

Environmental Impact Study for the Proposed McBain Subdivision, Crysler, Ontario

Final Report

December 13, 2022

Submitted To:

Philippe Grégoire
G & E Reno Construction
101-787 rue Principale
Casselman, Ontario K0A 1M0

KILGOUR & ASSOCIATES LTD.
www.kilgourassociates.com



EXECUTIVE SUMMARY

This Environmental Impact Statement (EIS) was prepared by Kilgour & Associates Ltd. (KAL) on behalf of G&E Reno Construction in support of their application for development of lands in the northeast portion of Crysler, Ontario, east of Bridge Street and north of the South Nation River (“the Site”). In the United Counties of Stormont, Dundas and Glengarry, an EIS is required when development or site alteration is proposed in or adjacent to natural heritage features. The purposes of this EIS are to identify 1) natural heritage features on or adjacent to the Site, 2) potential impacts of the proposed development on those features, and 3) mitigation measures to minimize or eliminate those impacts. The requirement of an EIS for the proposed development was triggered by a portion of the proposed development located less than 120 m from the seasonal high water mark associated with the South Nation River, potential interaction with intermittent drainages on-site, and potential presence of habitat for species at risk (SAR).

The proposed project will comprise development of a residential subdivision (“McBain Subdivision”). The proposed residential development will comprise primarily single detached style housing, supporting infrastructure and utilities, and a stormwater management facility. Proposed development of the Site will be concentrated in areas of agricultural land; areas of native vegetation cover (e.g., a deciduous woodlot at the north side of the Site and a deciduous hedgerow along the South Nation River) are expected to be retained.

Background information for the Site and surrounding area was obtained from online databases and geographic information system mapping applications to review relevant information. Field studies of the Site were conducted during the spring and summer of 2022 to confirm the findings of the background review. These studies included delineation of vegetation communities, breeding bird surveys, and incidental observations of other wildlife species.

The dominant landcover on the Site is agricultural, comprising soybean crops to the south and a large, central area left fallow in 2022. A deciduous woodlot is situated on the north edge of the site, and a deciduous hedgerow is located along the South Nation River. A small cultural meadow and abandoned, cut-off drainage feature are situated in the southwest corner of the Site. Rural residential properties are located adjacent to the Site along Bridge Street.

The proposed project has potential to interact with eleven SAR listed as Endangered or Threatened, including four species of birds, three species of bats, Blanding’s Turtle, American Eel, Butternut and Black Ash. Appropriate vegetation clearing windows would be followed to minimize impacts to birds and bats. Turtle exclusion fencing is recommended to be installed prior to development and the overwintering period. Following appropriate setbacks from the South Nation River, as well as employing appropriate erosion and sediment control measures, will minimize potential impacts to aquatic SAR and other aquatic species. No Butternut or Black Ash trees were observed on-site.

This EIS provides a set of mitigation measures for employment in the design and construction of the proposed development, such as the use of standard erosion and sediment control measures, specific mitigation measures to prevent impacts to SAR, and appropriate development setbacks. Our assessment within this report of the potential for impacts to the natural heritage system is based on the implementation of these mitigation measures. It is our professional opinion that the proposed



development could proceed without significant negative impacts on natural features or their ecological functions if all mitigation measures provided within this report are followed.



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1.0 INTRODUCTION

This report is an Environmental Impact Study (EIS) prepared by Kilgour & Associates Ltd. (KAL; Appendix A) on behalf of G&E Reno Construction in support of their proposed residential subdivision development (“McBain Subdivision”) near the intersection of Bridge Street and Gloss Street in Crysler, Ontario (“the Site”; Figure 1). The proposed development would include primarily single detached residences and supporting infrastructure (e.g., roads, utilities, pumping station). A stormwater management facility is proposed for the southeast corner of the property.

In the United Counties of Stormont, Dundas and Glengarry, an EIS is required in support of a planning application for a subdivision development, as outlined in Section 5.5.7 of the Official Plan (2018). An EIS is required when development or site alteration is proposed in or adjacent to natural heritage features (United Counties of Stormont, Dundas and Glengarry, 2018). The purposes of an EIS are to:

- Identify natural heritage features on or adjacent to the Site;
- Assess potential impacts of the proposed development to existing features; and
- Recommend mitigation measures to minimize or eliminate identified impacts.

2.0 ENVIRONMENTAL POLICY CONTEXT

Natural heritage policies and legislation relevant to this EIS are outlined below.

2.1 The Provincial Policy Statement, 2020

The Provincial Policy Statement (PPS) was issued under Section 3 of the *Planning Act* (Government of Ontario, 1990a). The current PPS came into effect May 1, 2020 (Government of Ontario, 2020). Natural features are afforded protections under Section 2.1 of the PPS. Protections may include maintenance, restoration, and improved function of diversity, connectivity, ecological function, and biodiversity of natural heritage systems. These protections restrict development and site alteration in significant natural areas (e.g., woodlands, wetlands, wildlife habitat) unless it can be demonstrated that there will be no negative effects on the features and ecological functions of those natural areas. Technical guidance for implementing the natural heritage policies of the PPS is found within the second edition of the *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005* (NHRM: Ministry of Natural Resources (MNR), 2010). This manual recommends the approach and technical criteria for protecting natural heritage features and areas in Ontario.

2.2 United Counties of Stormont, Dundas, and Glengarry Official Plan

The United Counties of Stormont, Dundas, and Glengarry Official Plan (2018) provides direction for future growth in the counties and is a policy framework to guide physical development.

2.3 *Species at Risk Act, 2002*

The federal *Species at Risk Act* (SARA; Government of Canada, 2002) is administered by Environment and Climate Change Canada (ECCC) and provides direction to protect and ensure the survival of wildlife species



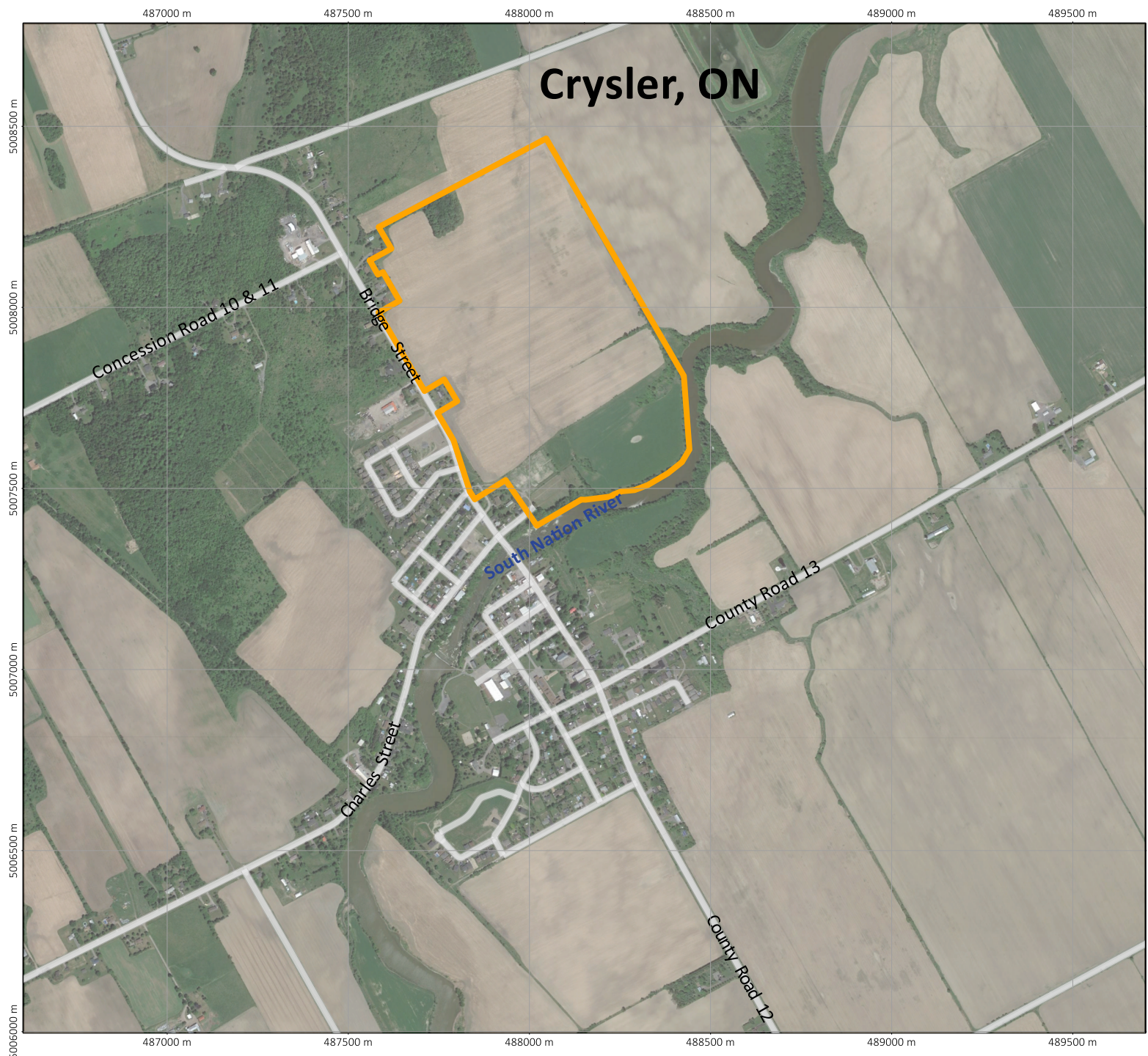
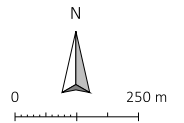


Figure 1 Location of the Site

Legend

 Site boundary



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in Canada. The purpose of the SARA is to prevent populations of wildlife from becoming Extirpated, Endangered, or Threatened, provide recovery Endangered or Threatened species, and to manage other species to prevent them from becoming Endangered or Threatened.

All species listed on Schedule 1 of SARA are afforded protection on federal lands. Aquatic species and species of migratory birds protected by the *Migratory Birds Convention Act* (MBCA; Government of Canada, 1994) and listed as Endangered, Threatened, or Extirpated under Schedule 1 of SARA are protected wherever they occur in Canada, regardless of land ownership.

2.4 *Endangered Species Act, 2007*

The provincial *Endangered Species Act* (ESA; Government of Ontario, 2007) is administered by the Ministry of Environment, Conservation, and Parks (MECP) and provides protection for species at risk (SAR) and their habitat. The ESA states that it is illegal to harm the habitat of species listed as Extirpated, Endangered, and Threatened. It is also illegal to kill, harm, harass, possess, transport, buy or sell Extirpated, Endangered, and Threatened species, whether it is living or dead. Species listed as Endangered, Threatened, or Extirpated and their habitats (e.g., areas essential for breeding, rearing, feeding, hibernation, and migration) are automatically afforded legal protection under the ESA.

2.5 *Fisheries Act, 1985*

The federal *Fisheries Act* (Government of Canada, 1985) is administered by Fisheries and Oceans Canada (DFO) and provides protections to fish, fish habitat, and fisheries. Specifically, the *Fisheries Act* in its current version provides:

- Protection for all fish and fish habitat
- Prohibition against the "harmful alteration, disruption or destruction of fish habitat"
- Prohibition against causing "the death of fish by means other than fishing"

Projects with a scope that does not fall within DFO's defined standards and codes of practice require submission of a request for review to DFO.

2.6 *Migratory Birds Convention Act, 1994*

Nesting migratory birds are protected under the MBCA (Government of Canada, 1994). No work is permitted that would result in the destruction of active nests (nests with eggs or young birds) or the wounding or killing of bird species protected under the MBCA and/or associated regulations (e.g., SARA). The "incidental take" of migratory birds and the disturbance, destruction, or taking of the nest of a migratory bird is prohibited. "Incidental take" is the killing or harming of migratory birds due to actions that are not primarily focused on taking migratory birds (e.g., economic development) and no permits exist for the incidental take of migratory birds or their nest/eggs as a result of activities that are not focused on taking migratory birds. These prohibitions apply throughout the year. The Government of Canada has compiled nesting calendars that apply across Canada that can be used to greatly reduce the risk of harming/destroying active nests by ensuring works that may impact nests are performing outside of the nesting period.



2.7 Fish and Wildlife Conservation Act, 1997

The provincial *Fish and Wildlife Conservation Act* (FWCA; Government of Ontario, 1997) governs the hunting and trapping of a variety of wildlife including mammals, birds, reptiles, amphibians, and fish in Ontario, thereby facilitating the protection of wildlife and their habitat. The FWCA outlines the prohibition of hunting or trapping specially protected species and the requirement for provincially issued licenses for the hunting or trapping of “furbearing” or “game” animals. Examples of specifically protected animals include, for example, Southern Flying Squirrel (*Glaucomys volans*), Northern Harrier (*Circus cyaneus*), American Kestrel (*Falco sparverius*), Blue Jay (*Cyanocitta cristata*), Midland Painted Turtle (*Chrysemus picta marginata*), Northern Watersnake (*Nerodia sipedon*) and Gray Treefrog (*Hyla versicolor*). In particular, raptors that are not protected under the MBCA (including Peregrine Falcon) are protected under the FWCA.

2.8 Conservation Authorities Act, 1990

Conservation Authorities were created to address erosion, flooding, and drought concerns regionally by managing at the watershed level. Conservation Authorities were given the ability to regulate under Section 28 of the *Conservation Authorities Act* (Government of Ontario, 1990b). The Act provides mechanisms to regulate works and site alterations that have potential to affect erosion, flooding, land conservation, and alterations to waterbodies within their jurisdiction. It is the obligation of all Conservation Authorities to implement Ontario Regulations 42/06 and 146/06 to 182/06 *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* under Section 28 of the Conservation Authorities Act for relevant works.

3.0 PROPERTY IDENTIFICATION

The Site is approximately 77 hectares (ha) in size and is located on the east side of Bridge Street near the intersection of Bridge Street and Gloss Street in Crysler, Ontario (Concession 10, Pt Lots 12 and 13; Lat: 45°13'30" N and Long: 75°09'17" W; Figure 1). The majority of the Site is currently owned by G&E Reno Construction; however, the southern portion of Site, adjacent to the South Nation River is currently under private ownership by others. Rural residential properties along Bridge Street are also owned by others.

