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Environmental Impact Statement
Proposed Subdivision Plan
2085 Fourth Line Road
Geographic Township of Beckwith
Lanark County, Ontario

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Submitted to:

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Lanark County, Ontario

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Project: 100165.006 - V2

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EXECUTIVE SUMMARY

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Grizzly Homes to complete an Environmental Impact Statement (EIS) for the property located on part of lot 10, Concession 3 in the Geographic Township of Beckwith, Lanark County, Ontario. This EIS has been completed in support of a proposed plan of subdivision to permit the development of an approximately 27 hectare (ha) rural residential property into a 30-lot residential subdivision and was completed in accordance with all federal, provincial and municipal policies and guidelines, as applicable.

In support of this EIS a desktop review and numerous field investigations were completed to identify the presence or absence of natural heritage features and species at risk (SAR) on-site. Field investigations were completed throughout spring 2021. The focus of the site investigations was to describe, in general, the natural and physical setting of the subject property with a focus on confirming the presence or absence of natural heritage features and potential SAR or their habitat as identified in the desktop review.

Following completion of the desktop review and site investigations the following natural heritage features were identified on-site or within the study area: local wetlands and fish habitat, significant woodlands, significant wildlife habitat for raptor wintering area (*candidate*), turtle wintering are (*confirmed*), waterfowl nesting SWH (*candidate*), woodland amphibian breeding habitat (*confirmed*), wetland amphibian breeding habitat (*confirmed*), marsh breeding bird habitat (*candidate*) and special concern and rare wildlife habitat (eastern wood-pewee, evening grosbeak, golden-winged warbler, grasshopper sparrow, rusty blackbird, wood thrush and snapping turtle). The following SAR and their habitat were identified as having a potential to occur on-site: bobolink, eastern meadowlark, eastern whip-poor-will, eastern small-foot myotis, little brown myotis, tri-colored bat, Blanding's turtle and butternut.

Potential impacts to the natural heritage features were primarily associated with the loss of field, woodland and forest habitat, the loss of species at risk regulated habitat, and indirect impacts to local wetlands, significant wildlife habitat and fish habitat. Impacts to local wetlands, significant wildlife habitat and fish habitat are primarily associated with alterations to water quality through increased nutrient and sediment loading. Impacts to Blanding's turtles are limited to transient turtles, no regulated habitat was identified on-site.

Potential impacts to natural heritage features on-site are likely to be mitigated through the implementation of development setbacks from surface water features. For the protection of the on-site local wetlands, a 15 m setback is recommended. To protect significant woodlands, and habitat associated with significant wildlife habitat and habitat of species at risk, development envelopes are recommended for proposed lots with significant woodland present.

Additionally, to provide additional protection to potential SAR and their habitat on-site, reptile and amphibian exclusion fencing should be installed around all future construction areas prior to any development or site alteration, to prevent the immigration of SAR turtles and other wildlife into the construction area. Should any SAR be discovered throughout the course of any development on-site, operations should stop and the species at risk biologist with the local MECP district should be contacted immediately for further direction. Furthermore, to ensure compliance with applicable legislation, all best management practices and adherence to vegetation clearing for birds and bats, outlined in Section 7 should be followed to ensure no negative impacts occur to natural heritage features on-site.

The proposed plan of subdivision complies with the natural heritage policies of the Provincial Policy Statement and the Lanark County Official Plan. No negative impacts to identified natural heritage features or their ecological functions are anticipated as a result of the proposed development as long as all mitigation measures in Section 7 are enacted and best management practices followed.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Grizzly H to carry out an Environmental Impact Statement (EIS) for the property located at 2085 Fourth Line Road, in the Geographic Township of Beckwith, Lanark County (hereafter referred to as "the subject property"). The general location of the subject property is illustrated on Figure A.1 in Appendix A.

1.1 Purpose

The proponent is seeking to develop the existing 27-hectare land area into a 30-lot residential subdivision. Based on Section 5 of the Lanark County Official Plan (Lanark County, 2012) an EIS is required demonstrating that the proposed plan of subdivision will not negatively impact any potential natural heritage features which may be present within the study area. The study area is defined as the property boundary and the adjacent lands encompassing an area of 120 m beyond the property boundary. The subject project and the extents of the study area are illustrated on Figure A.2.

1.2 Objective

The 2020 Provincial Policy Statement (MMAH, 2020) issued under Section 3 of the Planning Act states that "development and site alteration shall not be permitted in: habitats of species at risk, significant wetlands, significant woodlands and significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions." Similarly, the 2020 Provincial Policy Statement dictates that 'development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements."

The objective of the work presented herein is twofold; 1) to identify and evaluate the significance of any natural heritage features, as defined in the Provincial Policy Statement (MMAH, 2020), on the subject property and within the broader study area and; 2) to assess the potential impacts from the proposed plan of subdivision on any natural heritage features identified and to recommend appropriate and defensible mitigation measures to ensure the long-term protection of any natural heritage features identified.

To meet these objectives, the EIS presented herein has been completed in accordance with the following provincial and municipal regulations, policies and guidelines:

- Provincial Policy Statement (MMAH, 2014);
- Endangered Species Act (Ontario, 2007);
- Conservation Authorities Act (Ontario, 1990);
- Natural Heritage Reference Manual (OMNR, 2010); and
- Lanark County Official Plan (Lanark County, 2012).

1.3 Physical Setting

The subject property is located at 2085 Fourth Line Road, in the Geographic Township of Beckwith, Lanark County, and is comprised of coniferous and deciduous woodlands, thicket and deciduous swamps, cultural thickets and a dug pond. The subject property is bound to the northwest by Fourth Line Road and by the rear yards of properties fronting to Fourth Line Road, to the northeast the site is bound by vacant land and neighbouring properties of Lot 10, Concession 3. To the southwest the site is bound by vacant land and neighbouring properties of Lot 9, Concession 3, to the southeast the site is bound by Perth Road and the rear yards of properties fronting to Perth Road.

1.4 Land Use Context

The existing land use designation from the Lanark County OP is settlement area. The land-use from the Beckwith Township is rural lands. The zoning by-law from the township is residential (R).

2.0 METHODOLOGY

2.1 Desktop Review

A desktop information gathering exercise was completed to aid in the scoping of field investigations and to gather information relating to natural heritage features which may be present on the subject project or within 1 km of the subject property. An additional component of the desktop review was to assess the potential presence of SAR to occur on the subject property or within the study boundary based on a review of publicly accessible occurrence records, and review of SAR habitat requirements and range maps.

Information regarding the potential presence of natural heritage features and SAR within the vicinity of the site was obtained from the following sources:

- Make A Map: Natural Heritage Areas (OMNRF, 2014a);
- Land Information Ontario (OMNR, 2011c);
- Lanark County Official Plan (Lanark County, 2012);
- Ontario Geological Survey (OGS, 2019);
- Natural Heritage Information Centre Biodiversity Explorer (OMNRF, 2013);
- Breeding Bird Atlas of Ontario (Cadman et al., 2007);
- eBird (Cornell Lab of Ornithology, 2022);
- iNaturalist (iNaturalist, 2022)
- Atlas of Mammals of Ontario (Dobbyn, 1994);
- Ontario Herpetofaunal Atlas (Oldham and Weller, 2000);
- Ontario Ordonata Atlas (OMNR, 2005); and
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019).

2.2 Field Investigations

Field investigations were undertaken to describe in general, the natural and physical setting of the subject property with a focus on natural heritage features and to identify any potential SAR or their habitat that may exist at the subject property.

Field investigations completed in support of this EIS are outlined in Table 2.1 below. Photographs of site features taken during field investigations are provided in Appendix B.

Table 2.1 Summary of Field Investigations

Date	Time	Weather	Purpose
April 19, 2021	20:00-21:10	15°C, ~40-90% cloud cover, Beaufort 1, no precipitation	Amphibian Breeding Survey
April 26, 2021	14:15-16:15	9°C, ~0% cloud cover, Beaufort 3, no precipitation	Turtle Basking Survey
April 27, 2021	08:00-11:00	15°C, 100% cloud cover, Beaufort 1, no precipitation	Preliminary Constraints, Ecological Land Classification
May 6, 2021	12:45-14:15	11°C, ~10% cloud cover, Beaufort 1, no precipitation	Turtle Basking Survey
May 12, 2021	11:00-13:15	14°C, ~0% cloud cover, Beaufort 2, no precipitation	Turtle Basking Survey
May 18, 2021	10:00-14:30	20°C, ~10-40% cloud cover, Beaufort 3, no precipitation	Turtle Basking Survey
May 19, 2021	22:30-23:00	21°C, ~30% cloud cover, Beaufort 0, no precipitation	Amphibian Breeding Survey
May 19, 2021	23:00-23:25	21°C, ~70% cloud cover, Beaufort 0, no precipitation, moon phase 52%	Whip-poor-will Breeding Survey
June 2, 2021	09:00- 10:30	19°C, ~0% cloud cover, Beaufort 0, no precipitation	Turtle Basking Survey
June 2, 2021	02:00- 02:30	14°C, ~0% cloud cover, Beaufort 0, no precipitation, moon phase 48%	Whip-poor-will Breeding Survey
June 9, 2021	9:00-10:00	23°C, ~40% cloud cover, Beaufort 2, no precipitation	Breeding Bird Survey
June 22, 2021	08:00- 09:30	12°C, ~50% cloud cover, Beaufort 2, no precipitation	Breeding Bird Survey
June 24, 2021	23:45- 00:30	21°C, ~75% cloud cover, Beaufort 0, no precipitation, moon phase 100%	Whip-poor-will Breeding Survey
July 5, 2021	00:20-01:00	21°C, ~80% cloud cover, Beaufort 1, light precipitation	Amphibian Breeding Survey
July 8, 2021	06:30-08:00	13°C, ~100% cloud cover, Beaufort 3, no precipitation	Breeding Bird Survey

2.2.1 Ecological Land Classification

Vegetation communities on the subject property were delineated during the desktop review stage of this EIS using publicly available air photos and confirmed in the field on April 27, 2021, following the Ecological Land Classification System for Southern Ontario (Lee et al., 2008). Vegetation

communities were confirmed in the field by employing the random meander methodology while documenting dominant vegetation species within the various vegetation community forms.

2.2.2 Breeding Bird Surveys

Breeding bird surveys were conducted on three occasions at five point count locations; breeding bird survey locations are provided on Figure A.2 in Appendix A. Breeding bird surveys followed protocols from the Canadian Breeding Bird Surveys (Downes and Collins, 2003) and the Ontario Breeding Bird Atlas (Cadman et al., 2007). Surveys were conducted no earlier than 30 minutes before sunrise and were completed within 5 hours of sunrise, to encompass peak song bird activity. Breeding bird surveys consisted of 5 minutes of passive listening in which all birds heard or seen within the survey period were recorded, including species, sex and breeding behaviour, if possible.

A list of all avian species identified on-site is provided in Table C.1 in Appendix C.

2.2.3 Basking Turtle Surveys

In order to address the potential for the site to provide turtle overwintering habitat and to assess the presence or absence of Blanding's turtle, a species at risk, a series of five turtle basking surveys were completed following the approved protocol for Blanding's turtles established by the MNRF (2015). Basking turtle surveys were carried out at each surface water and wetland feature illustrated on Figure A.2.

2.2.4 Amphibian Breeding Surveys

Amphibian breeding surveys were conducted on three occasions at three point count locations; breeding amphibian survey locations are provide on Figure A.2. Breeding amphibian surveys followed protocols from the Marsh Monitoring Program (Bird Studies Canada, 2008). Surveys were conducted no earlier than 30 minutes after sunset and were completed by midnight, to encompass peak amphibian calling activity. Breeding amphibian surveys consisted of 3 minutes of passive listening in which all amphibians calling during the survey period were recorded, along with their call code. A list of all amphibian species identified on-site is provided in Table C.1 in Appendix C.

2.2.5 Nocturnal Whip-Poor-Will Surveys

Nocturnal whip-poor-will surveys were conducted on three occasions at two point count locations; whip-poor-will survey locations are provided on Figure A.2. Whip-poor-will surveys followed protocols from the MNRF (MNRF, 2014). Surveys were completed on May 19, June 2 and 24, 2021.

2.3 Data Analysis

An evaluation of the significance of natural heritage features, the sensitivity of identified flora and fauna and the potential impacts posed by the proposed development was undertaken through an analysis of desktop and field investigation data using the approaches and criteria outlined in the following documents:

- Natural Heritage Reference Manual (OMNR, 2010);
- Significant Wildlife Habitat Technical Guide (OMNR, 2000);
- Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015); and
- Significant Wildlife Habitat Mitigation Support Tool (OMNRF, 2014b)

3.0 EXISTING ENVIRONMENT

3.1 Ecoregion

The site is situated Ecoregion 6E-11 (Lake Simcoe-Rideau), which extends from Lake Huron in the west to the Ottawa River in the east. The climate of Ecoregion 6E is categorized as humid, high to moderate temperate ecoclimate with a mean annual temperature range between 4.9°C to 7.8°C and an annual precipitation ranging between 759 mm to 1,087 mm (Crins et al., 2009).

The eastern portion of the Ecoregion, which the subject property is located, is underlain by glaciomarine deposits as a result of the brief post-glacial incursion of salt water from the Champlain Sean along the St. Lawrence Valley. This Ecoregion falls with Rowe's (1972) Great Lakes-St. Lawrence Forest Region, including its Huron-Ontario and Upper St. Lawrence sections, and a small part of the Middle Ottawa Forest section (Crins et al., 2009).

3.2 Study Area Land Use

A review of aerial photographs indicates that the subject property is a mix of forest and scrub land with the presence of standing freshwater pond. The surrounding area is agricultural, residential, forested, and scrub land (Figure 1). Historical aerial imagery depicts residential development to the east and southeast of the property since 1985.

Figure 1. Temporal Changes in Land Use

3.3 Landforms, Soils and Bedrock Geology

The topography of the site is relatively flat with a gentle downward slope from south to north, from a topographical high of 146 mASL in the southern portion of the site to a topographical low of 141 mASL in the northern portion of the site.

A single topographical landform, as mapped by Chapman and Putnam (1984) is described on the subject property, the limestone plains of the Ottawa Valley Clay Plains physiographic region.

The Ontario Geological Survey (OGS, 2019) identifies one surficial soil unit on the subject property, Paleozoic bedrock.

Bedrock at the site, is described by OGS (2019) as entirely the Beekmantown Group comprised of dolostone and sandstone.

3.4 Surface Water, Groundwater and Fish Habitat

Surface water on the subject property consists of two features: a dug pond with accompanying berm and surrounding swamp located in the western centre of the property; and a swamp in the southern half of the property along the eastern property boundary.

A fisheries assessment was not conducted as part of this EIS; however, based on field observations and the isolated nature of each surface water feature, it is assumed that fish habitat is not present on-site.

Groundwater investigations were not completed in support of this EIS.

3.5 Vegetation Communities

Vegetation communities on-site were confirmed by GEMTEC in 2021, following protocols utilized in the Southern Ontario Ecological Land Classification System (Lee et al., 2008). Vegetation at the site represents a mosaic of deciduous and coniferous forests, cultural thickets, local wetlands and ponds. Table 3.1 below provides a summary of the various vegetation communities identified on-site while Figure A.3 in Appendix A provides an illustration of the various vegetation communities.

Table 3.1 Vegetation Communities On-site

ELC Type	Description	Size (ha)
Cultural Thicket (CUT)	Located in the northern half and southeastern corner of the property is a cultural thicket. This community was dominated by common juniper with the scattered presence of other low shrub growth species such as common buckthorn (*Rhamnus cathartica*) and hawthorn. Tree species along the edge of the community included white elm, white ash, ironwood and eastern white cedar. Herbaceous vegetation included poison ivy, buckthorn saplings, red raspberry, poison parsnip, goldenrod species, vetch and a variety of grasses.	10.0
Willow Mineral Deciduous Thicket Swamp (SWTM3)	Located in the west central area of the property is a willow mineral deciduous thicket swamp. This community was dominated by willow species and dead stand eastern white cedar trees. The herbaceous layer consisted of grasses and sedges.	1
Shallow Water (SA)	Located in the west central area of the property is a shallow water pond. This community was dominated by green algae (*Chara* sp.). Lesser constituents included water lily species and emergent vegetation.	0.4
Single Family Residential (RVC_3)	Single family residential building occurs in the north central portion of the property.	0.4
Ash Mineral Deciduous Swamp (SWDM2)	Located in the east central portion of the property is an ash mineral deciduous swamp. Vegetation in this community was dominated by green ash and black ash. Shrub and herbaceous layer occurred sporadically throughout this community due to a large amount of standing water.	1.6
Fresh-Moist White Cedar Coniferous Forest (FOCM4)	Occurring throughout the central and southern end of the property is a white cedar coniferous forest. This community was dominated by eastern white cedar. Lesser constituents included ironwood, large tooth aspen, trembling aspen and plantings of white pine and spruce. Shrub layer consisted of common buckthorn and sugar maple. The herbaceous layer was sparse and made up of mostly grass.	6.13
Dry-Fresh Sugar Maple – Ironwood Deciduous Forest (FODM5-4)	Occurring in the southern portion of the property is a sugar maple and ironwood dominated deciduous forest. Lesser constituents include white ash. The shrub layer contains sugar maple and ironwood while the herbaceous layer includes white ash saplings.	5.5

3.6 Wildlife

Wildlife observed on-site and within the study area during field investigations completed in 2021 are summarized in Table C.1 in Appendix C. Incidental wildlife observations were documented during the various surveys detailed in Section 2.2.

