Natural Environment Report

Quarry Above Water Licence

385 Lavigne Road, Municipality of East Ferris

District of Nipissing

March 2022

FRICORP ECOLOGICAL SERVICES

Table of Contents

Introduction

Study Objectives

FRi Ecological Services (FRi) was retained by Timbercraft Consultation Inc. to complete a combined Natural Environment Level 1 and 2 Report for a proposed quarry above water in the Municipality of East Ferris. The current aggregate pit is located on private land accessed by Lavigne Road, southeast of Highway 94.

The field investigations and reporting were completed to meet or exceed the Provincial Standards for a Natural Environment technical report. Five natural heritage components were considered for the proposed permit area and the adjacent 120 meters, including:

- Fish habitat
- Significant wetlands
- Habitat of endangered and threatened species
- Significant wildlife habitat
- Significant areas of natural and scientific interest

This report combines background information and results from field work completed in 2021 to identify and evaluate natural heritage features or areas and their ecological functions and identify preventative, mitigative or remedial measures to eliminate potential negative impacts. This approach is consistent with Part 2, Section 2.2 of the *Aggregate resources of Ontario standards: A compilation of the four standards adopted by Ontario Regulation 244/97 under the Aggregate Resources Act.* [1]

Background Information

A review of the available natural heritage information was conducted with respect to natural heritage values. The following sources were consulted:

- Natural Heritage Information Centre (NHIC) database;
- Ministry of Natural Resources and Forestry Make-a-Map, Natural Heritage Values;
- East Ferris Official Plan, 2016[2];
- Atlas of the Breeding Birds of Ontario (OBBA) data summaries[3];
- e-Bird[4];
- Significant Wildlife Habitat Ecoregion Criteria Schedule for Ecoregion 5E[5]; and
- Land Information Ontario digital data including: Watercourses, Waterbodies, Wetlands, Wintering Areas, ANSI

[1] https://files.ontario.ca/mnrf-aggregates-combined-standards-en-2020-08-27.pdf (August 27, 2020)
[2] https://eastferris.ca/uploads/documents/Ministers_Approved_Version_East_Ferris_OP.pdf
[3] Atlas of the Breeding Birds of Ontario. 2001 – 2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature. Editors: Michael D. Cadman, Donald A. Sutherland, Gregor G. Beck, Denis Lepage, and Andrew R. Couturier. 728 pages
[4] http://ebird.org/content/ebird/
[5] Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E. 2015. Ontario Ministry of Natural Resources and Forestry. 48pp.

As of 2019, the administration the Endangered Species Act (ESA) is the responsibility of the Ministry of Environment, Conservation and Parks (MECP). Recent direction from the MECP with respect to endangered and threatened species at risk and their habitat is for proponents to access available information through various public resources. FRi took this self-directed approach to background information gathering, accessing multiple digital resources for up-to-date natural features information in advance of field investigations.

Applicable Legislation, Policy and Plans

There are a number of applicable legislation and policies that are relevant considerations in the execution of the natural environment field investigations and reporting. They are:

- Aggregate Resources Act (1990)[6]
- East Ferris Official Plan (2016) & Schedule E[7]
- Endangered Species Act (ESA) (2007)
- Fish & Wildlife Conservation Act (1997)
- Migratory Birds Convention Act (1994)
- Fisheries Act (1985)
- Provincial Policy Statement (2020)
- Provincial Standards of Ontario – Category 1 – Class A Pit Below Water
- Provincial Standards of Ontario – Category 4 – Class A Quarry Above Water

Field Investigations

Field investigations focussed on the five natural heritage categories and species and habitat-specific surveys for the same. Several surveys and field visits were completed over the course of the site investigations, many of them having specific timing windows or weather condition requirements. To complete the requisite studies, a total of 9 field visits, usually by two staff were conducted accounting for approximately 64 person hours on site on May 12th, 18th, and 27th, June 16th, 23rd, and July 12th and 28th, 2021 (detailed investigations outlined in Appendix A). Assessment and use of habitat types were conducted during each field investigation; monitoring changes and use over time through visual observations and indirect observations.

Study Area Description

The aggregate site is in the Township of Ferris within the Municipality of East Ferris, accessed from Lavigne Road via Corbeil-Astorville Road from Highway 94. The proposed licence area is approximately 31 hectares. The lands are described as Parts of Lots 10 & 11, Concession 9 (Figure 1).

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[6] https://www.ontario.ca/laws/statute/90a08
[7] https://eastferris.ca/uploads/documents/Ministers_Approved_Schedules.pdf