Land cover on the Site is dominated by agricultural lands and includes a small deciduous woodlot and cemetery. The Site is located immediately north of the South Nation River. The zoning of the property is Agricultural (AG), Residential First Density (R1), Residential Fourth Density (R4), Open Space (OS) and Institutional (IN; an existing cemetery). The Site includes areas of designated floodplain immediately adjacent to the South Nation River.

The Site is bordered by:

- Rural properties, agricultural lands and undeveloped lands to the north;
- Agricultural lands to the east;
- The South Nation River, the Village of Crysler, and agricultural and undeveloped lands to the south; and



- The Village of Crysler to the west.

4.0 METHODOLOGY

4.1 Desktop and Background Data Review

4.1.1 Background Review

Background information was obtained from online databases and geographic information system mapping applications to review relevant information. Aerial imagery was used to identify existing features and confirm information found in the background review. Background information was obtained from available resources, which include:

- Natural Heritage Information Centre (NHIC; Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF), 2022a);
- Land Information Ontario (MNDMNRF, 2022b);
- Species at Risk in Ontario (SARO; Ministry of Environment, Conservation and Parks (MECP, 2022a);
- Species at Risk Public Registry (Government of Canada, 2022);
- Aquatic Species at Risk Map (DFO, 2019);
- Atlas of the Breeding Birds of Ontario (ABBO; Bird Studies Canada et al., 2009);
- Ontario Reptile and Amphibian Atlas (ORAA; Ontario Nature, 2019);
- eBird (Cornell Lab of Ornithology, 2022);
- iNaturalist (California Academy of Sciences and National Geographic Society, 2022);
- *Recovery Strategy for the Little Brown Myotis (Myotis lucifugus), Northern Myotis (Myotis septentrionalis) and Tri-colored Bat (Perimyotis subflavus) in Ontario* (Humphrey and Fotherby, 2019);
- *Recovery Strategy for the Eastern Small-footed Myotis (Myotis leibii) in Ontario* (Humphrey, 2017);
- Bumble Bee Sightings Map (Bumble Bee Watch, 2022);
- Fish ON-Line (MNDMNRF, 2022c); and
- Ontario Butterfly Atlas (Toronto Entomologists' Association, 2022).

4.1.2 Agency Consultation

The review of existing information included a preliminary SAR screening for species listed under the federal SARA and provincial ESA. The screening identified SAR having some potential to occur on or near the Site.



The screening was completed following the *Draft Client's Guide to Preliminary Screening for Species at Risk* (MECP, 2019). The results of the screening were sent to MECP on May 13, 2022, to confirm the information collected (Appendix B). A response had not yet been received at the time of writing this report, though it is considered unlikely that MECP would indicate potential for SAR beyond those already considered in this EIS.

The Site is located within the jurisdictions of the United Counties of Stormont, Dundas and Glengarry (SDG) and South Nation Conservation (SNC). A pre-consultation meeting was held between the Client, the United Counties of SDG, the Township of North Stormont, and SNC on May 20, 2022 to determine the scope of the EIS. Based on this pre-consultation meeting, the need for this EIS was triggered by proximity to the South Nation River and 100-year floodplain and occurrence of intermittent tributaries on the Site.

4.2 Field Surveys

KAL undertook a field program in summer 2022 to document existing ecological conditions on the Site and to confirm the results of the background review.

4.2.1 Fish Habitat Characterization

The Site is located within the Middle South Nation Subwatershed of the larger South Nation Watershed (SNC, 2017). The South Nation River is situated along the south edge of the Site. A remnant drainage channel is located adjacent to the southwest corner of the Site; it appears to be cut off from the South Nation River and does not provide functional aquatic habitat. The bank of the South Nation River on-site was characterized during the Ecological Land Classification (ELC) exercise described in Section 4.2.2 below. A desktop review of relevant databases was completed to document fish species occurrences in the river. The drainage channel was also characterized as part of the ELC exercise, with characteristics of the channel, banks, and lack of hydrological connectivity documented.

4.2.2 Vegetation

Vegetation communities on the Site were identified and mapped in the field on May 24, 2022, using standard Ecological Land Classification (ELC) methods for Ontario (Lee et al., 1998). This method provides a consistent approach to identify, describe, name, and map vegetation communities or physiographic features on the landscape, based on soils and plant species composition. This method results in a standardized description of each vegetation community to determine the natural diversity and variability of communities within a site, and to provide insight into available habitat and the type of species that may be present. More specifically, the classifications from ELC provide a basis for determining whether potential habitat for a given SAR or other ecological value may be present.

Desktop review of available aerial imagery and preliminary field visits informed how the Site may be divided into vegetation communities based on variation in land cover, topography, and vegetation structure. The dominant plant species were recorded within each proposed ecosite in the field to further divide ecosites into vegetation types (the finest resolution in ELC), where possible. Representative photos of each ELC unit on the Site were taken and are included with the community descriptions in this report.



4.2.3 Breeding Birds

Morning breeding bird surveys were performed using point counts following the Ontario Breeding Bird Atlas Guide for Participants (Bird Studies Canada et al., 2001). Breeding bird surveys are to be completed from survey stations that, combined, provide suitable viewing of all habitats on a site on calm weather days with light wind (less than 3 on the Beaufort Scale¹) and no precipitation. As per the Ontario Breeding Bird Atlas, two rounds of surveys should take place between sunrise and five hours after sunrise between May 24 and July 10. An additional (third) bird survey is required under MNRF protocols for at-risk bird species that nest in field habitats (e.g., MNRF's *Draft Bobolink Survey Methodology* (MNRF, 2011)). Since the Site has the potential to provide habitat for at-risk bird species that nest in field habitats (e.g., Bobolink and Eastern Meadowlark), three rounds of breeding bird surveys were conducted. Surveys took place during the mornings of May 24, June 15, and June 23, 2022.

A total of six breeding bird survey stations were established in representative habitats on the Site (Figure 2). All incidental observations were recorded while moving between survey points as well as during other visits to the Site. Birds were identified by song and/or direct visual observation.

Bird species were classed as regionally rare based on an analysis of data from the Atlas of Breeding Birds of Ontario (Cadman et al., 1987) based on Hill's Site Regions, now Ecoregions. The federal and provincial significance of bird species were classed based on species' listings under Schedule 1 of SARA and the ESA, and species tracked by NHIC (MNDMNRF, 2022a; for non-SAR species considered provincially significant).

5.0 RESULTS

5.1 Landforms, Soils and Geology

The topography of the broader area is gently undulating (Matthews and Richards, 1954). The Site was characterized as relatively level, with a decline in elevation toward the South Nation River. Surface water features on the Site include the South Nation River and a remnant (cut-off) drainage feature in the southwest corner of the site (Figure 3); both water bodies were both characterized by steeply sloping banks. Soils in the broader area are of the Carp and North Gower series and are characterized by stone-free, imperfectly- to poorly-drained clay loam underlain by silty calcareous clay loam (Matthews and Richards, 1954).

5.2 Fish Habitat Characterization

The Site is situated on the north bank of the South Nation River, which flows southwest to northeast (Figure 4). In the vicinity of the Site, the South Nation River was characterized by steeply sloping banks supporting a deciduous hedgerow community. Fish records for the South Nation River in the vicinity of the Site are provided in Table 1 below.

¹ The Beaufort Wind Force Scale is an empirical measure that relates wind speed to observed conditions at sea or land. The scale is as follows: **0**: calm, smoke rises vertically, wind speed <1km/hr; **1**: light air, smoke drift indicates wind direction, leaves and wind vanes are stationary, wind speed = 1.1-5.5km/hr; **2**: light breeze, wind felt on exposed skin, leaves rustle, wind vanes begin to move, wind speed = 5.6-11km/hr, **3**: gentle breeze, leaves and small twigs constantly moving, light flags extended, wind speed = 12-19km/hr.



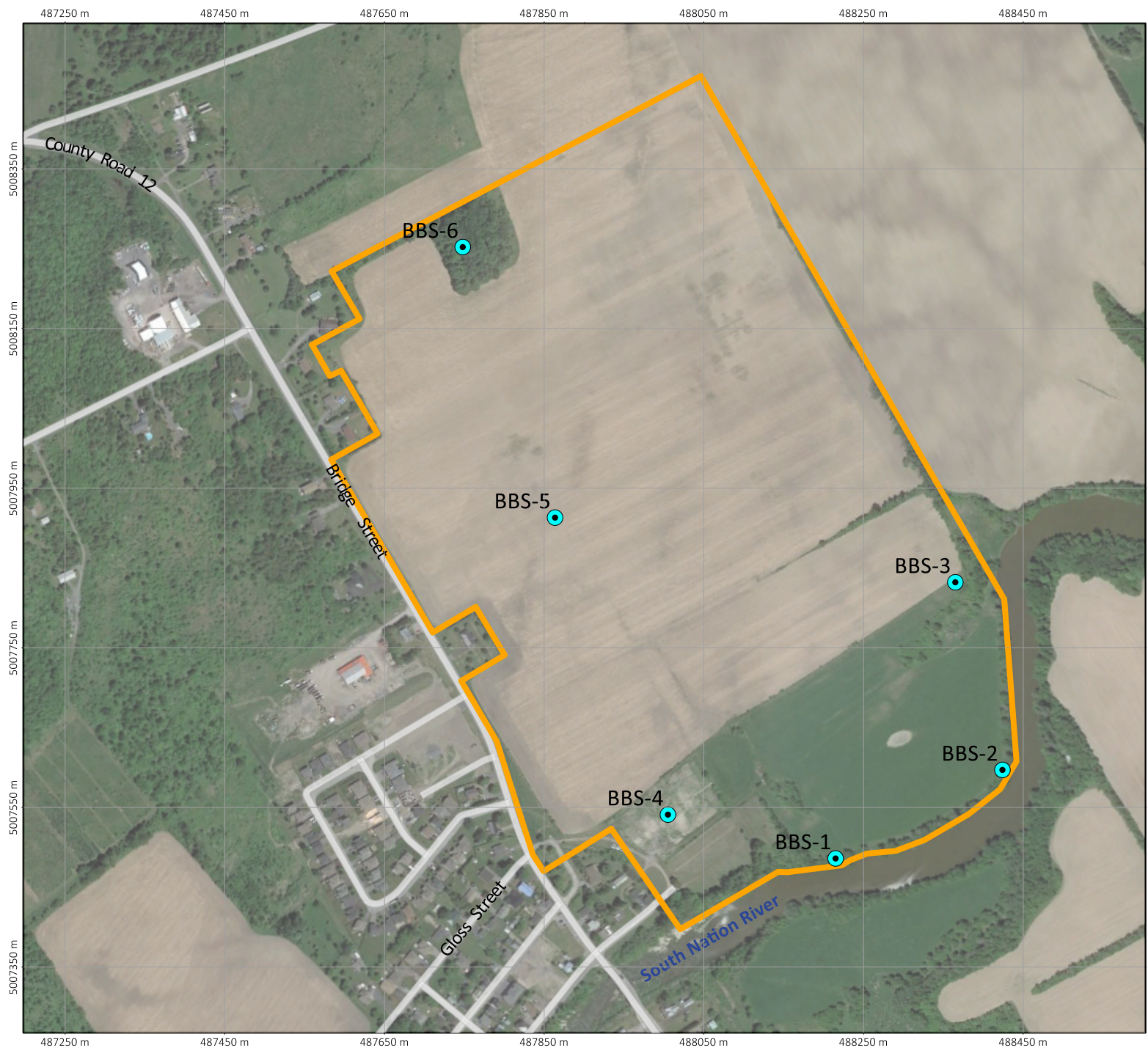


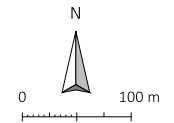


Figure 2 Breeding Bird Survey stations on Site

Legend

-  BBS stations
-  Site boundary



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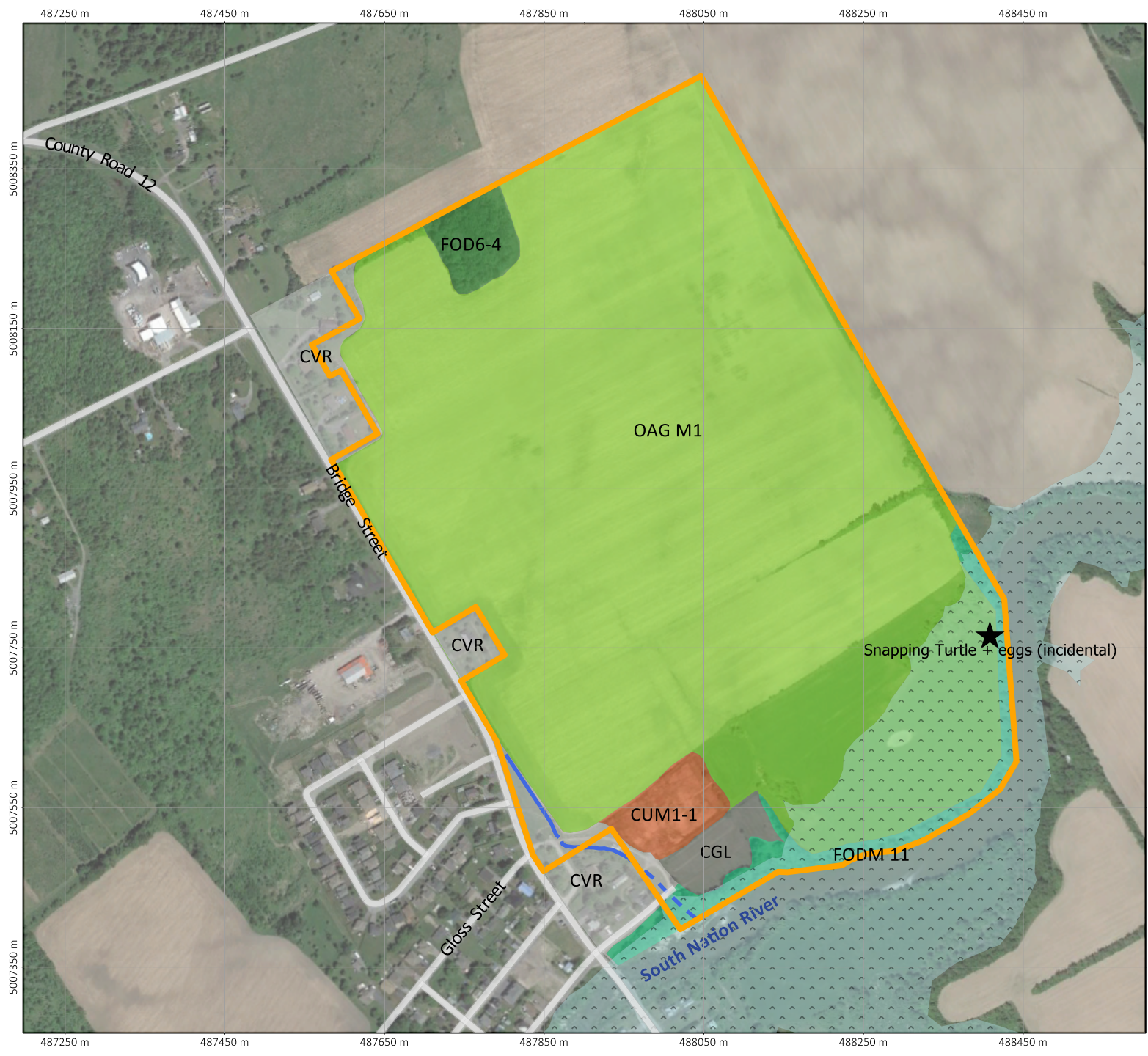