4.0 NATURAL HERITAGE FEATURES

Natural heritage features are defined in the PPS as “features and area, including *significant wetlands, significant coastal wetlands, fish habitat, significant woodlands* south and east of the Canadian Shield, *significant valleylands* south and east of the Canadian shield, *significant habitats of endangered species and threatened species, significant wildlife habitat* and *significant areas of natural and scientific interest*, which are important for their environmental an social values as a legacy of the natural landscape of an area”.

4.1 Significant Wetlands

As described in the Natural Heritage Reference Manual (OMNR, 2010), wetlands “mean lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface.” While *significant* in regards to wetlands means “an area identified as provincially significant by the Ontario Ministry of Natural Resources and Forestry using evaluation procedures established by the Province, as amended from time to time.”

No significant wetlands were identified on-site or within the study however, local unevaluated wetlands occur in the central western portion of the property and in the south central along the eastern property boundary. Impacts to local wetlands from the proposed project are discussed in Section 6.

4.2 Significant Woodlands

Significant woodlands are defined in the natural heritage reference manual (OMNR, 2010) as “an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history.”

At the local scale, significant woodlands are defined and designated by the local planning authority. Generally, most planning authorities have defined significant woodlands as any woodland that contains any of the four criteria listed in Section 7.2 of the natural heritage reference manual (OMNR, 2010), including: woodland size, ecological functions, uncommon characteristics and economic and social functional values.

Table C.2 in Appendix C, presents the screening rationale for significant woodlands applied in this EIS. For comparison of woodland criteria used in Table C.2, the Official Plan of the Township of Beckwith did not identify any significant woodland within the planning area. The Lanark County Official Plan Schedule A also does not indicate that any of the woodland present on-site is significant. Based on the guidance outlined in the natural heritage reference manual (OMNR, 2010) it is assumed that the woodland coverage within the planning area is between 30% and 60% of the land area, therefore the minimum woodland size for determining significance is 50 ha or greater.

Based on the NHRM (OMNR, 2010) screening criteria presented in Table C.2, significant woodlands are present on-site due to their proximity to local wetlands and fish habitat; however the identification of significant woodlands is conducted by municipal planning authorities and according to the Township of Beckwith and Lanark County Official Plans, no significant woodlands were identified on-site.

As such, no significant woodlands are present on-site and are not discussed further in this EIS.

4.3 Significant Valleylands

Valleylands are defined in the natural heritage reference manual (OMNR, 2010) as 'a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of time". The identification and evaluation of significant valleys lands in Ontario is based on the recommended criteria from the MNRF and is the responsibility of local planning authorities.

In Southern Ontario, conservation authorities have identified valleylands as part of their regulation mapping (i.e., floodplain mapping); however, where valleys lands have not been defined, their physical boundaries are generally determined as the 'top-of-bank' or 'top-of-slope' associated with a watercourse. For less well-defined valleys, the physical boundary may be defined by riparian vegetation, flooding hazard limits, ordinary high water marks or the width of the stream meander belt (OMNR, 2010).

As discussed in Section 3.2, the site is relatively flat and no valleylands have been identified on-site, as such valleylands are not discussed or evaluated further in this EIS.

4.4 Significant Areas of Natural and Scientific Interest

The MNRF identifies two types of areas of natural and scientific interest (ANSI) in Ontario: life sciences ANSIs typically represent significant segments of Ontario's biodiversity and natural landscapes, while earth science ANSIs typically represent significant examples od bedrock, fossils or landforms in Ontario (OMNR, 2010).

No ANSI have been identified on-site or adjacent to the site during the desktop review or during site investigations. Therefore, ANSI are not discussed or evaluated further in this EIS.

4.5 Significant Wildlife Habitat

The natural heritage reference manual (OMNR, 2010), in combination with the significant wildlife habitat technical guide (OMNR, 2000) and the significant wildlife habitat ecoregion criterion schedules (OMNRF, 2015) were used to identify and evaluated potential significant wildlife habitat on-site. The significant wildlife habitat is broadly categorized as habitats of seasonal concentration of animals, rare vegetation communities, specialized habitats for wildlife, habitats of species of conservation concern and animal movement corridors. Table C.3, C.4, C.5 and C.6

in Appendix C, provide the screening rationale for each category of significant wildlife habitat, respectively.

4.5.1 Habitats of Seasonal Concentrations of Animals

Seasonal concentration areas are habitats where large numbers of species congregate at one particular time of the year. The significant wildlife habitat technical guides (OMNR, 2000) and significant wildlife habitat ecoregion criterion schedules (OMNRF, 2015) identify 11 types of seasonal concentration habitats that may be considered significant wildlife habitat. These 11 types of seasonal habitat are presented in Table C.3 in Appendix C, including a brief description of the rationale as to why or why they are not assessed further in this EIS.

Following review of Table C.3 in Appendix C, two *candidate* habitats of seasonal concentration of animals are present on-site, raptor wintering area and turtle wintering areas. The *candidate* SWH are discussed in detail in the subsections below.

4.5.1.1 Raptor Wintering Area

The combination of forest and upland habitat on-site provides c*andidate* raptor wintering area. Raptor wintering area SWH provides critical overwintering habitat for the following raptor species: rough-legged hawk, red-tailed hawk, northern harrier, American kestrel, snowy owl, short-eared owl and bald eagle. Bald eagle habitat requires the forest community to be adjacent to shoreline areas of large rivers or lakes with open water. The defining criteria for confirmed raptor wintering area is the use of the habitat by one or more short-eared owl, one or more bald eagle or at least 10 individuals of the listed hawk/owl species (OMNRF, 2015). In order to be significant, sites must be used regularly (3 out of 5 years) for a minimum of 20 days by the number of birds detailed above (OMNRF, 2015).

A formal raptor wintering survey was outside of the scope of this EIS. The *candidate* significant wildlife habitat for raptor wintering area corresponds with the deciduous and coniferous forest and cultural thicket on-site (ELC code FODM5, FOCM4 and CUT on Figure A.3 in Appendix A). Given the lack of suitable shoreline habitat on-site the property does not support raptor wintering areas for bald eagle. Potential impacts to *candidate* raptor wintering area SWH are discussed in Section 6.

4.5.1.2 Turtle Wintering Area

Confirmed turtle wintering areas SWH was identified on-site within the one of the local wetlands.

To evaluate the potential for the local wetlands to provide turtle wintering area SWH, a series of turtle basking surveys were conducted. Turtle wintering areas provide protection for turtle species from winter element and typically consist of permanent water bodies, large wetlands, bogs or fens, with adequate dissolved oxygen, soft substrates and deep water. The defining criteria for

confirmed turtle wintering area SWH is the presence of 5 over-wintering midland painted turtles, one or more northern map turtle or one or more snapping turtle within a wetland (OMNRF, 2015).

Wintering areas may be identified by searching basking areas for congregations of turtles on warm, sunny days during the spring or fall (OMNRF, 2015). A total of five basking turtle surveys were conducted for the subject property. Table 4.1 below provides a summary of the basking turtle survey results.

Table 4.1 Summary of Turtle Basking Surveys

Location	Species / Highest Number Observed / Date	Confirmed SWH
SWDM2	Midland painted turtle / 3 / April 26, 2021 Midland painted turtle / 12 / May 6, 2021 Midland painted turtle / 6 / May 12, 2021 Midland painted turtle / 9 / May 18, 2021	Yes
SWT	Midland painted turtle / 1 / April 26, 2021 Midland painted turtle / 3 / May 6, 2021 Midland painted turtle / 2 / May 18, 2021	No

Following review of Table 4.1 above, the local wetland (illustrated as SWDM2 on Figure A.3) provides *confirmed* turtle overwintering area due to the presence of more than 5 over-wintering midland painted turtles. Potential impacts to *confirmed* turtle wintering area SWH due to the proposed development are discussed in Section 6.

4.5.2 Rare Vegetation Communities

Rare vegetation communities in the province are described generally as those with an S1 to S3 ranking by the NHIC, and typically include communities such as sand barrens, alvars, old growth forests, savannahs and tallgrass prairies.

The vegetation communities identified on-site and described in Section 3.4 of this report are not ranked by the NHIC as S1, S2 or S3 and are therefore not considered to be rare vegetation communities. As such, rare vegetation communities are not discussed or evaluated further in this EIS.

4.5.3 Specialized Habitats for Wildlife

Specialized wildlife habitats are microhabitats that provide a critical resource to some groups of wildlife. The significant wildlife habitat technical guide (OMNR, 2000), defines eight specialized habitats that may constitute significant wildlife habitat, these eight types of specialized wild habitat are evaluated in Table C.4 in Appendix C.

Following review of Table C.4 in Appendix C, three *candidate* specialized habitats for wildlife are present on-site or within the broader study area: waterfowl nesting area, wetland amphibian breeding habitat and woodland amphibian breeding habitat. The *candidate* SWH are discussed in detail in the subsections below.

4.5.3.1 Waterfowl Nesting Area

Candidate waterfowl nesting area SWH has been identified on-site and is associated with all upland habitats within 120 m of the local wetlands on-site where waterfowl breeding is known to occur, as defined in the SWH criteria schedule (OMNRF, 2015).

Nine waterfowl species are listed as indicator species for waterfowl nesting areas: American black duck, northern pintail, northern shoveler, gadwell, blue-winged teal, green-winged teal, wood duck, hooded merganser, and mallard. Based on observations from breeding bird surveys, only one of the listed species was observed on-site, mallard. A total of 10 nesting mallard pairs are required to confirm SWH. Waterfowl nesting can occur in any upland ecosite; however, based on GMETECs professional experience in completion of waterfowl nesting surveys, habitat conditions present on-site are unlikely to provide *confirmed* SWH for nesting waterfowl. This conclusion is supported by the observation of only one defined nest on-site, the absence of other listed species and the fact that less than 10 mallard pairs were observed on-site.

Impacts to *candidate* waterfowl nesting SWH from potential future development are discussed in Section 6.

4.5.3.2 Amphibian Breeding Habitat

Candidate woodland amphibian breeding habitat was identified on-site within the on-site swamp communities adjacent to woodlands on-site (SWDM2 and FODM5-4). *Candidate* wetland amphibian breeding habitat was identified on-site within swamp and associated pond (SA and SWTM3 on Figure A.3). To evaluate the potential for the habitats on-site to provide amphibian breeding habitat, a series of amphibian breeding surveys were conducted.

Table 4.2 below summarizes the results of the amphibian breeding surveys described in Section 2 of this report. Figure A.2 in Appendix A illustrates the survey locations.

Table 4.2 Summary of Amphibian Breeding Call Surveys

Survey Location	Breeding Habitat	Species / Highest Call Code / Date	Confirmed SWH
1	Wetland	NLFR / 1-1 / April 19, 2021 SPPE / 3* / April 19, 2021 GRTR / 3* / May 19, 2021 SPPE / 2-4 / May 19, 2021 GRFR / 2-6 / May 19, 2021 GRFR / 1-5 / July 5, 2021	Yes
2	Woodland	SPPE / 3* / April 19, 2021 CHFR / 2-5 / April 19, 2021 AMTO / 2-5 / May 19, 2021 CHFR / 1-1 / May 19, 2021 SPPE / 2-6 / May 19, 2021 GRTR / 3* / May 19, 2021	Yes
3	Woodland	SPPE / 3* / April 19, 2021 AMTO / 1-1 / April 19, 2021 GRFR / 1-1 / May 19, 2021 GTFR / 3* / May 19, 2021 SPPE / 2- 8 / May 19, 2021	Yes

Notes: SPPE = Spring Peeper, GRTR = Gray Treefrog, GRFR = Green Frog, NLFR = Northern Leopard Frog, AMTO = American Toad, CHFR = Western Chorus Frog. Call Codes: the first number indicates the call code where: (1) number of individuals can be accurately counted, (2) individuals can be readily estimated, (3) calls are continuous and overlapping, such that estimates of individuals are not reliable. The second number identifies the number of individuals calling. Call codes of 3 do not have a second number, as individual estimates are not possible.

*Species abundance number was not recorded during the survey.

4.5.3.3 Woodland Amphibian Breeding SWH

Woodland amphibian breeding habitat provides critically important breeding habitat for the following wildlife species: eastern newt, blue-spotted salamander, spotted salamander, gray treefrog, spring peeper, western chorus frog and wood frog. Woodland amphibian breeding habitat can be located in all ecosites associated with coniferous, mixed and deciduous forests or swamps. The defining criteria for confirmed woodland amphibian breeding SWH is the presence of breeding populations of one or more listed newt/salamander species, two or more of the listed frog/toad species with at least 20 individuals, or two or more of the listed frog/toad species with a call level code 3.

Based on review of Table 4.2 above, woodland habitat on-site does meet the defining use criteria for *confirmed* woodland amphibian breeding SWH, for stations 2 and 3, which correspond to the sugar maple – ironwood deciduous forest and ash mineral deciduous swamp (ELC codes FODM5

and SWDM2). Based on the description provided in the Significant Wildlife Habitat Criteria Schedules (OMNRF, 2015), woodland amphibian habitat is considered to be the wetland, plus a 230 m radius of surrounding woodland area.

Confirmed woodland amphibian breeding habitat is illustrated on Figure A.5 in Appendix A. Impacts to woodland amphibian breeding habitat from the proposed development is discussed in Section 6.

4.5.3.4 Wetland Amphibian Breeding SWH

Wetland amphibian breeding habitat provides critically important breeding habitat for the following wildlife species: American toad, spotted salamander, four-toed salamander, blue-spotted salamander, gray treefrog, western chorus frog, northern leopard frog, pickerel frog, green frog, mink frog and bullfrog. Wetland amphibian breeding habitat occurs throughout swamps, marshes, fens, bogs, open aquatic and submerged aquatic habitats. The defining use criteria is the presence of breeding populations of one or more listed newt/salamander species, two or more of the listed frog/toad species with at least 20 individuals or two or more listed frog/toad species with a call level code of 3 or the presence of confirmed bullfrog breeding.

Based on review of Table 4.2 above, wetland habitat on-site does meet the defining use criteria for *confirmed* wetland amphibian breeding SWH for stations 1, which corresponds to the willow mineral deciduous thicket swamp and shallow water pond (ELC codes SWT and SA). Based on the description provided in the Significant Wildlife Habitat Criteria Schedules (OMNRF, 2015), wetland amphibian habitat is considered to be the wetland and the shoreline encompassing the wetland.

Impacts to wetland amphibian breeding habitat from the proposed development is discussed in Section 6.

4.5.4 Habitats of Species of Conservation Concern

Provincial rankings are used by the Natural Heritage Information Centre to set protection priorities for rare species, similar to those described in Section 4.5.2 above for vegetation communities. Provincial rankings (S-ranks), are not legal designations such as those used to define the various protection statuses of species at risk, they are only intended to consider factors within the political boundaries of Ontario that might influence a particular species abundance, distribution or population trend.

Based on the guidance provided in the Significant Wildlife Habitat Ecoregion Criterion Schedules (MNRF, 2015), when a plant or animal element occurrence is recorded for any species with an S-rank of S1 (extremely rare), S2 (very rare), S3 (rare to uncommon) or SH (historically present), the corresponding vegetation ecosite is considered to provide *candidate* habitat for species of conservation concern and further consideration within the EIS is warranted.

The Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015), provides five general habitat types known to support a wide range of species of conservation concern in Ontario. The five general habitat types for Ecoregion 6E-11 are provided in Table C.5 in Appendix C, including a brief rationale as to why they are or are not considered further in this EIS. Following review of Table C.5 in Appendix C, three habitats of species of conservation concern have been identified on-site, marsh breeding bird SWH, shrub/early successional bird breeding habitat and habitat for special concern and rare wildlife species for eastern wood-pewee, evening grosbeak, golden-winged warbler, grasshopper sparrow, rusty blackbird, wood thrush and snapping turtle. The *candidate* SWH are discussed in detail in the subsections below.

4.5.4.1 Marsh Breeding Bird Habitat

Candidate marsh breeding bird SWH was identified within the thicket swamp and pond on-site (SA and SWTM3 on Figure A.3). Wetlands for marsh breeding birds are typically productive and rare in southern Ontario landscapes. Marsh breeding bird habitat provides critical habitat for the following wildlife species: American bittern, Virginia rail, sora, common moorhen, American coot, pied-billed grebe, marsh wren, sedge wren, common loon, sandhill crane, green heron, trumpeter swan, black tern and yellow rail. The defining use criteria for confirmed marsh breeding bird habitat is the presence of five or more nesting pairs of sedge or marsh wrens, or one pair of sandhill cranes or breeding by any combination of five or more listed species. Any wetland with breeding of one or more black tern, trumpeter swan, green heron or yellow rail is also considered SWH.

The defining use criteria for confirmed marsh breeding bird SWH is the breeding of one or more green heron pairs. Based on observations from breeding bird surveys and other site investigations, green herons were observed on-site. Impacts to marsh breeding bird habitat from the proposed development is discussed in Section 6

4.5.4.2 Special Concern and Rare Wildlife Species SWH

Based on observation data from the field investigations and occurrence data from NHIC, eBird and iNaturalist, seven species of special concern have been identified on-site or within the broader study area, eastern wood-pewee, evening grosbeak, golden-winged warbler, grasshopper sparrow, rusty blackbird, wood thrush and snapping turtle. No other species of special concern or rare wildlife species were identified on-site or within the broader study area.