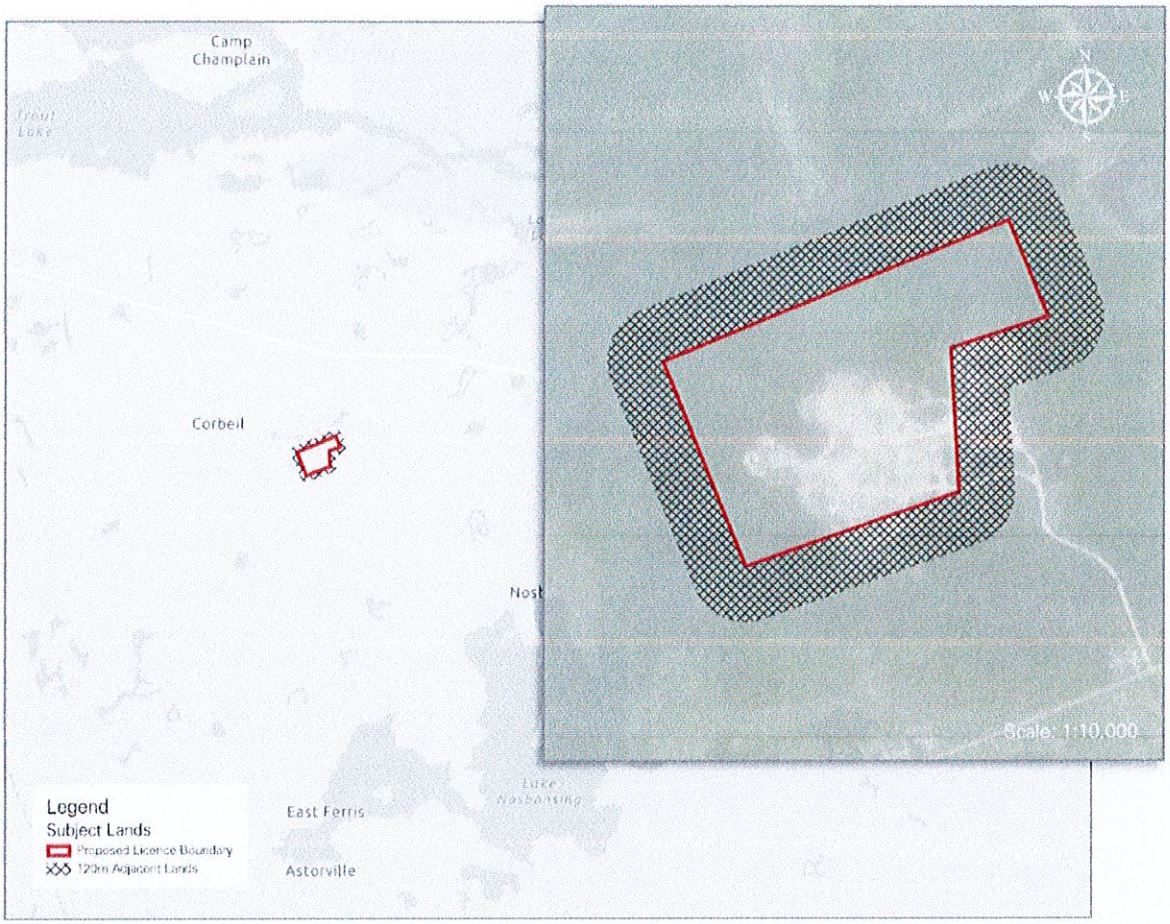


Figure 1: Location of proposed licence boundary and 120m adjacent lands

Ecological Setting

The proposed aggregate extraction area is within the Ontario Shield Ecozone. This ecozone occupies more than half of Ontario and contains both boreal forest and non-boreal Great Lakes - St. Lawrence forest regions.[8] The study area is within the Georgian Bay Ecoregion (5E) specifically the North Bay Ecodistrict (5E-5). The climate in this ecoregion is cool, temperate, and humid; with mean annual temperatures ranging from 2.8°C to 6.2°C and a growing season between 183 to 219 days. Mean precipitation ranges between 771 and 1134 mm annually. Ecodistrict 5E-5 situated on the Precambrian Shield and is predominantly underlain by igneous and metamorphic rock. Glaciofluvial deposits of sand and gravel are scattered throughout with topography described as gently to moderately rolling uplands of shallow soils and bedrock knobs with interspersed sand-filled depressions.[9] Site-specific ecosites represented on the subject property and adjacent lands were identified during field investigations; each described below.

[8] Crins, William J., Paul A. Gray, Peter W.C. Uhlig, and Monique C. Wester. 2009. The Ecosystems of Ontario, Part 1: Ecozones and Ecoregions. Ontario Ministry of Natural Resources, Peterborough Ontario, Inventory, Monitoring and Assessment, SIB TER IMA TR-01, 71pp

[9] Ibid.

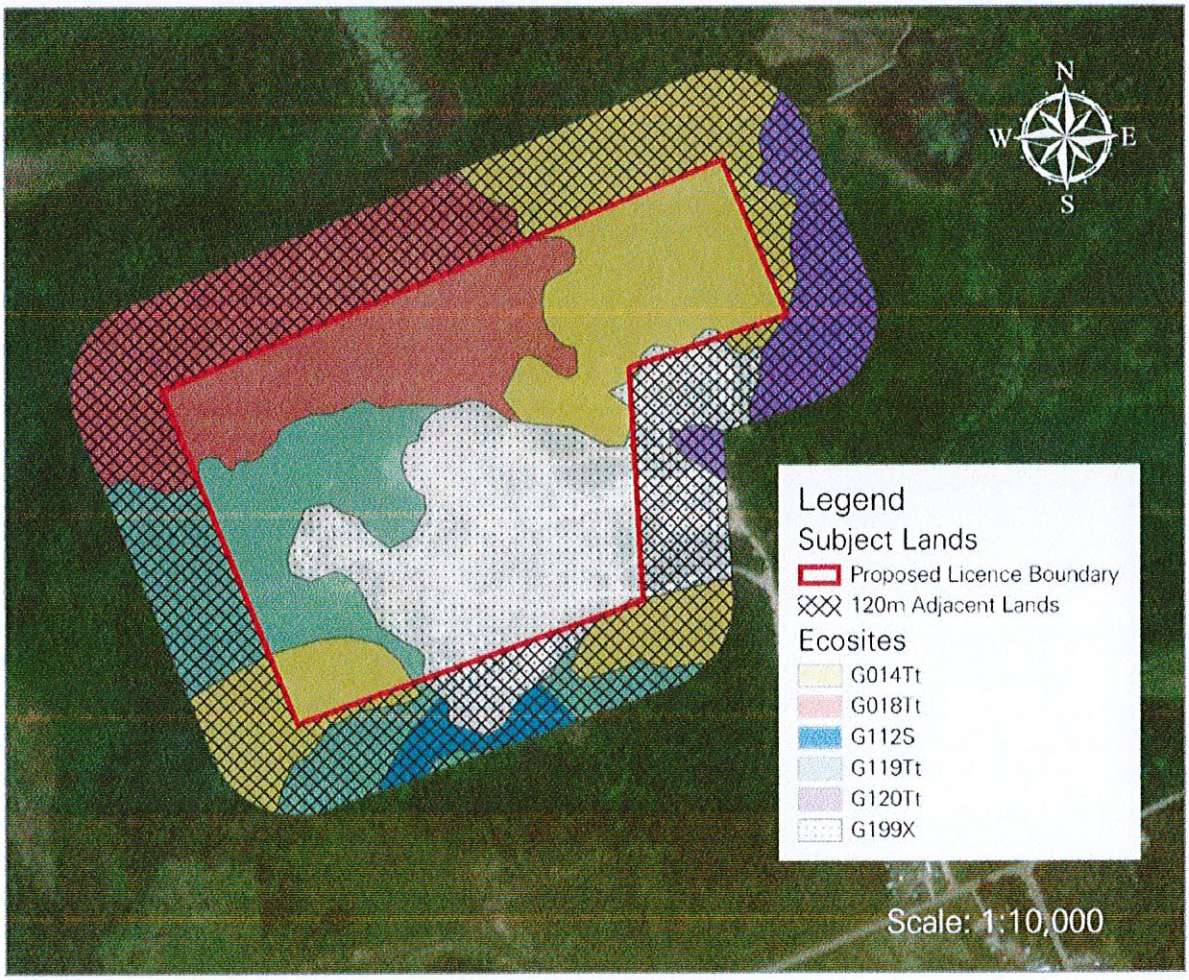
Ecological Land Classification

Ecological land classification or ecosites are determined by assessing the soil and vegetation characteristics of a site. To assess the presence of potential habitat and natural heritage features, including species at risk and significant wildlife habitat, the ecosites on the property were determined during the field investigations.

There are five representative natural ecosites on subject lands and one (G199X) anthropogenic/altered ecosite:

- *G014Tt Very Shallow, Dry to Fresh: Conifer*
- *G018Tt Very Shallow, Dry to Fresh: Maple Hardwood*
- *G112S Moist, Fine: Shrub*
- *G119Tt Moist, Fine: Aspen – Birch Hardwood*
- *G120Tt Moist, Fine: Elm – Ash Hardwood*
- *G199X Anthropogenic – representing existing roads and existing excavation and operation*

Access was not obtained to adjacent patent lands as part of field investigations and it has been assumed that the ecosites were contiguous in the areas beyond the subject property within the 120m information area.



