing process for the Project, the *Keeyask Generation Project Terrestrial Effects Monitoring Plan* (TEMP; KHLP 2015) was developed, detailing the monitoring activities of various components of the terrestrial environment including the focus of this report, black bear (*Ursus americanus*) den surveys, for the construction and operation phases of the Project.

Black bear were a common species observed during pre-construction surveys conducted from 2001-04 (KHLP 2012). Black bear sign was widespread throughout various habitats that were surveyed using tracking transects and trail-camera traps (KHLP 2012). Within the construction footprint, black bear sign was common and likely overlapped with the home ranges of one or more individuals (KHLP 2012).

This study was conducted to meet the requirements of Environment Act Licence No. 3107 to complete monitoring as described in the TEMP. Planned clearing within the Project construction footprint that was scheduled for the winter of 2017/18 included a new access road and borrow area and several areas in the future reservoir area on the south side of the Nelson River. Prior to clearing, areas of high denning probability were searched in an attempt to prevent the disturbance or destruction of black bear dens.

The objective of these surveys was to identify black bear dens in areas of the Project footprint to be cleared, and if found, protect bears from harm. In accordance with the Project's Environmental Protection Plans (KHLP 2014a,b), if an active black bear den is found, a setback distance of 100 m is put in place to prevent disturbance.

2.0 METHODS

2.1 DEN HABITAT SELECTION

Clearing of a new access road and borrow area at the Ellis Esker, and several areas on the south shore of the future reservoir area were proposed to occur during the fall of 2017/winter 2018. As clearing was to occur when black bears are hibernating, pre-clearing surveys were required to verify whether any active black bear dens were present.

Due to the relatively large size of the proposed access road and borrow area, remotely-sensed data were used to identify areas of habitat with a greater probability of supporting black bear dens to improve the efficiency of ground searches. Using a Geographic Information System (GIS), habitat data from the Project's EIS (provided by ECOSTEM Ltd.) were extracted from the Project footprint area planned for clearing, which had been buffered by 100 m. A predictive model that used soil and vegetation data was applied to the Project footprint areas, which were divided into three classes (high, moderate, low) based on their potential to support black bear dens. High potential den habitat was defined as areas with dry mineral soils and dense overstorey vegetation cover. Moderate potential den habitat contained thin peatland and some overstorey vegetation cover. Low potential den habitat was defined by deep peatlands, other wet areas lacking overstorey vegetation cover, and existing disturbed areas located near active construction (Tietje and Ruff 1980; Hodder et al. 2014). High-resolution satellite imagery was used to support selected categories of den habitat by visually inspecting the habitat within the Project footprint areas to be cleared.

