# Sherwood Heights, Oakville
# Environmental Impact Study (EIS)

Prepared for:
**Infrastructure Ontario**
1 Dundas Street West
Toronto ON
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NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

# Sherwood Heights, Oakville
# Environmental Impact Study (EIS)

**Project Team:**

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Report submitted on March 30, 2022

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# Table of Contents

## List of Tables



## Maps



## List of Appendices

## 1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained by Infrastructure Ontario (IO) to complete an Environmental Impact Study (EIS) for 50 Sherwood Heights Drive, located southeast of the Queen Elizabeth Way (QEW) and Highway 403, in the Town of Oakville. The subject property was within the Parkway West Belt Plan Area (PWBP). MTO has deemed the lands to be surplus to their requirements and therefore should be considered for a higher use. An amendment to the PBWP, removing the subject property from the plan, was recently approved. In order to determine the best use of the lands, the development potential is to be identified based on any physical and natural heritage constraints as well as other planning and social considerations.

An Official Plan Amendment (OPA) is being applied for to change the land use designation on the subject property to allow for development. Through consultation with the Town of Oakville, Conservation Halton (CH) and Halton Region it was determined that an Environmental Impact Assessment (EIA) is required to show that development can proceed without negatively impacting natural heritage features and system. A Scoping and Terms of Reference (TOR) checklist was prepared by Halton Region to guide the EIA, or as termed in this report, EIS.

This report provides the results of background review, field surveys and analysis of natural heritage features found on-site and adjacent to the subject property. The study area is shown on Map 1, along with natural features as identified through this review.

### 1.1 Study Area

The subject property is approximately 7.4ha in area, located in the Town of Oakville, at 50 Sherwood Heights Drive (Map 1). The subject property is bounded by Sherwood Heights Drive, Ford Drive, highway on-ramp and Highway 403. Adjacent lands are occupied by a municipal park, residential subdivision, roadways and transportation corridor. The site is currently vacant within remnants of an asphalt parking lot at the southern end. The subject property was disturbed historically during the construction of the QEW and Highway 403, and is primarily regenerating with meadow and thicket vegetation, a small wetland feature and a drainage feature. The property is within Ecoregion 7E.

## 1.2 Natural Environment Policy Context

*Provincial Policy Statement (OMMAH 2020)*

The Provincial Policy Statement (PPS) Section 2.1 – Natural Heritage, provides protection of significant natural features in Ontario (Gov. of Ontario 2020). These features are identified by the Ministry of Natural Resources and Forestry (MNRF) or the municipality and include:

a) significant habitat of endangered species and threatened species,
b) significant wetlands,
c) significant woodlands,
d) significant valleylands,
e) significant wildlife habitat,
f) significant areas of natural and scientific interest; and,
g) fish habitat.

Under the PPS, development and site alteration shall not be permitted in significant habitat of endangered or threatened species or significant wetlands within Ecoregions 6E and 7E. Development and site alteration shall not be permitted in significant woodlands, significant valleylands, significant wildlife habitats, or significant ANSIs unless it has been demonstrated that there will be no negative impacts on the features or their ecological functions. Based on the background review and initial site visit, there is potential for several of these natural features to be present on the subject property including: significant habitat of Endangered and Threatened Species, significant wildlife habitat and fish habitat.

*Parkway Belt West Plan (1978)*

The Parkway Belt West Plan (PBWP) took effect in 1978 and was used to reserve land for infrastructure, separate urban area, and connecting open spaces in Halton, Peel, York, Hamilton and Toronto. Today, the PBWP primarily designates and protects lands needed for large-scale infrastructure corridors.

Infrastructure Ontario submitted an application to the Ministry of Municipal Affairs and Housing to remove the site from the Parkway Belt West Plan, on the basis that the lands are no longer required as part of that plan (i.e. lands are surplus to MTO's needs). The

application was approved on March 22, 2022. The lands are now subject to the Town of Oakville Official Plan.

*Livable Oakville Plan (2009 Town of Oakville Official Plan)*

Land use within the Town of Oakville is guided through the Official Plan (OP) that was adopted by the Council of the Corporation of the Town of Oakville on June 22, 2009 and approved by the Regional Municipality of Halton on November 30, 2009. The OP was last updated on April 4, 2017.

The site is designated as 'Parkway Belt' in the OP, which means that the PBWP (1978) applies (Section 19 in Part D of the OP). As identified above, the province has removed the lands from the PBWP.

The OP has identified a Natural Heritage System (NHS) within the Town which is made up of significant natural features and functions and is recognized as areas where protecting, enhancing and restoring natural features is of a high priority. Part D Section 16 Natural Area of the Town of Oakville OP specifies that *"The purpose of the Natural Area designation is for the long-term preservation of natural features and functions. Therefore the diversity and connectivity of natural features in creating a system, and the long-term ecological function and biodiversity of natural heritage features, should be maintained, restored or, where possible, improved, recognizing links or corridors between and among natural heritage features and areas, surface water features and groundwater features.*"

Permitted Uses under Section 16.1.1.b states "*Where planning applications to establish or expand a permitted use are not subject to the Environmental Assessment Act, an environmental impact statement (EIS) shall be required, to the satisfaction of the Town, to establish that the use will not negatively impact the natural features or ecological functions contained within the Natural Area designation.*"

There are no Natural Area designations mapped on the subject property in the OP as shown on Map 1. There is potential for presence of significant natural features (as listed above per the PPS) which may then in turn be considered part of the NHS in the Town of Oakville.

*Region of Halton (2015)*

The *Halton Region Official Plan* (2015) identifies the natural features, ecological functions and potential linkages and corridors that comprise the Natural Heritage System (NHS). The NHS consists of both the Greenbelt Natural Heritage System and the Regional Natural Heritage System. Within the NHS, key features, such as: the shoreline along Lake Ontario and Burlington Bay, and the Niagara Escarpment are to be protected and maintained for conservation purposes. Examples of key features identified within the Natural Heritage System include significant habitat of SAR, fish habitat, wetlands, ANSI, significant valleylands, significant woodlands, significant wildlife habitat, streams, wetlands, lakes and their littoral zones, seepage areas and springs, aquifers and recharge areas.

Development within or adjacent to the NHS requires the completion of an EIS to demonstrate that it will not negatively impact the natural heritage or hydrologic features.

No NHS features are mapped on the subject property in the Regional OP. NHS features are identified approximately 160m south and 100m east of the subject property, across Ford Drive and Kingsway Drive, associated with the Joshua Creek Valley. There is potential for presence of significant natural features which may then in turn be considered part of the NHS in Halton Region.

*Conservation Halton*

Pursuant to Ontario Regulation 162/06, permission is required from Conservation Halton to develop areas within designated natural features and hazard lands including floodplain, valleyland, wetland, or other hazardous land. Permission is also required for any proposed alteration to a river, stream or watercourse, or any interference with a wetland. The regulated area covered by O. Reg. 162/06 represents the greatest extent of the combined hazards plus a prescribed allowance. Generally, development or alterations within the designated Regulation Area is not permitted unless it can be demonstrated to the satisfaction of Conservation Halton that there will be no negative effects on the control of flooding, erosion, pollution or conservation of the land. Any development within Conservation Halton's Regulation Limits requires the completion of an EIS to demonstrate no negative impacts.

The wetland and drainage features on the site are not identified on regulation mapping by Conservation Halton. Discussion with CH indicates that the watercourse is not regulated and the wetland will require formal review to understand its status. A formal assessment is to be completed during this EIS, with the wetlands required to be assessed and staked if necessary during the appropriate season of June to October (pers. comm, L. Head, CH, 2020-2021).

*Endangered Species Act (2007)*

The *Endangered Species Act* (2007) prohibits killing, harming, harassing, or capturing endangered or threatened species and protects their habitats from damage and destruction. Based on the initial background information the following is a list of protected species that may have potential to be found on the subject property:

- Eastern Meadowlark (*Sturnella magna*)

*Fisheries Act (1985)*

The Fisheries Act (1985) protects against the death or damage of fish and the harmful alteration, disruption or destruction of fish habitat. Fish habitat, as defined in s.2(1), includes all waters frequented by fish and any other areas upon which fish depend directly or indirectly to carry out their life processes. To implement work that would alter fish habitat Ministerial approval would be required through a Request for Review and Fisheries Act Authorization process. All watercourses within the subject property will be further examined to determine their classification as fish habitat and potential to be altered. No Species at Risk fish have been identified within or surrounding the subject property.

*Migratory Birds Convention Act (1994)*

The Migratory Birds Convention act (1994) provides protections to migratory birds as established by Environment and Climate Change Canada through the Migratory Bird Regulations. These protections exist to protect migratory birds, their nests, and eggs anywhere they are found within Canada. This includes birds nesting in trees and on structures. Since many locations have the potential to be used as nesting habitat by migratory birds, their presence should be considered whenever there is the possibility of tree removal or demolition of structures.

*Development Engineering Procedures and Guideline, Town of Oakville (undated)*

As the drainage feature within the subject property is not regulated by Conservation Halton, for any potential development to proceed on this parcel of land, this feature will need to be reviewed as part of the stormwater management plan in accordance with the Development Engineering Procedures and Guidelines. For any new development, minor and major drainage will need to be controlled to pre-development conditions. Existing drainage (up to and including the 100 year flows) would need to be safely conveyed through the property to an approved outlet in some form without impacting the property itself or surrounding properties (Pers. comm. D. Friesen, Town of Oakville, Jan 12, 2021).