G014Tt: Very Shallow, Dry to Fresh: Conifer

This ecosite has areas of fresh, shallow mineral soils over coarse rock fragments. The understory is mostly leaf litter and organics with patches of stoniness at the surface. Trees are mostly spruce (*Picea sp.*) and balsam fir (*Abies balsamea*), with some red maple (*Acer rubrum*), cedar (*Thuja occidentalis*), poplar (*Populus* sp.), and white birch (*Betula papyrifera*) interspersed throughout. Ground cover includes honeysuckle (*Lonicera sp.*), blue bead lily (*Clintonia borealis*), bunchberry (*Cornus canadensis*), and bracken fern (*Pteridium aquilinum*).

G018Tt: Very Shallow, Dry to Fresh: Maple Hardwood

This ecosite consists of nearly all sugar maple in the main canopy and fresh, shallow mineral soils over coarse rock fragments. Understory species include starflower (*Trientalis borealis*), painted trillium (*Trillium undulatum*), wild sarsaparilla (*Aralia nudicaulis*), and fly honeysuckle (*Lonicera canadensis*). The ground surface is mostly broadleaf litter with some areas of exposed coarse rock fragments and bedrock.

G112S: Moist, Fine: Shrub

This ecosite has deep, fine mineral soils with some trembling aspen (*Populus tremuloides*) and white birch (*Betula papyrifera*) sparsely scattered throughout. Shrub species include mostly speckled alder (*Alnus incana*) and red-osier dogwood (*Cornus sericea*) with jewel-weed (*Impatiens capensis*), asters (*Asteraceae* spp.), and Canada goldenrod (*Solidago canadensis*) also present. This ecosite is located wholly in the 120m adjacent lands.

G119Tt: Moist, Fine: Aspen - Birch Hardwood

This tall-treed ecosite is represented south and west of the current active operation. It is an even-aged stand of trembling aspen, white birch (*Betula papyrifera*), red maple (*Acer rubrum*), and some white ash (*Fraxinus americana*). The understory is conifer leaf litter, dogwood (*Cornus alternafolia*), bracken fern (*Pteridium aquilinum*, interrupted fern (*Osmunda claytoniana*), foam flower (*Tiarella*), bunchberry (*Cornus canadensis*), and starflower (*Lysimachia borealis*).

G120Tt: Moist, Fine: Elm - Ash Hardwood

The canopy is dominated by white ash trees with some red maple throughout. The understory is a combination of serviceberry (*Amelanchier spp.*), balsam poplar (*Populus balsamifera*), and young ash trees. Ground cover includes dwarf raspberry (*Rubus pubescens*), devil's bit (*Succisa pratensis*), interrupted fern (*Osmunda claytoniana*), sensitive fern (*Onoclea sensibilis*), and occasional bracken fern (*Pteridium aquilinum*). A few small pockets of standing water were visible in this ecosite in spring but were not present when revisited in summer conditions. This ecosite is located wholly in the 120m adjacent lands.

Natural Features Impact Assessment

The A.R. 4.01.06 Natural Environment Report Standards policy requires that an assessment of whether or not the natural features occur on or within 120 meters of the site (Level 1) and if any features are identified, an impact assessment is required to determine any negative impacts on the features or function as a result of the proposed aggregate site. If impacts are identified, preventative, mitigative and remedial measures are to be recommended.

There are five relevant natural heritage feature categories covered by this report:

- Fish Habitat
- Significant Wetlands;
- Habitat of Endangered and Threatened Species;
- Areas of Natural and Scientific Interest (ANSIs);
- Significant Wildlife Habitat

Fish Habitat

Field investigations confirmed the absence of fish habitat within and adjacent the proposed licence boundary. No negative impacts to this natural heritage feature are anticipated.

Significant Wetlands

Significant wetlands are identified as such by the Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF). There are no identified provincially significant wetlands (PSW) or unevaluated wetlands within or adjacent the proposed licence boundary, as confirmed by field investigations.

Habitat of Endangered and Threatened Species

An initial list of species at risk (SAR) for consideration was generated from the above-mentioned sources and was subsequently scoped following initial habitat (ecosite) investigations. Where there was potential for species habitat on or within 120 meters of the licence boundary, those species were considered specifically.

The following species were specifically considered: Blanding's turtle (threatened), eastern hog-nosed snake (threatened), eastern whip-poor-will (threatened), SAR bat species [little brown myotis (endangered), northern myotis (endangered), and tricolored bat (endangered)].

Blanding's Turtle (*Emydoidea blandingii*)

The Blanding's turtle is a mostly aquatic turtle found in a variety of habitats, including lakes, ponds, marshes, ditches, creeks, rivers, and bogs. Within these habitats, the species generally prefers shallow water, organic substrates and dense submergent

and/or emergent vegetation. Basking sites are a critical component of suitable habitat. These are characteristically floating vegetation mats, hummocks, partially submerged logs, rocks, bog mats, or suitable shoreline areas with access to full sunlight.

Blanding's turtles hibernate from October through April, usually in permanent bodies of water, often the same wetlands they utilize during the active season. Recent studies confirm seasonally isolated wet areas, ditches for example, are used for hibernacula in some years. Blanding's turtles will travel up to 6 km or more to nesting sites that are usually within 250m from the shore of some waterbody. Nesting activities generally occur at the end of June through the beginning of July. Nest sites are chosen in areas that offer suitable substrate for digging (e.g. loose soil), well-drained, open locations which increases the incubation temperatures because of sunlight exposure. This in turn increases nest success. Upland areas adjacent wetlands can be used for nesting, basking and travel between summer activity areas. Turtles regularly move up to 1 km between wetlands and will chose a 'wetted' corridor, rather than a direct route.[10] [11] [12] [13] [14]

Potential for Blanding's Turtles and Impact Assessment

There are no known observations of Blanding's turtles within 2km of the proposed licence area or adjacent lands that were identified through the background search on the NHIC database and no turtles were observed during field investigations during ideal conditions. There are no areas that would support basking, foraging, nor hibernating by the species on the subject lands. No negative impacts to Blanding's turtles or their habitat are anticipated.

Eastern Hog-nosed Snake (*Heterodon platirhinos*)

Eastern hog-nosed snakes are highly mobile and have large home ranges making it especially challenging to define a specific habitat as critical to the species. Features which are required by eastern hog-nosed snakes are widespread and in relatively abundant supply at the northern edge of the species' range.[15] [16] [17] Ontario has adopted the federal recovery strategy for hog-nosed snakes and included an addendum which outlines the recommended areas to be considered for a habitat regulation. Oviposition and hibernation sites are the areas described as critical habitat; essential for the long-term

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[10] COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle *Emydoidea blandingii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp. (www.sararegistry.gc.ca/status/status_e.cfm)

[11] Edge, C. B. 2008. Multiple Scale Habitat Selection by Blanding's Turtles (*Emydoidea blandingii*). Master's Thesis. School of Graduate Studies, Laurentian University.

[12] Ontario Ministry of Natural Resources. 2012. Survey Protocol: Blanding's Turtle (*Emydoidea blandingii*). Policy Division, Species at Risk Branch. 15pp.