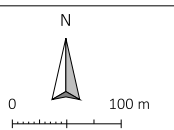


Figure 3 Existing natural environment features on Site

Legend

- ELC polygons**
-  CGL
 -  CUM1-1
 -  CVR
 -  FOD6-4
 -  FODM 11
 -  OAG M1
 -  Floodplain
 -  Site boundary



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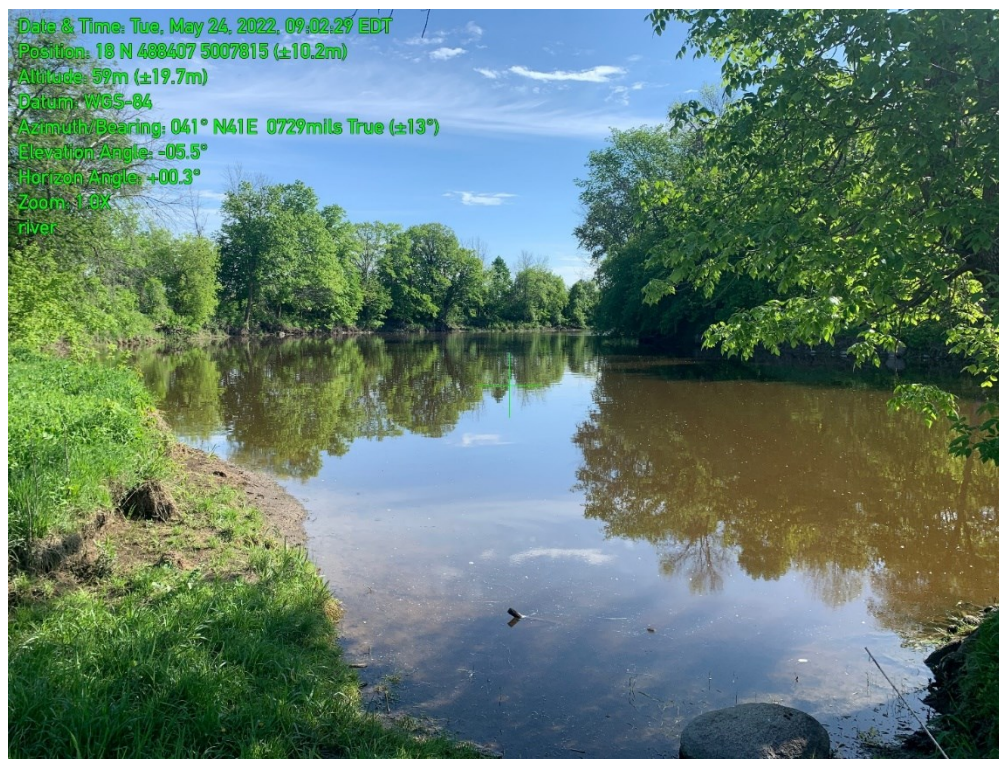


Figure 4 South Nation River, along the south edge of the Site, looking downstream (photo taken May 24, 2022)

Table 1 Fish Species Records for the South Nation River in the vicinity of the Site

Common Name	Scientific Name	Source
Black Crappie	<i>Pomoxis nigromaculatus</i>	MNDMNRF, 2022c; SNC, 2016
Brown Bullhead	<i>Ameiurus nebulosus</i>	MNDMNRF, 2022c; SNC, 2016
Channel Catfish	<i>Ictalurus punctatus</i>	MNDMNRF, 2022c
Common Carp	<i>Cyprinus carpio</i>	MNDMNRF, 2022c; SNC, 2016
Freshwater Drum	<i>Aplodinotus grunniens</i>	MNDMNRF, 2022c
Goldeye	<i>Hiodon alosoides</i>	MNDMNRF, 2022c
Greater Redhorse	<i>Moxostoma valenciennesi</i>	SNC, 2016
Largemouth Bass	<i>Micropterus salmoides</i>	MNDMNRF, 2022c



Common Name	Scientific Name	Source
Mooneye	<i>Hiodon tergisus</i>	MNDMNRF, 2022c
Muskellunge	<i>Esox masquinongy</i>	MNDMNRF, 2022c
Northern Pike	<i>Esox lucius</i>	MNDMNRF, 2022c; SNC, 2016
Pumpkinseed	<i>Lepomis gibbosus</i>	MNDMNRF, 2022c; SNC, 2016
Rainbow Trout	<i>Onchorhynchus mykiss</i>	MNDMNRF, 2022c
Rock Bass	<i>Ambloplites rupestris</i>	MNDMNRF, 2022c; SNC, 2016
Sauger	<i>Sander canadensis</i>	MNDMNRF, 2022c
Shorthead Redhorse	<i>Moxostoma macrolepidotum</i>	SNC, 2016
Silver Redhorse	<i>Moxostoma anisurum</i>	SNC, 2016
Smallmouth Bass	<i>Micropterus dolomieu</i>	MNDMNRF, 2022c; SNC, 2016
Walleye	<i>Sander vitreus</i>	MNDMNRF, 2022c; SNC, 2016
White Crappie	<i>Pomoxis annularis</i>	MNDMNRF, 2022c
White Sucker	<i>Catostomus commersonii</i>	MNDMNRF, 2022c; SNC, 2016
Yellow Bullhead	<i>Ameiurus natalis</i>	MNDMNRF, 2022c
Yellow Perch	<i>Perca flavescens</i>	MNDMNRF, 2022c; SNC, 2016

In the pre-consultation comments for the proposed project, SNC indicated potential intermittent tributaries on the Site. A single drainage feature was observed off-site, situated adjacent to the southwest corner of the Site, on residential properties at Bridge Street and Charles Street (Figure 5). The drainage feature passes through a culvert under Bridge Street, flowing southeast; there is no indication of the feature upstream of the culvert. At the time of survey (May 2022), the drainage channel adjacent to the Site supported shallow water (Figure 6). It was characterized by steeply sloping banks and dense graminoid cover with scattered shrubs. Provincial mapping indicates it connects to the South Nation River downstream (MECP, 2022b); however, the defined channel ends approximately 100 m north of the river, and there does not appear to be a connection to the South Nation River. As such, this appears to be a cut-off trough that does not provide aquatic habitat or connectivity to the South Nation River.





Figure 5 Drainage channel adjacent to the southwest corner of the Site, looking southeast (photo taken May 24, 2022)



Figure 6 Drainage channel adjacent to the southwest corner of the Site, showing dense graminoid cover and shallow water (photo taken May 24, 2022)



5.3 Vegetation Cover (Ecological Land Classification)

Six distinct ELC units were delineated on the Site (Figure 3). The majority of the Site is characterized by agricultural lands supporting annual row crops. A small remnant patch of deciduous forest is situated along the north edge of the Site. A deciduous hedgerow is located along the banks of the South Nation River. The southwest corner of the Site supports a cemetery and cultural meadow community. Rural residential properties are located along the west edge of the Site, along Bridge Street and Charles Street.

5.3.1 Agriculture: Annual Row Crops (OAGM1)

The majority of the Site is characterized as agricultural lands supporting annual row crops. Much of the Site showed remnants of corn and soybean crops. While no crops were evident during our early spring surveys, at the time of our site visits in June 2022, the fields in the south portion of the property had been seeded with soybeans, while the central field area appeared to have been left fallow (Figure 7). In the southeast corner of the Site, the agricultural fields follow a significant grade change approaching the South Nation River.



Figure 7 Agricultural lands at the southwest corner of the Site; note the grade change sloping down toward the South Nation River (photo taken May 24, 2022)

5.3.2 Fresh-Moist Sugar Maple – White Elm Deciduous Forest Type (FOD6-4)

A small remnant deciduous forest stand is situated on the north Site boundary and is characterized as a Fresh-Moist Sugar Maple – White Elm Deciduous Forest Type (FOD6-4; Figure 8). The stand is dominated by large, mature Sugar Maple (*Acer saccharum*) trees, with American Elm (*Ulmus americana*) and Basswood (*Tilia americana*). The subcanopy supports Sugar Maple and Green Ash (*Fraxinus pennsylvanica*) saplings. Groundcover comprises abundant litter, with Virginia Creeper (*Parthenocissus quinquefolia*), Trout Lily (*Erythronium americanum*), Eastern Enchanter's Nightshade (*Circaea canadensis*) and Prickly Gooseberry (*Ribes cynosbati*). Manitoba Maple (*Acer negundo*), European Buckthorn (*Rhamnus cathartica*) and Common



Chokecherry (*Prunus virginiana*) saplings also occur in the lower forest strata. The edges of the forest stand are characterized by Staghorn Sumac (*Rhus typhina*), Red Elderberry (*Sambucus racemosa*) and Dog-strangling Vine (*Vincetoxicum rossicum*). The forest stand is relatively isolated, surrounded by agricultural lands; however, a narrow deciduous hedgerow extends west from the northwest corner of the stand to rural residential properties along Bridge Street.



Figure 8 Fresh-Moist Sugar Maple – White Elm Deciduous Forest Type (FOD6-4) on the north edge of the Site (photo taken May 24, 2022)

5.3.3 Naturalized Deciduous Hedgerow Ecosite (FODM11)

A Naturalized Deciduous Hedgerow (FODM11) runs along the north edge of the South Nation River on-site, situated on the steeply sloping banks of the river (Figure 9). Dominant tree species include Green Ash, Manitoba Maple, and American Elm. The subcanopy is characterized by Tatarian Honeysuckle (*Lonicera tatarica*), with Red-Osier Dogwood (*Cornus stolonifera*), and a species of Hawthorn (*Crataegus* sp.). Groundcover is characterized by Reed Canary Grass (*Phalaris arundinacea*), Wild Parsnip (*Pastinaca sativa*), Creeping Charlie (*Glechoma hederacea*) and Star-flowered Solomon’s Seal (*Maianthemum stellatum*). The opposite bank of the South Nation River (off-Site) is characterized by mature oak (*Quercus* spp.) trees, Sugar Maple, White Pine (*Pinus strobus*) and Trembling Aspen (*Populus tremuloides*).





Figure 9 Naturalized Deciduous Hedgerow (FODM11) on the banks of the South Nation River (photo taken May 24, 2022)

5.3.4 Dry –Moist Old Field Meadow Type (CUM1-1)

A Dry-Moist Old Field Meadow Type (CUM1-1) is situated in the southwest corner of the Site (Figure 10). The meadow represents a relatively small area adjacent to rural residential properties to the west and cemetery to the south. The meadow is dominated by Reed Canary Grass and Curled Dock (*Rumex crispus*), with Common Mullein (*Verbascum thapsus*), Wild Parsnip, Canada Thistle (*Cirsium arvense*), Greater Burdock (*Arctium lappa*), Yellow Rocket (*Barbarea vulgaris*) and Prickly Lettuce (*Lactuca serriola*).





Figure 10 Dry-Moist Old Field Meadow Type (CUM1-1) in the southwest corner of the Site (photo taken May 24, 2022)

5.3.5 Constructed Green Lands (CGL)

A small cemetery is assigned the landcover type of Constructed Green Land (CGL; Figure 11). The cemetery is situated in the southwest corner of the Site, north of the South Nation River. The area is characterized by an open, central area with mown grass, with mature deciduous trees around the perimeter. It is partially fenced with a chain-link style fence.





Figure 11 Cemetery (at the southwest corner of the Site (photo taken May 24, 2022))

5.4 Breeding Birds

Weather conditions during the three breeding bird surveys are provided in Table 2.

Table 2 Summary of dates and weather conditions of morning breeding bird surveys

Date	Wind (Beaufort Scale)	Air Temperature (°C)	Cloud Cover (%)	Precipitation
May 24, 2022	2-3	13-14	0-25	None
June 15, 2022	1-2	20-23	30-50	None
June 23, 2022	0	17-19	100	None

A total of 47 bird species were observed on the Site via morning breeding bird surveys and incidental observations (Table 3). The following six bird species were commonly observed on the Site, detected at all survey stations on all three survey dates: Red-winged Blackbird (*Agelaius phoeniceus*), Song Sparrow (*Melospiza melodia*), American Robin (*Turdus migratorius*), Common Grackle (*Quiscalus quiscula*), and American Crow (*Corvus brachyrhynchos*).

In general, the survey stations situated within the hedgerow along the South Nation River supported a relatively higher diversity of breeding birds (27 and 30 species at BBS-2 and BBS-1, respectively). The survey stations within the agricultural areas and cultural meadow supported a relatively lower diversity of breeding birds (18 and 19 species at BBS-4 and BBS-5, respectively).