## 2.0 Methods

### 2.1 Collection and Review of Background Information

Background information on the natural environment features within the study area was gathered from Conservation Halton, the Natural Heritage Information Centre (NHIC) (MNRF 2020) and wildlife atlases described below.

Initial wildlife species lists were compiled to provide information on species reported from the vicinity of the study area (10km radius) using various atlases; including the Ontario Mammal Atlas (Dobbyn 1994), and the Ontario Reptile and Amphibian Atlas (Ontario Nature 2020). Data on breeding birds in the area was extracted from the Ontario Breeding Bird Atlas (OBBA) (Bird Studies Canada (BSC) *et al.* 2020). Since this atlas provides data based on 10x10 km survey squares, information on significant species of breeding birds from the squares that overlaps the study area (17PJ0716) was compiled.

Requests for background information were sent to Conservation Halton and the Township of Oakville to get further information on the features within the subject property. Agency correspondence is included in Appendix I .

### 2.2 Species at Risk and Species of Conservation Concern Screening

A preliminary list of potential SAR was developed to identify those which are known from the local area and may have suitable habitat within the subject property (Appendix II). This involved cross-referencing the preferred habitat for potential SAR and Species of Conservation Concern (SCC) (MNR 2000, Appendix G) against habitats known to occur on the subject property. This was completed to ensure that the potential presence of all SAR and SCC within the subject property was adequately assessed in this Natural Heritage Review.

SAR are defined as species listed as Threatened or Endangered provincially. Confirmed habitat for SAR is protected under the ESA. Species considered Special Concern are included in the definition of SCC, which includes the following:

- species designated provincially as Special Concern,
- species that have been assigned a conservation status (S-Rank) of S1 to S3 or SH by the NHIC, and

- species that are designated federally as Threatened or Endangered by the Committee for the Status of Endangered Wildlife in Canada (COSEWIC) but not provincially by the Committee on the Status of Species at Risk in Ontario (COSSARO). These species are protected by the federal Species at Risk Act but not provincially by the ESA.

## 2.3 Significant Wildlife Habitat Screening

A preliminary screening for the presence of SWH was completed for the subject property. The Significant Wildlife Habitat Technical Guide (SWHTG) is a guideline document that outlines the types of habitats that the MNRF considers significant in Ontario as well as criteria to identify these habitats (MNR 2000, MNRF 2015). The SWHTG groups SWH into 4 broad categories: 1) seasonal concentration areas, 2) rare vegetation communities and specialized wildlife habitat, 3) habitats of SCC, and 4) animal movement corridors. Based on the results of this preliminary screening exercise and initial site visit, candidate SWH was identified for the subject property (Appendix III).

## 2.4 Field Methods

Field studies were completed within the study area to characterize existing conditions and identify significant natural heritage features and species that have the potential to be adversely affected by development of the subject property. The scope and methods of the field survey program were determined based on the review of background information, the scoping checklist and requirements of guiding policy and legislation. The field program was initiated in fall 2020 and completed in fall of 2021. Surveys are summarized in Table 1.

Observations of all wildlife species were recorded while on site during all surveys. This included direct observations, as well as observations of signs such as tracks, scat, or vocalizations. All natural and human-induced disturbances within the subject property were also documented during site visits. Following initial surveys (see **Error! Reference source not found.**1), the verification and continued assessment of Ecological Land Classification (ELC) results, SWH, and SAR habitat was ongoing during all site visits.

**Table 1 Field Survey Summary**

| Survey Type | Protocol | Date | Observer(s) |
|---|---|---|---|
| **Vegetation Mapping and Surveys** | | | |
| Preliminary ELC | Lee et al. 1998 | October 20, 2020 | E. Gosnell |
| Preliminary wetland boundary flagging | OWES | December 14, 2020 | E. Gosnell |
| Spring Vegetation Inventory and ELC | Systematic search by ELC polygon, and Lee et al. 1998 | June 4, 2021 | C. Humphrey |
| Summer Vegetation Inventory and ELC refinements | | July 14, 2021 | J. McCarter<br>J. Nene |
| Wetland Investigation and Boundary Flagging | OWES | September 27, 2021 | A. Dean<br>E. Gosnell |
| Wetland Boundary Surveying | OLS | December 1, 2021 | Callon Dietz Land Surveyors<br>E. Gosnell |
| **Bird Surveys** | | | |
| Breeding Bird Surveys | OBBA (2001) used for breeding evidence | June 4, 2021 | C. Humphrey |
| | | June 28, 2021 | K. Mimms |
| | | July 14, 2021 | J. McCarter<br>J. Nene |
| **Aquatic Surveys** | | | |
| Preliminary watercourse assessment | Modified Ontario Stream Assessment Protocol (OSAP) (Stanfield 2013) | October 20, 2020 | G. MacVeigh |
| Spring Aquatic Habitat Assessment | | May 20, 2021 | G. MacVeigh |
| Summer Aquatic Habitat Assessment | | June 29, 2021 | G. MacVeigh |
| **Herpetofauna** | | | |
| Anurans (Calling amphibian) | BSC 2009 | May 20, 2021 | G. MacVeigh |
| | | June 29, 2021 | G. MacVeigh |

### 2.4.1 Terrestrial Field Surveys

#### 2.4.1.1 Ecological Land Classification and Vegetation Inventories

Vegetation community delineation was completed within the study area using aerial imagery interpretation and refined through investigations in the field. The standard ELC System for southern Ontario was applied (Lee et al. 1998). Details of the vegetation communities were recorded, including species composition, dominance, uncommon species or features, and evidence of anthropogenic disturbance. Vegetation communities were reviewed during subsequent site visits to confirm that no further refinements were necessary. A 3-season vascular flora inventory was also conducted within the study area in the spring and summer of 2021. During vascular flora inventories, NRSI biologists completed a systematic search within each identified ELC polygon and documented all plant species observed.

#### 2.4.1.2 Breeding Bird Surveys

Breeding bird surveys were conducted using area searches within vegetation communities and data was recorded using standard Ontario Breeding Bird Atlas (OBBA) protocol for breeding evidence. Surveys consisted of walking transects between various habitat types (ELC communities) present within the study area in attempt to capture the diversity of species within the study area. Surveys occurred between dawn and 1000hrs. All birds observed, as well as the highest level of breeding evidence exhibited for each species, were recorded.

Observations of birds made while conducting breeding bird area searches and during other, non-target field surveys conducted during the 2021 field surveys were also recorded.

#### 2.4.1.3 Significant Wildlife Habitat and Species at Risk Habitat Assessments

The assessment of potential SWH and habitat for SAR within the study area was conducted during all field surveys. All ELC polygons delineated within the study area were thoroughly inspected for characteristics consistent with the criteria outlined in the SWHTG and supporting documents (OMNR 2000, MNRF 2015a), with a particular focus on the candidate SWH types identified during the preliminary SWH screening exercise provided as part of the Preliminary Natural Heritage Assessment Report prepared by

NRSI (2021). Natural habitats were also assessed for their potential to provide habitat for those SAR and SCC with records from within the study area (Appendix II).

### 2.4.2 Aquatic Surveys

#### 2.4.2.1 Aquatic Habitat Assessments

Two aquatic habitat assessments were conducted, capturing conditions in the spring and summer. NRSI biologists completed the aquatic habitat characterization on the watercourse and roadside drainage channel to determine the availability and quality of fish habitat (Map 1). The surveys followed a modified version of the standard Ontario Stream Assessment Protocol (OSAP) methodology (Stanfield 2013). The following information was recorded during the survey:

- General characteristics and channel morphology;
- Substrate composition;
- Flow conditions;
- In-stream and riparian vegetation;
- Location and type of fish habitat available, if present (e.g., refuge areas, nesting sites, areas and types of food supply including overhanging vegetation, woody debris);
- Adjacent land use and slopes; and
- Evidence of groundwater discharge.

## 3.0 Existing Conditions

### 3.1 Soils, Terrain and Drainage

The soils and drainage patterns within the subject property have been heavily altered due to human activities in the local area (i.e. residential development, paved roads, highways, parking lots, and trails). The local topography on site is hilly with a drainage pattern that slopes towards the south and east. The site is located in the broad physiographic region known as the Shale Plains which is characterized as having an overburden consisting predominantly of coarse-textured glaciolacustrine deposits of sand, gravel, minor silt and clay.

On the subject property, drainage is from northwest to south east, with an intermittent drainage feature collecting flows from the northwest portion of the site, conveying flow east and south, through a roadside ditch before discharging under Kingsway Drive. Drainage continues through a series of roadside ditches, stormwater facilities eventually entering the Joshua Creek valley system.

### 3.2 Designated Natural Areas

Based on examination of the Town of Oakville OP, Region of Halton OP, Conservation Halton online mapping, and Natural Heritage Information Center's Make-a-Map there are no provincially or locally designated natural features mapped within the subject property.

### 3.3 Vegetation

#### 3.3.1 Vegetation Communities

A summary of vegetation communities that were identified within the subject property is provided in Table 2 and shown on Map 1.