[13] Seburn, D. C. 2007. Recovery Strategy for Species at Risk Turtles in Ontario. Ontario Multi-Species Turtles at Risk Recovery Team. 83pp.

[14] Ontario Ministry of Natural Resources. 2013. General Habitat Description for the Blanding's turtle (*Emydoidea blandingii*).

[15] Kraus, T. 2011. Recovery Strategy for the Eastern Hog-nosed Snake (*Heterodon platirhinos*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. i + 6 pp + Appendix vi + 24 pp. Adoption of the Recovery Strategy for the Eastern Hog-nosed Snake (*Heterodon platirhinos*) in Canada Seburn, 2009).

[16] COSEWIC. 2007. COSEWIC assessment and update status report on the Eastern Hog-nosed Snake *Heterodon platirhinos* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 36 pp. (www.sararegistry.gc.ca/status/status_e.cfm)

[17] http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/MNR_SAR_ESTRN_HG_NSD_SNK_EN.html

persistence of the species. Habitat used for foraging, thermoregulating, mating and dispersal is also important. Contiguous natural habitat is generally described as open areas (meadow, sand, beach and beach dunes, open forest, brushland, rock barrens), wetlands, forest and forest edge in the species range.[18]

As outlined in the Recovery Strategy for the Eastern Hog-nosed Snake in Canada states the five physical features that are used to describe preferred habitat. They include well-drained loose or sandy soil, open vegetative cover such as open woods, brush land or forest edge, proximity to water and climatic conditions typical of the eastern deciduous forest biome. Females lay eggs beginning in late June in sandy soils, sometimes under rocks and driftwood and tend to use the same general area for nesting in subsequent years. Hibernation sites are also found in sandy soils; and unlike other snakes, the Eastern hog-nosed usually hibernates alone. Hibernation takes place from October through April. The sites have been documented in upland intolerant forests below the frost line.

Potential for Eastern Hog-nosed Snake and Impact Assessment

The property has some potential to support suitable habitat for hog-nosed snakes. The forested upland area and sandy areas of the existing operation have some potential to support life processes such as foraging and movement. Due to their large home ranges and preference for a variety of habitats, it is impossible to completely rule out the presence of hog-nosed snakes. No eastern hog-nosed snakes or snakes of any species were observed during targeted field investigations in suitable weather conditions during the species' active season. The recommended vegetation clearing and site preparation window will serve to protect individual snakes and snakes can continue to move through the site unimpeded. If a hog-nosed snake is observed moving through the subject lands, it should be permitted to move away on its own or relocated to a safe location nearby. Recommended mitigation measures are summarized below in the Summary of Natural Heritage Features & Impact Assessment section of this report.

Eastern Whip-poor-will (*Antrostomus vociferus*)

Eastern whip-poor-wills are found in a variety of open habitats and avoid areas where the forest canopy is extensive and closed. Breeding habitat is considered suitable when it contains features related to the following life processes: territory establishment, nesting, foraging and roosting. Whip-poor-wills typically select rock or sand barrens with scattered trees, savannahs, old burns, and open conifer plantations. These and other sites in a state of early to mid-forest succession are preferred for breeding. Whip-poor-wills have been documented in a variety of semi-open habitats, usually near wetlands. Their eggs are laid directly on the ground in an area that provides sparse ground cover and offers shade and tree cover as well. Nest sites are usually close to open areas which are necessary for

foraging. They are crepuscular insectivores, feeding predominantly on Lepidopterans (moths). Breeding is typically mid-May through mid-July.[19] [20] [21] [22]

Potential for Eastern Whip-poor-will and Impact Assessment

Generally, the habitat available within the proposed aggregate site is not suitable for whip-poor-wills in areas with closed canopy forest. The existing open areas, edge habitat, and wetland ecosites have with some potential to provide suitable habitat for the species. Surveys for whip-poor-wills were conducted by FRi field crews at two stations within the proposed licence boundary and two stations in the surrounding landscape (Figure 4) during ideal weather, temporal, and moon phase conditions (also substantiated by whip-poor-will calling at known sites elsewhere in the region) on the evenings of May 27th and June 23rd, 2021. Despite the near perfect conditions, no birds were heard calling at any point during these surveys. Based on the absence of whip-poor-wills calling during ideal conditions it can be concluded that whip-poor-will are not utilizing the open habitat on or adjacent the proposed licence boundaries. There are no negative impacts expected to whip-poor-wills or their habitat.

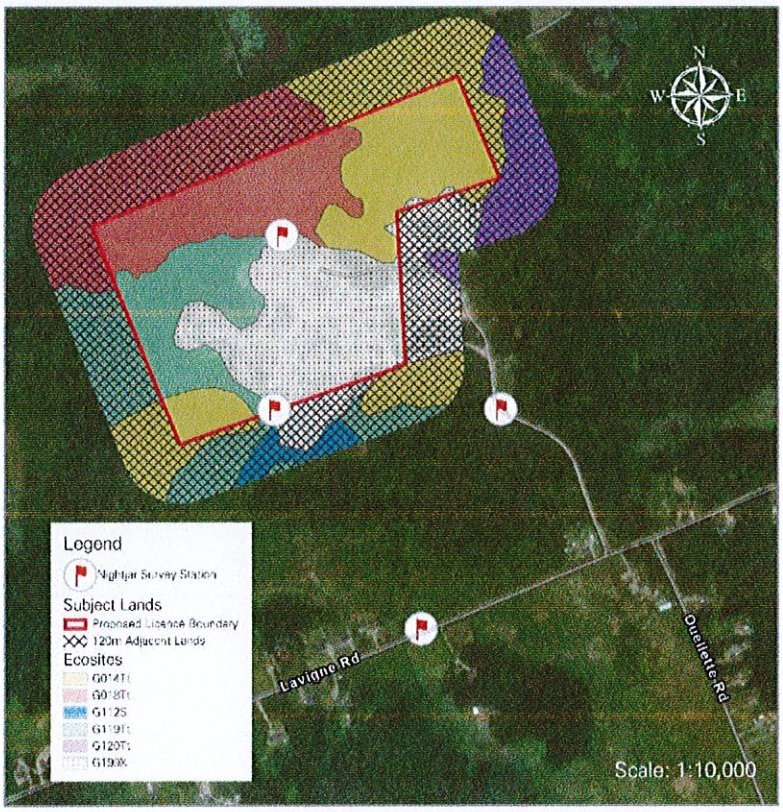

Figure 4: Location of nightjar surveys on May 27th and June 23rd, 2021

[19] Desy, G. 2010. Habitat Description, Whip-poor-will (*Caprimulgus vociferus*): Threatened. Ontario Ministry of Natural Resources. 16 pp. DRAFT.

[20] Ontario Ministry of Natural Resources. 2013. General Habitat Description for the Eastern Whip-poor-will (*Caprimulgus vociferous*)

[21] COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will *Caprimulgus vociferus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

[22] Cink, Calvin L. 2002. Eastern Whip-poor-will (*Antrostomus vociferus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/620

SAR Bat Species

A disease called white nose syndrome poses a very serious threat to bat populations in North America, threatening to extirpate the species in many locations.