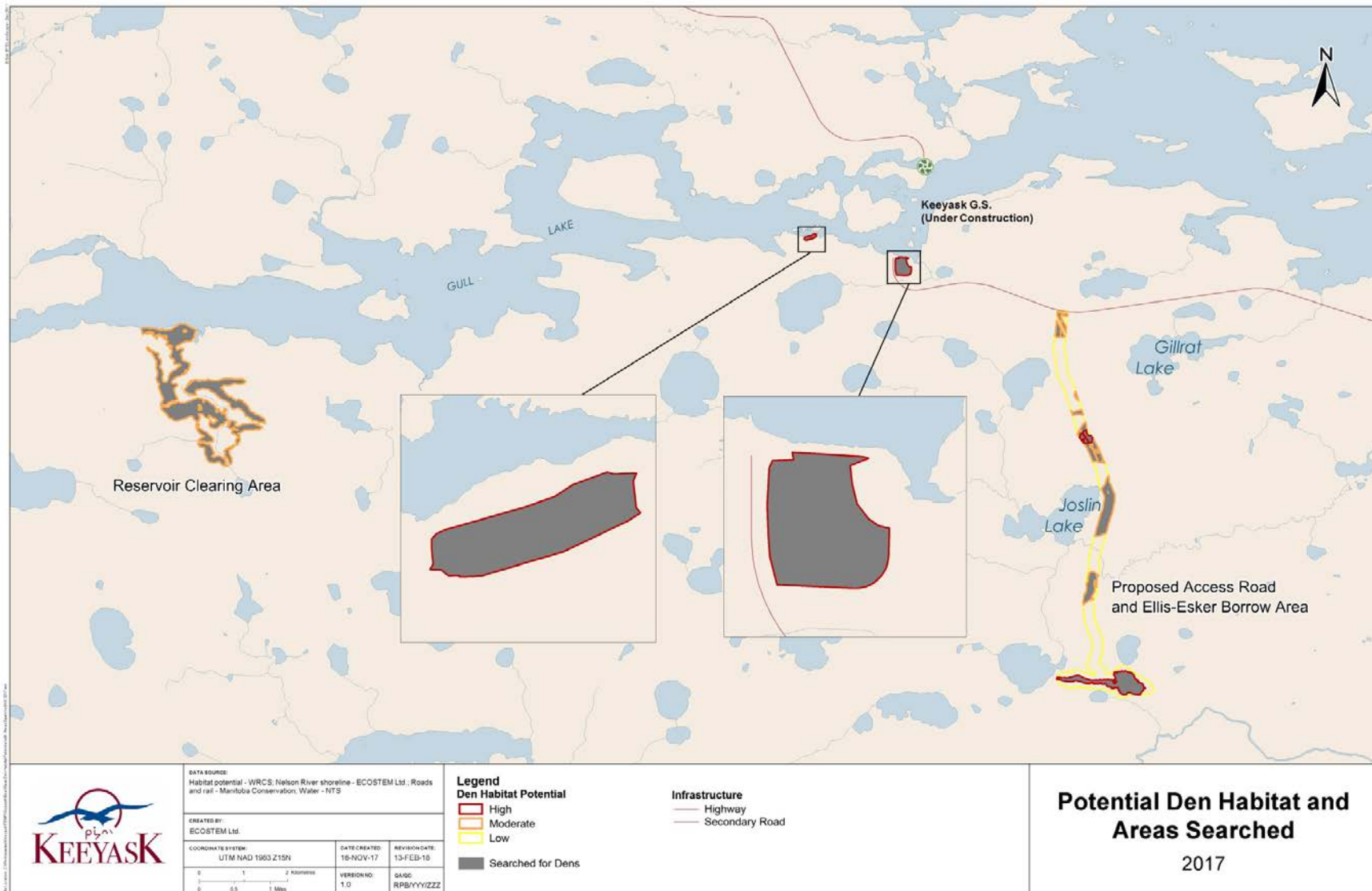
The areas on the south shore of the proposed reservoir were searched for dens in 2016 (Wildlife Resource Consulting Services MB Inc. 2017). Because some forest stands were not cleared in 2016, these areas required another search in 2017 as bears may have initiated dens during the year. These areas were selected by overlaying the high and moderate den habitat polygons developed in 2016 over high-resolution imagery collected in 2017, to identify polygons that were not cleared.

2.2 DEN SURVEYS

From October 24-30, 2017, den surveys were conducted along the proposed access road and borrow area at the Ellis Esker, as well as several areas in the future reservoir on the south side of the Nelson River (Map 2-1). An additional area on the south side of the Nelson River, along the South Access Road was searched on November 23, 2017 (Map 2-1).

Up to 11 survey personnel conducted systematic ground searches. Surveyors walked slowly and intensively searched the ground for dens and other signs of black bear (*i.e.*, tracks, scat,

and evidence of digging), paying close attention to features such as hummocks, brush piles, uprooted tree-root mats, and areas with topographic relief. Surveyors followed transect lines spaced approximately 10 m apart, uploaded to handheld Garmin Global Positioning System (GPS) 60Cs and 60Csx receivers. Spacing of transects varied from 10-20 m depending on vegetation density and other topographic features.