Eastern Wood-pewee

The eastern wood-pewee is a small flycatcher bird with an S-rank of S4 (uncommon but not rare) in Ontario; the most recent Ontario Breeding Bird Atlas indicated that the eastern wood-pewee has a probability of occurrence of over 80% (Cadman et al, 2007). Furthermore, the national capital region is considered to have some of the highest density of wood-pewee in Ontario, indicating a stable, healthy population (Cadmen et al, 2007). The NHIC identified the eastern

wood-pewee as having historically occurred within 1 km of the site. Eastern wood-pewee is a woodland species that is often found near clearings and edges. Given the mosaic of woodland and open habitat on-site and the eastern wood-pewee's affinity for clearings and edges, there is a high chance of eastern wood-pewee or suitable habitat to occur on-site. Furthermore, eastern wood-pewee were observed calling on-site during the 2021 site investigations.

Evening Grosbeak

The evening grosbeak is a large, stocky finch with an S-rank of S4B (breeding is uncommon but not rare) and is listed as a species of special concern in Ontario. Evening grosbeak is a forest species that is often found in mixedwood or coniferous forests where fir and spruce are abundant. Outside of breeding season the evening grosbeak will congregate in areas with high yield seed crops. Given the mosaic of deciduous and coniferous forest available on-site, there is a moderate chance for suitable evening grosbeak habitat to occur on-site. Furthermore, evening grosbeak has been documented as occurring within the area.

Golden-Winged Warbler

The golden-winged warbler is a small songbird with an S-rank of S4B (breeding is uncommon but not rare) and is listed as a species of special concern in Ontario. Golden-winged warbler is a shrublands species that is often found nesting in areas with young shrubs surrounded by mature forest such as field edges, hydro or utility right of ways or logged areas. Given the mosaic of shrub thicket habitat surrounded by forest habitat, there is a high chance for golden-winged warbler habitat to occur on-site. Furthermore, golden-winged warbler were observed calling on-site during the site investigation.

Grasshopper Sparrow

The grasshopper sparrow is a small songbird with an S-rank of S4B (breeding is uncommon but not rare) and is listed as a species of special concern in Ontario. Grasshopper sparrow is a grassland species that prefers areas that are sparsely vegetated with well-drained soil. Given the cultural thicket and abundance of open field there is a moderate chance for grasshopper sparrow habitat to occur on-site.

Rusty Blackbird

The Rusty Blackbird breeds in habitats that are dominated by coniferous forest with wetlands nearby including bogs, marshes and beaver ponds. During the winter, it is found in wet woodlands, swamps, and pond edges and often forages in agricultural lands. The rusty blackbird is of Special Concern and ranked as S5B (Very common and demonstrably secure) in Ontario. Given the abundance of preferred habitat and winter migratory patterns, there is a moderate chance for the rusty blackbird to occur on site or adjacent property.

Wood Thrush

The wood thrush is a medium-sized songbird with an S-rank of S4 (uncommon but not rare) in Ontario; the most recent Ontario Breeding Bird Atlas indicated that the wood thrush populations in Ontario have shown a significant annual increase of 4.4% between the first and second atlas (Cadman et al., 2007). The NHIC identified the wood thrush as having historically occurred within 1 km of the site. Wood thrush is a woodland species often found in moist, deciduous hardwood or mixed forests stands, with dense deciduous undergrowth and tall trees. Furthermore, wood thrush were observed calling on-site during the 2021 site investigations.

Snapping Turtle

The snapping turtle is a highly aquatic turtle species with an S-rank of S3 (rare to uncommon) in Ontario. The NHIC identified the snapping turtle as having historically occurred within 1 km of the site. The snapping turtle is a highly aquatic turtle species with an S-rank of S3 (rare to uncommon) and is listed as a species of special concern in Ontario. Snapping turtles are aquatic generalists, found in a variety of wetlands, water bodies and watercourses. Given the availability of potentially suitable aquatic habitat on-site there is a moderate potential for snapping turtle and its habitat to occur on-site.

4.5.5 Animal Movement Corridors

Animal movement corridors are elongated areas used by wildlife to move from one habitat to another and allow for the seasonal migration of animals (OMNRF, 2015). The Significant Wildlife Habitat Ecoregion Criterion Schedules for Ecoregion 6E-11 (OMNRF, 2015), identifies two types of animal movement corridor: amphibian movement corridors and deer movement corridors. As per guidance presented in MNRF, 2015, animal movement corridors should only be identified as significant wildlife habitat when a *confirmed or candidate* significant wildlife habitat has been identified by the MNRF district office or by the regional planning authority.

Following review of Table C.6 in Appendix C, one animal movement corridors have been identified on-site, amphibian movement corridor. Amphibian movement corridors are corridors for amphibians moving from their terrestrial habitat to their breeding habitat, and can be extremely important for local populations (OMNRF, 2015). Movement corridors must be determined when wetland amphibian breeding SWH is confirmed.

As discussed in Section 4.5.3.2, wetland amphibian breeding SWH has been confirmed within the local wetland on-site (ELC code SWT on Figure A.3), based on the presence of probable gray treefrog, spring peeper and green frog breeding. As such wetlands may provide *candidate* amphibian movement corridors. Impacts to *candidate* amphibian movement corridors are discussed in Section 6.

4.6 Fish Habitat

The protection of fish and fish habitat is a federal responsibility and is administered by the Department of Fisheries and Oceans Canada (DFO). Fish habitat as defined in the Fisheries Act (Canada, 1985) means, “spawning grounds and nursery, rearing food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes.”

When development is unable to avoid resulting in the harmful alteration, disturbance or destruction of fish habitat from typical project impacts such as temperature change, sedimentation, infilling, reduction of nutrient and food supply, etc., an authorization under the Fisheries Act is required for the project to proceed.

As outlined in Section 3.4, based on site observations and the isolated nature of on-site surface water features, fish habitat is not anticipated to be present on-site or within the study area. Accordingly, fish habitat is not assessed or evaluated further within this EIS.

4.7 Species at Risk

The probability of occurrence for species at risk to occur on-site and within the broader study area was determined through the desktop review stage of this EIS, as described in Section 2.1, and through the site specific surveys conducted as part of this EIS, outlined in Section 2.2.

Table C.7 in Appendix C, provides a summary of all species at risk which were determined to have the potential to occur on-site or within the broader study area, their protection status under the provincial Endangered Species Act (Ontario, 2007), , their probability of occurrence and a brief rationale of that probability. Impacts to endangered or threatened SAR determined to have a moderate or high potential to occur on-site or within the broader study area are discussed further in Section 6.

5.0 PROPOSED PROJECT

The proposed project assessed for potential impacts on the natural heritage features determined to be present within the broader study area is a plan of subdivision application for 2085 Fourth Line, Beckwith, Ontario.

The proposed plan of subdivision includes the creation of one residential road providing access to 30 residential lots, developing approximately 27 ha. All lots will be on private services. Access to the proposed subdivision will be from Fourth Line Beckwith. The proposed plan of subdivision is provided on Figure A.4.

Future components of the proposed project considered in the impact assessment presented in Section 6 include: tree clearing and vegetation grubbing, fill placement and elevation grading, road construction, laneway construction, excavation and pouring of foundations, construction of single family dwellings including well drilling and septic system installation and general landscaping activities.

Stormwater management for the site will be employed to match pre-development peak flow rates and continue to direct stormwater and snowmelt to existing outlets including but not limited to sheet flow to the 4th Line Road roadside ditch as well as the existing low lying areas on-site and the County Road 10 roadside ditch. Quantity controls proposed will result in temporary ponding and attenuation of peak flows in roadside ditches and side yard/rear yard swales. Quality control will be achieved through the a treatment train approach wherein stormwater is directed across vegetated front lawns comprised of imported material to assist in promoting infiltration. Once stormwater enters the roadside ditch, the low slope vegetated ditch with countersunk culverts will provide additional opportunity to particle settlement before reaching the ultimate outlet.

The timeline for the proposed project, from lot creation to completion of residential construction is currently unknown. For the purpose of assessing impacts to natural heritage features, it is assumed in this EIS that the creation of individual residential lots will happen in the near-term and will not result in any physical alterations to the natural environment of the site and the broader study area. Future construction of single family residential homes on each of the subdivision lots is assumed to occur over a several year period, and that the construction of any one residential home will be completed such that the duration of any potential impacts on the natural environment during construction will be approximately six months.

6.0 IMPACT ASSESSMENT

Potential impacts to natural heritage features on-site and within the broader study area are assessed for direct, indirect and cumulative effects based on the proposed project outlined in Section 5. Natural heritage features identified in Section 5 of this report as present or likely to be present are discussed in the subsections below.

Potential effects to the natural environment from the proposed development outlined in Section 5 include: vegetation removal, habitat fragmentation and loss, disturbance of the natural soil mantle, increased noise generation, increased human disturbance, increase storm water generation and potentially increased nutrient loading to adjacent surface water features.

6.1 Local Wetlands

As no-in water work is proposed for the development, the greatest potential impacts to wetlands on-site is encroachment, fill placement, compaction of soils and vegetation loss. Other potential impacts include short duration construction impacts such as heavy machinery encroachment and noise generation, and long term human disturbances such as dumping of refuse and trampling.

Mitigation measures to protect local wetlands from development impacts are provided in Section 7.

6.2 Significant Wildlife Habitat

The presence of significant wildlife habitat on-site and within the study area was evaluated in Section 4.5, as a result of this assessment six types of significant wildlife habitat were determined to be present on-site or within the study area: raptor wintering area, *confirmed* turtle wintering area, *candidate* waterfowl nesting area, *confirmed* woodland and wetland amphibian breeding habitat, *candidate* marsh breeding bird habitat and habitats of special concern and rare wildlife species.

Potential impacts to significant wildlife habitats are discussed in greater detail in the following subsections, while mitigation measures indented to prevent such impacts are presented in Section 7.

6.2.1 Raptor Wintering Area

Candidate raptor wintering area habitat encompasses all upland and forested areas within the site. Wooded areas occur in the south while the upland thicket habitat occurs in the northern half of the property.

Potential direct impacts to *candidate* raptor wintering SWH are associated with loss of candidate roosting trees, resulting from tree clearing during the construction process. Indirect impacts include increase human presence, increased human and wildlife interaction and disturbances, and increased noise levels.

Mitigation measures intended to protect *candidate* raptor wintering habitat are provided in Section 7.

6.2.2 *Confirmed* Turtle Wintering Area

Confirmed turtle wintering area on-site is confined to the ash mineral deciduous swamp that occurs in the east central portion of the property (SWDM2 on Figure A.3). As no in-water works is proposed as part of the development, potential impacts to turtle wintering areas are anticipated to be indirect in nature. Indirect impacts may include alterations to water quality due to nutrient and sediment loading and alterations to the hydrologic regime due to increases in impermeable surfaces and stormwater runoff.

Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement and long term human disturbance such as noise generation, dumping or refuse and yard waste and trampling.

Mitigation measures to reduce impacts to and protect turtle wintering habitat are provided in Section 7.

6.2.3 Waterfowl Nesting Area

Candidate waterfowl nesting habitat has been identified within all upland habitats within 120 m of the local wetlands on-site.

Potential direct impacts to *candidate* waterfowl nesting SWH includes a loss of potential upland nesting habitat and vegetation cover. Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement and long-term human disturbance such as noise generation, dumping of refuse and trampling.

Mitigation measures to reduce impacts to *candidate* waterfowl nesting areas SWH are provided in Section 7.

6.2.4 *Confirmed* Woodland Amphibian Breeding Habitat

Confirmed woodland amphibian breeding habitat has been identified within the deciduous swamp (SWDM2) and the adjacent deciduous forest (FODM5-4) which encompasses a 230 m radius. Based on the habitat description outlined in the Significant Wildlife Habitat Criteria Schedule (OMNRF, 2015) habitat for woodland breeding amphibians is the wetland area plus a 230 m radius of woodland area adjacent to the wetland. Non-woodland habitat adjacent to the wetlands is not considered SWH, as illustrated on Figure A.5.

As no in-water work is proposed as part of the development, potential impacts to woodland amphibian breeding SWH are anticipated to be associated with direct impacts to woodland habitat and indirect impacts to wetland habitats. Direct impacts to woodland amphibian breeding SWH is primarily associated with habitat fragmentation and loss of woodland cover and vegetation as a

result of the proposed development. Indirect impacts to wetland habitats may include alterations to water quality due to nutrient and sediment loading as well as alterations to the hydrologic regime due to loss of riparian vegetation and increases in impermeable surfaces and increases in storm water runoff.

Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement, and long-term human disturbance such as dumping of refuse and trampling, and foraging.

Mitigation measures to reduce impacts to *confirmed* woodland amphibian breeding habitat SWH are provided in Section 7.

6.2.5 *Confirmed* Wetland Amphibian Breeding Habitat

Confirmed wetland amphibian breeding habitat on-site is confined to the thicket swamp and shallow water within the dug pond in the west central area of the property (SWT and SA on Figure A.3). As no in-water works is proposed as part of the development potential impacts to wetland amphibian breeding SWH are anticipated to be indirect in nature. Indirect impacts may include disturbance of amphibian movement corridors, alterations to water quality due to nutrient and sediment loading and alterations to the hydrologic regime due to increases in impermeable surfaces and stormwater runoff.

Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement, and long-term human disturbance such as dumping of refuse and trampling, and foraging.

Mitigation measures to reduce impacts to *confirmed* wetland amphibian breeding habitat SWH are provided in Section 7.

6.2.6 Marsh Breeding Bird Habitat

Candidate marsh breeding bird SWH on-site is confined to the thicket swamp in the west central and deciduous swamp in the east central areas of the property (SWT and SWDM2 on Figure A.3). As no in-water works is proposed as part of the development, potential impacts to marsh breeding bird habitat for green heron is anticipated to be indirect in nature. Indirect impacts may include alterations to water quality due to nutrient and sediment loading and alterations to the hydrologic regime due to increases in impermeable surfaces and storm water runoff.

Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement, and long-term human disturbance such as noise generation, dumping of refuse and trampling.

Mitigation measures to reduce impacts to *candidate* marsh breeding bird habitat SWH are provided in Section 7.

6.2.7 Habitats of Special Concern and Rare Wildlife Species SWH

Eastern Wood-Pewee

Eastern wood-pewee (*Contupus virens*) is a small, avian insectivore that lives in a variety of deciduous, mixed, and to a lesser extent, coniferous woodland habitat (COSEWIC, 2012a). Adult eastern wood-pewee are grey-olive with pale wing-bars, the breast and sides are slightly darker green than the wings. It is best identified by its three-phrased song, often paraphrased as a whistled 'pee-ah-wee' (COSEWIC, 2012a). In Ontario, the eastern wood-pewee is listed as a species of special concern.

Threats to eastern wood-pewee are not well understood however, loss of suitable forest habitat does not appear to be a significant issue across their Canadian breeding range (COSEWIC, 2012a). Furthermore, research indicates that the species is not very sensitive to forest fragmentation effects or forest size (COSEWIC, 2012a). Eastern wood-pewee may be sensitive to human habitation, in Ontario they occur less frequently in woods with surrounding development than those without houses (COSEWIC, 2012a). Other threats to eastern wood-pewee may include changes in the availability of aerial insects, mortality during migration and/or wintering, nest predation and habitat changes due to white-tailed deer browsing (COSEWIC, 2012a).

Impacts to eastern wood-pewee and their habitat on-site from the proposed development is limited to the wooded and forested habitat on-site (ELC Codes FODM5-4 and FOCM4 on Figure A.4 in Appendix A), which may provide suitable nesting and foraging habitat. Impacts to eastern wood-pewee habitat may include loss of forest habitat and increased human presence and disturbance.

While the proposed development may result in the loss of suitable habitat on-site, suitable habitat is readily available within the broader study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging eastern wood-pewee are presented in Section 7.

Evening Grosbeak

The Evening Grosbeak is a large, stocky finch with a thick greenish-yellow bill. Adult males are yellow and black in colour with a prominent white patch on the wings and a brown head. Females and juveniles are mostly greyish-brown, with white and black wings and some yellow on the neck and flanks (Ontario, 2021).

In Ontario, the evening grosbeak breeds in coniferous forests across northern Ontario, as far south as southern Georgian Bay. In Ontario, the evening grosbeak is listed a species of special concern.

Evening grosbeak nest in open, mature mixedwood forests, where fir species and/or White Spruce are dominant, and Spruce Budworm is abundant. Outside the breeding season, the

species depend largely on seed crops from various trees such as firs and spruces in the boreal forest, but is also attracted to ornamental trees that produce seeds or fruit, and bird feeders stocked with sunflower seeds (COSEWIC 2016).

Impacts to evening grosbeak and their habitat on-site from the proposed development is limited to the wooded and forested habitat on-site (ELC Codes FODM5-4 and FOCM4 on Figure A.4 in Appendix A), which may provide suitable nesting and foraging habitat. Impacts to evening grosbeak habitat may include loss of forest habitat and increased human presence and disturbance.

Mitigation measures intended to prevent negative impacts to nesting and foraging evening grosbeak are presented in Section 7.

Golden-winged Warbler

The golden-winged warbler (*Vermivora chrysoptera*) is a small songbird that is grey in color with white undersides and distinctive yellow wing patches and forehead (Ontario, 2019). Male golden-winged warblers have a black through and black patch behind their eyes, while these markings are grey in females.

In Ontario, the golden-winged warbler breeds in central-eastern Ontario, as far south as Lake Ontario and the St Lawrence River and as far north as Georgian Bay. In Ontario, the golden-winged warbler is listed a species of special concern.

Golden-winged warblers nest in areas with early successional shrubs surrounding by mature forests, typically in areas that have been recently disturbed such as field edges, hydro or utility right-of-ways or logged areas (COSEWIC, 2006).