**Table 2. Vegetation Communities Identified within the Subject Property**

| ELC Ecosite Type | ELC Description | Environmental Characteristics |
|---|---|---|
| **Cultural** | | |
| CUM1-1 | Dry – Fresh Cultural Meadow | The subject property is a previously disturbed site which has become revegetated with a variety of cultural vegetation types. The majority is vegetated with cultural meadow which has a dry-fresh moisture regime dominated by grasses, Canada goldenrod, asters, rose, wild carrot, teasel and scattered shrubs such as hawthorn and buckthorn. There are two sizable stands which are dominated by almost pure *Phragmites australis*, a non-native and invasive grass. These |

| ELC Ecosite Type | ELC Description | Environmental Characteristics |
|---|---|---|
| | | are identified on the map as CUM1 Cultural Meadow (Phragmites). |
| CUT1 | Mineral Cultural Thicket (Buckthorn) | There are several areas of the property which have regenerated with shrubs, namely common European buckthorn (*Rhamnus cathartica*). These are dense stands dominated by buckthorn with occasional Tartarian honeysuckle and apple. The southern-most thicket, as shown on Map 1, contains a few larger remnant deciduous trees such as sugar maple and red oak. |
| CUT1-1 | Sumac Cultural Thicket | There are several pockets of staghorn sumac shrubs found throughout the subject property. |
| CUT1-4 | Gray Dogwood Cultural Thicket | In the northern part of the property there is a small shrub stand dominated by gray dogwood. |
| **Wetland** | | |
| MAM2 | Mineral Meadow Marsh Ecosite | In the central part of the property, there is a flat area of poor drainage which appears to have resulted from alterations on this site in the past. This wetland is approximately 0.07ha in size and contains purple loosestrife as well as narrow leaved cattail at the western (downstream) end. It is surrounded by a fringe of *P. australis*. Soil investigation was carried out to determine the wetland boundary, based on the moisture regime. The wetland boundary was flagged on September 27, 21 and surveyed by an Ontario Land Surveyor on December 1, 2021 and is shown on all maps. This wetland receives water from drainage ditches along Sherwood Heights Drive and discharges to a drainage feature which flows south and east off-property and under Kingsway Drive. |

### 3.3.2 Vascular Flora

In total, 108 plant species were observed by NRSI biologists during the 2021 vascular flora inventories and ELC surveys. Of the vascular flora species reported from within or directly adjacent to the subject site, 68 (63%) are considered non-native and 40 (37%) are considered native. The prevalence of non-native species is characteristic of sites that are heavily influenced by anthropogenic disturbances.

Background information and SAR and SCC screening indicates that no SAR/SCC plant species were identified to potentially be present in the subject property. Within the overall Halton Region, the background information identified 63 SAR/ SCC.

No SAR or SCC plant species were documented during the spring and summer vegetation inventories and ELC. One plant species considered regionally rare in Eco-district 7E-4(Oldham 2017) were documented within the subject property; Early

Goldenrod (*Solidago junceus*). This species was observed to be widespread and abundant throughout the thicket areas of the property. It is documented relatively frequently across the Eco-district (more than 12+ research grade observations on iNaturalist).

A complete list of vascular plant species observed in the study area during vascular flora inventories and ELC completed by NRSI biologists is provided in Appendix IV.

## 3.1 Wildlife

### 3.1.1 Birds

According to the Ontario Breeding Bird Atlas (OBBA) (BSC et al. 2008), 91 bird species are reported from the 10km x 10km square (17PJ01) that overlaps the study area. Species reported by the OBBA include 12 SAR and SCC bird species. Of these species, 1 SAR bird, Eastern Meadowlark (*Sturnella magna*), and 1 SCC, Grasshopper Sparrow (*Ammodamus savannarum*), were identified during preliminary screenings as potentially having suitable habitat within the study area (Appendix II).

In total, 33 bird species were observed by NRSI biologists during breeding bird surveys and incidentally. Most species were observed exhibiting possible or probable evidence of breeding. Four species observed were identified as having confirmed breeding evidence within the study area, including:

- Blue Jay (*Cyanocitta cristata*)
- American Robin (*Turdus migratorius*)
- Red-winged Blackbird (*Agelaius phoeniceus*)
- Common Grackle (*Quiscalus quiscula*)

During field surveys, NRSI biologists observed 2 SAR bird species within the study area, Barn Swallow (*Hirundo rustica*) and Chimney Swift (*Chaetura pelagica*). However, no breeding evidence was observed from either species. The birds were observed foraging within the subject property. Both of these species use manmade structures and buildings for their nesting (such as bridges, barns, sheds, buildings with chimneys), which are not present on the subject property.

The full list of all birds observed by NRSI biologists is provided in Appendix V.

### 3.1.2 Herpetofauna

According to the Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature 2019), 22 species of herpetofauna are reported from the 10km x 10km square (17PJ01) that overlaps the study area. Species reported by the ORAA include 1 SAR and 4 SCC, are known from within 10km of the subject property (Ontario Nature 2020). Preliminary background screening identified potentially suitable habitat for 1 SCC species, Eastern Milksnake (*Lampropeltis taylori triangulum*). However, further site investigations identified habitat was not suitable to support populations and no snake hibernaculum was present.

Targeted surveys (anuran call surveys) were carried out during the 2021 field season. No amphibians were heard calling during any of the targeted field surveys. No amphibian or reptile species, SAR or SCC herpetofauna were observed by NRSI during any of the field surveys.

Appendix VI provides a full list of all herpetofauna species with records from within the study area.

### 3.1.3 Mammals

According to the Mammal Atlas of Ontario (Dobbyn 1994), 46 mammal species, including 2 SAR, are reported from within 10km x 10km atlas square that overlaps with the study area. Based on the site assessment and screening, there is no suitable habitat for any mammal SAR, within the subject property.

In total, 5 mammal species were incidentally observed by NRSI biologists during field surveys between 2020 and 2021. All species observed are common within Halton Region.

Appendix VII provides a full list of all mammal species with records from within the study area.

### 3.1.4 Butterflies

According to the Ontario Butterfly Atlas (McNaughton et al. 2020), 10 butterfly species are reported from the 10km x 10km square (17PJ01) that overlaps with the study area. Available records indicated that 1 SAR, Mottled Duskywing (*Erynnis martialis*), and 2

SCC species, Monarch (*Danaus plexippus*) and West Virginia White (*Pieries virginiensis*) are reported from the vicinity of the study area (McNaughton et al. 2020). Preliminary screening identified only Monarch has potential to be present within the subject property based on habitat requirements.

NRSI biologists observed 5 butterfly species during field surveys, including on SCC: Monarch. All species observed are common within the Halton Region (Wormington 2006).

Appendix VIII provides a full list of all butterfly species with records within the vicinity of the study area.

### 3.2 Aquatic Habitat

There is one drainage feature present within the subject property as shown on Map 1. The feature appears to originate alongside the QEW, to the northwest of the subject property. It travels easterly along Sherwood Heights Drive as a roadside ditch. It then turns and goes in a southerly direction through a Mineral Meadow Marsh (MAM2) wetland and Cattail Mineral Shallow Marsh (MAS2-1) within the subject property. The feature flows to the southwest property boundary at Ford Drive where it splits, flowing east within the channelized roadside ditch and entering a corrugated steel pipe under Kingsway Drive, where it continues to flow south. Downstream of Kingsway Drive, no defined channel is present and flows as sheet run-off to the south. Drainage pathways are indistinct but it is expected that the feature then drains through a series of roadside ditches and stormwater facilities toward Joshua Creek which is located to the west and south.

The drainage feature is ephemeral in nature, and only conveys water after heavy rainfall events or spring melt. There are various inputs of run-off from the surrounding lands via roadside ditches. Due to the lack of connectivity and ephemeral nature of the watercourse, no fish habitat is present.

Additional roadside grass lined channels are also present along the edges of the subject property. Saturated soils and limited standing water was present within these channels at the time of the site visit, however, these are ephemeral and only convey water during rainfall events and spring melt.

## 4.0 Significance and Sensitivity

### 4.1 Watercourses and Fish Habitat

The watercourse within the site is not mapped or regulated by Conservation Halton (Pers. comm. L. Head, Conservation Halton, November 4, 2020).

The watercourse is not considered fish habitat, as it is not connected to fish-bearing waters downstream. No fish were observed during the aquatic habitat assessments, and the watercourse is ephemeral in nature, lacking standing or flowing water with the exception of rainfall events and melt.

### 4.2 Wetland

The wetland within the site is not mapped or identified by any planning authority. Its status is to be assessed to determine if it warrants regulation or being designated part of the Regional NHS (Pers. Comm. A. Pasquini-Smith, Intermediate Planner, Halton Region, December 20, 2021).

The wetland on the subject property is a highly degraded and disturbed community, being dominated by invasive and non-native plant species Phragmites (*P. australis)* and purple loosestrife *(L. salicaria*). The wetland is composed of two small wetland polygons totalling 0.07ha in size; one being Mineral Meadow Marsh (MAM2) and the second being a Cattail Mineral Shallow Marsh (MAS2-1).

Due to the heavy infestation by *P. australis*, and lack of other vegetation species, soil investigation was used to determine the moisture regime and determine if this community is wetland and what its extents are. Soil investigations revealed that the wetland is based on silty clay loam to a depth of approximately 55 to 65cm. Mottling was observed in 3 locations at a depth between 33cm and 48 cm. Based on the dominant soil type being silty clay loam, the wetland areas were determined based on the moisture regime being 6 (considered to be hydric soils). Soil inspections were used in conjunction with sporadic wetland indicator plant species to flag the wetland boundary. The non-wetland areas were identified as upland Phragmites dominated meadow. Details of soil inspections and the resulting wetland boundary is shown on Map 1.