Map 2-1: Potential Den Habitat and Areas Searched in 2017

Upon observation of a den, survey personnel attempted to determine if it was occupied by searching the immediate area for signs, such as tracks, scat, hair, or claw marks on trees. The potential den was then geo-referenced, photographed, and marked with flagging tape. If the den appeared to be occupied by a black bear, as indicated by the presence of fresh bear sign, personnel returned with a pole-mounted camera. The pole-mounted camera consisted of an Aqua View Micro 5 underwater camera with built-in digital video recording and an infrared light source (Figure 2-1) that was attached to a 4 m (12 foot) extendable, aluminum pole. This apparatus allowed personnel to confirm if the den was occupied and identify the potential species, while remaining at a safe distance from the den entrance. The pole-mounted camera was manoeuvred into the den by one crewmember while the video monitor was observed by another, and the den was searched.

If the den was occupied by a black bear or it appeared to be recently constructed and have the potential to support a black bear, two Reconyx™ PM35C31 trail cameras (remote-cameras) were mounted on nearby trees to monitor bear activity at each potential den site.



Figure 2-1: Aqua View Micro 5 Camera with Built-in Digital Video Recording and Infrared Light Source, Used to Confirm Den Occupation

3.0 RESULTS

3.1 DEN HABITAT SELECTION

Within the areas proposed for clearing during the fall and early winter of 2017, the remote-sensing exercise of selecting potential den habitat yielded 58 ha of high potential den habitat, 275 ha of moderate potential den habitat, and 182 ha of low potential den habitat. All high potential and moderate potential den habitats were searched. No low potential den habitat was searched due to the low probability of dens being located in these areas (Map 3-1).

3.2 DEN SURVEYS

No active black bear dens were located during the 2017 survey. One inactive black bear den was observed in the clearing footprint of the future reservoir (Photo 3-1; Map 3-1). Two black bear excavations were observed, one in the clearing footprint of the future reservoir and another in the proposed access road footprint (Photo 3-2; Photo 3-3; Map 3-1). The inactive den and excavations appeared to be old and were partially collapsed and filled with water. Additional observations included black bear scat in the proposed access road and borrow area footprints, as well as a red fox den, an American marten den, four medium-sized mammal (likely red fox) dens, and 15 small mammal dens throughout the areas searched (Map 3-1; Appendix 1).