Golden-winged warbler were observed on-site during the site investigations.

Impacts to golden-winged warbler and their habitat on-site from the proposed subdivision development are limited to the cultural thicket habitat on-site (CUT), which may provide suitable nesting and foraging habitat. Impacts to golden-winged warbler may include the loss of thicket habitat, loss of vegetation cover and increased human interaction. While the proposed development will result in the loss of almost all of the suitable thicket habitat on-site, suitable habitat is readily available within the broader study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging golden-winged warbler are presented in Section 7.

Grasshopper Sparrow

The Grasshopper Sparrow is a small brown songbird with a streaked back and buffy white underparts. It has a white stripe down the centre of its crown and a flat look to the top of its head.

Its conical bill is beige. The male and female look similar to each other and the young have a streaked breast in the first fall (Ontario, 2021).

In Ontario, the grasshopper sparrow breeds in southern Ontario and occasionally on the Canadian Shield. In Ontario, the grasshopper sparrow is listed a species of special concern. Grasshopper Sparrow populations declined by about 2.5% per year between 1966 and 2015, resulting in a cumulative decline of 72% over that period (North American Bird Conservation Initiative 2014). If current rates of decline continue, the species will lose another half of its population by 2065. Grasshopper Sparrows are especially vulnerable to habitat loss through fragmentation and degradation, and the loss of native prairie habitat to intensive agriculture has reduced populations across its entire range. However, the species is very responsive to management including prescribed burns, light to moderate grazing, and delayed mowing of hayfields (Vickery P. D., 2020).

Grasshopper sparrow nests in grasslands, such as pastures and hayfields, and natural prairies, such as alvars, characterized by well-drained soil dominated by relatively low herbaceous vegetation. The habitat used by the grasshopper sparrow in its wintering range is generally similar to that used in the breeding range. (COSEWIC, 2013).

Impacts to grasshopper sparrow and their habitat on-site from the proposed subdivision development are limited to the open field locations within the cultural thicket habitat on-site (CUT), which may provide suitable nesting and foraging habitat. Impacts to grasshopper sparrow may include the loss of open field habitat, loss of vegetation cover and increased human interaction. While the proposed development will result in the loss of almost all of the suitable open and thicket habitat on-site, suitable habitat is readily available within the broader study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging grasshopper sparrow are presented in Section 7.

Rusty Blackbird

The Rusty Blackbird is a medium-sized songbird with both sexes having pale yellow eyes and a slender black bill. During the breeding season, males are dark black with a faint green and purple gloss, and females are brownish grey. In the winter, both sexes are more rust-coloured (Ontario, 2021).

In Ontario, the breeding range is found in the Hudson Bay Lowlands and northern Boreal Shield ecozones. It also winters irregularly in extreme southern Canada. The Canadian breeding population, which includes approximately 87% of the global population, is estimated at 4.4 million birds. It has seen an annual rate of decline of approximately 5.5% for a total reduction of the population of 85-90% since 1970. However, analyses of short-term trends in Canada indicate that the population has been fairly stable between 2004 and 2014 (COSEWIC 2018).

The rusty blackbird breeds in habitats that are dominated by coniferous forest with wetlands nearby including bogs, marshes and beaver ponds. During the winter, it is found in wet woodlands, swamps, and pond edges and often forages in agricultural lands.

Impacts to rusty blackbird and their habitat on-site from the proposed subdivision are limited to the wet forest and swamp habitat on-site (SWT, SA, SWDM2 and FODM5-4), which may provide suitable nesting and foraging habitat. Impacts to rusty blackbird habitat may include the loss of forest habitat and increased human interaction. While the proposed development will result in the loss of suitable forest habitat on-site suitable habitat is readily available within the broader study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging rusty blackbird are presented in Section 7.

Wood Thrush

The wood thrush (*Hylocichla mustelina*) is a medium-sized songbird, similar in shape to an American robin, but slightly smaller. Generally wood thrush plumage is distinct from other thrush species, with rusty-brown upper parts, white underparts and large blackish spots on the breast and sides.

In Ontario, the wood thrush breeding range extends from southern Ontario north to northern Georgian Bay and eastern Lake Superior (COSEWIC, 2012b). While wood thrush populations have declined over most of its North American range, between 1981 and 2005, breeding bird data indicates populations in Ontario have increased by 4%, likely due to increases in woodland cover south of the Canadian Shield (Cadman et al., 2007). The probability of occurrence in Ontario however, has decreased by 15% between the first and second breeding bird atlas (Cadman et al., 2007). The wood thrush is listed as a species of special concern in Ontario.

During the breeding season, the wood thrush is found in moist, deciduous hardwood or mixed forest stands, often in previously disturbed sites with dense, deciduous undergrowth and tall trees that are used as singing perches (COSEWIC, 2012b). For wood thrush, habitat selection is based more on the structure of the forest, preferring sites with lower elevations, trees taller than 16 m, closed canopy (>70%), with a high variety of deciduous species, moist soil and decaying leaf litter (COSEWIC, 2012b).

Wood thrush were detected during breeding bird surveys on-site.

Impacts to wood thrush and their habitat on-site from the proposed subdivision are limited to the forest habitat on-site (FODM5-4 and FOMC4), which may provide suitable nesting and foraging habitat. Impacts to wood thrush habitat may include the loss of forest habitat and increased human interaction. While the proposed development will result in the loss of suitable forest habitat on-site suitable habitat is readily available within the broader study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging wood thrush are presented in Section 7.

Snapping Turtle

Snapping turtle is the largest freshwater turtle found in Canada; in central Ontario males average 32 cm in carapace length and have an average mass of 9.3 kg (COSEWIC, 2008). The carapace is keeled and can be brown, black or olive in colour (COSEWIC, 2008). The plastron is cross-shaped and is small, leaving the limbs and sides of the body exposed (COSEWIC, 2008). The head of a snapping turtle is large with a hooked upper jaw, relatively long neck and tail that can be as long as the carapace (COSEWIC, 2008). In Ontario the snapping turtle is listed as a species of special concern.

Threats to snapping turtle are primarily related to their life-history, their slow recruitment, late maturity, long lifespan and high adult survival make them extremely vulnerable to a variety of anthropogenic impacts (COSEWIC, 2008). Short, cool summers also reduce hatching success. In Canada, snapping turtles are most impacted by events that increase adult mortality, such as harvesting of adults, persecution and road mortality (COSEWIC, 2008). Other threats include loss of habitat, environmental contamination and nest predation (COSEWIC, 2008).

As no in-water work is proposed as part of the future development, potential impacts to snapping turtle and their habitat are anticipated to be indirect in nature. Potential indirect impacts may include changes to surface water quality and quantity through increased storm water runoff resulting from an increase in impervious surface area and vegetation loss.

Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement and long-term human disturbance such as noise generation, dumping of refuse and yard waste and trampling.

Mitigation measures to protect snapping turtle and their habitat from the proposed development are presented in Section 7.

6.2.8 Animal Movement Corridors

Impacts to candidate amphibian movement corridors on-site may include a loss of available corridor habitat, impairment to corridor function and increased human-wildlife interactions. As outlined in the SWHMST, if a significant portion of the corridor is impacted by development it can completely disrupt the function of a movement corridor. Potential direct impacts to candidate amphibian movement corridors include loss of woodland cover and creation of movement barriers through the corridor. It should be noted that the proposed development illustrated on Figure A.4 maintains an uninterrupted movement corridor for amphibian access to each wetland feature from the adjoining properties.

Potential indirect impacts may include changes to surface water quality and quantity through increased storm water runoff resulting from an increase in impervious surface area and vegetation loss. Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement and long-term human disturbance such as noise generation, dumping of refuse and yard waste and trampling.

Mitigation measures for candidate amphibian movement corridors are provided in Section 7.

6.3 Species at Risk

As outlined in the Endangered Species Act (Ontario, 2007), only species listed as threatened or endangered and their general habitat receive automatic protection. When a species-specific recovery strategy is developed, a specific habitat regulation will be established, which eventually replaces the automatic habitat protection. Species of special concern and their habitat do not receive protection under the ESA.

Potential impacts associated with the proposed project to threatened or endangered species identified as having a moderate or high potential to occur on-site in Section 4.7, are discussed on a species-by-species basis in subsections below.

6.3.1 Bobolink

Bobolink (*Dolichonyx oryzivorus*) are small, omnivorous songbirds with large, somewhat flat heads, short necks and short tails. The male bobolink has a white back, black underside and a straw-yellow coloured patch on the back of the head. Female bobolinks have a non-descript buff and brown plumage not unlike most species of sparrows.

In Ontario, bobolink are restricted to southern Ontario and occur south of the Highway 17 corridor between North Bay and Sault Ste. Marie. Scattered populations exist in correlation with Clay Belt areas in Timiskamin, Cochrane and Thunder Bay areas. Between the first and second breeding bird atlas, the probability of bobolink observations declined by 28% province wide (Cadman et al., 2007).

Bobolink breed primarily in hayfields and other grasslands with tall vegetation that provides cover for nests which are established on the ground (Cadman et al., 2007). The bobolink is generally sensitive to vegetation structure and composition in its habitat that are generally found in old (> 8 years old) forage crops. Abundance and density are positively correlated with a moderate litter depth, high lateral litter cover, high grass-to-legume rations, an abundance of small shrubs and a high percentage of forb cover (COSEWIC, 2010). Bobolinks typically avoid nesting in habitats that are dominated by overly dense shrub vegetation with an overly deep littler layer or a high percentage of bare soil (COSEWIC, 2010).

A series of three breeding bird surveys were conducted at five point count locations, two of which targeted potentially suitable habitat for grassland birds such as bobolink. Bobolink were not heard

or observed nesting or foraging during any of the site investigations. However, development is proposed to occur within suitable bobolink habitat on-site. Where the development cannot avoid potentially suitable habitat, impacts may include vegetation removal, increased human disturbance and noise generation and short-term construction impacts including heavy machine encroachment, increased noise, and fill placement.

Avoidance and mitigation measures intended to protect bobolink and their habitat during construction are provided in Section 7.

6.3.2 Eastern Meadowlark

Eastern meadowlark (*Sturnella manga*) is a chunky, medium-sized grassland songbird, with a short tail, and a long spear-shaped bill. The colour pattern of the species is pale brown marked with black, the underside is bright yellow and a bold black 'V' pattern across the chest.

The eastern meadowlark was once well established in southern Ontario, however, due to the natural succession of abandoned agricultural fields transitioning back to forested habitat on the Canadian shield and through the northern portion of the Lake Simcoe-Rideau region, along with intensive farming practices and expanding of urbanization in southwestern and eastern Ontario, the eastern meadowlark has suffered significant habitat loss (Cadman et al., 2007). Between the first and second breeding bird atlas, the probability of observation declined by 13% province wide (Cadman et al., 2007). The current distribution of eastern meadowlark is concentrated through the Lake Simcoe-Rideau region, primarily from Kingston to Lake Simcoe.

The eastern meadowlark prefers native grassland, pasture and savannah habitat, however it is known to use a variety of anthropogenic grassland habitats including hayfields, weedy meadows, young orchards, grain fields and herbaceous fence rows (COSEWIC, 2011). Preferred grassland habitat typically contains moderately tall (25 to 50 cm) grass species with abundant litter cover, with a high proportion of grass, moderate to high forb density a low percent of shrub cover (typically <5%) and low percent cover of bar ground (COSEWIC, 2011).

Potential nesting and foraging habitat occurs on-site and throughout the broader study area, however no eastern meadowlark were observed nesting or foraging on-site during any of the site investigations. As there is a potential for eastern meadowlark to occur on-site, avoidance and mitigation measures for the protection of eastern meadowlark and their habitat from impacts of the proposed development are provided in Section 7.

6.3.3 Eastern Whip-poor-will

The eastern whip-poor-will (*Caprimulgus vociferous*) is a medium-sized, insectivorous bird with a large round head, and stout chest that tapes to a long tail and wings. They are heavily camouflaged with a complicated pattern of gray and brown, allowing the bird to blend seamlessly into the forest floor, where it lays its eggs without the safety of a nest.

In Ontario, breeding bird surveys have demonstrated a decline in eastern whip-poor-will populations by more than 50% between the first and second breeding bird atlas' (Cadman et al., 2007). The primary breeding range in Ontario extends from Rideau lakes towards Georgian Bay and north to Sudbury (Cadman et al., 2007).

The breeding and foraging habitat of eastern whip-poor-will depends more on forest structure than composition. The species avoids both wide-open spaces and closed-canopy forests, favouring semi-open forests or patchy forests with clearing, such as barrens and forests that are regenerating (COSEWIC, 2009).

Three nocturnal breeding bird surveys were conducted on May 19, June 2 and 24 2021, under optimum conditions (moon phase, clear skies and air temperatures above 10°C) to target eastern whip-poor-will. The surveys were conducted at two locations on-site and are shown in Figure A.2 in Appendix A. During the nocturnal surveys, no whip-poor-will was observed or documented calling. However, potentially suitable whip-poor-will habitat does occur on-site.

Where the proposed development cannot avoid potential whip-poor-will habitat, impacts may include vegetation removal and increased human disturbance during construction including increased noise and light pollution and increased wildlife and human interaction.

Avoidance and mitigation measures intended to protect whip-poor-will and their habitat during construction are discussed in Section 7.

6.3.4 Eastern Small-footed Myotis

Eastern small-footed Myotis (*Myotis leibii*) is the smallest (typically 3-5 g), insectivorous bat found in Ontario. The fur of an eastern small-footed Myotis is golden-brown in colour, with a distinct black mask across the face. The eastern small-footed Myotis is very similar in appearance to the little brown Myotis, and is distinguishable by their small foot and keeled calcar (Fraser, MacKenzie & Davy, 2007).

The eastern small-footed Myotis is found throughout eastern North America. In Ontario the species has been observed in the areas sough of Lake Superior across to the Ontario-Quebec border (Humphrey, 2017).

Eastern small-footed Myotis overwinter primarily in caves and abandoned mines with low humidity and temperatures and stable microclimates (Humphrey, 2017). In comparison to other Ontario bat species, they are able to tolerate much colder temperatures, drier conditions and draftier locations for hibernating (Humphrey, 2017). During the spring and summer months, they utilize a variety of habitats for roosting, including under rocks or rock outcrops, in buildings, under bridges, or in caves, mines or hollow trees (Ontario, 2021d).

Although the forest habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings on-site and within the study area, there is a potential for eastern small-footed Myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to eastern small-footed Myotis are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect eastern small-footed Myotis from impacts of the proposed development are discussed in Section 7.

6.3.5 Little Brown Myotis

Little brown Myotis (*Myotis lucifugus*) is a small (typically 4-11 g), insectivorous bat. The fur of a little brown Myotis is bi-coloured; fur is a glossy brown with a darker coloured base. The tragus of the Little Brown Myotis is long and thin, with a rounded tip (Fraser, MacKenzie & Davy, 2007).

In Canada, little brown Myotis' occur throughout all of the provinces and territories (except Nunavut), with its range extending south through the majority of the United States as well. In Ontario, the little brown Myotis is widespread in southern Ontario and has been found as far north as Moose Factory and Favourable Lake (Ontario, 2021e).

Little brown Myotis overwinter in caves and abandoned mines, they require highly humid conditions and temperatures that remain above the freezing mark (Ontario, 2021e). During the summer months, maternity colonies are often located in buildings or large-diameter trees. Little brown Myotis roost in trees and buildings. Foraging occurs over water and along waterways, forest edges and in gaps in the forest. Open fields and clearcuts are not typically utilized for foraging (COSEWIC, 2013b).

Although the forest habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings on-site and within the study area, there is a potential for little brown Myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to little brown Myotis are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect little brown Myotis from impacts of the proposed development are discussed in Section 7.

6.3.6 Tri-Colored Bat

Tri-colored bat (*Perimyotis subflavos*) is a small (typically 5-7 g), insectivorous bat. The fur is uniformly coloured on the ventral and dorsal sides, however when parted fur shows three distinct colour bands. The base of the hair is blackish, with a blonde middle and brownish tip. The snout of the tri-coloured bat is also distinct, with swollen bulbous glands present (Fraser, MacKenzie & Davy, 2007).

In Canada, the tri-colored bat has only been recorded in southern parts of Nova Scotia, New Brunswick, Quebec and central Ontario. In Ontario it occurs primarily from the southern edge of Lake Superior across to the Ontario-Quebec border and south (COSEWIC, 2013b).

Tri-colored bat overwinter in in caves or mines, and have very rigid habitat requirements; they typically roosting the deepest parts where temperatures are the least variable, and have the strongest correlation with humidity levels and warmer temperatures (COSEWIC, 2013b). In the spring and summer, tri-colored bat utilize trees, rock crevices and buildings for maternity colonies. Foraging is mainly done over watercourses and streamside vegetation (COSEWIC, 2013b).

Although the woodlands on-site do not meet minimum snag density requirements to support bat maternity colony habitat, given the availability of habitat on-site there is a potential for tri-colored bat to occur on the property, primarily for foraging or non-maternal roosting. Impacts to tri-colored bat are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect tri-colored bat from impacts of the proposed development are discussed in Section 7.

6.3.7 Blanding's Turtle

Blanding's turtles (*Emydoidea blandingii*) have a highly domed, smooth black carapace with small, irregular tan or yellow flecking. The most distinctive characteristic of this species is the bright yellow chin and throat. Their hinged plastron is yellow with a large dark blotch in the corner of each scute, but may also be entirely black (Oldham and Weller, 2000).