The soil inspection information and Map 1 was provided to CH, who determined that the wetland does not warrant regulation based on the vegetation composition being composed predominantly of Phragmites, the size of the actual wetland feature and the

lack of hydric soils throughout (pers. comm. L. Bernier, Planning Ecologist, CH, October 7, 2021).

As requested by Halton Region, the wetland was further assessed as per Section 115.3 (6) of the ROP to determine if it contributes to the RNHS and/or Key Features (Pers. Comm. A. Pasquini-Smith, Intermediate Planner, Halton Region, December 20, 2021). Policy 115.3 states:

> *The Regional Natural Heritage System is a systems approach to protecting and enhancing natural features and functions and is scientifically structured on the basis of the following components:*
> *(1) Key Features, which include:*
> *a) significant habitat of endangered and threatened species,*
> *b) significant wetlands,*
> *c) significant coastal wetlands,*
> *d) significant woodlands,*
> *e) significant valleylands,*
> *f) significant wildlife habitat,*
> *g) significant areas of natural and scientific interest,*
> *h) fish habitat, Key Features that have been identified are shown on Map 1G.*
> *(2) enhancements to the Key Features including Centres for Biodiversity,*
> *(3) linkages,*
> *(4) buffers,*
> *(5) watercourses that are within a Conservation Authority Regulation Limit or that provide a linkage to a wetland or a significant woodland, and*
> *(6) wetlands other than those considered significant under Section 115.3(1)b).*

The wetland has not been included in any wetland evaluation by the MNRF and is too small and too far away from any other PSW (3.8km from North Oakville-Milton East PSW) to be considered part of a PSW complex. Therefore it does not qualify as a provincially significant wetland (1b), and it is not a significant coastal wetland (1c). To determine if it contributes to the RNHS as an “other wetland” (6), the wetland was considered against a number of characteristics which would provide value to the regional natural heritage system (Table 3). The characteristics selected are based on criteria from other jurisdictions (GRCA 2015) and general ecological principles such as provided in the Natural Heritage Definition and Implementation, Sustainable Halton Report 3.02 (North South Environmental 2009).

Table 3. Wetland Assessment

| Characteristic | Wetland Assessment |
|---|---|
| Size (ha) | The wetland is composed of 2 very small polygons, together totalling 0.07ha. It is too small to be mapped as an ELC unit (0.5ha) and too small to be considered a wetland polygon as per OWES (2ha). |
| Located within a floodplain or riparian community | The wetland is not located within a riparian corridor and not within a CH-mapped floodplain. |
| Part of a provincially or municipally designated natural heritage feature, a significant woodland or hazard land | The wetland does not fall within provincially or municipally designated natural heritage features, significant woodlands, or hazard lands. |
| Vegetation community | The wetland is a meadow marsh community, which is a common and abundant type of wetland. It is a highly degraded and disturbed community, being dominated by invasive and non-native plant species (*P. australis and L. salicaria*). |
| Fish habitat | The wetland does not contain suitable depth of water or hydroperiod to provide fish habitat. |
| Significant species | The wetland does not contain any federal, provincial or regionally significant species of plants or wildlife. |
| Significant wildlife habitat | No forms of SWH are present. The wetland does not provide amphibian breeding habitat (woodland or wetland) significant wildlife habitat (see Section 4.4). |
| Amphibian population | No amphibians were documented during any of the anuran call surveys or other field surveys of the wetland. |
| Adjacent habitat/ecological connection | The wetland is not adjacent or connected to any other mapped or significant natural habitats or key features or features that are adjacent to key features. It does provide enhancement to any other natural feature. |
| Hydrologic connection | The wetland receives surface sheetflow drainage from the subject property, and runoff water only during rain or snow melt events from the roadside ditch along Sherwood Heights Drive. It outlets water to a drainage course that only flows during rain or snow melt events. The drain does not provide fish habitat and does not connect to any other aquatic or wetland habitats within approximately 800-1000m. |
| Hydrogeologic connection | The wetland has formed on poorly drained silty clay loam soils. This soil type has poor infiltration capability and there is no appreciable recharge to or discharge of groundwater in this wetland. |

Based on the above analysis it is determined that the wetland polygons are not significant and do not contribute to the regional natural heritage system. The wetland

provides a flow path for water entering the subject property and provides some limited retention function, based on its very small size. These functions are recommended to be taken into account in the stormwater management strategy for the subject property.

### 4.3 Habitat of Threatened and Endangered Species

Based on the preliminary background assessment and 2021 field surveys, no Threatened or Endangered species were present or had suitable habitat within the subject property. Though 2 SAR bird species (barn swallow and chimney swift) were observed within the subject property, they were foraging in the air above the property, and were not observed to exhibit any breeding evidence. No breeding habitat for these species is present.

### 4.4 Significant Wildlife Habitat

Background information and the results of the site investigations completed in 2020 and 2021, were compared to the evaluation criteria set out in the SWHTG, Ecoregion 7E Criteria Schedule (MNRF 2015). Based on this analysis, no SWH types were identified within the subject property.

Though Monarch butterflies (SCC) were observed within the subject property, the habitat based on the host plant, Milkweed, is present in low numbers and is not reliable to meet the survival needs of a large population of Monarchs. No observations of Monarch eggs, caterpillars, or chrysalis' were made during field investigations. Habitat for Monarch on the subject property is limited and does not provide a good source of breeding or foraging habitat. Therefore, SWH for Monarch is not considered present within the subject property.

The full results of the SWH screening are provided in Appendix III.

## 5.0 Constraints Analysis

Based on a review of existing information and the field surveys, there are no natural features on the subject property that are constraints to development. The regionally rare plant species (Early Goldenrod) is abundant and widespread across the property, and the population of this species is not expected to be impacted due to development of the subject property.

### 5.1 Drainage/Watercourse Feature

The watercourse on site does not provide direct fish habitat, though may contribute to inputs downstream as indirect fish habitat. The hydrologic function of watercourse/drainage feature (convenyance) is to be maintained but the form of the feature could be altered as necessary to accommodate development. It is preferable to maintain the drainage feature as an open watercourse, and realignment is a possibility. If the system is realigned, a 15m buffer should be established along the full length of the drainage feature and vegetated with natural riparian species.

The drainage feature is not connected to any permanent watercourse, and is ephemeral in nature. As such, no fish habitat is present within the drainage feature and therefore is not regulated. Due to the nature of the drainage feature, no authorization or permitting would be required from the DFO.

Any development of the subject property will need to review the Town's Development Engineering Procedures and Guidelines as it relates to the drainage feature and stormwater management plan. If the feature was to be relocated/realigned, the existing drainage (up to and including the 100 year flows) would need to be safely conveyed through the property to an approved outlet in some form without impacting the property itself or surrounding properties.

### 5.2 Wetland

Correspondence with staff from Conservation Halton identified that the wetland within the subject property will not be a regulated feature. The wetland is also not identified as part of the Regional Natural Heritage Systems (Halton Region 2014). Through an assessment in this EIS, it is recommended that the wetland not be considered part of the RNHS, due to its lack of suitable characteristics and ecological functions. It is recommended that the hydrologic function of the wetland (storage and conveyance of

surface runoff) be taken into account in the stormwater management plan for the subject property.

### 5.3 Tree Removal

The Town of Oakville's Private Tree Protection By-law 2017-038 applies to all private property within the Town and prohibits the injury or destruction of any tree Species at Risk, designated provincially or federally; any tree with a trunk diameter ≥15cm; or any tree required to be retained or planted as a condition of an approved site plan. Authorization for tree removal may be issued by the Town through a Tree Protection Zone Encroachment Permit or a Tree Permit; an application for one of these permits will require an Arborist Report. Regulated trees are present on the property and an inventory and an Arborist Report will be required at a more detailed stage.

# 6.0 Impact Analysis

## 6.1 Description of the Undertaking

The subject property is envisioned to be developed for light industrial and/or office use. A conceptual site plan has been prepared by GSP Group and is shown on Map 2. The concept was prepared to demonstrate the development potential of the subject lands and to provide a framework for this EIS, however, the concept is not being submitted for approval. The concept includes three 1 storey industrial buildings ranging in size from 3,500 to 9,200 square metres, one 2 storey office building, parking throughout the site, two entrances from Sherwood Heights Drive, an internal road and two stormwater management facilities. WalterFedy prepared an Engineering Feasibility Servicing & Stormwater Management Report in 2021. This report was followed by a Stormwater Management Feasibility Report and proposed grading plan in February 2022, based on the preliminary concept plan. The concept plan for the subject property is based on the drainage channel being routed along the frontage of Sherwood Heights Drive and provided with a 15m buffer. The concept plan would allow an opportunity to construct an online wetland in the northwest corner of the property.

## 6.2 Approach to Impact Assessment

Potential impacts have been determined by comparing the concept plan with the location and characteristics of the existing natural features and their functions. As detailed site grading and development plans are not available at this time, recommendations to avoid potential impacts to natural features and functions have been presented and should be considered during the detailed design stage. The following is a description of the types of impacts that have been assessed as part of this EIS:

- Direct impacts to the natural features or significant habitats on the subject property associated with disruption or displacement caused by the actual proposed ‘footprint’ of the undertaking.
- Indirect impacts associated with changes in site conditions such as erosion and water quantity/quality.
- Induced impacts associated with post-construction human-induced stresses or disturbances to the natural features or habitat functions.