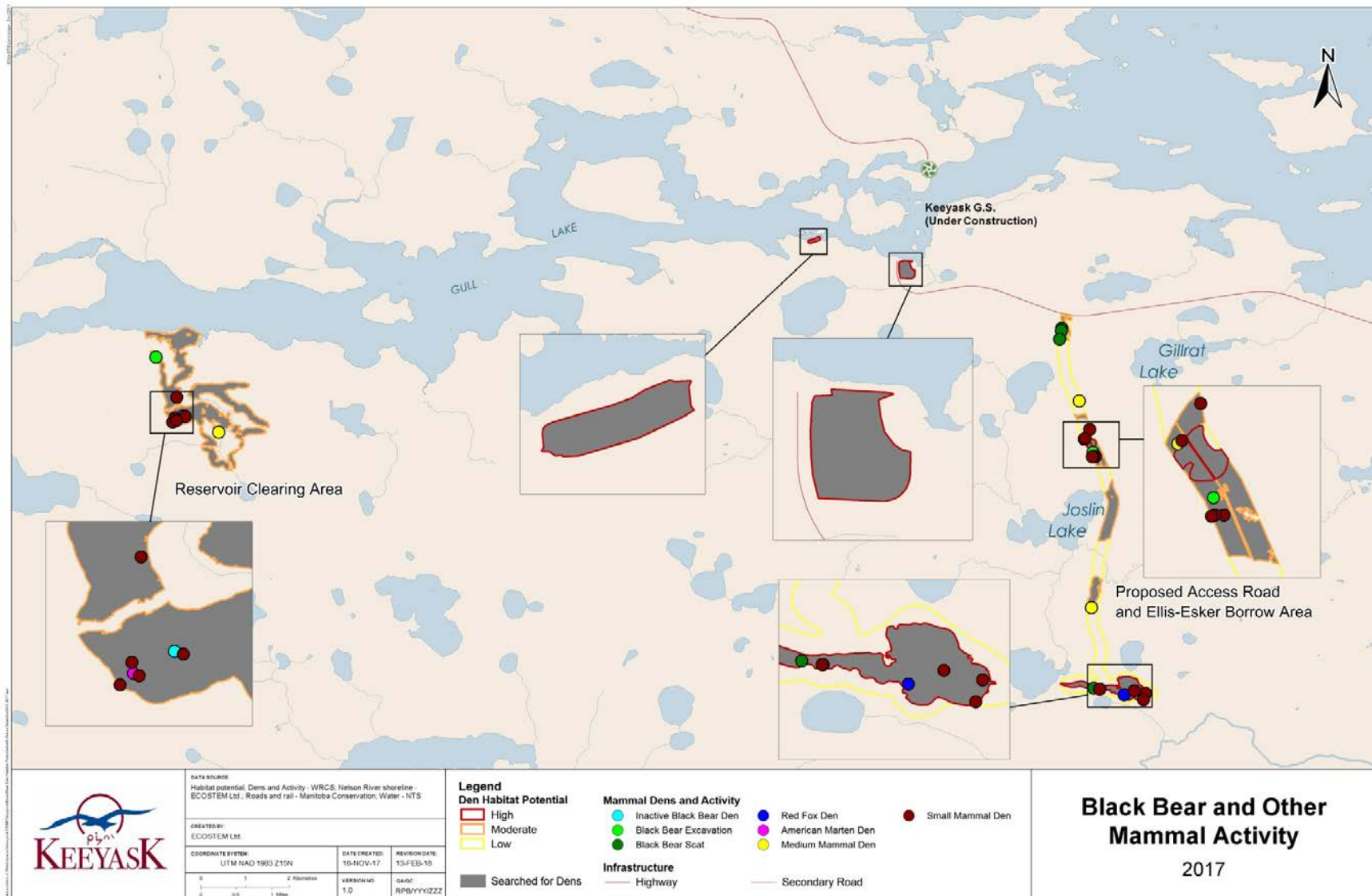
Photo 3-1: Inactive Black Bear Den Observed in the Reservoir Clearing Area



Photo 3-2: Black Bear Excavation Observed in the Reservoir Clearing Area



Photo 3-3: Black Bear Excavation Observed on the Proposed Access Road



Map 3-1: Inactive Black Bear Den, Excavations, and Other Mammal Dens Observed in Areas Searched in 2017

4.0 SUMMARY AND CONCLUSIONS

The approach of using remotely sensed imagery to identify potential bear den habitat was a reliable method for determining areas of potential denning habitat within the Project footprint. The delineation of potential denning habitat prior to performing the ground searches increased the efficiency of search crews over large areas and allowed the highest area of potential den habitat to be searched, while avoiding areas that were unlikely to contain dens (*i.e.*, wet areas).

As no active black bear dens were observed in 2017, no setback buffers were required within the areas to be cleared. For the other mammal dens observed (*e.g.*, American marten and red fox), a distance buffer is not applicable at this time of year as these species are active and mobile during the winter and can relocate if disturbed. Buffers for furbearing species may be required if maternity dens are found in late winter or spring.

There is a small possibility that a den could have been missed within a searched area or occurred in a portion of the Project footprint that was not searched. As such, the Keeyask Hydropower Limited Partnership was advised to proceed with caution, and still be watchful for mammal dens while conducting all clearing activities.

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APPENDIX 1: PHOTOS



Photo 6-1: Red Fox Den and Fresh Excavation



Photo 6-2: American Marten Den



Photo 6-3: Medium-sized Mammal Den



Photo 6-4: Small Mammal Den