In Canada, Blanding's turtles are found throughout southern and south-central Ontario from south of Manitoulin Island to western Quebec. In Ontario, Blanding's turtles are often observed utilizing eutrophic habitats with clear water (COSEWIC, 2005). This turtle species occurs primarily in shallow water; adults are generally found in open or partially vegetated sites, where as juveniles prefer areas that contain thick aquatic vegetation. Blanding's turtles are known to make large overland journeys between connected lakes, rivers, streams, marshes or ponds, upwards of 6 km in a single active season. Overwintering occurs in permanent pools that average about one metre in depth, or slow flowing streams (COSEWIC, 2005).

A series of turtle basking surveys were undertaken to determine the presence or absence of Blanding's turtles on-site. During the site investigations, Blanding's turtles were not detected on-site. However the site has the potential for Blanding's to occur on-site in a transient nature but no category 1, 2 or 3 habitat has been confirmed for the site.

As no in-water work is proposed as part of the development plan, impacts to Blanding's turtles are anticipated to be indirect in nature. Impacts to Blanding's turtles and their habitat may include changes in water quality due to increases in imperviousness and storm water runoff, as well as increased human disturbance, increased wildlife and human interaction, and encroachment during construction.

Avoidance and mitigation measures intended to prevent harm to Blanding's turtles who have the potential to occur on-site are present in Section 7.

6.3.8 Butternut

Butternut (*Juglans cinerea*) is a relatively short lived, medium-sized tree that can reach heights of up to 30 m. It is easily distinguished by its compound leaves, made up of 11 to 17 leaflets, arranged in a feather-like patter. Each leaflet is 9 to 15 centimetres in length. The bark is grey and smooth on young trees, becoming more ridged with age. Butternut is a member of the walnut family and produces edible nuts in the fall.

The Canadian range for Butternut extends through southern Ontario into southern Quebec, and New Brunswick (COSEWIC, 2003). Butternut is a shade intolerant tree that is commonly found in riparian habitats, and sites in a regenerative state. Butternut can also be found on rich, moist, well-drained gravels, favouring those of limestone origin. Common associates of Butternut trees include: basswood, black cherry, beech, black walnut, elm, hickory, oak, red maple, sugar maple, yellow poplar, white ash and yellow birch.

No butternut trees was observed on-site during the investigations. As such, butternut trees are not mentioned further in this EIS.

6.4 Cumulative Impacts

Potential cumulative impacts associated with the proposed project include an increase in storm water generation, potential increases in nutrient loading to aquatic features, and the loss of forest, thicket and meadow habitat, primarily for avian species.

Cumulative impacts to the natural environment at the site due to increased human presence, increased wildlife and human interaction and increased noise, are expected to be negligible given the existing residential and agricultural land use in the surrounding project area.

Cumulative impacts such as those listed above can be mitigated by implementing the proposed setbacks and recommended mitigation measures outlined in Section 7 below.

7.0 RECOMMENDED AVOIDANCE AND MITIGATION MEASURES

The following avoidance and mitigation measures have been recommended by GEMTEC in order to minimize or eliminate potential environmental impacts identified in Section 6. As such, the following avoidance and mitigation measures should be enforced throughout the development through application the Conditions of Draft Plan of Subdivision Approval.

For the purpose of this report, a setback is defined as the minimum required distance between any structure, development or disturbance and a specified line. A buffer, for the purpose of this report, is defined as the area located between a natural heritage feature and the prescribed setback. For the purpose of the following subsections, buffers should be located between natural heritage features and lands subject to development or alteration, be permanently vegetated by native or non-invasive, self sustaining vegetation and protect the natural heritage feature against the impact of the adjacent land use.

Vegetated buffers, particularly buffers that are vegetated with a mix of grassy herbaceous vegetation and shrubby or woody vegetation are most effective in mitigating impacts associated with anthropogenic activities in adjacent lands (Beacon, 2012). Buffers recommended in the following subsections and illustrated on Figure A.5, are done so within the context of the existing environmental disturbances but also to promote reasonable natural rehabilitation. In the subsections below, where possible, literature references for studies used as the basis of the recommended buffer widths are provided.

7.1 Unevaluated Wetlands

No negative impacts on the integrity of the unevaluated wetlands are anticipated as a result of the proposed development if all mitigation measures recommended below area enacted and best management practices followed. Wetlands on-site can be protected against potential impacts of the proposed development through the implementation of a construction setback.

Beacon Environmental Review of Ecological Buffers (2012), provides a range for buffer widths to protect various natural heritage features based on the current science. The buffers are presented in a way that determines the risk of not achieving the desired buffer function (i.e. high, moderate and low). The functions analysed include water quantity, water quality, screening or human disturbance/changes in land use, hazard mitigation zone and core habitat protection. Impacts to the local wetlands on-site were identified to include potential impacts to water quality, human disturbance and core habitat protection (SWH for breeding woodlands amphibians). Wetland buffer widths have a moderate risk of not providing adequate mitigation for water quality impacts at widths equal to or greater than 10 m. Wetland buffer widths have a low risk of not providing adequate mitigation for human disturbance/land use change impacts at widths equal to or greater than 30 m. Wetland buffer widths have a moderate risk of not providing adequate mitigation for core habitat protection at widths greater than 20 m.

In consideration of the local wetlands, and the nature of the proposed development, a minimum 15 m setback from the local wetlands is recommended. The recommended 15 m setback provides sufficient protection for mitigating water quality impacts and human disturbances. At 15 m, the protection the buffer offers for core habitat protection, falls into the moderate risk of not achieving desired buffer function, however, in conjunction with the prescribed development envelopes, development is not anticipated to negatively impact the core habitat functions of the wetlands and adjacent woodlands. As such a 15 m setback is sufficient to protect core habitat within the local wetlands.

General mitigation measures recommended for the protection of water quality and wetland habitat include:

- Buffers should be comprised of a mixture of native or non-invasive, self sustaining trees, shrubs and tall grasses.
- All future development and construction activities within the study area, including ditching, culvert installation, erosion and sediment control and storm water management should be completed in accordance with Ontario Provincial Standard Specification 182 and OPSS 805.
- No in-water work should occur between March 15 and June 30 of any year to protect spawning fish habitat adjacent to the development area. All in-water habitat features, including aquatic vegetation, natural woody debris and boulders should be left in their current locations in the near shore area.
- When native soil is exposed, sediment and erosion control work in the form of heavy-duty sediment fencing shall be positioned along the down gradient edge of any construction envelopes adjacent to waterbodies.
- The development plan should include lot-side swales and/or road side ditches designed to promote infiltration.
- Downspouts should be directed towards lot-side swales that are in tern directed to road side ditches and not adjacent surface water features. Rain gardens or soak away pits should be utilized in areas of difficult topography.
- Any temporary storage of aggregate material shall be set back from the water's edge by no less than 40 m and be contained by heavy-duty silt fencing.
- Septic systems shall be installed no closer than 30 m from the high water mark of any surface water feature and not located in areas of exposed bedrock.

7.2 Significant Wildlife Habitat

If the full build-out potential of the proposed subdivision was realized it could potentially results in a significant impacts to significant wildlife habitat on-site. To ensure that only the area required to accommodate a single family dwelling, septic field, drinking water well is cleared, site control by

way of prescribed development envelopes is recommended for each severance parcel with woodlands, associated with significant wildlife habitat, present on the parcel.

Figure A.6 in Appendix A illustrates the proposed development plan and the extents of the woodlands. Thirteen proposed lots have woodland coverage associated with significant wildlife habitat; development envelopes proposed are to be approximately 0.2 ha in size. Due to the varied topography of the site, the development envelopes have not been illustrated. Building envelopes should be positioned on each parcel such that they minimize tree clearing to the maximum extent possible and that they are preferentially located near the front of each lot to reduce impacts on the integrity of the significant wildlife habitats by developing each lot as close to the proposed subdivision road as possible.

By registering the proposed 0.2 ha development envelopes on land titles for the 13 proposed lots that contain woodland associated with significant wildlife habitat and including the proposed subdivision road, the approximate impacts to significant wildlife habitat is the loss of 3.54 ha of woodland of the 12.24 ha of woodlands associated with significant wildlife habitat on-site. Placement of the development outside of woodlands associated with significant wildlife habitats where possible, as suggested above, will further decrease the impacts on significant wildlife habitats and mitigate impacts on amphibian movement corridors.

No negative impacts on the ecological function of the significant wildlife habitats associated with woodlands are anticipated as a result of this project if the development envelopes proposed above are registered on land title and all mitigation measures and best management practices recommended in Section 7 are adhered to.

7.2.1 *Candidate* Raptor Wintering Area

The development envelopes proposed above to protect significant woodlands are sufficient to minimize impacts to *candidate* raptor wintering habitat. The development envelopes are intended to be positioned on each parcel in such a manner as to reduce impacts on the integrity of the woodlands by developing each lot as close to the proposed subdivision road as possible, maintaining habitat connectivity and function of the raptor wintering area, reducing habitat fragmentation and minimizing human-wildlife interactions.

7.2.2 *Confirmed* Turtle Wintering Area

The 15 m setback presented above, to protect the local wetlands on-site (ELC code SA, SWT and SWDM2) is sufficient to protect *confirmed* turtle wintering areas. Furthermore, the development envelopes on the proposed parcels ensure that forest cover and surrounding summer habitat is maintained, which is important for wetland amphibians and reptiles moving between habitats throughout the year.

7.2.3 *Candidate* Waterfowl Nesting Area

The 15 m setback established to protect local wetlands on-site is sufficient to protect the core area of *candidate* waterfowl nesting area from potential impacts of development. Furthermore, the development envelopes established to protect significant woodlands on-site provide protection against upland habitat loss. The setbacks and development envelopes ensure that the higher quality upland habitat (adjacent woodlands) are protected from development and encroachment. To further minimize the impact of the proposed development *candidate* waterfowl nesting habitat, vegetation removal should occur outside the key breeding bird period (typically April 15 to August 15) as identified by Environment Canada for the protection of nesting and foraging waterfowl and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing activities must take place during the aforementioned timing window than a nest survey shall be conducted by a qualified professional.

7.2.4 *Confirmed* Woodland and Wetland Amphibian Breeding Habitat

The 15 m setback from local wetlands on-site, presented above, is sufficient to protect *confirmed* woodland and wetland amphibian core breeding habitat from development encroachment, water quality impacts and human disturbance. Furthermore, the development envelopes on the proposed parcels ensure that the core forest cover and surrounding summer habitat is maintained, which is important for amphibians moving between habitats throughout the year.

7.2.4.1 *Candidate* Marsh Breeding Bird Habitat

The 15 m setback established above to protect local wetlands is sufficient to protect *candidate* marsh breeding bird habitat from development encroachment, water quality impacts and human disturbance. Furthermore, the development envelopes established to protect significant woodlands on-site provide protection against upland habitat loss. The setbacks and development envelopes ensure that the higher quality upland habitat (adjacent woodlands) are protected from development and encroachment.

7.2.5 Habitats of Special Concern and Rare Wildlife Species

7.2.5.1 Eastern Wood-Pewee, Evening Grosbeak, Wood Thrush

Impacts to eastern wood-pewee, evening grosbeak and wood thrush primarily concern habitat loss and increased fragmentation, the development envelopes presented above to protect significant woodlands on-site is sufficient to protect special concern and rare wildlife habitat from large amounts of habitat loss and fragmentation. To further minimize the impact of the proposed development on eastern wood-pewee, evening grosbeak and wood thrush habitat, vegetation removal should occur outside the key breeding bird period (typically May 1 to September 1) as identified by Environment Canada for the protection of nesting and foraging eastern wood-pewee, evening grosbeak and wood thrush and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing activities must take place during the aforementioned timing window than a nest survey shall be conducted by a qualified professional.

7.2.5.2 Golden Winged-Warbler, Grasshopper Sparrow

Impacts to golden-winged warbler and grasshopper sparrow habitat may include habitat loss, vegetation removal and grubbing, increased human disturbance and increased wildlife-human interactions. While the proposed development will result in the loss of suitable thicket habitat on-site suitable habitat is readily available within the broader study area. Impacts from increased human presence are anticipated to be negligible given the existing development surrounding the subject property and availability of suitable habitat within the greater study area. To further minimize the impact of the proposed development on golden-winged warbler and grasshopper sparrow habitat, vegetation removal should occur outside the key breeding bird period (typically May 1 to August 1) as identified by Environment Canada for the protection of nesting and foraging golden-winged warblers and grasshopper sparrows and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing activities must take place during the aforementioned timing window than a nest survey shall be conducted by a qualified professional.

7.2.5.3 Rusty Blackbird

Impacts to rusty blackbird primarily concern habitat loss and increased fragmentation, the 15 m setback, to protect the local wetland on-site (ELC code SA, SWT and SWDM2), and development envelopes to protect significant woodlands on-site presented above are sufficient to protect special concern and rare wildlife habitat (rusty blackbird) from large amounts of habitat loss and fragmentation. To further minimize the impact of the proposed development on rusty blackbird habitat, vegetation removal should occur outside the key breeding bird period (typically April 30 to August 1) as identified by Environment Canada for the protection of nesting and foraging rusty blackbirds and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing activities must take place during the aforementioned timing window than a nest survey shall be conducted by a qualified professional.

7.2.5.4 Snapping Turtle

The 15 m setback presented above, to protect the local wetland on-site (ELC code SA, SWT and SWDM2) is sufficient to protect special concern and rare wildlife habitat (snapping turtle). Furthermore, the development envelopes on the proposed parcels ensure that forest cover and surrounding summer habitat is maintained, which is important for wetland amphibians and reptiles moving between habitats throughout the year.

7.2.6 Animal Movement Corridor

The development envelopes proposed above to protect significant woodlands and 15 m setback from local wetlands is sufficient to protect *candidate* amphibian movement corridors. The development envelopes are positioned on each parcel in such a manner as to reduce impacts on the integrity of the woodlands and the setback further protects riparian vegetation and woodland adjacent to the swamp maintaining habitat connectivity and function of the *candidate* movement corridors, reducing habitat fragmentation and minimizing human-wildlife interactions.

Furthermore, the position of each wetland community relative to the property boundaries results in the uninterrupted migration of amphibians on at least one side of each wetland.

7.3 Species at Risk

7.3.1 Bobolink and Eastern Meadowlark

As indicated in Section 6.4, bobolink and eastern meadowlark, have the potential to occur on-site however, Category 1, Category 2 and Category 3 habitat were not identified on-site. To avoid disturbance and potential habitat on-site vegetation clearing during the breeding bird window between April 1 and July 31 should be avoided where possible. If avoidance is not possible a nest survey should be conducted by a qualified person prior to vegetation removal.

7.3.2 Eastern Whip-poor-will

As indicated in Section 6.5.3, eastern whip-poor-will, an avian species at risk, has the potential to occur on-site however, Category 1, Category 2 and Category 3 habitat were not identified on-site. The development envelopes discussed above ensures that the majority of the future residential construction will be able to avoid potential habitat on-site and vegetation clearing during the breeding bird window (April 15 to August 15) should be avoided where possible. If avoidance is not possible a nest survey should be conducted by a qualified person prior to vegetation removal.

7.3.3 Eastern Small-footed Myotis, Little Brown Myotis, and Tri-Colored Bat

To protect roosting and foraging bats, tree removal where required should take place outside of the spring and summer active season (typically May 1 to September 1), when bats are more likely to be using forest habitat. If vegetation clearing must be conducted during the spring and summer timing window than a roost survey should be conducted be a qualified professional.

7.3.4 Blanding's Turtle

As indicated in Section 6.5.7, Blanding's turtles, a reptilian species at risk, has the potential to occur on-site, primarily in a transient nature. To protect Blanding's turtles that may transit the site, on-site reptile exclusion fencing should be installed around the entire construction zone and be maintained for the duration of the project, to prevent Blanding's turtle from entering the construction zone. Reptile exclusion fencing should follow guidelines established in *Species at Risk Branch Best Practices Technical Note – Reptile and Amphibian Exclusion Fencing* (OMNRF, 2013b).

7.4 Wildlife

The following avoidance and mitigation measures are provided in effort to minimize impacts to on-site and off-site wildlife:

- Vegetation removal should occur outside the key breeding bird period (typically April 15 to August 15) as identified by Environment Canada for the protection of migratory birds and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing

activities must take place during the aforementioned timing window than a nest survey shall be conducted by a qualified professional.

- Installation of silt fence barriers around the entire construction envelope of each future residential dwelling to prohibit the emigration of wildlife into the construction area.
- Cover all stock piled material with a geotextile to prevent turtles from nesting in the material between May 1 and August 1 of any year.
- Perform daily pre-work sweeps of the construction area to ensure no species at risk are present and to remove any wildlife from inside the construction area.
- Should any species at risk be discovered throughout the course of the proposed works, the species at risk biologist with the local MECP district should be contacted immediately and operations modified to avoid any negative impacts to species at risk or their habitat until further direction is provided by the MECP.

7.5 Best Practice Measures for Mitigation of Cumulative Impacts

The following best management practice measures are provided for the mitigation of cumulative impacts resulting from general construction and development activities;

- To protect trees identified to be retained during construction, the Critical Root Zone (CRZ) should be identified and fenced. The CRZ is defined as 10 cm from the base of the tree for every centimetre in diameter of the tree trunk measured at breast height.
- Maintain as much permeable surface as possible in future development plans to minimize the generation of storm water runoff.
- Silt fencing should be installed along all setbacks to provide visual demarcation of the setbacks and to prevent machinery encroachment and sediment transport.
- Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized.
- In effort to offset the effect of vegetation clearing, consideration should be given to landscape planting with native tree species indicative of the Great Lakes – St. Lawrence Forest Region, such as white cedar, white spruce, red maple and red oak.