## 6.3 Direct Impacts

### 6.3.1 Tree and Vegetation Removal

Virtually all of the subject property will require clearing and grading, and therefore all existing vegetation (cultural meadow, marsh and cultural thicket) will require removal as a result of the development. The majority of the subject property is cultural meadow with some small areas of cultural thicket and trees. The marsh vegetation of the two small wetland communities will also be removed. All of these communities have arisen since and as a result of former disturbances of the lands. No federally, provincially or regionally significant vegetation species or habitat will require removal as a result of the concept plan.

A limited number of trees that would be protected by the Town's tree bylaw will be removed. A Tree Protection Zone Encroachment Permit or a Tree Permit will be required at a more detailed stage.

### 6.3.2 Wetland and Drainage Channel Removal

The development of the subject property will require the removal of the two small marsh wetland polygons and the re-alignment of the drainage channel. The wetland and the channel do not provide any direct or indirect fish habitat or habitat for wildlife. The vegetation within the wetland and along the channel is not significant and is primarily non-native and aggressive invasive species such as Phragmites, purple loosestrife and common buckthorn. There will be no negative impact to the natural heritage system due to the removal of these features. The wetland and the channel perform a hydrologic function within the subject property as storage and a flow path for surface water during rain or snow melt events. This hydrologic function will be maintained and enhanced within the concept plan prepared for the property. The channel will be re-aligned to flow along the Sherwood Heights Drive frontage of the property, or can also be accommodated along the Queen Elizabeth Way frontage, and will be given a 15m buffer. The new stormwater management ponds and the re-aligned channel will maintain the function of the current features; providing storage, and a flow path, and will be an opportunity to enhance the ecological condition through removal of Phragmites, new plantings of native species of trees, shrubs and herbaceous plants. Details of the re-aligned drainage channel will be determined at a more detailed stage.

### 6.3.3 Online Wetland

The concept plan provides an opportunity to install a constructed wetland at the northwest corner of the property. Although not required, this online wetland provides replacement habitat for the wetland that is to be removed. This relatively unusable corner of the property is conceptually proposed to be converted to a naturalized wetland, as part of the public greenspace. The wetland is conceptually proposed to be online with an inlet from and outlet to the drainage channel along Sherwood Heights Drive. The wetland is provided a 15m buffer in order to separate it physically from the developed portions of the site. Details of the wetland design and its planting will be determined at a more detailed stage.

### 6.3.4 Migratory Birds

The removal of trees and vegetation from the subject property has the potential to disrupt nesting birds. The Migratory Birds Convention Act (MBCA) (Government of Canada 1994) identifies a list of migratory bird species that are protected. When development proceeds, tree and vegetation removal is recommended to occur outside of the general core nesting period for migratory birds as established by the Canadian Wildlife Service (CWS 2012), which extends from April 1 through August 31.

Nest searches, as a means of mitigation during the core breeding period, may be undertaken in “simple” habitats, such as hedgerows, plantations, isolated trees, or constructed features (e.g. bridges, barns, etc.) where the potential to observe all active nests is relatively high (CWS 2013). It is therefore recommended that tree and vegetation removal and grading occur outside the peak breeding bird period, where possible. If removals do need to occur during the breeding bird period, nest searches, completed by a qualified biologist should be completed within 48hrs of tree clearing to ensure no impacts to nesting birds. The proponent should keep a clearance memo, prepared by the biologist, on-file.

## 6.4 Indirect Impacts

<u>Stormwater Quantity and Quality</u>

WalterFedy has prepared a Stormwater Management Feasibility Report in support of the concept plan (WalterFedy 2022). The purpose of their report is to evaluate potential development scenarios for the subject property and provide potential stormwater

management solutions to support development. The stormwater management plan includes two stormwater management ponds, tiered across the site, to capture and treat flows from the conceptually proposed buildings, parking lots and road. Pond 1 services the western part of the property, with an outlet draining to Pond 2 which serves the eastern part of the property. The outlet of Pond 2 is to the existing drainage channel which flows through a culvert under Kingsway Drive. This flow path of the stormwater management plan maintains the existing surface water drainage pattern of the site and maintains flows to downstream watercourses and the subwatershed.

Infiltration of precipitation and surface water into the ground is an important component of the stormwater management plan. Details of the soil types on-site and their capability for infiltration will be determined at a more detailed stage. Opportunity for installation of infiltration galleries to capture and infiltrate clean roof water has been provided in the concept plan by the greenspace located adjacent to the buildings. WalterFedy provides a water balance analysis in Section 3.3 and Appendix A of their SWM feasibility report. Their analysis shows that by infiltrating the first 5mm of surface runoff of each storm event (approximately 46 per year), this results in an annual groundwater recharge over and above the existing recharge occurring on the site. Therefore, the development concept has the ability to mitigate the loss in groundwater recharge resulting from the development of the site, and no impacts to water balance will occur.

The conceptual ponds have been sized adequately to provide appropriate storage and to achieve the Enhanced level of water quality treatment required by the Town of Oakville and the MECP including 80% long term suspended solids removal. The combined ponds and outlet structures provide sufficient volume and staging to control the 2 to 100 year, and 25mm storm events. In this manner the stormwater management plan for the conceptual development shows that post-development flows can be controlled to pre-development conditions, peak flows are controlled to less than existing and that an Enhanced level of water quality can be met.

Erosion and Sedimentation Control

Exposing bare soils through vegetation clearing, grubbing and grading can increase risk of erosion during rainfall events, resulting in movement of sediment-laden runoff into

drainage features and natural areas. Runoff from construction sites can cause soil erosion, channelization, and sedimentation.

An Erosion and Sediment Plan will need to be prepared prior to any site alteration or development activities. The control measures will need to be installed prior to any vegetation clearing or grading within the subject property. Silt fencing should be installed along the grading limits and monitored periodically to ensure that it is functioning properly. Any recommendations regarding erosion control measures, best management practices and monitoring provided by WalterFedy should be taken into account. Timing windows for the protection of aquatic habitat due to grading or in-water work are not necessary.

## 6.5 Induced impacts

Induced impacts are those associated with impacts after the development is constructed such as disturbances to adjacent natural features created by increased human habitation/use of the area and vicinity.

Due to the lack of significant natural features in the study area, there are no significant induced impacts anticipated as part of this development.

## 6.6 Recommendations

Mitigation measures recommended above in the impact analysis sections are expected to minimize and avoid any impacts to natural features. The following recommendations are provided to aid further in mitigating any potential impacts and to provide enhancement to the local area:

- Conservation Halton and the Region of Halton provide guidelines for selecting species for plantings and seed mixes for restoration and stormwater management facilities. Their guidelines should be referred to in the detailed design (Conservation Halton 2010, 2017, Regional Municipality of Halton 2000).
- Due to its removal from the site, the regionally rare early goldenrod (*Solidago junceus*) should be included in the seed mix for restoration, or seed can be collected on-site prior to removal, and used in the planting of the naturalized areas of the drainage channel, wetland and their buffers.

- Opportunities for ecological enhancement can include naturalized landscape plantings around the buildings and parking areas, as well as the SWM ponds, drainage channel and the online wetland. Naturalized areas within the development that are attractive to birds, insects and wildlife should be coupled with bird friendly building design.
- The development of the site will remove the existing infestations of *Phragmites australis* and monitoring should be employed to ensure it does not re-colonize the SWM pond or drainage channel in the future.
- Details of the design of the re-aligned channel and the wetland to be prepared at a more detailed stage.
- A sediment and erosion control plan be prepared and implemented prior to any construction in order to protect off-site natural features from any impacts due to erosion and sediment-laden runoff escaping the site.

## 7.0 Summary

NRSI was retained to complete an EIS to analyze the development potential of the subject lands and inform the conceptual site plan for the vacant lands at 50 Sherwood Heights Drive in Oakville. This report provides a summary of the existing natural features within the subject property and an analysis of potential impacts. The property has been disturbed in the past due to the construction of the Queen Elizabeth Way and other roads and developments in the area. It is predominantly cultural meadow and thicket, and does not contain any significant natural features or species or their habitats which would pose a constraint to development. Two small marsh wetland pockets and a drainage channel are found on-site. These are not regulated features and not part of the Region of Halton's Natural Heritage System.

The conceptual site plan was prepared to demonstrate the development potential of the subject lands and to provide a framework for the preparation of this EIS, however, the conceptual site plan is not being submitted for approval. Light industrial and/or commercial use, is shown on the concept prepared by GSP Group. Development will result in the removal of almost all vegetation on the site, while proposing a re-alignment of the drainage channel as an open channel with a buffer, and a created wetland.

A strategy for managing stormwater has been prepared by WalterFedy and will ensure that post-development runoff is controlled to pre-development levels and water balance will be maintained. Water quantity and quality will be controlled according the requirements of the Town of Oakville and MECP.

Recommendations are provided to avoid and mitigate impacts to natural features such as nesting birds and downstream habitats. The re-aligned channel, stormwater management ponds and created wetland are all opportunities to enhance and provide naturalized habitats while removing the non-native and invasive plant species from the site.