During the active season, bats feed on insects at night and roost during the day. They roost either individually (males) or in groups (females with pups), usually in warm, elevated spaces. Bats often choose human-created roosts such as attics and abandoned buildings which offer optimum habitat for summer roosts, usually close to water and open areas for foraging. Natural roosts include large hollow trees and spaces behind loose bark. Bat species hibernate in caves and abandoned mines in October through April where temperatures remain above freezing and humidity levels are high.[23] [24]

Little Brown Myotis

According to the Significant Wildlife Habitat Technical Guide, Appendix G4, Table G4, little brown myotis use caves, quarries, tunnels, hollow trees or buildings for roosting. Maternity colonies are most often found in warm dark areas, like barns, attics and old buildings. They overwinter in caves and mine adits (horizontal mine shafts) in Ontario. This species forages mainly over open areas including wetlands and near forest edges where insect densities are greater. [25]

Northern Myotis

According to the Significant Wildlife Habitat Technical Guide, Appendix G4, Table G4, Northern myotis roost in hollow trees or under loose bark. Males roost individually while females are found in maternity colonies of up to 60 adults. They overwinter in mines and caves similar to other species which hibernate in Ontario. Unlike little brown myotis, northern myotis hunt primarily in forested areas, below the canopy.

Tri-coloured Bat

During the active season, Tri-coloured Bats can be found throughout older forested habitats. The species is known to form day roosts and maternity colonies in forests but may also be found roosting in barns or other anthropogenic structures. They forage for flying insects over water and along streams in the forest. Nearing the end of the summer, Tri-colored Bats will travel to their overwintering site, often situated underground or near a cave, where they swarm. This species typically overwinters in caves where they roost by themselves rather than as part of a group.

Potential for SAR bats and Impact Assessment

A passive ultrasonic recorder was strategically deployed during bat active season in suitable habitat. Recorders were placed to capture the open areas and forest edge habitat where bats would most likely be found on the subject property. The Wildlife Acoustics passive acoustic recorder was deployed for 41 consecutive nights; from June 17th to July 27th, 2021 inclusive, was set to triggered recording from sunset to sunrise and the

[23] Dobbyn, S. 1994. Atlas of the Mammals of Ontario. Federation of Ontario Naturalists. 120 pp.
[24] Ontario Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. Toronto: Queen's Printer for Ontario. 151pp.
[25] Forbes, G. 2012. COSEWIC. Technical Summary and Supporting Information for an Emergency Assessment of the Little Brown Myotis, *Myotis lucifugus*. 25pp.

internal clock set with the GPS accessory to ensure absolute locational accuracy. The minimum trigger frequency (14kHz) was chosen to include the full echolocation range of all eight (8) bat species found in Ontario. The recordings were analyzed with Wildlife Acoustics Kaleidoscope Pro software and verified by an experienced biologist.[26] One limitation of acoustic monitoring for bats is that pass counts only represent an *index of the magnitude of activity* rather than a population size estimate. For example, 84 passes from single silver-haired bat and a single pass from 84 silver-haired bats would be tabulated identically for a given night. The number of passes for each bat species recorded on the subject property (300+ total hours of recording) are as follows:

Bat Species	SAR?	Total passes	Median passes/nt	Most passes in a single night
Silver-haired	No (SWH)	485	6	84
Hoary	No (SWH)	302	5	30
Big Brown	No (SWH)	248	2	35
Little Brown	Yes	20	0	3
Northern	Yes	0	0	0
Tricolored	Yes	1	0	1

Individual day roosts for bats are impossible to rule out completely, but the age and composition of the forested ecosites don't align with the old-growth, upland, open-canopy forest habitats preferred by the forest-roosting bats. Both SAR bat species' (Little Browns and Tricolored bats) activity occurred over a very limited number of nights (with many nights with no passes at all) and was relatively low compared with the non-SAR bat species. It is very unlikely that SAR bats are using the subject lands for roosting or for any critical life processes outside of passing through or foraging on a very intermittent basis. Given the absence of SAR bat activity during the peak of the species' active season on several consecutive nights on the subject lands, it can be assumed that the subject lands do not support critical habitat for SAR bats. Considerations for non-SAR bats are included in the Significant Wildlife Habitat section of this report.

Areas of Natural and Scientific Interest (ANSIs)

There are no confirmed or candidate areas of natural and scientific interest within or adjacent the subject property.

Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) has been identified as one of the natural heritage feature areas under the Provincial Policy Statement (PPS, section 2.1.5). In general, section 2.1 of the PPS requires that natural heritage features and areas be protected for the long-term and that development and site alteration will not be permitted on or

[26] When the acoustic recorder is triggered by a sound with the appropriate frequency and duration, a recording is saved. Each recording is a series of pulses which represent the bat echolocating. The pulse series is called a bat pass. The bat passes provide valuable information with respect to which species are present, and the relative abundance over time or compared to other sites. It does not, however, give any indication of the actual number of individuals of a particular species.

adjacent to these areas unless it can be demonstrated that there will be no negative impact on the natural heritage features or ecological functions for which the area is identified.[27]

There are four broad categories of significant wildlife habitat that were considered during field investigations. They include seasonal concentration areas, rare vegetation communities and specialized habitats for wildlife, habitats of species of conservation concern), and animal movement corridors. The Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (SWHECS 5E)[28] and the process outlined in the Ministry of Natural Resources Natural Heritage Reference Manual (2010) (NHRM)[29] were used to guide field investigations related to significant wildlife habitat.

Potential for Significant Wildlife Habitat

Potentially significant habitats were identified following the classification of the ecosites and cross-referencing the list of known species ranges that overlap the study area. According to the SWH Ecoregion 5E Criterion Schedule, there are approximately forty-two different types of significant wildlife habitat for initial consideration; only those that were present or had the potential to be present based on the ecosite assessment are described further.

Seasonal Concentration Areas

Seasonal concentration areas are defined by the SWHTG as relatively small areas where species of wildlife are concentrated at certain times of the year. For example, in the spring and fall, migratory species of birds and butterflies concentrate in stopover areas where they can rest and feed.

Raptor Wintering Areas: G014Tt, G018Tt, G119Tt

This SWH type requires a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors and need to be a minimum of 20ha in size or larger. There are no meadow or field ecosite in or adjacent the proposed licence boundary and any raptors utilizing this area in the winter months may continue to do so. No negative impacts are anticipated as a result of the proposed licence.

Bat Maternity Colonies: G018Tt, G119Tt, G120Tt

The absence of bat activity on several consecutive nights in the appropriate monitoring period and the relatively low number of overall passes give confidence in concluding the absence maternity colonies on or near the property. For context, similar monitoring near a known Little Brown maternity colony in the region resulted in 334 bat passes over a 2-hour period. Based on the limited and inconsistent number of passes over a consecutive timeframe, it is unlikely that bat maternity roosts exist on the subject property. No negative impacts are anticipated and no further study required.