8.0 CONCLUSIONS

The proposed project supported by this EIS is the creation of a residential subdivision on an existing 27 ha property.

Based on the results of the impact analysis, impacts to the natural environment are anticipated to be minimal. Provided that mitigation measures recommended in Section 7 are implemented as proposed, no significant residual impacts are anticipated from the proposed development.

Following review of the information pertaining to the natural heritage features of the site, the following general conclusions are provided by GEMTEC in regards to the Environmental Impact Statement.

- No significant impacts to natural heritage features identified on-site, including fish habitat, significant wildlife habitat or habitats of species at risk are anticipated as a result of future residential development.
- The proposed project complies with the natural heritage policies of the Provincial Policy Statement.
- The proposed development complies with the natural heritage policies of the Lanark County Official Plan.

9.0 LIMITATION OF LIABILITY

This report and the work referred to within it have been undertaken by GEMTEC Consulting Engineers and Scientists Ltd (GEMTEC), and prepared for Grizzly Homes and is intended for the exclusive use of Grizzly Homes. This report may not be relied upon by any other person or entity without the express written consent of GEMTEC and Grizzly Homes. Nothing in this report is intended to provide a legal opinion.

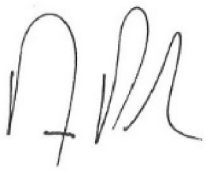
The investigation undertaken by GEMTEC with respect to this report and any conclusions or recommendations made in this report reflect the best judgements of GEMTEC based on the site conditions observed during the investigations undertaken at the date(s) identified in the report and on the information available at the time the report was prepared.

This report has been prepared for the application noted and it is based, in part, on visual observations made at the site, all as described in the report. Unless otherwise stated, the findings contained in this report cannot be extrapolated or extended to previous or future site conditions, or portions of the site that were unavailable for direct investigation.

Should new information become available during future work, including excavations, borings or other studies, GEMTEC should be requested to review the information and, if necessary, re-assess the conclusions presented herein.

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Emily Young, B.Sc.
Biologist



Drew Paulusse, B.Sc.
Senior Biologist

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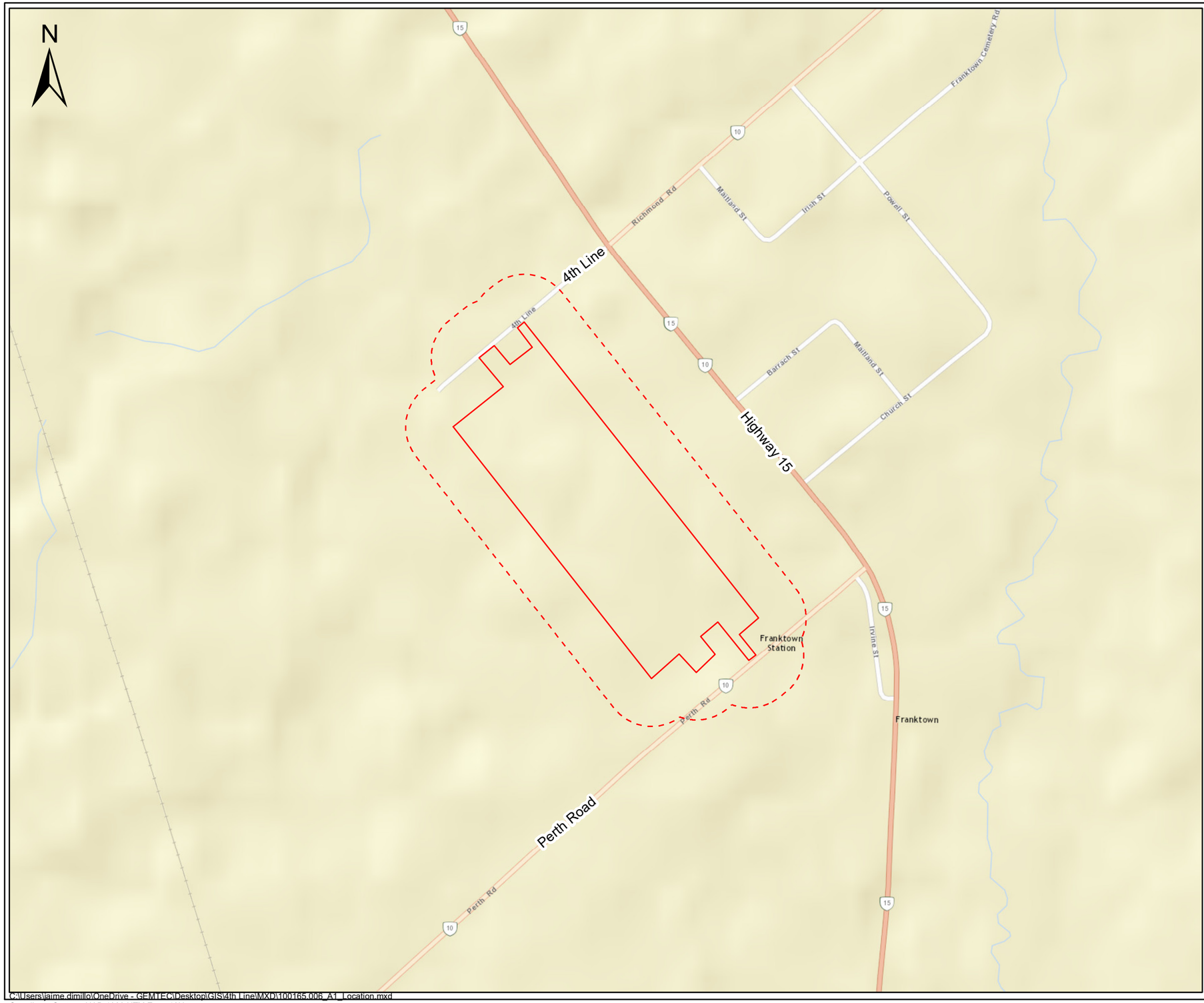
APPENDIX A

Report Figures



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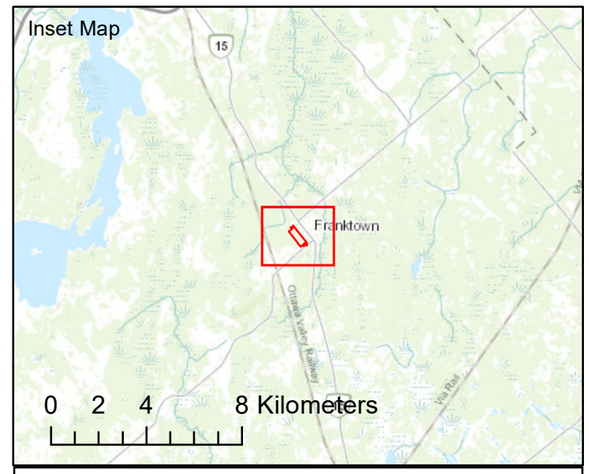
- Property Boundary
- Study Area



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ottawa@gemtec.ca

Client:	Project:
McIntosh Perry Consulting Engineers Ltd.	100165.006

Location
2085 Fourth Line Road
Beckwith Township
Lanark County, Ontario

Drwn By:	Chkd By:	
JD	DP	Site Location

Date: January 2022	Rev.	
© Queen's Printer for Ontario	0	Figure A.1

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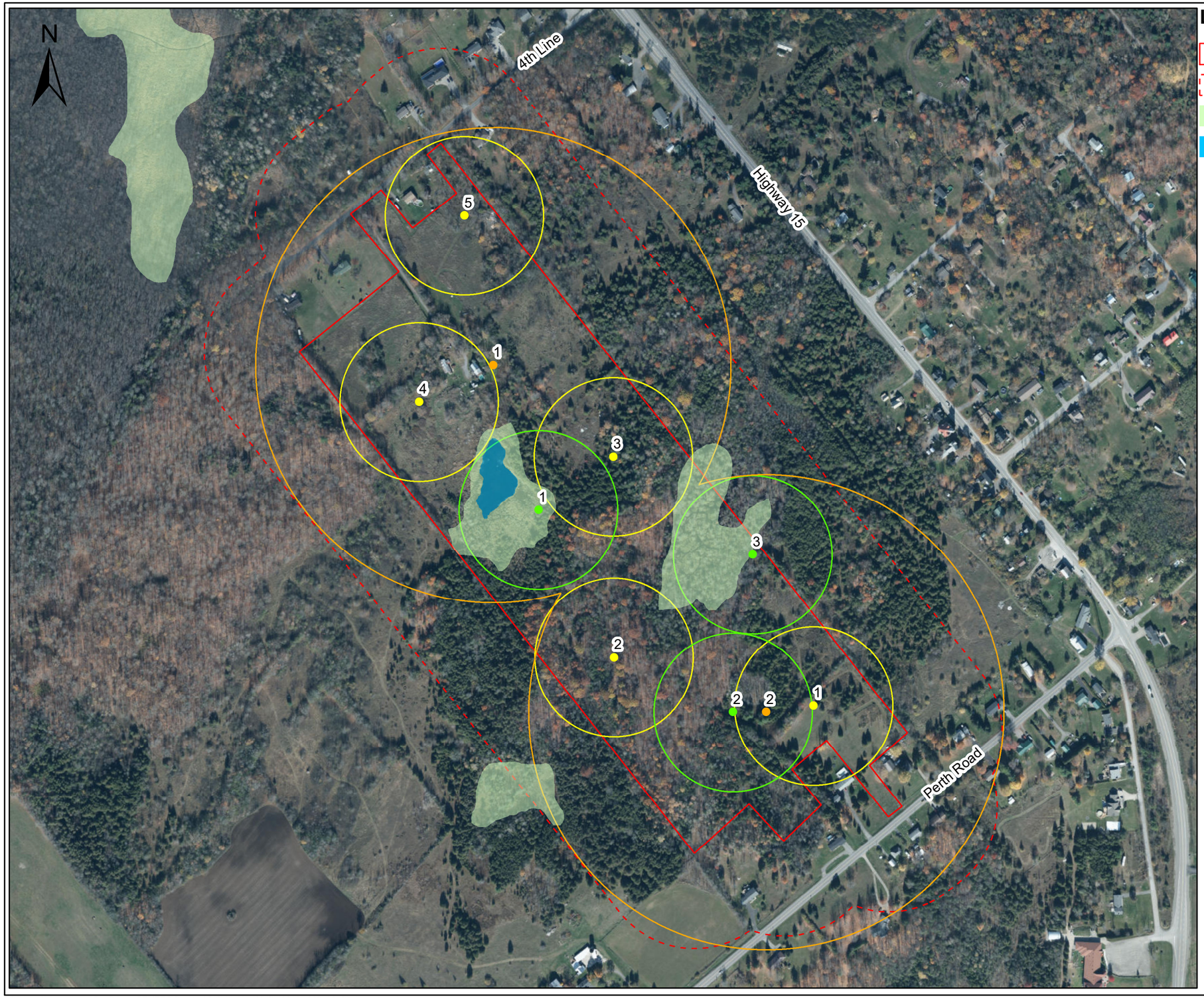
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Legend

- Property Boundary
- Study Area
- Local Wetland
- Waterbody
- Amphibian Breeding Survey Location (100 m radius)
- Breeding Bird Survey Location (100 m radius)
- Whip-poor-will Breeding Survey Location (300 m radius)

Scale
1:5,000
0 35 70 140 210 280 Meters

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Client: McIntosh Perry Consulting Engineers Ltd.	Project: 100165.006
Location: 2085 Fourth Line Road, Beckwith Township, Lanark County, Ontario	
Drwn By: JD	Chkd By: DP
Site Layout	
Date: December 2021	Rev. 0
© Queen's Printer for Ontario	Figure A.2

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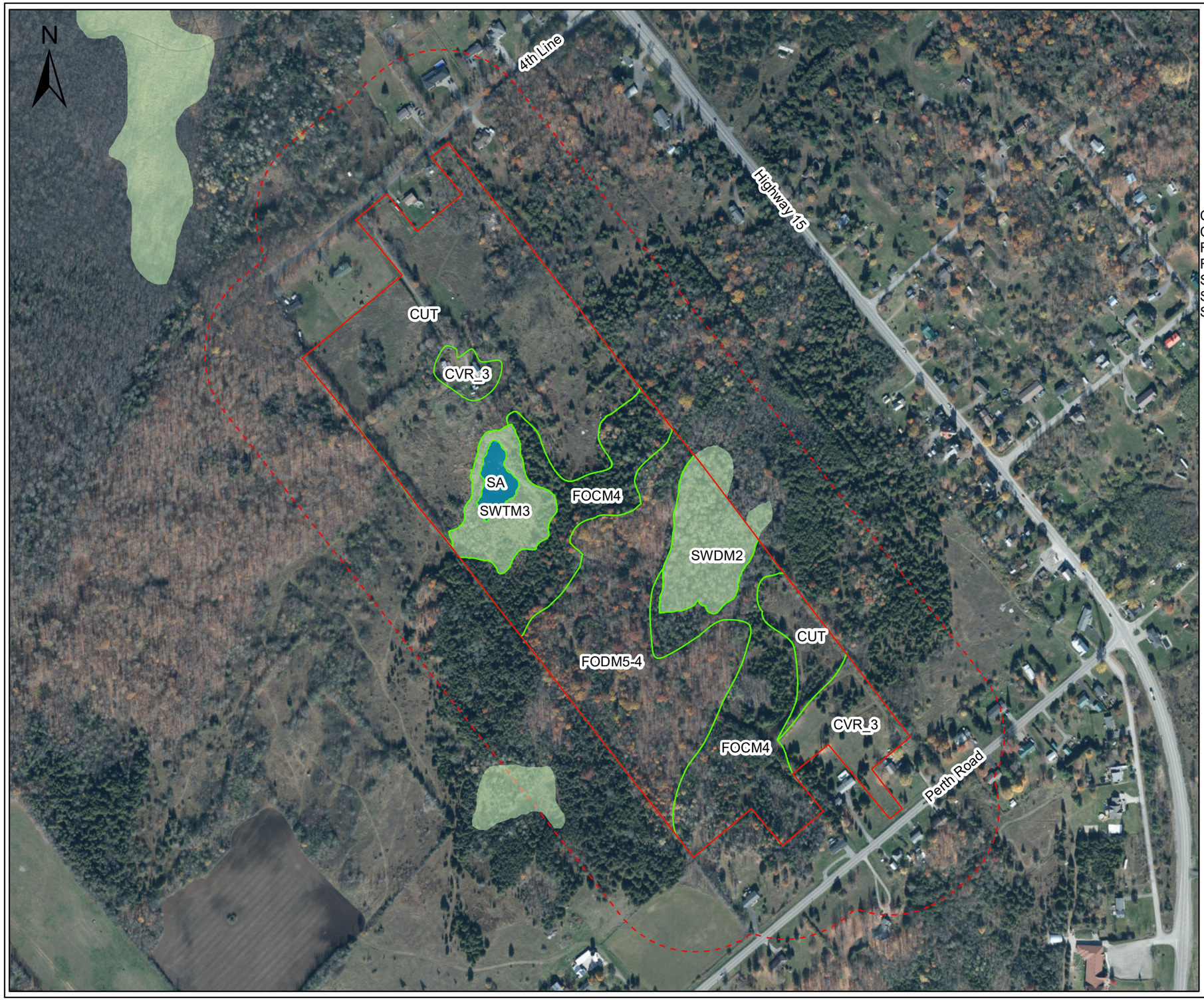
Service Layer Credits: Rideau Valley Conservation Authority (RVCA)



Legend

- Property Boundary
- Study Area
- Local Wetland
- Waterbody
- Vegetation Community

CUT = Cultural Thicket
CVR_3 = Single Family Residential
FOCM4 = Fresh-Moist White Cedar Coniferous Forest
FODM5-4 = Dry-Fresh Sugar Maple-Ironwood Deciduous Forest
SA = Shallow Water
SWDM2 = Ash Mineral Deciduous Swamp
SWTM3 = Willow Mineral Deciduous Swamp

Scale
1:5,000
0 35 70 140 210 280 Meters

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Client: McIntosh Perry Consulting Engineers Ltd.	Project: 100165.006
Location: 2085 Fourth Line Road, Beckwith Township, Lanark County, Ontario	
Drwn By: JD / Chkd By: DP	Vegetation Communities
Date: February 2022	Rev. 0
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Service Layer Credits: Rideau Valley Conservation Authority (RVCA)

Legend

- Property Boundary
- Study Area
- Local Wetland
- Waterbody

Proposed Development

- Lot Line
- Road
- Driveway
- House
- Septic

Scale
1:5,000
0 35 70 140 210 280 Meters

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Client: McIntosh Perry Consulting Engineers Ltd.	Project: 100165.006
Location: 2085 Fourth Line Road, Beckwith Township, Lanark County, Ontario	
Drwn By: JD	Chkd By: DP
Development Concept	
Date: December 2021	Rev. 0
Figure A.4	