## 8.0 References


Bird Studies Canada (BSC), Environment Canada's Canadian Wildlife Service, Ontario Nature, Ontario Field Ornithologists and Ontario Ministry of Natural Resources. 2020. Ontario Breeding Bird Atlas Database. Square 17PJ01. http://www.birdsontario.org/atlas/

Canadian Wildlife Service (CWS). 2012. Explanation for the Core Nesting Periods Table. Ottawa, ON: Canadian Wildlife Service.

Canadian Wildlife Service (CWS). 2013. Migratory Birds Convention Act (MBCA) and Regulations. May 3, 2013. http://www.ec.gc.ca/nature/default.asp?lang=En&n=7CEBB77D-1

Dobbyn, J.S. 1994. Atlas of the Mammals of Ontario. Don Mills, Federation of Ontario Naturalists.

Fisheries and Oceans Canada (DFO). 2020. Aquatic Species at Risk Maps. https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html

Government of Canada. 1985. Fisheries Act. Available online at: https://laws-lois.justice.gc.ca/eng/acts/f-14/

Government of Canada. 1994. Migratory Birds Convention Act (MBCA) and Regulations. https://laws-lois.justice.gc.ca/eng/acts/m-7.01/page-1.html

Government of Canada. 2019. Species at Risk Public Registry: Species Search. Last updated December 6, 2019. https://species-registry.canada.ca/index-en.html#/species?sortBy=commonNameSort&sortDirection=asc&pageSize=10

Government of Ontario. 1978. Parkway Belt West Plan. Available online at: http://www.mah.gov.on.ca/AssetFactory.aspx?did=5455

Government of Ontario. 1990. Conservation Authorities Act, R.S.O. 1990, c. C.27. https://www.ontario.ca/laws/statute/90c27

Government of Ontario. 2007. Endangered Species Act. Available online at: https://www.ontario.ca/laws/statute/07e06

Government of Ontario. 2015. Ontario Wetland Evaluation System Manual. Ministry of Natural Resources and Forestry. Available online at: https://files.ontario.ca/environment-and-energy/parks-and-protected-areas/ontario-wetland-evaluation-system-southen-manual-2014.pdf

Government of Ontario. 2020a. Provincial Policy Statement (PPS). Available online at: https://files.ontario.ca/mmah-provincial-policy-statement-2020-accessible-final-en-2020-02-14.pdf

Government of Ontario. 2020b. Land Information Ontario (LIO) Data Warehouse. Queen's Printer for Ontario. Available online at: https://www.ontario.ca/page/land-information-ontario

Grand River Conservation Authority (GRCA). 2015. Policies for the Administration of the Development, Interference with Wetlands and Alteration to Shorelines and Watercourses Regulation. Ontario Regulation 150/06. Effective October 23rd, 2015.

Halton Region. 2020. Environmental Impact Assessment Guideline. Regional Official Plan Guidelines.

Halton Region. 2015. Regional Official Plan. Available online at: https://www.halton.ca/The-Region/Regional-Planning/Regional-Official-Plan-(ROP)-(1)

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.

MacNaughton, A., Layberry, R., Jones, C., and B. Edwards. 2020. Ontario Butterfly Atlas Online. Toronto Entomologists' Association. Last updated 2020. http://www.ontarioinsects.org/atlas_online.htm.

Ministry of the Environment, Conservation and Parks (MECP). 2021. General Habitat Description for the Barn Swallow (*Hirundo rustica*). Published October 2. 2018. Last updated July 9, 2021. https://www.ontario.ca/page/barn-swallow-general-habitat-description

Ministry of Natural Resources (MNR). 2000. Significant Wildlife Habitat Technical Guide. July 2014.

Ministry of Natural Resources (MNR). 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Toronto: Queen's Printer for Ontario. 248 pp.

Ministry of Natural Resources and Forestry (MNRF). 2015. Significant Wildlife Habitat Ecoregion 7E Criterion Schedule: Addendum to Significant Wildlife Habitat Technical Guide. MNRF, January 2015.

Ministry of Natural Resources and Forestry (MNRF). 2020. Species at Risk in Ontario (SARO) List. Last updated November 9, 2020. https://www.ontario.ca/environment-and-energy/species-risk-ontario-list

Ministry of Natural Resources and Forestry (MNRF). 2021. Make a Map: Natural Heritage Areas (NHIC). Available online at: https://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US

North-South Environmental. 2009. Natural Heritage System Definition and Implementation. Sustainable Halton Report 3.02. Prepared for Halton Region.

Ontario Nature. 2020. Ontario Reptile and Amphibian Atlas. Available online at: https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas/

Town of Oakville. 2009. Livable Oakville Plan (2009 Town of Oakville Official Plan). Available online at: https://www.oakville.ca/townhall/livable-oakville-official-plan.html

Town of Oakville. Undated. Development Engineering Procedures and Guidelines. Available online at: https://www.oakville.ca/assets/general%20-%20business/DevelopmentEngProceduresManual.pdf

Varga, S. 2000. Distribution and Status of the Vascular Plants of the Greater Toronto Area. Ontario Ministry of Natural Resources, Aurora District.

WalterFedy. 2022. Stormwater Management Feasibility Report. Infrastructure Ontario. 50 Sherwood Heights Drive. February 24, 2022.

**Authorities Consulted**

Conservation Halton (CH). Personal Communication (e-mail)., E. Bernier, Planning Ecologist., October 7, 2021.

Conservation Halton (CH). Personal Communication (e-mail)., L. Head, Regulations Officer., November 2, 4, 2020, January 7 and 18, 2021.

Town of Oakville. Personal Communication (e-mail)., A. Pasquini-Smith, Intermediate Planner., November 26, 2021.

Town of Oakville. Personal Communication (e-mail)., D. Friesen, Water Resources Technologist, Development Services., December 18, 2020, January 12, 2021.