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[27] Provincial Policy Statement, 2014. Ontario Ministry of Municipal Affairs and Housing. 56 pp.
[28] Ontario Ministry of Natural Resources and Forestry. 2015. Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E. 46pp.
[29] Ontario Ministry of Natural Resources. March 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second edition. Toronto: Queen's Printer for Ontario. 248pp.

Habitat of Species of Special Concern

Three candidate significant habitat types which had potential to be present on the property were identified, including open country bird breeding habitat, shrub bird breeding habitat, and special concern species. Unlike their threatened and endangered counter parts, those SAR species listed as special concern do not receive specific habitat protection under the ESA. Any proposed work with potential to impact species of special concern should consider the provisions outlined in the 2020 Provincial Policy Statement.

Special Concern Species

Canada warbler, common nighthawk, eastern wood-pewee, monarch butterfly, olive-sided flycatcher, snapping turtle, and wood thrush have been confirmed in the 1 – 10 km^2 grids that overlap the project study area by others (OBBA, e-Bird), are known to be present in the general area, or potentially suitable habitat for the species was identified on the property during field investigations. Following ecosite determination, the list of species was further scoped to include those special concern species with potential to be present on the subject lands, including: Canada warbler, common nighthawk, monarch butterfly, snapping turtle, and wood thrush.

Canada Warbler (*Cardellina canadensis*)

Canada warblers are most often found in cool, wet, low-lying areas; including swamps, sphagnum bogs and moist forest edges and openings. They are often associated with sites that have a dense understory near open water, vegetation associations including alder and willow. Female Canada warblers build a loosely constructed cup-shaped nest on or near the ground in early May. The nest is well-concealed, often in thickets or areas with dense ferns. These are typically wet, mossy areas within forest among ferns, stumps, and fallen logs. Nests have been documented in a variety of micro-habitats including within a recessed hole of upturned tree root mass, rotting tree stump or sphagnum moss hummock. Eggs are laid at the end of May, fledglings leave the nest and are ready to migrate by the end of July, early August. Migration peaks at the end of August, beginning of September.[30] [31] [32]

Potential for Canada Warbler

Canada warblers are known to occur in the nearby area although no individuals were observed or heard calling during field investigations during breeding season and limited habitat is present in the proposed licence boundary. Tree clearing, grubbing and vegetation removal are recommended to occur outside of the species' breeding season.

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[30] COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler *Wilsonia Canadensis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

[31] Reitsma, Len, Marissa Goodnow, Michael T. Hallworth and Courtney J. Conway. 2010. Canada Warbler (*Cardellina canadensis*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/421

[32] http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/MNR_SAR_CND_WRBLR_EN.html

If the recommendations for setbacks, vegetation removal, and site preparation are respected, no impacts to Canada warblers are expected.

Common Nighthawk (*Chordeiles minor)*

Common nighthawks are a medium-sized insectivore that traditionally use open habitats such as rock barrens, forest clearings, gravel beaches and areas recently impacted by forest fire. They nest on open ground in these areas and are also known to use anthropogenic sites, especially flat gravel roofs in urban areas. No nest materials are used; ground cover at the nest sites includes gravel, sand, bare rock, leaves and lichen. Similar to Whip-poor-wills, Common Nighthawks are crepuscular (most active at dusk and dawn) insectivores. They commonly forage over open areas, often resting on gravel roads and airport runways or other similar features.[33]

Potential for Common Nighthawk

Surveys were conducted in conjunction with Whip-poor-will surveys as both species are expected to use similar habitats. Surveys were conducted during suitable lunar and weather conditions. No nightjars were heard on any of the survey nights. Common nighthawks are not using the property or the adjacent 120 meters for breeding; no further study required and no negative impacts expected.

Eastern wood-pewee (*Contopus virens*)

Eastern Wood-pewees are found in almost every forested ecosite in Ontario, usually associated with edge habitat and less often found in wetter sites. They are a medium-sized flycatcher with a signature 'pee-a-wee' call. Wood-pewees perch on dead branches in the mid-canopy and sally out after flying insects. Its diet includes flies, bugs, butterflies, moths, bees, wasps, beetles, grasshoppers, crickets, stoneflies, and mayflies. The pewee also eats small amounts of vegetable matter, including the berries and seeds of dogwood, blueberry, raspberry, and poison ivy. They nest mainly in deciduous saplings including oak and maple, and less so in conifer, usually restricted to pine species. A small, inconspicuous cup nest is built along a branch, woven with grasses and other vegetation and covered with lichen. Their size and design provide superb camouflage. Pewees are territorial, averaging territories 2 – 8 hectares in size.

Potential for Eastern wood-pewee

There is potentially suitable habitat for Eastern wood pewees on the subject property and adjacent lands. Eastern wood-pewees typically nest between June 6 until August 17 within the region and during this time, no vegetation clearing should take place. This timing restriction should serve to avoid impacts to individual birds and eliminate impacts to nests and nestlings. Provided the suggested timing restrictions are respected, no impacts to Eastern wood-pewees are anticipated.

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[33] Brigham, R. M., Janet Ng, R. G. Poulin and S. D. Grindal. 2011. Common Nighthawk (*Chordeiles minor*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/213

Monarch (*Danaus plexippus*)

In Ontario, monarch butterflies have two habitat requirements. Firstly, adults lay their eggs on common milkweed (*Asclepias syriaca*) and the resultant caterpillar eats milkweed leaves exclusively. Common milkweed is most often found in disturbed sites growing in a variety of soils. Adult butterflies also require nectar from wildflowers which are found in a variety of habitats and soil types. Wildflowers are typically found on open sites; such as grasslands, roadsides, agricultural areas and residential gardens.

Potential for Monarch

No adult Monarchs were observed feeding on wildflowers in June and July during field investigations and no Monarch caterpillars or other larval stages were found. Where additional edge habitat is created through tree clearing, additional suitable habitat will be created for monarchs and an overall benefit to the species may result. Where vegetation clearing is conducted in the recommended timing window for breeding birds, no negative impacts to monarchs are expected and no further study required.

Snapping Turtle (*Chelydra serpentina*)

Snapping turtles are found in the shallow waters of lakes, rivers and ponds. They occasionally move over land usually in search of suitable nest sites.

Potential for Snapping Turtle

There is no suitable habitat for this species on or adjacent the proposed licence boundary. Any individuals moving overland should be permitted to move away on their own. No negative impacts are anticipated.

Wood Thrush (*Hylocichla mustelina*)

The wood thrush lives in mature deciduous and mixed (conifer-deciduous) forests. They seek moist stands of trees with well-developed undergrowth and tall trees for singing perches. These birds prefer large forests but will also use smaller stands of trees. They build their nests in living saplings, trees or shrubs, usually in sugar maple or American beech.[34]

Potential for Wood Thrush

Wood thrushes have some potential to be found in the proposed licence boundary and adjacent lands and species observations have been documented nearby. Wood thrushes were not observed or heard calling during field investigations. The species typically nests from May 20th to July 29th of any given year in this ecodistrict. The overall timing restriction for breeding birds encompasses these dates and should serve to avoid impacts to individual birds and eliminate impacts to nests and nestlings. Provided the suggested timing restrictions are respected, no negative impacts to wood thrushes are anticipated.