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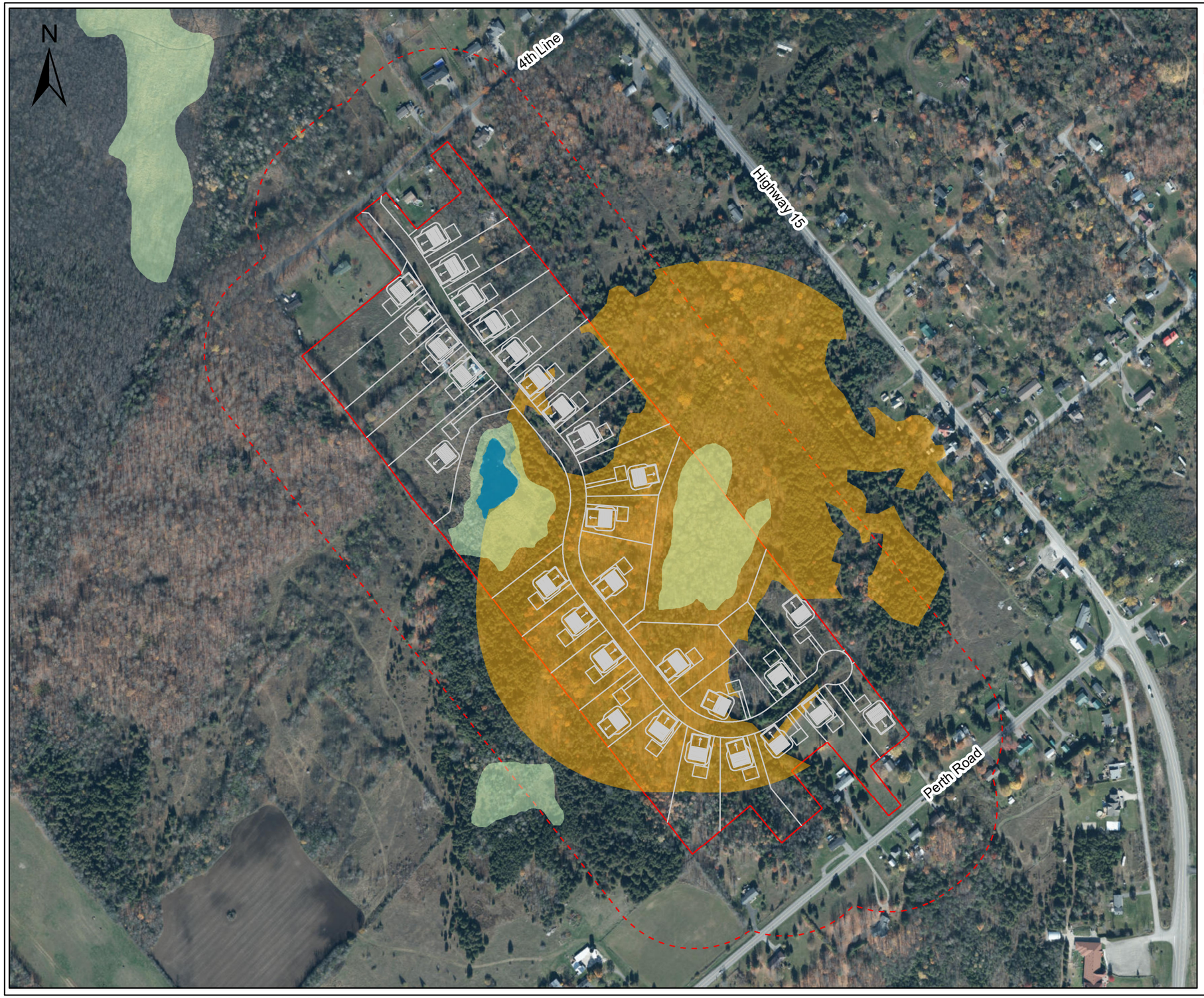

Legend

- Property Boundary
- Study Area
- Local Wetland
- Waterbody
- Woodland Amphibian Breeding Habitat (230 m radius)

Proposed Development

- Proposed Development

Scale
1:5,000
0 35 70 140 210 280 Meters

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Client: McIntosh Perry Consulting Engineers Ltd.	Project: 100165.006
Location: 2085 Fourth Line Road, Beckwith Township, Lanark County, Ontario	
Drwn By: JD / Chkd By: DP	Natural Heritage Features
Date: January 2022	Rev. 0
	Figure A.5

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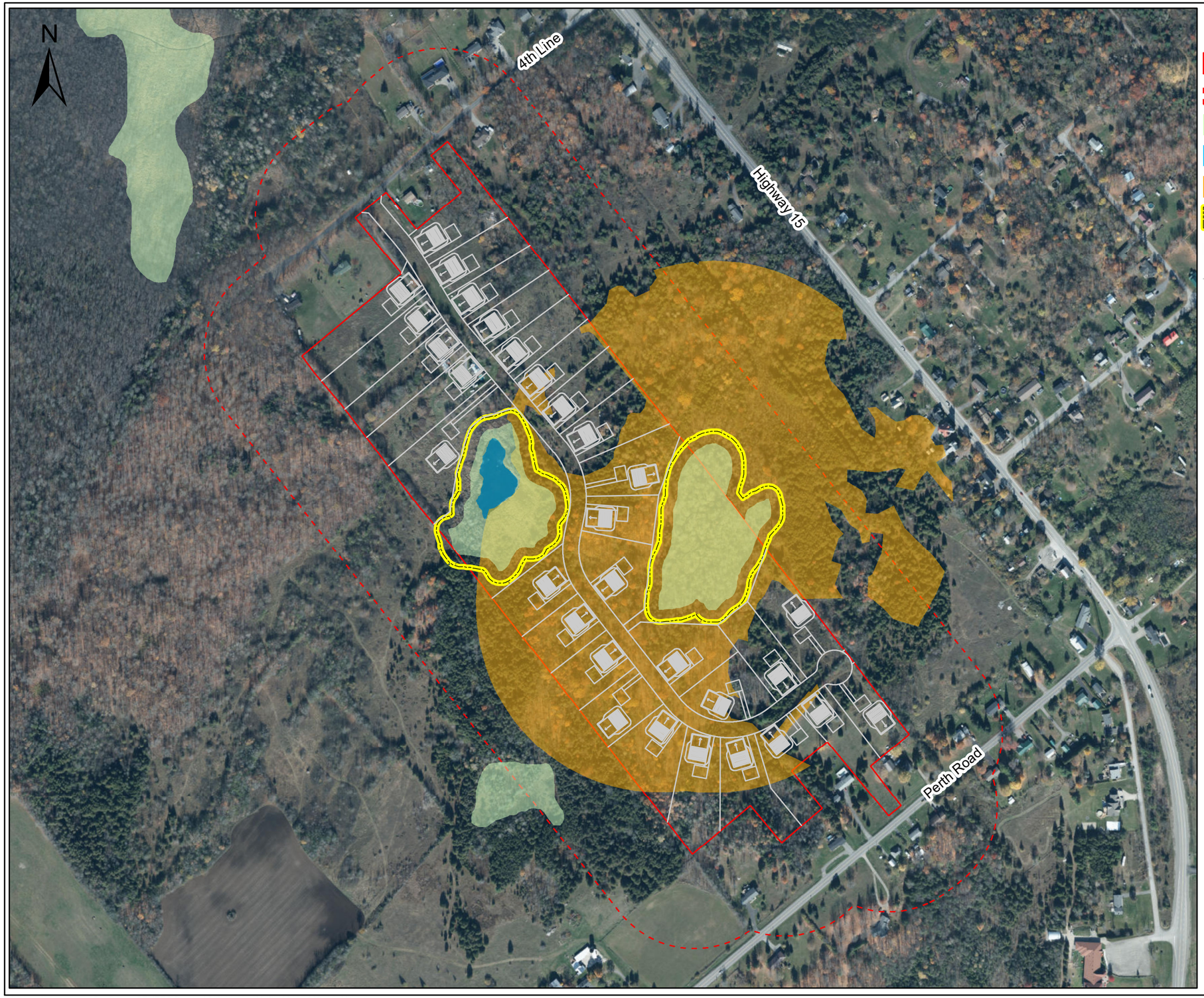

Legend

- Property Boundary
- Study Area
- Local Wetland
- Waterbody
- Woodland Amphibian Breeding Habitat (230 m radius)
- 15 m Setback

Proposed Development

- Proposed Development

Scale
1:5,000
0 35 70 140 210 280 Meters

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Client: McIntosh Perry Consulting Engineers Ltd.	Project: 100165.006
Location: 2085 Fourth Line Road, Beckwith Township, Lanark County, Ontario	
Drwn By: JD	Chkd By: DP
Mitigation Measures	
Date: January 2022	Rev. 0
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C:\Users\jaime.dimillo\OneDrive - GEMTEC\Desktop\GIS\4th Line\MXD\100165.006_A6_Mitigation.mxd
Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: Rideau Valley Conservation Authority (RVCA)

APPENDIX B

Site Photographs

Site Photograph 1 – Cultural Thicket (CUT)

Site Photograph 2 – Cultural Thicket (CUT)

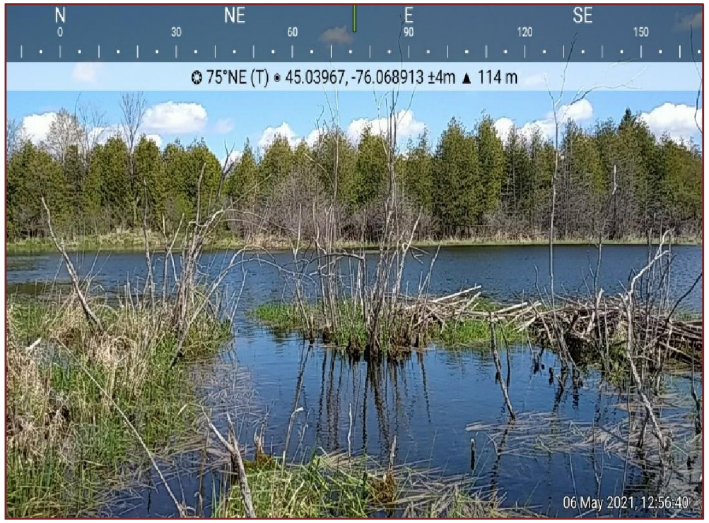
Site Photograph 3 – Cultural Thicket (CUT)

Site Photograph 4 – Willow Mineral Deciduous Thicket Swamp (SWTM3)

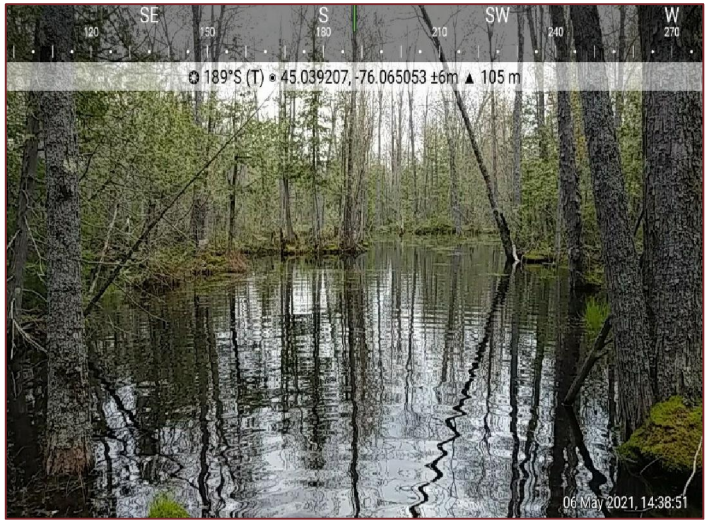
GEMTEC Consulting Engineers and Scientists	Project Environmental Impact Statement Proposed Subdivision Plan 2085 Fourth Line Road Beckwith, Ontario	**ATTACHEMNT B** File No. 100165.006	**Site Photographs**

Site Photograph 5 – Willow Mineral Deciduous Thicket Swamp (SWTM3)

Site Photograph 6 – Shallow Water (SA)



Site Photograph 7 – Shallow Water (SA)



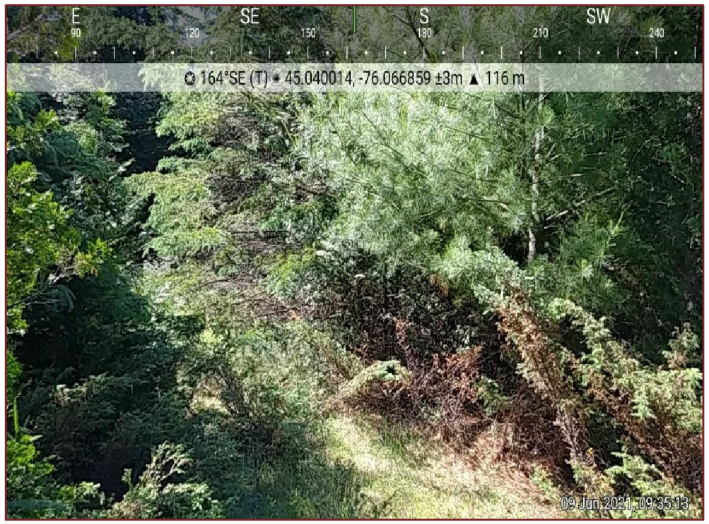
Site Photograph 8 – Ash Mineral Deciduous Swamp (SWDM2)

GEMTEC Consulting Engineers and Scientists	Project Environmental Impact Statement Proposed Subdivision Plan 2085 Fourth Line Road Beckwith, Ontario	**ATTACHEMNT B** File No. 100165.006	**Site Photographs**

Site Photograph 9 – Ash Mineral Deciduous Swamp (SWDM2)

Site Photograph 10 – Ash Mineral Deciduous Swamp (SWDM2)

Site Photograph 11 – Fresh-Moist White Cedar Coniferous Forest (FOCM4)

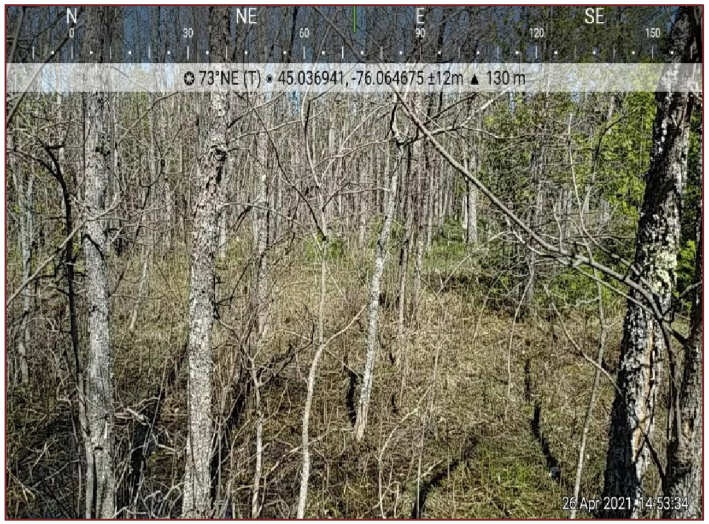


Site Photograph 12 – Fresh-Moist White Cedar Coniferous Forest (FOCM4)

GEMTEC Consulting Engineers and Scientists	Project Environmental Impact Statement Proposed Subdivision Plan 2085 Fourth Line Road Beckwith, Ontario	**ATTACHEMNT B**	**Site Photographs**
		File No. 100165.006	

Site Photograph 13 – Fresh-Moist White Cedar Coniferous Forest (FOCM4)

Site Photograph 14 – Fresh-Moist White Cedar Coniferous Forest (FOCM4)



Site Photograph 15 – Fresh-Moist White Cedar Coniferous Forest (FOCM4)

Site Photograph 16 – Dry-Fresh Sugar Maple - Ironwood Deciduous Forest (FODM5-4)

GEMTEC Consulting Engineers and Scientists	Project Environmental Impact Statement Proposed Subdivision Plan 2085 Fourth Line Road Beckwith, Ontario	**ATTACHEMNT B** File No. 100165.006	**Site Photographs**

Site Photograph 17 – Dry-Fresh Sugar Maple - Ironwood Deciduous Forest (FODM5-4)

Site Photograph 18 – Lawn

GEMTEC Consulting Engineers and Scientists	Project Environmental Impact Statement Proposed Subdivision Plan 2085 Fourth Line Road Beckwith, Ontario	**ATTACHEMNT B** File No. 100165.006	**Site Photographs**