# MAPS

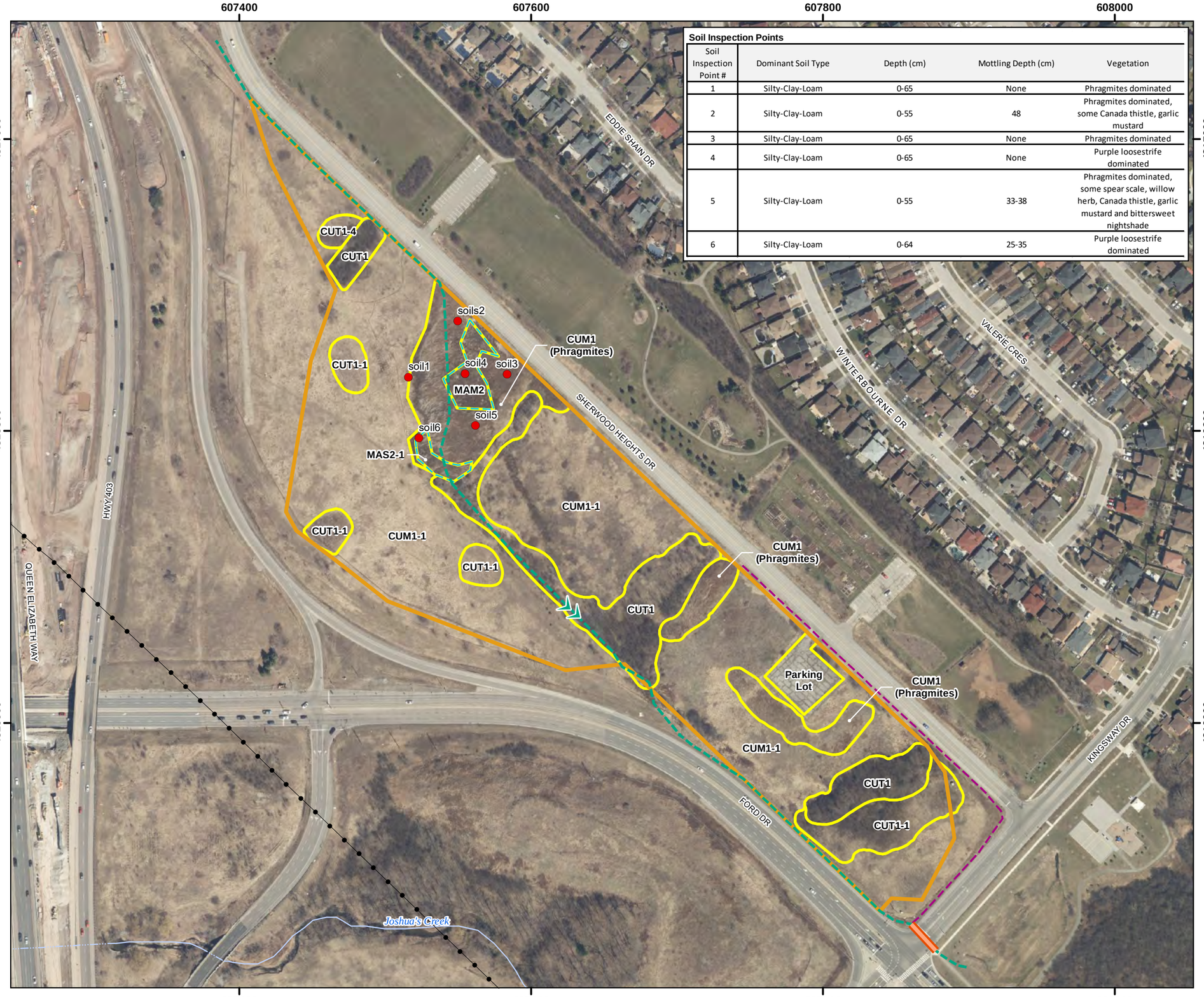
**Map 1**

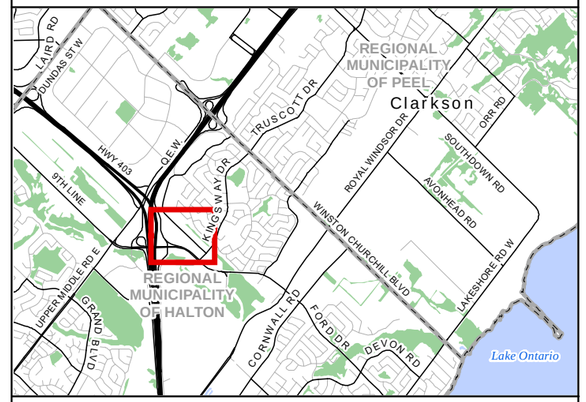
# IO Sherwood Heights

## Existing Conditions

**Soil Inspection Points**

| Soil Inspection Point # | Dominant Soil Type | Depth (cm) | Mottling Depth (cm) | Vegetation |
|---|---|---|---|---|
| 1 | Silty-Clay-Loam | 0-65 | None | Phragmites dominated |
| 2 | Silty-Clay-Loam | 0-55 | 48 | Phragmites dominated, some Canada thistle, garlic mustard |
| 3 | Silty-Clay-Loam | 0-65 | None | Phragmites dominated |
| 4 | Silty-Clay-Loam | 0-65 | None | Purple loosestrife dominated |
| 5 | Silty-Clay-Loam | 0-55 | 33-38 | Phragmites dominated, some spear scale, willow herb, Canada thistle, garlic mustard and bittersweet nightshade |
| 6 | Silty-Clay-Loam | 0-64 | 25-35 | Purple loosestrife dominated |




**Legend**

- Subject Property
- Soil Inspection Point
- Surveyed Wetland (Dec 1, 2021)
- Watercourse
- Direction of Flow
- Roadside Channel
- Culvert
- Utility Line
- Permanent Watercourse
- Intermittent Watercourse
- Ecological Land Classification

(CUM1) Mineral Cultural Meadow Ecosite (Phragmites)
(CUM1-1) Dry - Moist Old Field Meadow Type
(CUT1) Mineral Cultural Thicket Ecosite (Buckthorn)
(CUT1-1) Sumac Cultural Thicket Type
(CUT1-4) Gray Dogwood Cultural Thicket Type
(MAM2) Mineral Meadow Marsh (Purple Loosestrife)
(MAS2-1) Cattail Mineral Shallow Marsh

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists



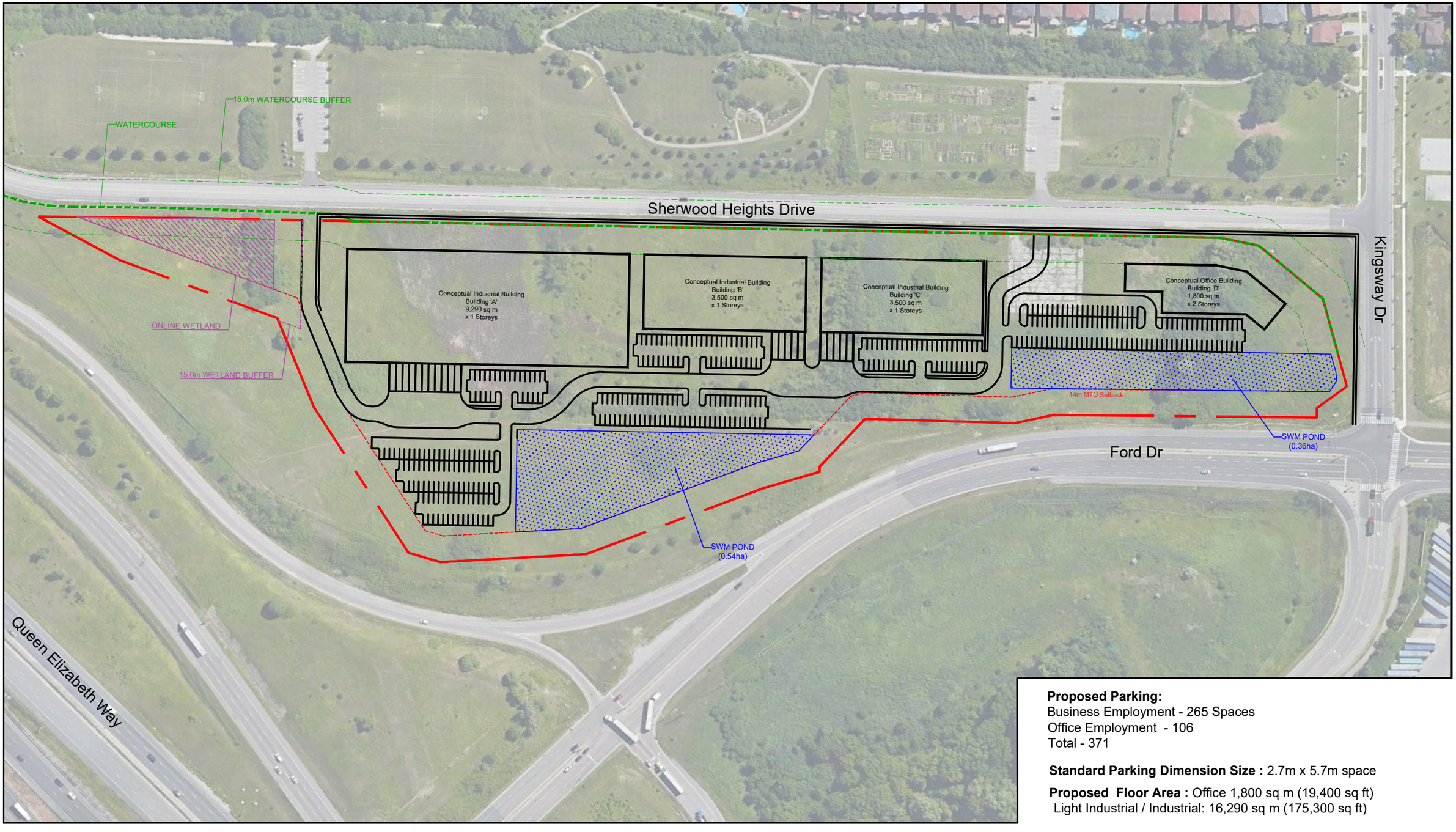
Project: 2494
Date: January 25, 2022

NAD83 - UTM Zone 17
Size: 11x17"
**1:2,600**

0 40 80 120 160 Metres

N

Path: X:\2494_SherwoodHeightsIO\NRSI_2494_Map1_ExistingConditions_3K_2022_01_25_GCS.mxd




**Proposed Parking:**
Business Employment - 265 Spaces
Office Employment - 106
Total - 371

**Standard Parking Dimension Size :** 2.7m x 5.7m space

**Proposed Floor Area :** Office 1,800 sq m (19,400 sq ft)
Light Industrial / Industrial: 16,290 sq m (175,300 sq ft)

# Illustrative Concept Plan

## 50 Sherwood Heights Drive, Oakville

***FOR DEMONSTRATION PURPOSES ONLY - NOT SUBMITTED FOR APPROVAL**

GSP group

0 20 40 60 100 Meters

Scale 1:50,000 | February 18, 2022 | Project No.: 20297 | Drawn By: EF

## Appendix I

Regulatory Agency Correspondence

**Appendix D-2**

# Scoping and Terms of Reference Checklist

The **Scoping Checklist** provides a brief summary of components to be considered in the preparation of an EIA Terms of Reference. Scoping is to be completed in consideration of the following:

- Scope and scale of the proposed *development* or *site alteration*;
- Scope and scale of potential impacts resulting from the proposed *development* or *site alteration*;
- Sensitivity or complexity of the features on or adjacent to the proposed project to land use change and specific impacts associated with the proposed project;
- Surrounding land use context (e.g., existing *development*);

Depending on the items above, not all elements listed below will necessarily be required. Large projects, those with a higher risk of potential impact, and those with complex natural heritage features and functions will generally require a more comprehensive set of assessments, analyses, etc. Smaller scale projects with lower potential impacts and where natural heritage features and functions are less complex are suitable for a scoped EIA and a greater number of items may be 'scoped out' (i.e., not required). In all cases, some items listed below may not be required depending on the specific site conditions and project.

**Who Prepares the Checklist:** The checklist is to be completed by the Lead Planning Agency (or by their delegate or assign) with input from other agencies with jurisdiction within the subject property or features that triggered the EIA requirement.

**Who Uses the Checklist:** The scoping checklist is to be used by the EIA practitioner who will be preparing the EIA to inform the preparation of a Terms of Reference for submission, review and approval.

**When is the Checklist Completed?** The scoping checklist may be completed through Step 2 of the EIA Process (Scoping the EIA).