Table 3 Summary of observations during breeding bird surveys

Common Name	Scientific Name	Station(s) Observed	Date(s) Observed	Highest Breeding Evidence ¹
American Bittern	<i>Botaurus lentiginosus</i>	BBS-1	2022-06-23	Possible
American Crow	<i>Corvus brachyrhynchos</i>	BBS-1, BBS-2, BBS-3, BBS-4, BBS-5, BBS-6	2022-05-24, 2022-06-15, 2022-06-23	Possible
American Goldfinch	<i>Spinus tristis</i>	BBS-2, BBS-3, BBS-4, BBS-5, BBS-6	2022-05-24, 2022-06-15, 2022-06-23	Probable
American Redstart	<i>Setophaga ruticilla</i>	BBS-2, BBS-4, BBS-6	2022-05-24, 2022-06-15	Possible
American Robin	<i>Turdus migratorius</i>	BBS-1, BBS-2, BBS-3, BBS-4, BBS-5, BBS-6	2022-05-24, 2022-06-15, 2022-06-23	Probable
Baltimore Oriole	<i>Icterus galbula</i>	BBS-1, BBS-2, BBS-3, BBS-5, BBS-6	2022-05-24, 2022-06-15	Probable
Black-capped Chickadee	<i>Poecile atricapillus</i>	BBS-1, BBS-2, BBS-3, BBS-6	2022-05-24, 2022-06-15, 2022-06-23	Possible
Blue Jay	<i>Cyanocitta cristata</i>	BBS-6	2022-05-24, 2022-06-15	Possible
Bobolink	<i>Dolichonyx oryzivorus</i>	BBS-1, BBS-5	2022-05-24, 2022-06-15	Probable
Brown Thrasher	<i>Toxostoma rufum</i>	BBS-3, BBS-6	2022-05-24, 2022-06-15	Possible
Brown-headed Cowbird	<i>Molothrus ater</i>	BBS-2, BBS-3, BBS-4	2022-06-15	Possible
Canada Goose	<i>Branta canadensis</i>	BBS-3	2022-05-24	Observed
Cedar Waxwing	<i>Bombycilla cedrorum</i>	BBS-2, BBS-5	2022-06-15	Possible
Chimney Swift	<i>Chaetura pelagica</i>	BBS-3	2022-06-23	Possible
Chipping Sparrow	<i>Spizella passerina</i>	BBS-2, BBS-3, BBS-5	2022-05-24, 2022-06-15, 2022-06-23	Possible
Common Grackle	<i>Quiscalus quiscula</i>	BBS-1, BBS-2, BBS-3, BBS-4, BBS-5, BBS-6	2022-05-24, 2022-06-15, 2022-06-23	Probable
Common Yellowthroat	<i>Geothlypis trichas</i>	BBS-1, BBS-2, BBS-3, BBS-5	2022-05-24, 2022-06-15	Possible
Eastern Kingbird	<i>Tyrannus tyrannus</i>	BBS-1, BBS-2, BBS-3	2022-05-24, 2022-06-15, 2022-06-23	Probable
Eastern Meadowlark	<i>Sturnella magna</i>	BBS-1, BBS-5	2022-05-24, 2022-06-15	Possible
Eastern Phoebe	<i>Sayornis phoebe</i>	BBS-4	2022-06-23	Possible
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	BBS-2	2022-06-23	Possible
Eastern Wood-Pewee	<i>Contopus virens</i>	BBS-2, BBS-3, BBS-4, BBS-6	2022-05-24, 2022-06-15, 2022-06-23	Probable



Common Name	Scientific Name	Station(s) Observed	Date(s) Observed	Highest Breeding Evidence ¹
European Starling	<i>Sturnus vulgaris</i>	BBS-1, BBS-4	2022-05-24, 2022-06-23	Probable
Gray Catbird	<i>Dumetella carolinensis</i>	BBS-1	2022-05-24	Possible
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	BBS-1, BBS-2, BBS-6	2022-05-24, 2022-06-15	Possible
House Wren	<i>Troglodytes aedon</i>	BBS-2, BBS-3, BBS-6	2022-05-24, 2022-06-15	Probable
Killdeer	<i>Charadrius vociferus</i>	BBS-1, BBS-2, BBS-4, BBS-5	2022-05-24, 2022-06-15, 2022-06-23	Possible
Mourning Dove	<i>Zenaida macroura</i>	BBS-1, BBS-2, BBS-4, BBS-5, BBS-6	2022-05-24, 2022-06-15, 2022-06-23	Possible
Northern Cardinal	<i>Cardinalis cardinalis</i>	BBS-1, BBS-4, BBS-5	2022-05-24, 2022-06-23	Possible
Northern Flicker	<i>Colaptes auratus</i>	BBS-1, BBS-2	2022-05-24, 2022-06-15	Possible
Purple Finch	<i>Haemorhous purpureus</i>	BBS-1	2022-05-24	Possible
Red-eyed Vireo	<i>Vireo olivaceus</i>	BBS-1, BBS-2, BBS-3, BBS-6	2022-05-24, 2022-06-15, 2022-06-23	Possible
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	BBS-1, BBS-2, BBS-3, BBS-4, BBS-5, BBS-6	2022-05-24, 2022-06-15, 2022-06-23	Probable
Ring-Billed Gull	<i>Larus delawarensis</i>	BBS-2, BBS-4	2022-06-15	Observed
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	BBS-2	2022-06-15	Possible
Ruffed Grouse	<i>Bonasa umbellus</i>	BBS-2	2022-06-23	Possible
Savannah Sparrow	<i>Passerculus sandwichensis</i>	BBS-2, BBS-3	2022-06-15	Probable
Song Sparrow	<i>Melospiza melodia</i>	BBS-1, BBS-2, BBS-3, BBS-4, BBS-5, BBS-6	2022-05-24, 2022-06-15, 2022-06-23	Probable
Spotted Sandpiper	<i>Actitis macularius</i>	BBS-1	2022-05-24	Probable
Tree Swallow	<i>Tachycineta bicolor</i>	BBS-1, BBS-2, BBS-4, BBS-5	2022-06-15, 2022-06-23	Possible
Vesper Sparrow	<i>Poocetes gramineus</i>	BBS-3, BBS-4, BBS-5, BBS-6	2022-05-24, 2022-06-15, 2022-06-23	Probable
Warbling Vireo	<i>Vireo gilvus</i>	BBS-1, BBS-3, BBS-4, BBS-5	2022-05-24, 2022-06-15, 2022-06-23	Probable
White-breasted Nuthatch	<i>Sitta carolinensis</i>	BBS-3, BBS-6	2022-05-24, 2022-06-15	Possible



Common Name	Scientific Name	Station(s) Observed	Date(s) Observed	Highest Breeding Evidence ¹
White-throated Sparrow	<i>Zonotrichia albicollis</i>	BBS-1, BBS-2	2022-05-24, 2022-06-23	Possible
Wild Turkey	<i>Meleagris gallopavo</i>	BBS-5, BBS-6	2022-05-24, 2022-06-15	Probable
Wilson's Warbler	<i>Cardellina pusilla</i>	BBS-6	2022-06-15	Possible
Yellow Warbler	<i>Setophaga petechia</i>	BBS-1, BBS-2, BBS-3, BBS-5, BBS-6	2022-05-24, 2022-06-15, 2022-06-23	Possible

¹Breeding evidence is based on the following:

- **Observed** = species observed in its breeding season (no breeding evidence).
- **Possible** = species observed in its breeding season in suitable breeding habitat; singing male(s) present or breeding calls heard in suitable nesting habitat in breeding season.
- **Probable** = at least seven individuals singing or producing other sounds associated with breeding (e.g., calls or drumming), all heard during the same visit and in suitable nesting habitat during the species' breeding season; pair observed in suitable nesting habitat in nesting season; permanent territory presumed through registration of territorial song or the occurrence of an adult bird at the same place in breeding habitat on at least two days a week or more apart during the breeding season; courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation; visiting probable nest site; agitated behaviour or anxiety calls of an adult; brood patch on adult female or cloacal protuberance on adult male.
- **Confirmed** = nest-building or excavation of nest hole by a species other than a wren or a woodpecker; distraction display or injury feigning; used nest or eggshells found (occupied or laid within the period of the survey); recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight; adult leaving or entering nest sites in circumstances indicating an occupied nest; adult carrying fecal sac; adult carrying food for young; nest containing eggs; nest with young seen or heard.

The following at-risk bird species were observed: Bobolink, Eastern Meadowlark, Eastern Wood-pewee, and Chimney Swift. Bobolink and Eastern Meadowlark were detected at survey stations in the agricultural field and hedgerow along the South Nation River (BBS-1 and BBS-5), while Chimney Swift was detected at the survey station at the east side of the agricultural field (BBS-3). Eastern Wood-pewee was detected at survey stations in the hedgerow (BBS-2), cultural meadow (BBS-4) and woodlot (BBS-6), as well as the east side of the agricultural field (BBS-3) No regionally significant bird species (Cadman et al., 1987) were observed.

5.5 Species at Risk

An assessment of species listed under SARA and ESA was completed to identify species having some potential to occur on or near the Site, including Extirpated, Endangered, Threatened and Special Concern species. The SAR assessment evaluated whether the Site would or could provide suitable habitat for SAR and whether they have potential to interact with future development of the Site. This assessment was completed based on the results of the field surveys, ELC (i.e., habitat availability) and a desktop review that considered known species ranges, historic observation records, and preferred habitat requirements of these species (Appendix C). A total of fifty SAR were identified with some potential (low/moderate/high) to occur in the broader vicinity of the Site. Twenty-two SAR had a moderate to high potential to occur on the Site and/or interact with the project (Table 4). Those with a moderate potential are known to occur within 10 km of the Site, and suitable habitat for the species exists on the Site. SAR with a high potential are those that are known to occur



on or adjacent to the Site (i.e., were observed by KAL during field surveys), with suitable habitat for the species on the Site. All other SAR with potential to occur in the region based on their documented ranges were assessed as having a low, negligible, or no potential to occur on the Site due to lack of occurrence records and/or suitable habitat (Appendix C).

Table 4 Species at risk with moderate or high potential to interact with the project

Common Name	Taxonomic Name	Status under Endangered Species Act	Status under Species at Risk Act (Schedule 1)	Potential to Interact with Development of the Site
Birds				
Barn Swallow	<i>Hirundo rustica</i>	Threatened	Threatened	Moderate
Bobolink	<i>Dolichonyx oryzivorus</i>	Threatened	Threatened	High
Canada Warbler	<i>Cardellina canadensis</i>	Special Concern	Threatened	Moderate
Chimney Swift	<i>Chaetura pelagica</i>	Threatened	Threatened	Moderate
Common Nighthawk	<i>Chordeiles minor</i>	Special Concern	Threatened	Moderate
Eastern Meadowlark	<i>Sturnella magna</i>	Threatened	Threatened	Moderate
Eastern Wood-pewee	<i>Contopus virens</i>	Special Concern	Special Concern	High
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Special Concern	Threatened	Moderate
Red-necked Phalarope	<i>Phalaropus lobatus</i>	Special Concern	Special Concern	Moderate
Wood Thrush	<i>Hylocichla mustelina</i>	Special Concern	Threatened	Moderate
Mammals				
Eastern Small-footed Myotis	<i>Myotis leibii</i>	Endangered	Not Listed	Moderate
Little Brown Myotis	<i>Myotis lucifugus</i>	Endangered	Endangered	Moderate
Tri-coloured Bat	<i>Perimyotis subflavus</i>	Endangered	Endangered	Moderate
Reptiles				
Blanding's Turtle	<i>Emydoidea blandingii</i>	Threatened	Endangered	Moderate
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	Not Listed	Special Concern	Moderate
Northern Map Turtle	<i>Graptemys geographica</i>	Special Concern	Special Concern	Moderate
Snapping Turtle	<i>Chelydra serpentina</i>	Special Concern	Special Concern	High
Fish				
American Eel	<i>Anguilla rostrata</i>	Endangered	No Status	Moderate
Arthropods				
Monarch	<i>Danaus plexippus</i>	Special Concern	Special Concern	Moderate
Yellow-banded Bumble Bee	<i>Bombus terricola</i>	Special Concern	Special Concern	Moderate
Vascular Plants				
Black Ash	<i>Fraxinus nigra</i>	Endangered	No Status	Moderate
Butternut	<i>Juglans cinerea</i>	Endangered	Endangered	Moderate



Species listed as Extirpated, Endangered, and Threatened are afforded species and habitat protection under ESA. Federal protections under SARA are always in force for listed species of fish and migratory birds. For species of other groups, SARA normally only applies on federal lands or on projects having some level of participation with or oversight by the federal government. However, SARA-based protections can be imposed by ministerial order on a case-by-case basis in situations where provincial-level protections are deemed inadequate to otherwise protect a species. Such protections are not expected to apply to the Site.

SAR presented in Table 4 that are not listed or are listed as Special Concern under the ESA are not considered further as SAR in this report because they do not receive individual or habitat protection under the ESA (whereas Threatened and Endangered species do). However, individuals of these species are protected under other regulations addressing wildlife conservation generally, such as the FWCA, the MBCA, and the PPS. In addition, species listed as Special Concern under the ESA may receive habitat protection if they are observed in habitats that meet the criteria for designation as Significant Wildlife Habitat for Special Concern Species (MNRF, 2015a).

5.6 Other Significant Natural Heritage Features

The Site does not contain wetlands, Significant Woodlands, Significant Valleylands, or Earth/Life Science Areas of Natural and Scientific Interest. The South Nation River is likely a significant wildlife corridor along the south edge of the Site. The small Sugar Maple woodlot on the north edge of the Site is isolated within an agricultural context and therefore may not provide significant wildlife habitat; however, mature trees within the woodlot may provide suitable bat habitat.

Guidelines and criteria for the identification of Significant Wildlife Habitats in ecoregion 6E are provided by MNRF (2015a). Significant Wildlife Habitats are identified based on the presence of certain habitat types (identified through ELC codes) and the presence and/or groupings of certain species. Since the Site has a moderate to high potential to provide habitat for ten species listed as Special Concern under the ESA (Table 8), suitable habitat areas for these species may meet the criteria for Significant Wildlife Habitat for Rare and Special Concern Species. For example, portions of the Site near the South Nation River may meet the definitions for turtle nesting areas and/or amphibian breeding habitat, and the Sugar Maple woodlot on the north side of the Site may meet the definition for bat maternity colonies. Note that even though Significant Wildlife Habitat is defined following provincial level (i.e., MNRF) guidelines, the protection of confirmed Significant Wildlife Habitats is on a municipal basis.

5.7 Incidental Wildlife Observations

Incidental wildlife observations made during the Site visits included the following species: Bullfrog, Green Frog, Grey Tree Frog. During the site visit on June 15, 2022, Snapping Turtle was observed nesting on recently tilled agricultural land in the southeast corner of the Site. Snapping Turtles as listed as Special Concern under the ESA, and one confirmed observation of a nesting Snapping Turtle is used to define Significant Wildlife Habitat; however, recently tilled agricultural land is excluded from the definition of Significant Wildlife Habitat for turtle nesting (MNRF, 2015a).