APPENDIX C

Report Summary Tables

TABLE C.1
SUMMARY OF WILDLIFE OBSERVED ON-SITE AND ADJACENT TO SITE

Common Name	Scientific Name	S-Rank	Evidence
Avian Species			
American bittern	*Botaurus lentiginosus*	S4B	Observed on-site
American robin	*Turdus migratorius*	S5B	Heard calling
American crow	*Corvus brachyrhynchos*	S5B	Heard calling
American goldfinch	*Spinu tristis*	S5B	Heard calling
Belted kingfisher	*Megaceryle alcyon*	S4B	Heard calling
Black-and-white warbler	*Mniotilta varia*	S5B	Heard calling
Black-throated green warbler	*Setophaga virens*	S5B	Heard calling
Black-capped chickadee	*Poecile atricapillus*	S5	Heard calling
Blue jay	*Cyanocitta cristata*	S5	Heard calling
Blue-winged warbler	*Vermivora cyanoptera*	S4B	Heard calling
Brown-headed cowbird	*Molothrus ater*	S4B	Heard calling
Cedar waxwing	*Bobycilla cedrorum*	S5B	Heard calling, observed perched
Common grackle	*Quiscalus quiscala*	S5B	Heard calling
Common raven	*Corvus corax*	S5	Heard calling
Common yellowthroat	*Geothlypis trichas*	S5B	Heard calling
Downy woodpecker	*Picoides pubescens*	S5	Heard calling
Eastern phoebe	*Sayornis phoebe*	S5B	Heard calling
Eastern towhee	*Pipilo erythrophthalmus*	S4B	Heard calling
Eastern wood-pewee	*Contopus virens*	S4B	Heard calling
European starling	*Sturnus vulgaris*	SNA	Heard calling
Field sparrow	*Spizella pusilla*	S4B	Heard calling
Golden-winged warbler	*Vermivora chrysoptera*	S4B	Heard calling
Gray catbird	*Dumetella caroliniensis*	S4B	Heard calling
Great-crested flycatcher	*Myiarchus crinitus*	S4B	Heard calling
Green Heron	*Butorides virescens*	S4B	Observed on-site
House wren	*Troglodytes aedon*	S5B	Heard calling
Kildeer	*Charadrius vociferus*	S5B, S5N	Heard calling, observed foraging
Mallard	*Anas platyrhnchos*	S5	Heard calling, observed swimming
Mourning dove	*Senaida macroura*	S5	Heard calling
Northern cardinal	*Cardinalis cardinalis*	S5	Heard calling
Northern flicker	*Colaptes auratus*	S4B	Heard calling, observed foraging
Northern waterthrush	*Parkesia noveboracensis*	S5B	Heard calling
Ovenbird	*Seiurus aurocapilla*	S4B	Heard calling
Purple finch	*Haemorhous purpureus*	S4B	Heard calling
Red-eyed Vireo	*Vireo olivaceus*	S5B	Heard calling
Red-winged blackbird	*Agelaius phoeniceus*	S4B	Heard calling
Ruffed grouse	*Bonasa umbellus*	S4	Heard calling
Song sparrow	*Melospiza melodia*	S5B	Heard calling
Turkey vulture	*Cathartes aura*	S5B	Observed soaring
Veery	*Catharus fuscescens*	S4B	Heard calling
White-breasted nuthatch	*Sitta carolinensis*	S5	Heard calling
White-throated sparrow	*Zonotrichia albicollis*	S5B	Heard calling
Wild turkey	*Meleagris gallopavo*	S5	Observed on-site
Wilson's snipe	*Gallinago delicata*	S5B	Heard winnowing
Yellow-bellied sapsucker	*Sphyrapicus varius*	S5B	Heard calling
Yellow warbler	*Setophaga petechia*	S5B	Heard calling
Mammalian Species			
Beaver	*Castor canadiensis*	S5	Observed on-site
Coyote	*Canis latrans*	S5	Observed on-site
Moose	*Aloes americanus*	S5	Observed scat on-site
Porcupine	*Erethizon dorsatum*	S5	Observed on-site
White-tailed deer	*Odocoileus virginianus*	S5	Observed scat on-site
Amphibian Species			
American Bullfrog	Lithobates catesbeianus	S4	Heard calling
American Toad	Anaxyrus americanus	S5	Heard calling
Gray treefrog	*Hyla versicolor*	S5	Heard calling
Green frog	*Lithobates clamitans*	S5	Heard calling
Northern leopard frog	*Lithobates pipiens*	S5	Heard calling
Spring peeper	*Pseudacris crucifer*	S5	Heard calling
Western chorus frog	*Pseudacris triseriata*	S4	Heard calling
Reptilian Species			
Eastern gartersnake	*Thamnophis sirtalis sirtalis*	S5	Observed on-site
Midland painted turtle	*Chrysemys picta marginata*	S4	Observed on-site

Notes:

Subnational Conservation Status Ranks:

S1 - Critically Imperilled, at very high risk of extirpation, very few populations or occurrences or very steep population decline

S2 - Imperiled, at high risk of extirpation, few populations or occurrences or steep population decline

TABLE C.1
SUMMARY OF WILDLIFE OBSERVED ON-SITE AND ADJACENT TO SITE

Common Name	Scientific Name	S-Rank	Evidence

S3 - Vulnerable, at moderate risk of extirpation, relatively few populations or occurrences, recent and widespread population decline

S4 - Apparently Secure, at a family low risk of extirpation, many populations or occurrences, some concern for local population decline

S5 - Secure, at very low or no risk of extirpation, abundant populations or occurrences, little to no concern for population decline

Qualifiers:

S#B - Conservation status refers to the breeding population of the species

S#N -Conservation status refers to the non-breeding population of the species

TABLE C.2
SCREENING RATIONALE FOR SIGNIFICANT WOODLANDS

Woodland Criteria	Further Considered in EIS	Rationale
Woodland Size	No	Contiguous woodlands on-site do not meet the minimum size requirement for the planning area (> 50 ha).
Ecological Functions		
a) Woodland Interior	No	Interior woodlands on-site does not meet the minimum size requirement for the planning area (> 8 ha).
b) Proximity	Yes	Woodlands on-site are proximate to local wetlands.
c) Linkages	No	Woodlands on-site do not provide linkages to other natural heritage features.
d) Water Protection	Yes	Woodlands on-site are proximate to local wetlands.
e) Diversity	No	Species composition within the on-site woodland is well represented on the landscape and no rare species communities were observed on-site.
Uncommon Characteristics	No	The woodlands on-site do not have a unique species composition, vegetation communities with a ranking of S1, S2 or S3, or a mature size structure.
Economical and Social Functional Values	No	The woodlands on-site do not contain high productivity in terms of economically valuable products, high social value such as recreational use, identified historical cultural or educational values.

TABLE C.3
SCREENING RATIONALE FOR HABITATS OF SEASONAL CONCENTRATION AREAS

Wildlife Habitat	Further Considered in EIS	Rationale
Winter Deer Yard	No	While there are stands of coniferous woodlands on-site, as outlined in the the Signficant Wildlife Habitat Criteria Schedules (OMNRF, 2015) winter deer yards and deer managment are an MNRF responsibility. Based on review of publically available data from the OMNRF on Land Information Ontario Geo-hub, no Stratum I deer yards, Stratum II deer yards, or winter congregation areas have been identified on-site or within the broader study area. The closest deer yard to site is a patch of Stratum I deer yard located approximately 10 km to the west.
Colonial Bird Nesting Habitat	No	No suitable habitat located on-site or within the study area to support colonial bird nesting.
Waterfowl Stopover and Staging Areas	No	Wetland habitat on-site does not provide suitable conditions for waterfowl stopover and staging areas (aquatic). Terrestrial stopover and staging areas are not present on-site.
Shorebird Migratory Stopover Area	No	Shorebird stopover sites are typically well-known and have a long history of use. The site does not contain suitable shoreline habitat for shorebird foraging.
Raptor Wintering Area	Yes	The site contains both forest and upland habitat, with large areas of upland habitat within the broader study area to support roosting and resting habitat within the on-stie forest.
Bat Hibernacula	No	Cave and crevice habitat is not present on-site or within the study area.
Bat Maternity Colonies	No	Woodlands on-site do not meet minimum snag density (>10 snags/hectare) requirement to be considered SWH for bat maternity colonies.
Turtle Wintering Area	Yes	Potentially suitable wetlands are present on-site to support turtle wintering areas.
Reptile Hibernaculum	No	No structures such as large rock piles, bedrock outcrops, cervices or other karstic features have been identified on-site.
Migratory Butterfly Stopover Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.
Landbird Migratory Stopver Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.

TABLE C.4
SCREENING RATIONALE FOR SPECIALIZED WILDLIFE HABITATS

Specialized Wildlife Habitat	Further Considered in EIS	Rationale
Waterfowl Nesting Area	Yes	Upland habitat is present adjacent to the wetlands ELC ecosites SA, SWDM2 and SWT on-site.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No	The site is located >120 m from any habitat which could support foraging bald eagles or osprey. Nesting sites for these species are uncommon in Ecoregion 6E (MNRF, 2012).
Woodland Nesting Raptor Habitat	No	Nesting may occur in any ecosite and species preference is towards mature forest stands >30 ha with >10 ha of interior habitat with a 200 m buffer. Contiguous forest stands >30 ha are present; however, interior forest habitat with a 200 m buffer does not meet the minimum size criteria. No stick nests were observed on-site.
Turtle Nesting Habitat	No	No suitable habitat (exposed mineral soil with minimal vegetation conver) is present within 100 m of the wetlands on-site.
Seeps and Springs	No	Seeps and/or springs were not identified on-site.
Woodland Amphibian Breeding Habitat	Yes	Suitable wetland and pond habitat within or adjacent to a woodland occurs on-site may support woodland amphibian breeding habitat.
Wetland Amphibian Breeding Habitat	Yes	Suitable wetland occurs on-site may support wetland amphibian breeding habitat.
Woodland Area-Sensitive Bird Breeding Habitat	No	Woodland area-senstive birds require interior forest habitat located >200 m from the forest edge in large (>30 ha) forest stands. Woodlands on-site and adjacent to the site do not meet the defining criteria.

TABLE C.5
SCREENING RATIONALE FOR HABITAT FOR SPECIES OF CONSERVATION CONCERN

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Marsh Breeding Bird Habitat	Yes	Potentially suitable marsh habitat present on-site to support marsh breeding bird habitat.
Open Country Breeding Bird Habitat	No	No suitable meadow habitat on-site.
Shrub/Early Successional Breeding Bird Habitat	No	Candidate early successional breeding bird habitat typically includes fallow fields transitioning to early successional forest habitats that are > 10 ha but have not been actively used for farming. The cultural thickets on-site are not considered SWH due to not meeting the minimum size requirement.
Terrestrial Crayfish Habitat	No	Terrestrial crayfish are only found within southwestern Ontario (MNRF, 2012).
Special Concern and Rare Wildlife Species	Yes	The following species of special concern were identified on-site during the site investigation: eastern wood-pewee, golden-winged warbler and wood thrush. Occurrence data from NHIC, eBird and iNaturalist also indactes the following species of special concern to have occurred on-site and/or the surorunding area: evening grosbeak, grasshopper sparrow, rusty blackbird and snapping turtle.

TABLE C.6
SCREENING RATIONALE FOR ANIMAL MOVEMENT CORRIDORS

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Amphibian Movement Corridor	Yes	*Confirmed* wetland amphibian breeding habitat has been identified on-site.
Deer Movement Corridor	No	No winter deer yards have been identified on-site by the OMNRF.

TABLE C.7
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA

Species	ESA Status	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
Avian				
Barn Swallow	Threatened	Nests in barns and other semi-open structures. Forages over open fields and meadows.	Low	Suitable foraging habitat available on-site. No suitable nesting structures present on-site or within the broader study area.
Bobolink	Threatened	Nests in dense tall grass fields and meadows, low tolerance for woody vegetation.	Moderate	Suitable grassland habitat available on-site and within study area.
Chimney Swift	Threatened	Nests in traditional-style open brick chimneys.	Low	No suitable nesting structures within the broader study area.
Eastern Meadowlark	Threatened	Nests and forages in dense tall grass fields and meadows, higher tolerance to woody vegetation.	Moderate	Suitable grassland habitat available on-site and within study area.
Eastern Whip-poor-will	Threatened	Nests on the ground in open deciduous or mixed woodlands with little underbrush, and bedrock outcrops.	Moderate	Woodlands and cultural lands on-site provide suitable habitat conditions for eastern whip-poor-will.
Evening Grosbeak	Special Concern	Nests in trees or large shrubs, prefers mature coniferous forests but will also use deciduous forests, parklands and orchards.	Moderate	Forests on-site provide suitable habitat conditions for evening grosbeak.
Eastern Wood-pewee	Special Concern	Woodland species, often found near clearings and edges.	High	Eastern wood-pewee was observed on-site during site investigations.
Golden-Winged Warbler	Special Concern	Ground-nesting edge species.	High	Golden-winged warbler was observed on-site during investigation.
Grasshopper Sparrow	Special Concern	Area-sensitive grassland species, nests on the ground.	Moderate	Suitable grassland habitat available on-site and within study area.
Henslow's Sparrow	Endangered	Prefers open, moist tallgrass fields.	Low	No suitable grassland habitat to support Henslow's sparrow nesting on-site.
Rusty Blackbird	Special Concern	Prefers wet wooded or shrubby areas (nests at edges of boreal wetlands).	Moderate	Swamp and woodlandsd on-site provide suitable habitat conditions for rusty blackbird.
Wood Thrush	Special Concern	Prefers deciduous or mixed woodlands	High	Wood Thrush was observed on-site during site investigations.
Mammalian				
Eastern Small-footed Myotis	Endangered	Roosts in rock crevices, barns and sheds. Overwinters in abandoned mines. Summer habitats are poorly understood in Ontario, elsewhere prefers to roost in open, sunny rocky habitat and occasionally in buildings (Humphrey, 2017).	Moderate	Potentially suitable anthropogenic structures adjacent to site. Available habitat on-site does not meet bat maternity colony requirements however the site and surrounding area may provide foraging and non-maternal roost habitat.
Little Brown Myotis	Endangered	Maternal colonies known to use buildings, may also roost in trees during summer. Affinity towards anthropogenic structures for summer roosting habitat and exhibit high site fidelity (Environment Canada, 2015).	Moderate	Potentially suitable anthropogenic structures adjacent to site. Available habitat on-site does not meet bat maternity colony requirements however the site and surrounding area may provide foraging and non-maternal roost habitat.
Northern myotis (Northern Long-eared Bat)	Endangered	Occurs throughout eastern North America in associated with Boreal forests. Roosts mainly in trees, occasionally anthropogenic structures during summer (Environment Canada, 2015). Overwinters in caves and abandoned mines.	Low	Species affinity is for Boreal forests and rarely roosts in anthropogenic structures.
Tri-colored Bat	Endangered	Roosts in trees, rock crevices and occasionally buildings during summer. Overwinters in caves and mines.	Moderate	Potentially suitable anthropogenic structures adjacent to site. Available habitat on-site does not meet bat maternity colony requirements however the site and surrounding area may provide foraging and non-maternal roost habitat.
Reptilian				
Blanding's Turtle	Threatened	Inhabits quiet lakes, streams and wetlands with abundant emergent vegetation. Frequently occurs in adjacent upland forests.	High	Historic occurrence data for the species within 1 km of the site (NHIC), and according to the Herp Atlas (Ontario Nature, 2019), Blanding's turtle have been observed 23 times between 2017 and 2019 within the 10 km2 grid square that encompasses the site. The site does provide potentially suitable aquatic habitat for Blanding's turtle.
Eastern Musk Turtle	Special Concern	Permanent ponds, lakes, marshes and rivers.	Low	No known occurrence data for species on-site however, the site does provide potentially suitable aquatic habitat for eastern musk turtle.
Gray Ratsnake	Threatened	On the Frontenac Axis, preference to a mosaic of forest and open habitats (fields; bedrock outcrops) with a high amount of edge habitat. In summer, seeks shelter in standing snags, hollow logs, and rock crevices. Nesting occurs inside standing snags, logs, stumps, compost piles. Overwinters in below ground hibernacula.	Low	No suitable habitat present on-site.
Snapping Turtle	Special Concern	Highly aquatic species, found in a wide variety of permanent ponds, lakes, marshes and rivers.	High	Historic occurrence data for species within 1 km of the site (NHIC), and according to the Herp Atlas (Ontario Nature, 2019), the species has been detected 12 times between 2017 and 2019 within the 10km2 grid square that encompasses the site. The site does provide potentially suitable aquatic habitat for snapping turtle.
Plants				
American Ginseng	Endangered	Grows in rich, moist but well-drained and relatively mature, deciduous woodlands dominated by sugar maple, white ash and American basswood.	Low	Woodlands on-site are mixed and are unlikely to support habitat requirements for American ginseng growth.
Butternut	Endangered	Inhabits a wide range of habitats including upland and lowland deciduous and mixed forests.	Moderate	Large portions of the site are open and in a regenerative state.
Insects				
Bogbean Buckmoth	Endangered	Preferred food plant is bog bean, present in a variety of wetlands including bogs, swamps and fens.	Low	Preferred wetland habitat is not present on-site.
Gypsy Cuckoo Bumble Bee	Endangered	Inhabits a wide range of habitats: open meadows, agricultural and urban areas, boreal forests and woodlands.	Low	Currently the only known Ontario population occurs in Pinery Provincial Park.
Monarch Butterfly	Special Concern	Caterpillars required milkweed plants that are confined to meadows and open areas. Adult butterflies use more diverse habitats with a variety of wildflowers.	Moderate	Potentially suitable foraging vegetation available for Monarch on-site.
Mottled Duskywing	Endangered	Larval food plant, New Jersey Tea, is found in sandy areas and alvars.	Low	Preferred habitat of sandy areas and alvars not present in the study area.

TABLE C.7
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA

Nine-spotted Lady Beetle	Endangered	Habitat generalist	Low	No recent occurrence reports in the area, thought to be locally extirpated.
Rusty-patched Bumble Bee	Endangered	Habitat generalist	Low	Currently the only known Ontario population occurs in Pinery Provincial Park.
Traverse Lady Beetle	Endangered	Habitat generalist	Low	No new records in Ontario, species thought to be absent in former habitats.
West Virginia White Butterfly	Special Concern	Requires mature moist, deciduous woods, with larval host plant, toothwort.	Low	Necessary vegetation and toothwort plant are not present on-site or within study area.
Yellow-banded Bumble Bee	Special Concern	Habitat generalist: mixed woodlands, variety of open habitat.	Moderate	Potentially suitable foraging habitat available for yellow-banded bumble bee on-site.

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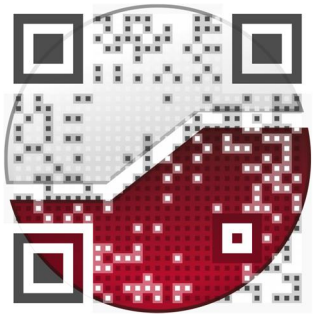

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geotechnical	géotechnique
environmental	environnementale
field services	surveillance de chantier
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