[34] https://www.ontario.ca/page/wood-thrush

Summary of Natural Heritage Features & Impact Assessment

The following table summarizes the findings and provides recommendations to move forward while ensuring the intent of the A.R. 4.01.06 policy, the natural heritage sections of the Provincial Policy Statement (2020) and any other relevant policy and legislation are met.

Table 1: Natural heritage features summary and recommendations

Natural Heritage Category	Natural Heritage Feature		Recommendations	Negative Impacts Expected?
Habitat of Endangered & Threatened Species	Eastern Hog-nosed Snake		• Snakes shall not be harmed, harassed or killed and allowed to move away on their own	No
Significant Wildlife Habitat	Special Concern Species	• Eastern wood-pewee • Monarch • Wood Thrush	• Initial vegetation clearing to be conducted from September 1 to April 1	No

Recommended Mitigation

The following general recommendations are summarized to minimize impacts:

- Site clearing and vegetation removal are recommended to occur from September 1st to April 1st of any given year to protect breeding birds and monarchs;
- If a hog-nosed snake is observed moving through the subject lands, it should be permitted to move away on its own or relocated to a safe location nearby

Conclusion

It is our opinion that the proposed aggregate licence can proceed while minimizing or eliminating potential impacts on natural heritage features on and adjacent the site. If the recommendations and mitigation outlined in this report are implemented, the proposed license will be consistent with the Natural Heritage considerations in the Provincial Policy Statement (2020), the Municipality's Official Plan, Aggregate Resources Policy 4.01.06, the *Endangered Species Act* (2007), *Fish and Wildlife Conservation Act* (1997), *Fisheries Act* (1985) and the *Migratory Birds Convention Act* (1994).

Respectfully submitted,

Hannah Wolfram
Biologist

Appendix A: Primary Field Records and Data Collection

Forest Bird Monitoring Results

		Survey Point Locations and Species Observed (O) or Heard (C)					
Date	Weather	G014Tt (17T 633844 5124157)	G018Tt (17T 633489 5124095)	G112S (17T 633669 5123608)	G119Tt (17T 633326 5123760)	G120Tt (17T 633987 5123912)	G199X (17T 633720 5123884)
2021-05-27	Partly cloudy, 0-5km/h winds, 4°C	6:15am-6:25am	6:29am-6:39am	7:15am-7:25am	6:51-7:01am	5:59am-6:09am	7:50am-8:00am
		• black-capped chickadee (O,C) • red-breasted nuthatch (C)	• hermit thrush (O, C)	• Red-winged blackbird (O, C)	• pileated woodpecker (C) • blue jay (C) • eastern phoebe (C) • white-throated sparrow (C) • ruffed grouse (C) • ovenbird (C)	• northern flicker (C) • American robin (O,C) • ruffed grouse (C) • white-throated sparrow (C) • common raven (O,C)	• ovenbird (C)
2021-06-16	Clear skies, 5-10km/h winds, 14°C	6:31am-6:41am	6:50am-7:00am	7:20am-7:30am	7:06am-7:16am	6:15am-6:25am	7:40am-7:50am
		• cedar waxwing (C) • white-throated sparrow (C) • America redstart (C)	• red-breasted nuthatch (C) • chestnut-sided warbler (C)	• alder flycatcher (C) • common yellowthroat (C) • red-winged blackbird (O, C)	• alder flycatcher (C) • white-throated sparrow (C) • eastern phoebe (C) • ovenbird (C) • red-eyed vireo (C) • black-capped chickadee (C)	• veery (C) • red-eyed vireo (C)	• common raven (O, C) • blue jay (C) • pileated woodpecker (O,C) • red-eyed vireo (C)

Site Assessments and Ecological Surveys conducted on and adjacent the proposed permit area

Date	Weather Conditions	Assessment/Survey	Time on Site
May 12, 2021	• Clear skies, 5-10km/h winds, 12°C	• Ecological Land Classification • Spring reptile emergence and basking surveys	1pm to 4:30pm
May 18, 2021	• Partly cloudy, 10-15km/h winds, 22°C	• Ecological Land Classification boundary mapping continued • Reptile basking surveys	9am to 2pm
May 27, 2021 (AM)	• Clear skies, 5-10km/h winds, 5°C	• Forest Bird Monitoring • Reptile basking surveys	5:30am to 9am
May 27, 2021 (PM)	• 15%CC, 0-5km/h winds, 9°C	• Whip-poor-will Surveys	9:00pm to 11:00pm
June 16, 2021	• Clear skies, 0-5km/h winds, 19°C	• Targeted reptile nesting surveys • Forest Bird Monitoring • Ultrasonic bat recorder deployment	6am to 10:30am
June 23, 2021 (AM)	• Sun with 20%CC, 5-10km/h winds, 17°C	• Reptile basking surveys • Significant Wildlife Habitat surveys • Relocation of bat monitoring equipment	9am to 12pm
June 23, 2021(PM)	• Clear skies, CC<10%, 0-5km/h winds, 13°C	• Whip-poor-will Surveys	10pm to 12am
July 12, 2021	• Clear skies, 5-10km/h winds, 28°C	• Fish habitat assessment (adjacent lands) • Targeted reptile nesting surveys • Relocation of bat monitoring equipment	8am to 4pm
July 28, 2021	• Sunny, 15%CC, 10-15km/h winds, 21°C	• ELC confirmation (summer) • Significant Wildlife Habitat surveys • Targeted reptile nesting surveys • Retrieval of bat monitoring equipment	10am to 3pm

Bat Passes & Recorder Locations

KALEIDOSCOPE 4.5.4		BIG BROWN	HOARY	SILVER-HAIRED	LITTLE BROWN	TRICOLORED
Bats of North America 4.3.0 S/A:+1	Recorder Location on Site	EPTFUS	LASCIN	LASNOC	MYOLUC	PERSUB
*TOTAL:		248	302	485	20	1
20210617	17T 633761 5123714	4	7	6	0	0
20210618		8	4	1	0	0
20210619		5	4	4	0	0
20210620		7	6	4	0	0
20210621		0	1	0	0	0
20210622		0	1	0	0	0
20210623	17T 633647 5124004	0	8	3	1	0
20210624		10	4	9	1	0
20210625		5	3	6	0	0
20210626		0	0	0	0	0
20210627		2	8	2	0	0
20210628		0	9	7	0	0
20210629		6	3	2	0	0
20210630		0	3	6	0	0
20210701		0	0	3	0	0
20210702		1	5	5	0	0
20210703		1	6	4	0	0
20210704		13	30	16	0	0
20210705		6	7	5	0	0
20210706		2	2	5	0	0
20210707		0	3	5	0	0
20210708		1	1	1	0	0
20210709		8	8	5	1	0
20210710		9	9	30	0	0
20210711		12	18	17	1	0