6.0 DESCRIPTION OF THE PROPOSED PROJECT

The proposed project would comprise development of a residential subdivision (“McBain Subdivision”; Figure 12). The proposed residential development would comprise single detached residential lots, with supporting infrastructure, including roadways and utilities. Two new roadway entrances are proposed from Bridge Street, and a stormwater management facility is proposed in the southeast corner of the Site. Lands naturally slope to the southeast corner of the Site, necessitating the installation of a sanitary pumping station to serve the development; the project proponent is currently exploring a service/cost-sharing arrangement with the Township of North Stormont for the pumping station. A portion of the Site is part of the 100-year floodplain associated with the South Nation River. While firm plans for park areas have not been determined to-date, the Township of North Stormont, the United Counties of Stormont, Dundas and Glengarry, and SNC recognize potential to coordinate parkland with the floodplain and riverbank lands. SNC regulates development within 15 m of the 100-year floodplain. Proposed setbacks from the floodplain limit range from 61 m (southwest corner of the site) to 7 to 13 m in the southeast, thus encroaching into the SNC-regulated area. A *Conservation Authorities Act* permit would be required for development within the regulated area. A portion of the development comprising parkland encroaches into the floodplain area itself. The proposed setbacks further represent a greater separation between the proposed development and the South Nation River itself, with distances between the development and the river ranging from 53 m in the southeast to 164m along the south edge of the development.

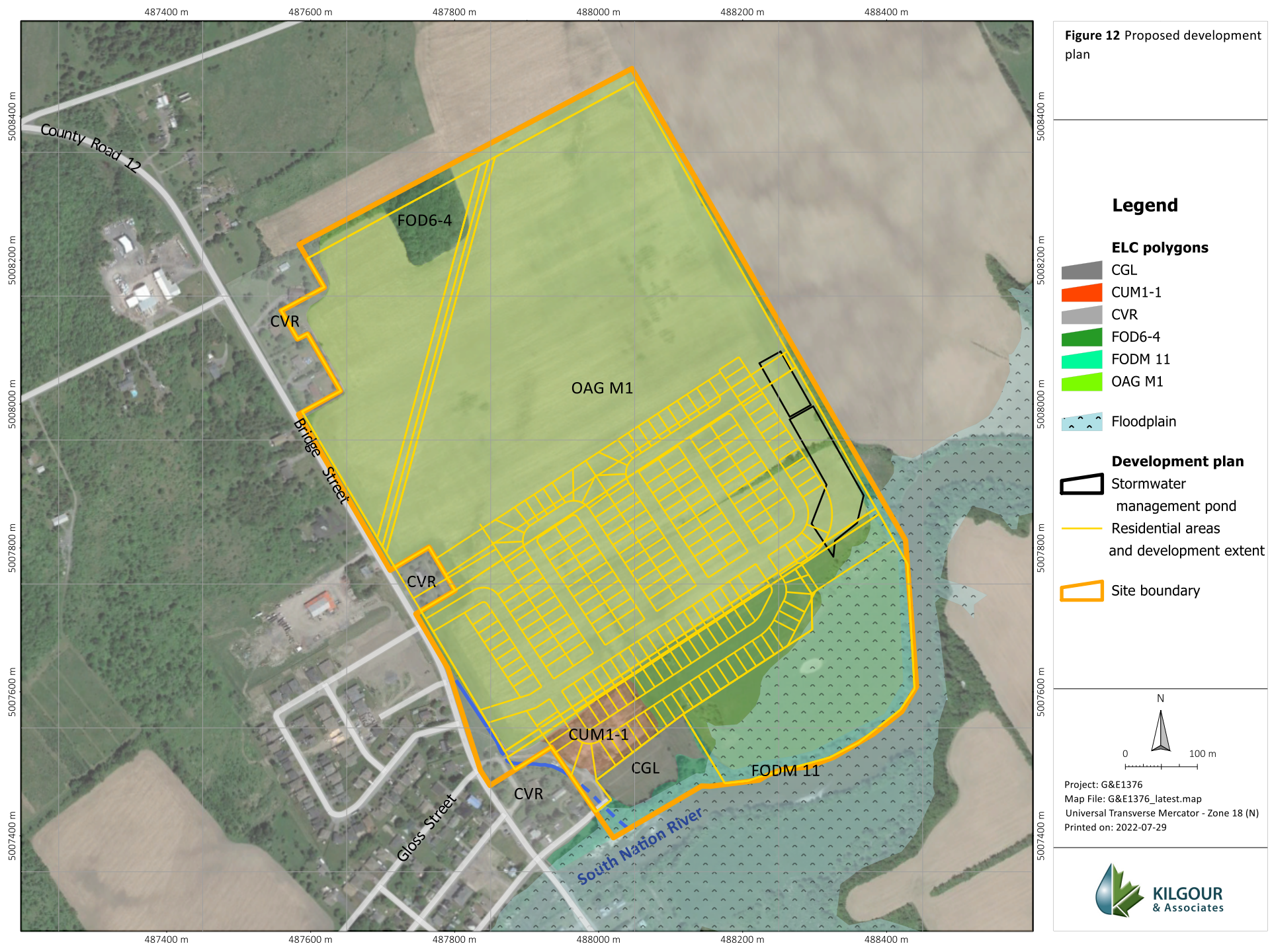
7.0 IMPACT ASSESSMENT AND MITIGATION

7.1 Surface Water, Groundwater, and Fish Habitat

The project should implement standard erosion and sediment control (ESC) measures to limit impacts to surface water features, such as the South Nation River. An ESC plan should be developed to the satisfaction of SNC and is anticipated to include:

- A multi-faceted approach to provide ESC.
- Silt fence paired with sturdy construction fence along the project perimeter. This fencing can also act as a wildlife exclusion measure for smaller and less mobile animals that may occupy the adjacent river habitats such as amphibians and turtles.
- Regularly inspecting and maintaining the ESC measures during all phases of the project.
- Retention of existing vegetation and stabilization of exposed soils with native vegetation where possible.
- Keeping the ESC measures in place until all disturbed ground has been permanently stabilized.
- Using biodegradable erosion and sediment control materials where possible and removing all exposed non-biodegradable erosion and sediment control materials once the Site is stabilized.
- Limiting the duration of soil exposure and phasing project works.
- Limiting the size of disturbed areas by minimizing nonessential clearing and grading.





487400 m 487600 m 487800 m 488000 m 488200 m 488400 m

5008400 m
5008200 m
5008000 m
5007800 m
5007600 m
5007400 m

5008400 m
5008200 m
5008000 m
5007800 m
5007600 m
5007400 m

County Road 12

Bridge Street

Gloss Street

South Nation River

FOD6-4

CVR

OAG M1

CVR

CUM1-1

CGL

FODM 11

CVR

- Minimizing the total slope length and the gradient of disturbed areas.
- Refuelling of machinery should occur >30 m from surface water features and all machinery will remain on the project-side of silt and construction fence.
- Maintaining overland sheet flow and avoiding concentrated flows.
- Storing/stockpiling materials >30 m away from surface water features.
- Regularly inspecting the South Nation River for signs of sedimentation during all phases of work and taking corrective action if required.
- Developing a response plan to be implemented immediately in the event of a spill of a deleterious substance.
- Keeping an emergency spill kit on the Site.
- Stopping work and containing deleterious substances to prevent dispersal.
- Reporting any spills of sewage, oil, fuel, or other deleterious material whether near or directly into a surface water feature.

Specific permits may be required from SNC for development within floodplain regulated areas. Such permits must be secured prior to construction. In particular, SNC regulates development (buildings, grading, fill placement, etc.) within 15 m of the 100-year floodplain. A *Conservation Authorities Act* permit is required for development within the regulated area. Similarly, a *Conservation Authorities Act* permit is required for a stormwater pond outlet if it will outlet to a natural watercourse. Current setbacks of the residential development range from 61 m (southwest corner) to 7 m in the southeast corner. The proposed stormwater management facility has a maximum setback of 21 m along its south edge and a minimum of 7 m from the edge of the floodplain at the southwest corner. A portion of the development encroaches into the designated floodplain area directly; however, this area represents parkland rather than residential lots or other infrastructure; and thus, anticipated impacts within the floodplain are anticipated to be minimal. The proposed setbacks further represent a greater separation between the proposed development and the South Nation River itself, with distances between the development and the river ranging from 53 m in the southeast to 164m along the south edge of the development. Setbacks are not developed for the cut-off drainage feature, as it was determined not to be hydrologically connected up- or down-stream, thereby not providing functional aquatic habitat.

7.2 Vegetation

Much of the Site was characterized as agricultural land with minimal tree cover. The Sugar Maple woodlot on the north edge of the Site and the hedgerow along the South Nation River will be retained. The following general protection measures are recommended during Site preparation and construction to further limit impacts to trees:

- Tree removal on the Site should be limited to that which is necessary to accommodate construction.



- If any trees on-site or on adjacent properties will be retained, the following measures are recommended to minimize impacts to retained trees during development:
 - Erect a fence beyond the critical root zone (CRZ; i.e., 10x the diameter at breast height) of trees. The fence should be highly visible (orange construction fence) and paired with erosion control fencing. Pruning of branches of branches is recommended in areas of potential conflict with construction equipment;
 - Do not place any material or equipment within the CRZ of trees;
 - Do not attach any signs, notices or posters to any trees;
 - Do not raise or lower the existing grade within the CRZ of trees without approval;
 - Tunnel or bore when digging within the CRZ of a tree;
 - Do not damage the root system, trunk, or branches of any remaining trees; and
 - Ensure that exhaust fumes from all equipment are not directed toward any tree's canopy.

Native vegetation should be planted as part of the landscape plan for the Site. The landscape plan should aim to incorporate at least one tree per residential lot with additional plantings along boulevards. If the landscape plan can achieve this, the proposed project would result in a net increase in canopy cover relative to the existing limited tree cover and open agricultural areas on the Site.

The designated floodplain area on-site is currently characterized as agricultural land with a narrow hedgerow adjacent to the South Nation River. If this area will no longer be farmed post-development, the floodplain area should be naturalized with additional native vegetation plantings, resulting in a further increase in canopy cover on the Site.

The following tree and shrub species are recommended for planting and should be used to direct the development of the landscape plan for the Site. The following species are appropriate given Site conditions and are native and non-invasive: Alternate-leaf Dogwood (*Cornus alternifolia*), American Beech (*Fagus grandifolia*), Balsam Fir (*Abies balsamea*), Balsam Poplar (*Populus balsamifera*), Basswood (*Tilia americana*), Bitternut Hickory (*Carya cordiformis*), Black Cherry (*Prunus serotina*), Black Walnut, Bur Oak (*Quercus macrocarpa*), Chokecherry (*Prunus virginiana*), Eastern Cottonwood (*Populus deltoides*), Eastern Hemlock (*Tsuga canadensis*), Hawthorns, Honey Locust (*Gleditsia triacanthos*), Horse-chestnut (*Aesculus hippocastanum*), Ironwood (*Ostrya virginiana*), Largetooth Aspen (*Populus grandidentata*), Maple-leaf Viburnum (*Viburnum acerifolium*), Nannyberry (*Viburnum lentago*), Northern Bush-honeysuckle (*Diervilla lonicera*), Peachleaf Willow (*Salix amygdaloides*), Pin Cherry (*Prunus pensylvanica*), Red Maple (*Acer rubrum*), Red Oak (*Quercus rubra*), Red Pine (*Pinus resinosa*), Serviceberries (*Amelanchier* spp.), Silver Maple (*Acer saccharinum*), Sugar Maple (*Acer saccharum*), Tamarack (*Larix laricina*), Trembling Aspen (*Populus tremuloides*), White Birch (*Betula papyrifera*), White Cedar (*Thuja occidentalis*), Yellow Birch (*Betula alleghaniensis*), White Oak (*Quercus alba*), White Pine (*Pinus strobus*), and White Spruce (*Picea glauca*).



7.3 Species at Risk

Eleven SAR ranked as Threatened or Endangered under the ESA have a moderate to high potential to interact with future development on the Site (i.e., may be present during development), based on previous observation records and the presence of potentially suitable habitat.

The general wildlife mitigation measures provided in Section 7.4 below do not provide species-specific mitigation per se but will protect the identified potential SAR. Additional mitigation to address specific SAR that may occur on the Site includes the following measures.

The Site is currently largely undeveloped; however, Barn Swallows could use nearby buildings for nesting. Barn Swallow nests and the surrounding 200 m are considered protected habitat under the ESA (MNR, 2019). Altering areas within 200 m of any Barn Swallow nests would require consultation with MECP; however, proposed project works are not anticipated to directly alter a nest. Thus, registration of project activities and associated habitat compensation would likely not be required. The Site is situated among other parcels that support forests, open meadows, and agriculture; as such, habitat for Barn Swallows is expected to remain in the immediate vicinity of the Site, and development restricted to the Site is not expected to have significant negative impacts on Barn Swallow.

Bobolink and Eastern Meadowlark are typically found in grasslands and fields, where they feed on insects and seeds near the ground. There is potential for these species to occur in the meadow on-site when it is left un-mowed, or the agricultural fields if left un-tilled; however, the suitable area is smaller than the preferred habitat (>10 ha and preferably >30 ha). The Site is considered unlikely to become habitat for this species if it is continuously maintained. Note, however, that the MBCA protects the nests and young of any migratory breeding birds present in fields. The timing of nesting for grassland birds in the region spans April 8 to August 30 (Government of Canada, 2018). Vegetation should not be cut during this period unless a qualified biologist deems that birds have completed nesting for the season.

Chimney Swifts nest in traditional-style open brick chimneys, and occasionally in hollow trees. The buildings along Bridge Street on the west side of the Site may provide suitable nesting habitat, while open areas in the vicinity of the Site may provide suitable foraging habitat. Existing buildings on-site are not anticipated to be directly affected by the proposed development; therefore, potential nesting habitat for Chimney Swifts is not anticipated to be altered. Considerable undeveloped lands will remain in the vicinity following development. Following the vegetation clearing window for other migratory birds, as outlined in Section 7.4 below would further minimize potential impacts to Chimney Swifts in the vicinity of the Site.

Eastern Small-footed Myotis, Little Brown Myotis, and Tri-coloured Bat may forage in open areas on-site and may roost in trees or buildings on or adjacent to the Site. To prevent impacts to bats, no clearing of trees on-site should take place between May 1 and September 30 (inclusive) without a qualified biologist first confirming the absence of bats (i.e., open work timing window from October 1 to April 30, inclusive; MNR, 2015b). If tree clearing is conducted between October and April, no interactions with bats are anticipated, and therefore, significant negative impacts to SAR bats would be avoided.

Blanding's Turtles have potential to occur along the banks of the South Nation River and in wetlands and riparian areas in the vicinity of the Site. Potential incursions into protected habitat would require notifying the MECP and securing necessary permits and approvals. Upon review of the Site and the general habitat



description for Blanding's Turtles, occurrences would likely be confined to the riparian hedgerow and floodplain area; Blanding's Turtles are not anticipated to utilize the agricultural lands on-site. The proposed setback from the South Nation River is generally greater than 15 m and is anticipated to minimize the potential for impacts to turtles. To further minimize potential impacts, installation of exclusion fencing around the perimeter of the project area prior to the turtle active season (ice-off/early April) and before vegetation clearing would prevent turtles from accessing the Site during construction. Exclusion fencing would remain in place throughout construction to continue to minimize interactions with turtles. The installation of silt fence as recommended in Section 7.1 above would also function as a turtle exclusion fence.

American Eel has potential to occur in the South Nation River in the vicinity of the Site. The proposed development is not expected to directly impact surface water or fish habitat. The mitigation measures provided in Section 7.1, combined with the setback from the river would prevent impacts to aquatic SAR and other fish species found in the South Nation River.

As an Endangered Species, both individual Butternut trees and their habitats are protected. If detected, a Butternut Health Assessment (BHA) is required to assess the health of the tree and explore implications for development in the area. The field ELC exercise included a search for Butternut trees, and none were detected on the Site. Therefore, no significant negative impacts to Butternut are anticipated.

Similar to Butternut, Black Ash is also listed as an Endangered species under the ESA; however, no habitat protections are in place at present. The field ELC exercise included a search for Black Ash trees, and none were detected on the Site. Therefore, no significant negative impacts to Butternut are anticipated.

7.4 General Wildlife Mitigation

The following mitigation measures should be implemented during Site preparation and construction to generally protect wildlife and potential Significant Wildlife Habitat areas:

- Areas shall not be altered or cleared during sensitive times of year for wildlife (breeding season; early spring to early summer) unless mitigation measures are implemented and/or the habitat has been inspected by a qualified Biologist.
 - Clearing of trees or vegetation should not take place April 1 to September 30 inclusive unless a qualified Biologist has determined that no bird nesting or bat roosting is occurring within five days prior to the clearing.
 - The MBCA protects the nests and young of migratory breeding birds in Canada. The timing of nesting for birds in the area spans April 8 to August 30 (Government of Canada, 2018).
 - The breeding and roosting period for bats is recognized as April 1 to September 30 (MNRF, 2015b).
- Inspect ESC measures and protective fence and/or other wildlife exclusion measures weekly and after each rain event to ensure their integrity and continued function.



- Check the entire work site for wildlife prior to beginning work each day.
- Do not harm, feed, or unnecessarily harass wildlife.
- Manage waste to prevent attracting wildlife to the work site. Effective mitigation measures include litter prevention and keeping all trash secured in wildlife-proof containers and promptly removing it from the work site, especially during warm weather.
- Drive slowly and avoid hitting wildlife.
- Manage stockpiles and equipment at the work site to prevent wildlife from being attracted to artificial habitat. Cover and contain any piles of soil, fill, brush, rocks and other loose materials and cap ends of pipes where necessary to keep wildlife out. Ensure that trailers, bins, boxes, and vacant buildings are secured at the end of each workday to prevent access by wildlife.
- Rock features on the Site may provide overwintering and/or refuge habitat for snakes. The removal of rock features should be phased such that if snakes are present in the area, they are provided with an opportunity to leave.
 - Pre-stress the area around rock features by making loud noise to encourage snakes to flee before disassembling the features.
 - Disassemble rock features slowly and carefully outside the hibernation period (approximately mid-October to April inclusive) to avoid direct harm to snakes that may be using the features.
 - If any snakes are encountered during the removal of rock features, work should stop immediately, and they should be safely and humanely encouraged to leave the work site.

8.0 CONCLUSION

This report provides a set of mitigation measures for employment in the design and construction of the proposed development. The assessment of the potential for impacts to the natural heritage system is based on the implementation of these mitigation measures. Based on our professional opinion, the proposed development is not expected to have significant negative impacts to existing natural features or ecological functions if the recommended mitigation measures are implemented.



9.0 CLOSURE

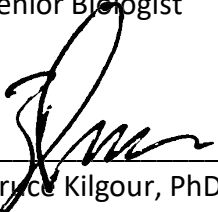
This report was prepared for exclusive use by G&E Reno Construction and may be distributed only by G&E Reno Construction. Questions relating to the data and interpretation can be addressed to the undersigned.

Respectfully submitted,

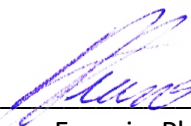
KILGOUR & ASSOCIATES LTD.



Kesia Miyashita, MSc
Senior Biologist



Bryce Kilgour, PhD
Project Director



Anthony Francis, PhD
Senior Review



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Appendix A Qualifications of Report Authors



Kesia Miyashita, MSc

Ms. Miyashita has over six years of experience in environmental consulting and more than ten seasons of field experience in ecosystems in Alberta and British Columbia. During her career in environmental consulting, Ms. Miyashita has completed environmental assessments for a variety of major infrastructure projects and urban developments. Her expertise is in vascular and non-vascular plant ecology, with experience in both terrestrial and wetland ecosystems; she has performed vegetation community inventories, rare plant surveys, and weed surveys in a variety of natural environments, including native forest, urban nature preserves, grasslands, and wetlands. Ms. Miyashita joined Kilgour & Associates Ltd. in May of 2021 and has since contributed to numerous Environmental Impact Statements and tree conservation reports, delineation of natural heritage features and SAR surveys. Ms. Miyashita is a Professional Biologist with the Alberta Society of Professional Biologists and a Qualified Wetland Science Practitioner in the province of Alberta.

Anthony Francis, PhD

Dr. Francis is a Senior Ecologist with 20 years' consulting experience to both government agencies and private industry. He has worked on a diversity of projects relating to species at risk, invasive species, terrestrial and aquatic habitat, environmental effects monitoring and mitigation, and fate/effects of contaminants. Within each of these subject areas, Dr. Francis has completed projects addressing specific site concerns and broader policy initiatives. In the Ottawa area Dr. Francis helps clients work their way through the land development process by producing key supporting studies such Environmental Impact Statements, Integrated Environmental Reviews, and by obtaining various permits and approvals from local regulatory agencies including the conservation authorities and Ministries of Environment and Natural Resources. Dr. Francis is our local in-house geomatics specialist, capable of carrying out detailed and complex analyses of geospatial data of plant and animal distribution. He often utilizes his skills to carry out constraint studies prior to a client purchasing or planning a development for a property.



Appendix B MECP Species at Risk Correspondence



May 13, 2022

Our File: G&E 1376

Management Biologist
Permissions and Compliance Section
Ontario Ministry of Environment, Conservation and Parks
10-1 Campus Drive
Kemptville, ON
K0G 1J0

Reference: Species at risk information request for the proposed McBain subdivision in Crysler, Ontario

1.0 INTRODUCTION

This letter is a request for information relating to the potential presence of species at risk (SAR) for the proposed development of the McBain residential subdivision located near the intersection of Bridge Street and Gloss Street in Crysler, Ontario. This letter includes a desktop review of SAR occurrence records using the resources and guidelines outlined in the draft document, *Client's Guide to Preliminary Screening for Species at Risk* (Ministry of the Environment, Conservation and Parks (MECP), 2019). We (Kilgour & Associates Ltd.; KAL) are seeking confirmation from MECP regarding the list of SAR that may occur on or near the project site. Potential impacts to SAR will be assessed via an Environmental Impact Study (EIS) that we will be preparing for our client. If impacts to SAR are anticipated, we will recommend that our client notifies MECP and engages in consultation to further consider potential impacts, avoidance and/or mitigation measures, and whether the project may require authorization under the *Endangered Species Act* (ESA).

1.1 Site Overview

The site is ~77 ha in size and is located near the intersection of Bridge Street and Gloss Street in Crysler, Ontario (Figure 1). The site is rural and dominated by agricultural fields north of the Payne River.

The centroid coordinates of the subject project area are:

Latitude: 45.2248568°, Longitude: -75.1529106°

The site is bordered by:

- Deciduous forest and agricultural fields to the north;
- Agricultural fields to the east;
- Payne River to the south; and
- The village of Chrysler and deciduous forest to the west.



Figure 1 Location and existing conditions of the site with proposed development concept overlaid

2.0 SPECIES AT RISK RESOURCES REVIEW AND RESULTS

We reviewed the following online resources to determine SAR occurrences on and/or nearby the site.

- Aquatic Species at Risk Map (DFO, 2022)
- Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF)
 - Natural Heritage Information Centre (MNDMNRF, 2022a)
 - Land Information Ontario Provincially Tracked Species Grid Detail (MNDMNRF, 2022b)
 - Recovery Strategy for the Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-colored Bat (*Perimyotis subflavus*) in Ontario (Humphrey and Fotherby, 2019)
 - Recovery Strategy for the Eastern Small-footed Myotis (*Myotis leibii*) in Ontario (Humphrey, 2017)
- Species at Risk in Ontario (MECP, 2022)
- Species at Risk Public Registry (Government of Canada, 2022)
- Atlas of the Breeding Birds of Ontario 2001-2005 (Bird Canada et al., 2009)
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019)
- iNaturalist (California Academy of Sciences and National Geographic Society, 2022)
- eBird (Cornell Lab of Ornithology, 2022)
- Bumble Bee Watch (Wildlife Preservation Canada et al., 2022)
- Ontario Butterfly Atlas (Toronto Entomologists' Association, 2022)
- City Stream Watch (South Nation Conservation et al., 2017)

The results of the SAR desktop review are indicated in Table 1. Note that occurrence data in Table 1 from the Natural Heritage Information Centre (MNDMNRF, 2022a), Land Information Ontario (MNDMNRF, 2022b), eBird (Cornell Lab of Ornithology, 2022), and iNaturalist (California Academy of Sciences and National Geographic Society, 2022) are occurrences within ~5 km of the site. SAR occurrence data from the Atlas of the Breeding



Birds of Ontario (Birds Canada et al., 2009), and the Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019) are based on the 10 x 10 km Atlas square that the site falls in (18VR80).

Table 1 List of species at risk with potential to occur on or near the project site based on our desktop review

Species Name (Scientific name)	Information Source
Birds	
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Cornell Lab of Ornithology (2022)
Bank Swallow (<i>Riparia riparia</i>)	Birds Canada et al. (2009); Cornell Lab of Ornithology (2022)
Barn Swallow (<i>Hirundo rustica</i>)	Birds Canada et al. (2009); Cornell Lab of Ornithology (2022); California Academy of Sciences and National Geographic Society (2022)
Black Tern (<i>Chlidonias niger</i>)	Birds Canada et al. (2009); MNDMNRF (2022a); Cornell Lab of Ornithology (2022)
Bobolink (<i>Dolichonyx oryzivorus</i>)	Birds Canada et al. (2009); MNDMNRF (2022a); MNDMNRF (2022b); Cornell Lab of Ornithology (2022)
Canada Warbler (<i>Cardellina canadensis</i>)	Cornell Lab of Ornithology (2022)
Chimney Swift (<i>Chaetura pelagica</i>)	Cornell Lab of Ornithology (2022)
Common Nighthawk (<i>Chordeiles minor</i>)	Cornell Lab of Ornithology (2022)
Eastern Meadowlark (<i>Sturnella magna</i>)	Birds Canada et al. (2009); MNDMNRF (2022a); MNDMNRF (2022b); Cornell Lab of Ornithology (2022)
Eastern Wood-Pewee (<i>Contopus virens</i>)	Birds Canada et al. (2009); Cornell Lab of Ornithology (2022)
Evening Grosbeak (<i>Coccothraustes vespertinus</i>)	Cornell Lab of Ornithology (2022)
Golden Eagle (<i>Aquila chrysaetos</i>)	Cornell Lab of Ornithology (2022)
Horned Grebe (<i>Podiceps auritus</i>)	Cornell Lab of Ornithology (2022)
Hudsonian Godwit (<i>Limosa haemastica</i>)	Cornell Lab of Ornithology (2022)
Least Bittern (<i>Ixobrychus exilis</i>)	MNDMNRF (2022a); Cornell Lab of Ornithology (2022)
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	MNDMNRF (2022a); MNDMNRF (2022b)
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	Cornell Lab of Ornithology (2022)
Peregrine Falcon (<i>Falco peregrinus</i>)	Cornell Lab of Ornithology (2022)
Red Knot (<i>Calidris canutus rufa</i>)	Cornell Lab of Ornithology (2022)



Species Name (Scientific name)	Information Source
Red-necked Phalarope (<i>Phalaropus lobatus</i>)	Cornell Lab of Ornithology (2022)
Rusty Blackbird (<i>Euphagus carolinus</i>)	Cornell Lab of Ornithology (2022)
Short-eared Owl (<i>Asio flammeus</i>)	Birds Canada et al. (2009)
Wood Thrush (<i>Hylocichla mustelina</i>)	Birds Canada et al. (2009); MNDMNRF (2022a); Cornell Lab of Ornithology (2022)
Mammals	
Eastern Small-footed Myotis (<i>Myotis leibii</i>)	Humphrey (2017)
Little Brown Myotis (<i>Myotis lucifugus</i>)	Humphrey and Fotherby (2019)
Northern Myotis (<i>Myotis septentrionalis</i>)	Humphrey and Fotherby (2019)
Tri-colored Bat (<i>Perimyotis subflavus</i>)	Humphrey and Fotherby (2019)
Reptiles	
Blanding's Turtle (<i>Emydoidea blandingii</i>)	MNDMNRF (2022a)
Northern Map Turtle (<i>Graptemys geographica</i>)	Ontario Nature (2019); MNDMNRF (2022a)
Snapping Turtle (<i>Chelydra serpentina</i>)	Ontario Nature (2019); MNDMNRF (2022a); MNDMNRF (2022b); California Academy of Sciences and National Geographic Society (2022)
Fish	
American Eel (<i>Anguilla rostrata</i>)	MNDMNRF (2022a)
Arthropods	
Monarch (<i>Danaus plexippus</i>)	Toronto Entomologists' Association (2022); South Nation Conservation et al. (2017)
Vascular Plants	
Black Ash (<i>Fraxinus nigra</i>)	MNDMNRF (2022a)
Butternut (<i>Juglans cinerea</i>)	MNDMNRF (2022a)

The local conservation authority (South Nation Conservation) does not have a SAR geodatabase, but relevant reports were reviewed with appropriate SAR information included in Table 1.