	20210712	17T 633450 5123714	24	10	16	0	0
	20210713		35	29	18	2	0
	20210714		27	11	18	0	0
	20210715		1	2	0	0	0
	20210716		19	29	28	1	0
	20210717		12	18	25	0	0
	20210718		6	12	32	2	0
	20210719		0	3	23	0	0
	20210720		1	3	84	0	0
	20210721		0	3	6	2	0
	20210722		5	5	13	2	0
	20210723		2	5	12	3	0
	20210724		0	1	17	0	0
	20210725		15	11	17	1	0
	20210726		1	6	13	1	1
	20210727		0	4	17	2	0

Appendix B: Author's Qualifications

HANNAH WOLFRAM

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PROFESSIONAL SUMMARY

Hannah has over eight years of experience applying natural resource policy as part of local and regional projects involving private, public, and non-profit proponents and stakeholders. Her knowledge and experience include advising on environmental planning and natural heritage feature policy and legislation as it pertains to transportation, land development, aggregate extraction, Crown Land acquisition, work authorizations, and monitoring. She has several seasons of field experience conducting species and habitat surveys throughout the province and applying natural heritage-related policy through site specific recommendations, achieving impact avoidance through mitigation, compensation, and overall benefit measures.

She is a formally trained aquatic macroinvertebrate specialist through the Ontario Benthos Biomonitoring Network (OBBN), a certified Erosion and Sediment Control Practitioner (ESCP), and experienced expert witness at the Ontario Municipal Board and Ontario Land Tribunal.

PROFESSIONAL EXPERIENCE

- Biologist, FRi Ecological Services — 2017 – Present
- Program Coordinator, Discovery Routes Trail Organization — 2014 – 2017
- Greater Nipissing Stewardship Council, Director — 2014 – 2019

EDUCATION

- Bachelor of Science, Biology; Queen's University — 2014

KEY SKILLS AND EXPERIENCE

- Species at Risk, Significant Wildlife Habitat Impact Assessment & Mitigation
- Certified Erosion and Sediment Control Practitioner
- Environmental Impact Studies and Natural Heritage Assessments
- Aquatic invertebrate sampling, identification, and analysis
- Fisheries field sampling, backpack electrofishing

WORK EXPERIENCE

FRi Ecological Services, Biologist **2017 – Present**

- Manage and conduct field work, agency and stakeholder consultation, impact analysis, policy conformity, and reporting for over 60 unique projects each year from proposal to conclusion for municipal and conservation authority class EAs, Environmental Impact Studies, and natural environment reporting for aggregate operations, federal and provincial authorizations, monitoring, and provincial highway and bridge rehabilitation projects
- Conduct surveys and analyze results for natural heritage features including habitat of species at risk, wetlands, fish habitat, significant wildlife habitat, migratory birds, asset management, and fisheries studies for highway rehabilitation projects
- Produce site and project-specific management plans and present findings and policy conformity to clients, municipalities, and community organizations

Discovery Routes Trails Organization, Program Coordinator **2014 –2017**

- Coordinated the preliminary planning and development process of a long-distance cycling route from the Ottawa Valley to the Greater Sudbury border through 16 municipalities in partnership with community stakeholders, consultants, the Ministry of Transportation, and The Trans Canada Trail Foundation
- Planned and directed stakeholder meetings and public information centers across the region as well as prepared all mapping, GIS deliverables, and presentation materials
- Engaged First Nations communities, business owners in the hospitality industry, the North Bay Parry Sound Health Unit, and non-profit organizations to support of the expansion of the Ontario by Bike network into Northern Ontario
- Upgraded the internal GIS system of the organization and procedures for mapping and data management and designed and internal inventory of trail data and statistics

Greater Nipissing Stewardship Council Director, Secretary **2014 – 2019**

- Proposed creative and innovative solutions to environmental concerns identified in the region and assisted with event planning and grant proposals
- Corresponded with community stakeholders, the council membership, and community volunteers on a regular basis and facilitated creative conflict resolution to achieve council goals
- Distributed, prepared, and recorded monthly meeting agendas and minutes and liaised with the council president, treasurer, and members-at-large

FRi Ecological Services, Field Staff **2013 – 2014**

- Responsible for assisting with surveying for natural heritage features including habitat of species at risk, significant wetlands, fish habitat, and significant wildlife habitat
- Prepared memos, Environmental Site Assessment and Natural Environment reports for clients
- Conducted habitat assessment, gravity pipe, asset management, and fisheries studies for highway rehabilitation projects

PROFESSIONAL ASSOCIATIONS AND CERTIFICATIONS

- Erosion and Sediment Control Practitioner (ESCP™) Certificate, VOI Training Group
- Ontario Benthos Biomonitoring Network (OBBN) Certification, Laurentian University
- Royal Ontario Museum Fish Identification and Minnow Identification Workshops
- Data Sensitivity Training, Natural Heritage Information Centre (NHIC)
- Ontario Species at Risk Basic Training & Safe Handling Training
- Standard/Wilderness First Aid and CPR-C/AED Certification
- Class 2 Backpack Electrofishing Certification
- Canadian Ski Instructors' Alliance (CSIA) Level II Certification

REPRESENTATIVE PROJECTS

Ski Ridge Estates EIS, City of North Bay, ON

Project Description: 71-lot Plan of Subdivision on Janey Avenue in North Bay, ON

Responsible For:

- Conducting an Environmental Impact Study to identify values, potential impacts and appropriate mitigation measures related to species at risk and their habitat as well as significant wildlife habitat
- Responsible for fulfilling the requirements of the MNRF and Fisheries & Oceans Canada (DFO) approvals for a residential water crossing; carrying out fish salvage prior to culvert installation and construction

Natural Environment Report L1&2, Pt Lt 19, Con 9, Township of Joly

Project Description: Category 9 and 11 Permit in the Twp of Joly, ON

Responsible For:

- Conducting all species and habitat surveys to determine presence and potential presence of natural heritage features on and adjacent the proposed permit area and identifying and quantifying potential impacts and suitable mitigation
- Provided recommendations and input through NE2 report to avoid negative impacts to significant wildlife habitat, wetlands, fish and fish habitat, and species at risk and their habitat and remain in compliance with all relevant provincial and federal policy and legislation

Blackstone Lake EIS, Township of the Archipelago

Project Description: Subdivision development involving the severance of four lots fronting on Blackstone Lake in Parry Sound, ON

Responsible For:

- Conducting an Environmental Impact Study to identify values, potential impacts and suitable mitigation measures related to SAR species and habitat, wetlands, significant wildlife habitat, lake development capacity, and fish habitat
- Assessing near shore and shoreline areas for delineation of quantity and quality of any critical fish habitat and determination of potential docking envelopes

189 Legault Street EIS, City of North Bay, ON

Project Description: 17-lot general industrial development in North Bay, ON

Responsible For:

- Conducting an Environmental Impact Study to identify values, potential impacts and appropriate mitigation measures related to species at risk and their habitat, significant wildlife habitat, wetlands, and fisheries
- Responsible for liaising with MECP, project engineer, and proponent to coordinate an approved Species at Risk avoidance plan in compliance with the *Endangered Species Act (2007)*