We note that observation records on eBird (Cornell Lab of Ornithology, 2022) and iNaturalist (California Academy of Sciences and National Geographic Society, 2022) are crowd-sourced and rely heavily on data submitted by volunteer citizen scientists that are not necessarily vetted by experts. As such, observation records from these sources are considered non-confirmed by KAL, but are included in this preliminary SAR screening based on guidelines set forth by MECP (2019).



3.0 CLOSURE

Thank you for considering this SAR information request for the proposed development of the McBain residential subdivision. We look forward to any comments you may have. Questions relating to the contents of this letter can be addressed to the undersigned.

Respectfully submitted,

KILGOUR & ASSOCIATES LTD.



Sarantia Katsaras, BA

Biologist

E-mail: skatsaras@kilgourassociates.com

Office: (613) 260-5555

16-2285 St. Laurent Blvd, Ottawa, ON, K1G 4Z6



Katie Black, MSc

Project Manager/Senior Biologist

E-mail: kblack@kilgourassociates.com

Office: (613) 260-5555

16-2285 St. Laurent Blvd, Ottawa, ON, K1G 4Z6

cc: Kesia Miyashita (KAL)



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Appendix C Regional Screening for Species at Risk



Species Name (Taxonomic Name)	Status under Endangered Species Act (ESA)	Status under Schedule 1 of the Species at Risk Act (SARA)	Observation Record Sources (within 10 km of the Site)	Habitat Description	Habitat on the Site	Potential to Interact with Development of the Site (None, Negligible, Low, Moderate, or High) ¹
Birds						
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Special Concern	Not at Risk	Cornell Lab of Ornithology (2022)	Nest in mature forests near open water. In large trees such as pine and poplar.	The Site does not appear to contain typical nesting habitat.	Low
Bank Swallow (<i>Riparia riparia</i>)	Threatened	Threatened	Birds Canada et al. (2009); Cornell Lab of Ornithology (2022)	Colonial nester; burrows in eroding silt or sand banks, sand pit walls, and human-made sand piles. Often found on banks of rivers and lakes.	Banks of the South Nation River on-Site do not appear to provide suitable habitat..	Low
Barn Swallow (<i>Hirundo rustica</i>)	Threatened	Threatened	Birds Canada et al. (2009); Cornell Lab of Ornithology (2022); California Academy of Sciences and National Geographic Society (2022)	Nests on barns and other structures. Forages in open areas for flying insects. Lives in close association with humans and prefers to nest on structures such as open barns, under bridges, and in culverts.	Agricultural land and structures on-Site may provide suitable habitat.	Moderate
Black Tern (<i>Chlidonias niger</i>)	Special Concern	No Status	Birds Canada et al. (2009); MNDMNRF (2022a); Cornell Lab of Ornithology (2022)	Build floating nests in loose colonies in shallow marshes, especially in cattails.	The Site does not appear to contain typical nesting habitat.	Low
Bobolink (<i>Dolichonyx oryzivorus</i>)	Threatened	Threatened	Birds Canada et al. (2009); MNDMNRF (2022a); MNDMNRF (2022b); Cornell Lab of Ornithology (2022); KAL, 2022	Periodically mown, dry meadow for nesting. Habitat (meadow) should be >10 ha, and preferably >30 ha before Bobolink are attracted to the area. Not near tall trees.	Meadow areas on and near the Site may provide suitable habitat.	High
Canada Warbler (<i>Cardellina canadensis</i>)	Special Concern	Threatened	Cornell Lab of Ornithology (2022)	Prefers wet forests with dense shrub layers. Nests located on or near the ground on mossy logs or roots, along stream banks or on hummocks.	Tree line along bank of Payne River on-Site may provide suitable habitat.	Moderate



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Cerulean Warbler (<i>Setophaga cerulea</i>)	Threatened	Threatened	N/A	Prefers mature deciduous forests.	The Site does not appear to contain typical nesting habitat.	Negligible
Chimney Swift (<i>Chaetura pelagica</i>)	Threatened	Threatened	Cornell Lab of Ornithology (2022); KAL, 2022	Nests in traditional-style open brick chimneys (and rarely in hollow trees). Tends to stay close to water.	The Site itself does not appear to contain typical nesting habitat, however, buildings on nearby properties may provide nesting habitat.	Moderate
Common Nighthawk (<i>Chordeiles minor</i>)	Special Concern	Threatened	Cornell Lab of Ornithology (2022)	Nests in a wide variety of open sites, including beaches, fields, and gravel rooftops with little to no ground vegetation. They also nest in cultivated fields, orchards, urban parks, mine tailings and along gravel roads/railways but tend to occupy more natural sites.	Cultivated fields and agricultural land on-Site may provide suitable habitat.	Moderate
Eastern Meadowlark (<i>Sturnella magna</i>)	Threatened	Threatened	Birds Canada et al. (2009); MNDMNRF (2022a); MNDMNRF (2022b); Cornell Lab of Ornithology (2022); KAL, 2022	Periodically mown, dry meadow for nesting. Habitat (meadow) should be >10 ha, and preferably >30 ha before Eastern Meadowlark are attracted to the area. Not near tall trees.	Meadow areas on and near the Site may provide suitable habitat.	High
Eastern Whip-poor-will (<i>Antrostomus vociferus</i>)	Threatened	Threatened	N/A	Suitable breeding habitats generally include open and half treed areas and often exhibit a scattered distribution of treed and open space. Lays eggs directly on the forest floor. Roosts are typically located in forest habitat on a low branch or directly on the ground.	Tree line along bank of South Nation River on-Site may provide suitable habitat.	Low
Eastern Wood-pewee (<i>Contopus virens</i>)	Special Concern	Special Concern	Birds Canada et al. (2009); Cornell Lab of Ornithology (2022); KAL, 2022	Woodland species often found in the mid-canopy layer near clearings and edges of deciduous and mixed forests.	Hedgerow and deciduous woodlot may provide suitable habitat.	High



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Evening Grosbeak (<i>Coccothraustes vespertinus</i>)	Special Concern	Special Concern	Cornell Lab of Ornithology (2022)	Nests in trees or large shrubs; prefers mature coniferous forests but will also use deciduous forests, parklands, and orchards.	The Site does not appear to contain typical nesting habitat.	Low
Golden Eagle (<i>Aquila chrysaetos</i>)	Endangered	No Status	Cornell Lab of Ornithology (2022)	Nests in remote, undisturbed areas, usually building their nests on ledges on a steep cliff/riverbank or large trees if needed. Most hunting is done near open areas such as large bogs or tundra.	The Site does not appear to contain typical nesting habitat.	Low
Golden-winged Warbler (<i>Vermivora chrysoptera</i>)	Special Concern	Threatened	N/A	Ground-nests in areas of young shrubs surrounded by mature forest. Often found in areas that have recently been disturbed such as field edges, hydro or utility right-of-ways, or logged areas.	Field edges on-Site may provide suitable habitat.	Low
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)	Special Concern	Special Concern	N/A	Lives in open grassland areas with well-drained sandy soil. Will also nest in hayfields and pastures, as well as alvars, prairies, and occasionally grain crops such as barley. It prefers areas that are sparsely vegetated, and its nests are well hidden in the field, woven from grasses in a small cup-like shape.	Agricultural land on-Site may provide suitable habitat.	Low
Henslow's Sparrow (<i>Ammodramus henslowii</i>)	Endangered	Endangered	N/A	Prefers extensive, dense, tall grasslands where it can easily conceal its small ground nest. Tends to avoid fields that have been grazed or are crowded with trees and shrubs.	The Site does not appear to contain typical nesting habitat.	Negligible
Horned Grebe (<i>Podiceps auritus</i>)	Special Concern	No Status	Cornell Lab of Ornithology (2022)	Nest in small ponds, marshes, and shallow bays that contain areas of open water and emergent vegetation.	The Site does not appear to contain typical nesting habitat.	Low
Least Bittern (<i>Ixobrychus exilis</i>)	Threatened	Threatened	MNDMNRF (2022a); Cornell Lab of Ornithology (2022)	Found in a variety of wetland habitats, but strongly prefers cattail marshes with a mix of open pools and channels.	The Site does not appear to contain typical nesting habitat.	Low
Loggerhead Shrike	Endangered	Endangered	MNDMNRF (2022a); MNDMNRF (2022b)	Prefers pasture or other grasslands with scattered low trees and shrubs. Lives in fields or alvars (areas of	The Site does not appear to contain suitable habitat.	Low



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<i>(Lanius ludovicianus)</i>				exposed bedrock) with short grass, which makes it easier to spot prey.		
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	Special Concern	Threatened	Cornell Lab of Ornithology (2022)	Found along natural forest edges and openings. Will use forests that have been logged or burned if there are ample tall snags and trees to use for foraging perches.	Tree line along bank of South nation River on-Site may provide suitable habitat.	Moderate
Peregrine Falcon (<i>Falco peregrinus</i>)	Special Concern	Special Concern	Cornell Lab of Ornithology (2022)	Nests on tall, steep cliff ledges close to large bodies of water. Urban peregrines raise their young on ledges of tall buildings, even in busy downtown areas.	The Site does not appear to contain suitable habitat.	Low
Red Knot (<i>Calidris canutus rufa</i>)	Endangered	Endangered	Cornell Lab of Ornithology (2022)	Prefer open beaches, mudflats, and coastal lagoons where they feast on molluscs, crustaceans, and other invertebrates.	The Site does not appear to contain suitable habitat.	Low
Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	Special Concern	Threatened	N/A	Lives in open woodland and woodland edges and is often found in parks, golf courses, and cemeteries. These areas typically have many dead trees, which the birds use for nesting and perching.	Agricultural land and a cemetery on-Site may provide suitable habitat.	Low
Red-necked Phalarope (<i>Phalaropus lobatus</i>)	Special Concern	Special Concern	Cornell Lab of Ornithology (2022)	It lives in coastal and inland marshes where it feeds in shallow ponds and nests on the grassy edges. It avoids mud and dense shrubs. Nests are located on the ground in dense grasses and sedges. During migration and in the winter, the Red-necked Phalarope is always near water, either saltwater, or freshwater ponds, lakes, ditches or lagoons. Usually only observed as a migrant.	Bank of South Nation River on-Site may provide suitable migration habitat.	Moderate
Rusty Blackbird (<i>Euphagus carolinus</i>)	Special Concern	Special Concern	Cornell Lab of Ornithology (2022)	Prefers wet wooded or shrubby areas. Nests at edges of boreal wetlands and coniferous forests. These areas include bogs, marshes, and beaver ponds.	The Site does not appear to contain suitable habitat.	Low
Short-eared Owl (<i>Asio flammeus</i>)	Special Concern	Special Concern	Birds Canada et al. (2009)	Lives in open areas such as grasslands, marshes, and tundra where it nests on the ground and hunts for small mammals.	The Site does not appear to contain suitable habitat.	Low



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Wood Thrush (<i>Hylocichla mustelina</i>)	Special Concern	Threatened	Birds Canada et al. (2009); MNDMNRF (2022a); Cornell Lab of Ornithology (2022)	Lives in mature deciduous and mixed (conifer-deciduous) forests. They seek moist stands of trees with well-developed undergrowth and tall trees for singing and perching. Usually build nests in Sugar Maple or American Beech.	Mature deciduous woodlot on-Site may provide suitable habitat.	Moderate
Yellow Rail (<i>Coturnicops noveboracensis</i>)	Special Concern	Special Concern	N/A	Lives deep in the reeds, sedges, and marshes of shallow wetlands, where they nest on the ground. The marshy areas used by Yellow Rails have an overlying dry mat of dead vegetation that is used to make roofs for nests.	The Site does not appear to contain suitable habitat.	Negligible
Mammals						
Algonquin Wolf (<i>Canis sp.</i>)	Threatened	Special Concern	N/A	Not restricted to a specific habitat type but typically occurs in deciduous and mixed forest landscapes.	This species only occurs in Algonquin Provincial Park and surrounding townships, along with other areas in central Ontario including in and around Killarney Provincial Park, Kawartha Highlands Signature Site, and Queen Elizabeth II Wildlands (MECP, 2019a).	None.
Eastern Cougar (<i>Puma concolor</i>)	Endangered	No Status	N/A	Lives in large, undisturbed forests or other natural areas where there is little human activity.	The Site does not appear to contain suitable habitat.	Negligible
Eastern Small-footed Myotis (<i>Myotis leibii</i>)	Endangered	Not Listed	Humphrey (2017)	In the spring and summer, Eastern Small-footed Myotis will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. Overwinters in caves and abandoned mines.	Tree line along bank of South Nation River on-Site may provide suitable habitat.	Moderate
Gray Fox (<i>Urocyon cinereoargenteus</i>)	Threatened	Threatened	N/A	Lives in deciduous forests and marshes. Their dens are usually found in dense shrubs close to a water source, but they will also use rocky areas, hollow trees, and underground burrows dug by other animals.	The range of this species has recently been reduced to west of Lake Superior in the Rainy River District and on Pelee Island in west Lake Erie (MECP, 2020a).	None.



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Little Brown Myotis (<i>Myotis lucifugus</i>)	Endangered	Endangered	Humphrey and Fotherby (2019)	During the day they roost in trees and buildings. They often select attics, abandoned buildings, and barns for summer colonies where they can raise their young. They can squeeze through very tiny spaces (as small as six millimetres across) allowing them access to many different roosting areas.	Deciduous woodlot and tree line along bank of South Nation River and abandoned barns on-Site may provide suitable habitat.	Moderate
Northern Myotis / Northern Long-eared Bat (<i>Myotis septentrionalis</i>)	Endangered	Endangered	Humphrey and Fotherby (2019)	Associated with boreal forests, choosing to roost under loose bark and in the cavities of trees.	The Site does not appear to contain suitable habitat.	Low
Tri-coloured Bat / Eastern Pipistrelle (<i>Perimyotis subflavus</i>)	Endangered	Endangered	Humphrey and Fotherby (2019)	Roosts mainly in trees during summer; overwinters in caves and mines along with other species, but often uses deeper parts of the hibernaculum.	Tree line along bank of South Nation River barns on-Site may provide suitable habitat	Moderate
Amphibians						
Western Chorus Frog (<i>Pseudacris triseriata</i>)	No Status	Great Lakes-St. Lawrence population: Threatened	N/A	Inhabits forest openings around woodland ponds but can also be found in or near damp meadows, marshes, bottomland swamps, and temporary ponds in open country, or even urban areas.	The Site does not appear to contain suitable habitat.	Negligible
Arthropods						
Bogbean Buckmoth (<i>Hemileuca</i> sp. 1)	Endangered	Endangered	N/A	Restricted to open, chalky, low shrub fens containing large amounts of bogbean, an emergent wetland flowering plant.	The Site does not appear to contain suitable habitat.	Negligible
Gypsy Cuckoo Bumble Bee (<i>Bombus bohemicus</i>)	Endangered	Endangered	N/A	Live in diverse habitats including open meadows, mixed farmlands, urban areas, boreal forest, and montane meadows. Host nests occur in	Currently only known to occur in Pinery Provincial Park (MECP, 2019b).	None.



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				abandoned underground rodent burrows and rotten logs.		
Macropis Cuckoo Bee (<i>Epeoloides pilosulus</i>)	Not listed	Endangered	N/A	Found in habitats supporting both Macropis bees and their food plant, Yellow Loosestrife (<i>Lysimachia</i>).	Has not been observed in Ontario in over 45 years (COSEWIC, 2011).	None.
Monarch (<i>Danaus plexippus</i>)	Special Concern	Special Concern	Toronto Entomologists' Association (2022)	Milkweeds are the sole food plant for Monarch caterpillars. These plants predominantly grow in open and periodically disturbed habitats such as roadsides, fields, wetlands, prairies, and open forests.	Meadows and roadsides on-Site may provide suitable habitat.	Moderate
Mottled Duskywing (<i>Erynnis martialis</i>)	Endangered	No Status	N/A	Requires host plants such as the New Jersey Tea and Prairie Redroot. These plants grow in dry, well-drained soils or alvar habitat within oak woodland, pine woodland, roadsides, riverbanks, shady hillsides, and tall grass prairies.	The Site does not appear to provide suitable habitat.	Low
Nine-spotted Lady Beetle (<i>Coccinella novemnotata</i>)	Endangered	No Status	N/A	Occurs within agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows, riparian areas, and isolated natural areas.	There have been no records of this species in Ontario since the mid-1990s (MECP, 2019c).	None.
Rapids Clubtail (<i>Gomphus quadricolor</i>)	Endangered	Endangered	N/A	Inhabits a wide variety of riverine habitats ranging in size from the St. Lawrence River to small creeks. Larvae are typically found in microhabitats with slow to moderate flow and fine sand or silt substrates where they burrow into the stream bed. Adults disperse from the river after emerging and feed in the forest canopy and other riparian vegetation.	There are no records of this species in Ottawa (MECP, 2019d).	None.
Rusty-patched Bumble Bee (<i>Bombus affinis</i>)	Endangered	Endangered	N/A	Can be found in open habitat such as mixed farmland, urban settings, savannah, open woods, and sand dunes.	The range of this species is limited to southwestern Ontario (MECP, 2019e).	None.



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Transverse Lady Beetle (<i>Coccinella transversoguttata</i>)	Endangered	Special Concern	N/A	Able to live in a wide range of habitats, including agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows, and riparian areas.	There have been no records of the species in Ontario since 1990 (MECP, 2020b).	None.
West Virginia White butterfly (<i>Pieris virginiensis</i>)	Special Concern	No Status	N/A	Lives in moist, deciduous woodlots. Requires a supply of toothwort, a small, spring-blooming plant that is a member of the mustard family, since it is the only food source for larvae.	The Site does not appear to contain suitable habitat.	Negligible
Yellow-banded Bumble Bee (<i>Bombus terricola</i>)	Special Concern	Special Concern	N/A	This species is a forage habitat generalist, able to use a variety of nectaring plants and environmental conditions. Can be found in mixed woodlands, particularly for nesting and overwintering, as well as a variety of open habitat such as native grasslands, farmlands, and urban areas.	Agricultural land on-Site may provide suitable habitat.	Moderate
Lichens						
Black-foam Lichen (<i>Anzia colpodes</i>)	No Status	Threatened	N/A	Grows on the trunks of mature deciduous trees growing on level or sloped land where high humidity is supplied by nearby wetlands, lakes, or streams. The most common host is Red Maple but it also occurs on White Ash, Sugar Maple, Red Oak, and very occasionally on other species.	Assumed to no longer occur in Ontario (COSEWIC, 2015).	None.
Flooded Jellyskin (<i>Leptogium rivulare</i>)	No Status	Threatened	N/A	Grows in seasonally flooded habitats, typically on the bark of deciduous trees, on rocks along the margins of seasonal ponds, and on rocks along shorelines and stream/riverbeds.	Bank of South Nation River on-Site may provide suitable habitat.	Low



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Pale-bellied Frost Lichen (<i>Physconia subpallida</i>)	Endangered	Endangered	N/A	Typically grows on the bark of hardwood trees such as White Ash, Black Walnut, and American Elm. Can also be found growing on fence posts and boulders.	There are no recent records of the species in the Ottawa area (MECP, 2019f).	None.
Reptiles						
Blanding's Turtle (<i>Emydoidea blandingii</i>)	Threatened	Threatened	MNDMNR (2022a)	Quiet lakes, streams, and wetlands with abundant emergent vegetation. Also frequently occurs in adjacent upland forests.	Bank of South Nation River on-Site may provide suitable habitat.	Moderate
Eastern Musk Turtle / Stinkpot (<i>Sternotherus odoratus</i>)	Special Concern	Special Concern	N/A	Found in ponds, lakes, marshes, and rivers that are generally slow-moving, have abundant emergent vegetation, and muddy bottoms that they burrow into for winter hibernation.	Bank of South Nation River on-site may provide suitable habitat	Low
Eastern Ribbonsnake (<i>Thamnophis sauritus</i>)	Special Concern	Threatened	N/A	The Eastern Ribbonsnake is semi-aquatic. It is most frequently found along the edges of shallow ponds, streams, marshes, swamps, or bogs bordered by dense vegetation that provides cover. Abundant exposure to sunlight is also required, and adjacent upland areas may be used for nesting.	The Site does not appear to contain suitable habitat.	Negligible
Midland Painted Turtle (<i>Chrysemys picta marginata</i>)	No Status	Special Concern	Ontario Nature (2019); MNDMNR (2022a); California Academy of Sciences and National Geographic Society (2022)	Inhabits waterbodies, such as ponds, marshes, lakes and slow-moving creeks that have a soft bottom and provide abundant basking sites and aquatic vegetation. Often bask on shorelines or on logs and rocks that protrude from the water.	Bank of South Nation River on-site may provide suitable habitat	Moderate
Milksnake (<i>Lampropeltis triangulum</i>)	Not Listed	Special Concern	N/A	Found in variety of open, scrubby or edge habitats, including pastures.	Agricultural land and meadows on-Site may provide suitable habitat.	Low



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Northern Map Turtle (<i>Graptemys geographica</i>)	Special Concern	Special Concern	Ontario Nature (2019); MNDMNRF (2022a)	Lives in rivers and lakeshores where it basks on emergent rocks and fallen trees throughout the spring and summer. In winter, they hibernate on the bottom of deep, slow-moving sections of river.	Bank of South Nation River on-site may provide suitable habitat	Moderate
Snapping Turtle (<i>Chelydra serpentina</i>)	Special Concern	Special Concern	Ontario Nature (2019); MNDMNRF (2022a); MNDMNRF (2022b); California Academy of Sciences and National Geographic Society (2022)	Spend most of their lives in the water. Prefer shallow waters so they can hide under the soft mud and leaf litter with only their noses exposed to the surface to breathe.	Bank of South Nation River on-site may provide suitable habitat	High
Spiny Softshell (<i>Apalone spinifera</i>)	Endangered	Threatened	N/A	Found primarily in rivers and lakes but also in creeks, ditches, and ponds near rivers. Habitat requirements are open sand or gravel nesting areas, shallow muddy or sandy areas to bury in, deep pools for hibernation, areas for basking, and suitable habitat for crayfish and other food species.	Bank of Payne River on-site may provide suitable habitat	Low
Spotted Turtle (<i>Clemmys guttata</i>)	Endangered	Endangered	N/A	Semi-aquatic and prefers ponds, marshes, bogs, and even ditches with slow-moving, unpolluted water and an abundant supply of aquatic vegetation.	Bank of South Nation River on-site may provide suitable habitat	Low
Wood Turtle (<i>Glyptemys insculpta</i>)	Endangered	Threatened	N/A	Prefers clear rivers, streams, or creeks with a slight current and sandy or gravelly bottom. Wooded areas are essential habitat but they are found in other habitats such as wet meadows, swamps, and fields.	Bank of South Nation River on-site may provide suitable habitat	Low



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Vascular Plants						
American Chestnut (<i>Castanea dentata</i>)	Endangered	Endangered	N/A	Typical habitat is upland deciduous forests on sandy acidic soils. Occurs with Red Oak, Black Cherry, Sugar Maple, and beech.	The Site does not appear to contain suitable habitat.	Negligible
American Ginseng (<i>Panax quinquefolius</i>)	Endangered	Endangered	N/A	Grows in rich, moist, but well-drained, and relatively mature, deciduous woods dominated by Sugar Maple, White Ash, and American Basswood.	The Site does not appear to contain suitable habitat.	Negligible
Black Ash (<i>Fraxinus nigra</i>)	Endangered	No Status	MNDMNRF (2022a)	Black Ash is predominantly a wetland species found in swamps, floodplains and fens.	Lands along the bank of the South Nation River on-Site may provide suitable habitat.	Moderate
Butternut (<i>Juglans cinerea</i>)	Endangered	Endangered	MNDMNRF (2022a)	Commonly found in riparian habitats but is also found on rich, moist, well-drained loams and well-drained gravels, especially those of limestone origin.	Deciduous woodlot and hedgerow on the bank of the South Nation River on-Site may provide suitable habitat.	Moderate
Eastern Prairie Fringed-orchid (<i>Platanthera leucophaea</i>)	Endangered	Endangered	N/A	Populations are found in three main habitat types: fens, tallgrass prairie, and moist old fields.	The Site does not appear to contain suitable habitat.	Negligible
Fish						
American Eel (<i>Anguilla rostrata</i>)	Endangered	Endangered	MNDMNRF (2022a)	Primarily nocturnal, hiding in soft substrate or submerged vegetation during the day.	South Nation River on-Site may provide suitable habitat.	Moderate
Bridle Shiner (<i>Notropis bifrenatus</i>)	Special Concern	Special Concern	N/A	Prefers clear water with abundant vegetation over silty or sandy substrate.	South Nation River on-Site may provide suitable habitat.	Low
Channel Darter (<i>Percina copelandi</i>)	Special Concern	Threatened	N/A	Prefers clean streams and lakes with moderate current over sandy or rocky substrate.	The Site does not appear to contain suitable habitat.	Negligible
Lake Sturgeon (<i>Acipenser fulvescens</i>)	Endangered	No Status	N/A	Only found in large lakes and rivers. Forages in cool water, 4-9 m deep over soft substrate; spawns in shallower, fast-flowing areas over rocks or gravel.	The Site does not appear to contain suitable habitat.	Negligible



Species Name (Taxonomic Name)	Status under Endangered Species Act (ESA)	Status under Schedule 1 of the Species at Risk Act (SARA)	Observation Record Sources (within 10 km of the Site)	Habitat Description	Habitat on the Site	Potential to Interact with Development of the Site (None, Negligible, Low, Moderate, or High) ¹
Northern Brook Lamprey (<i>Ichthyomyzon fossor</i>)	Special Concern	Special Concern	N/A	Inhabits clear, coolwater streams. The larval stage requires soft substrates such as silt and sand for burrowing which are often found in the slow-moving portions of a stream. Adults are found in areas associated with spawning, including fast flowing riffles comprised of rock or gravel.	The Site does not appear to contain suitable habitat.	Negligible
Cutlip Minnow (<i>Exoglossum maxillingua</i>)	Threatened	Special Concern	N/A	Lives in warmer rivers and creeks with clear, slow-moving water, and a rocky or gravel bottom.	South Nation River on-Site may provide suitable habitat.	Low
Northern Sunfish (<i>Lepomis peltastes</i>)	Special Concern	No Status	N/A	Lives in shallow vegetated areas of quiet, slow flowing rivers and streams, as well as warm lakes and ponds with sandy banks or rocky bottoms.	South Nation River on-Site may provide suitable habitat.	Low
River Redhorse (<i>Moxostoma carinatum</i>)	Special Concern	Special Concern	N/A	Prefers fast-flowing, clear rivers over rocky substrate.	South Nation River on-Site may provide suitable habitat.	Low
Silver Lamprey (<i>Ichthyomyzon unicuspis</i>)	Special Concern	Special Concern	N/A	Requires clear water where they can find fish hosts, relatively clean stream beds of sand and organic debris for larvae to live in, and unrestricted migration routes for spawning. Larvae live 4-7 years in burrows (prefer soft substrates); filter-feed on plankton.	The Site does not appear to contain suitable habitat.	Negligible

¹**None:** the range of the species does not overlap with the Site, the species is documented as no longer occurring in the ecoregion, or it is extremely unlikely for the species to occupy the Site due to access barriers.

Negligible: No observation records exist for within 10 km of the Site and the Site does not contain suitable habitat. The species has potential for unpredictable presence on/use of the Site.

Low: No observation records exist for within 10 km of the Site but suitable habitat exists on the Site, or suitable habitat does not exist on the Site but observation records exist for within 10 km.

Moderate: The species is known to occur within 10 km of the Site and suitable habitat exists on the Site.

High: The species is known to occur on or adjacent to the Site and suitable or confirmed habitat exists on the Site.



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