## **Part 1 –** Project Information

### 1-A | General Information

| | |
|---|---|
| Project Name: | 50 Sherwood Heights Drive |
| Proponent: | Infrastructure Ontario |
| Primary Contact: | Jordan Erasmus |
| Contact Information: | E:<br>P: |
| Project Location: | 50 Sherwood Heights Drive, Oakville<br>(Street Address or Legal Description) |
| Consultant: | GSP Group |
| Consultant Lead: | Eric Saulesleja |
| Contact Information: | E:<br>P: |

## 1-B | Project Type

- ☐ *Agricultural building* or structure within building cluster
- ☐ *Agricultural building* or structure outside building cluster
- ☐ Lot Severance for *single detached dwelling*
- ☐ New *single detached dwelling* on an existing lot
- ☐ New accessory structure (garage, shed, etc.)
- ☐ New accessory *development* (e.g., swimming pool, driveway)
- ☐ Re-build – same footprint
- ☐ Re-build – larger or altered footprint
- ☐ Addition to existing dwelling / structure
- ☐ Accessory re-*development* or modification (e.g., swimming pool, driveway)
- ☐ Septic system or other servicing
- ☒ Other *development* or *site alteration*. Specify:

# **Part 2** – Scoping of Inventories and Delineations


This section provides general guidance on what types of field inventories and feature delineations are anticipated to be required for the EIA. The proponent (or consultant) is to provide detailed description(s) of the proposed approach (survey type, specific methods, seasons, etc.), rationale and locations for surveys as part of a Draft Terms of Reference.

☒ ☐ Species at Risk

- ☒ ☐ Screening Assessment[19]
- ☐ ☐ Targeted surveys are anticipated to be required. To be confirmed through Screening Assessment and/ or in consultation with MECP, as appropriate

☒ ☒ *Significant Wildlife Habitat*

- ☒ ☒ Screening Assessment[20]
- ☐ ☐ Field program to address assessment of *Significant Wildlife Habitat*, as appropriate

☒ ☒ Terrestrial

- ☒ ☒ Ecological Land Classification (ELC) — ELC can be completed to the community level for adjacent areas.
- ☒ ☐ Botanical Inventory
- ☐ ☐ Significant woodland assessment[21]
- ☒ ☒ Avifauna (Birds)
  - ☒ ☐ In-Field Habitat Assessment
  - ☒ ☐ Incidental / General Observations[22]
  - ☐ ☐ Detailed or Targeted Survey(s)
- ☒ ☐ Herpetofauna (Amphibians and Reptiles)

[19] The Terms of Reference (TOR) is to include a preliminary Species at Risk (SAR) screening assessment to identify if any SAR have potential to occur within or adjacent to the study area within a distance appropriate to determine impacts to the species or influence of species presence on the proposed *development* or *site alteration*. This may include species listed Provincially (ESA 2007) or federally (SARA 2004), as applicable to the species type and project.

[20] A Screening Assessment for *Significant Wildlife Habitat* (SWH) includes a desktop and secondary-source level assessment of habitats present against criteria for SWH in the applicable Ecoregion Criteria Schedule for the Project. This assessment approach is suitable for identifying most candidate habitat areas (e.g., by vegetation community); for most SWH types this approach is not enough to confirm presence or absence. Where candidate areas may be impacted, additional field surveys to confirm will be required.

[21] A significant woodland assessment may require targeted field surveys to inform the assessment of significance (e.g., prism sweeps, forest patch age).

[22] This survey approach should be limited to only those projects with low risk of impact to this species group and where the potential presence of Species at Risk or *Significant Wildlife Habitat* is very low.

☒ ☐ In-Field Habitat Assessment
☒ ☐ Incidental / General Observations[21]
☐ ☐ Detailed or Targeted Survey(s)

☒ ☐ Mammals
☐ ☐ In-Field Habitat Assessment
☒ ☐ Incidental / General Observations
☐ ☐ Detailed or Targeted Survey(s)

☒ ☐ Terrestrial Crustaceans (e.g., chimney crawfish)
☒ ☐ In-Field Habitat Assessment
☒ ☐ Incidental / General Observations
☐ ☐ Detailed or Targeted Survey(s)

☒ ☐ Insects
☒ ☐ In-Field Habitat Assessment
☒ ☐ Incidental / General Observations
☐ ☐ Detailed or Targeted Survey(s)

☒ ☒ Aquatic
☒ ☒ In-Field Habitat Assessment / General Assessment
☐ ☐ Detailed / Targeted Survey(s)

Feature should be assessed after spring freshet, between late April-May and July-August to determine if there is habitat suitability for marsh dependent wildlife and fish.

☒ ☐ Delineation of Features[23]
☐ ☐ Woodland (If determined to be a *significant woodland*)
☒ ☐ Wetland
☐ ☐ Valleyland (Top of Bank / Slope)
☐ ☐ Other: _____

Delineation required if wetland meets the definition of NHS

## **Part 3 –** Other Studies[24]

[23] Where Species at Risk are found to occur, delineation of habitat will also be required, but cannot be known at the scoping stage. Delineation of habitat is to be done in consultation with, or be approved by the MECP, as appropriate.
[24] These studies are generally prepared as stand-alone reports. Relevant information on the interaction of these processes and functions with natural heritage features and functions is to be addressed in the EIS. It is strongly encouraged that the programs for these studies be integrated with the EIA Terms of Reference to ensure information appropriate to informing the EIA is collected.

☐ ☐ Geotechnical
- ☐ ☐ Secondary Source
- ☐ ☐ Study Required

☐ ☐ Hydrogeological
- ☐ ☐ Secondary Source
- ☐ ☐ Study Required

☐ ☐ Geomorphological
- ☐ ☐ Secondary Source
- ☐ ☐ Study Required

☒ ☐ Surface Water
- ☐ ☐ Secondary Source
- ☐ ☐ Study Required

Include information on stormwater and hydrologic drainage features.

☐ ☐ Natural Hazard(s)[25]
- ☐ ☐ Secondary Source
- ☐ ☐ Study Required

☐ ☐ Wetland Water Balance

☒ ☐ Other (specify): wetland assessment to confirm if it is part of the Regional NHS

## **Part 4 –** Terms of Reference Requirements

☒ Introduction
- ☒ Description of Subject Property
- ☒ Description of proposed d*evelopment* or *site alteration*
- ☒ Description of known site history pertinent to the EIA (e.g., former land use(s), grading, filling)
- ☒ Description of landscape context
- ☒ **Map**: location of subject property, orthophotography base.

☒ Planning Context
- ☒ Legislative, regulatory and policies applicable to the property and the proposed *development* or *site alteration*.
- ☒ Current land use designation and zoning
- ☒ Proposed land use designation and zoning to support proposed *development*

☒ Background Review
- ☒ List relevant natural heritage information secondary sources (e.g., species atlases, databases);
- ☒ List relevant existing studies, plans, etc. (if / as available).
- ☒ **Map**: location of subject property, mapped feature(s), orthophotography base.

☒ Biophysical Inventory
- ☒ Define and provide rationale for study area.
- ☒ Detailed study approach and methods for all identified inventories and delineations identified in **Part 2.** Where there is rationale to exclude a specific feature or area from assessment, provide rationale for consideration. Appropriate justification /

[25] This includes slopes, valleylands, steep and oversteep slopes, etc.

rationale for single-season or multi-season surveys shall be provided (e.g., vegetation community / ELC, wetland delineation, etc.)

- ⬓ **Map**: location of proposed surveys, subject property, proposed study area, orthophotography base.

⬓ Biophysical Analysis

*Describe the general approach and anticipated approach and/or method(s) of analyses for the following:*

- ⬓ Species at Risk:
  - ⬓ Preliminary screening assessment to be provided as part of the TOR. This will inform the field program.
- ⬓ *Significant Wildlife Habitat*:
  - ⬓ Preliminary screening assessment to be provided as part of the TOR. This will inform the field program.
- ⬓ Evaluation of significance for natural heritage species, features and/or areas within the study area against appropriate policies and guidelines[26];
- ☐ *Linkage* Assessment;
- ☐ Enhancement Area(s);
- ☐ Natural Hazards within the study area;
- ☐ *Buffer* assessment;

⬓ Alternative Assessment

*Outline approach to identifying or assessing alternatives to avoid or minimize impacts.*

⬓ Impact Assessment

*Confirm scope includes an impact assessment that will consider direct, indirect (including induced) and cumulative impacts and provide general approach to impact assessment.*

⬓ Mitigation

*Confirm scope includes identification of mitigation measures that effectively address anticipated impacts resulting from the proposed development or site alteration. Mitigation is to include recommendations for enhancement or restoration.*

☐ Monitoring Program

*If a monitoring program may be required, confirm that consideration and recommendations for a monitoring plan (or rationale that one is not required) will be included in the EIA.*

⬓ Recommendations and Conclusions

*Confirm that recommendations and conclusions with respect to the 'no negative impact' test will be included in the EIA.*

⬓ Maps and Figures

*Outline anticipated maps and figures to be prepared for and included in the EIA to document and support assessment(s), recommendations and conclusions.*

**Note**: Maps / figures may be combined for ease of production and review. The maps / figures listed are provided to illustrate the information that is to be included as part of the TOR submission.

[26] This may include local municipal, regional, provincial, federal legislation, policies, plans and guidance documents, as appropriate and applicable to the study area, project type, species and features.

## CHECKLIST COMPLETION RECORD

A record of the individuals who complete the checklist is provided below.

| COMPLETED BY: | | | |
|---|---|---|---|
| Name: | Elisa Bernier | Name: | Mark Andrews |
| Position | Planning Ecologist | Position | Planner, Natural Environment |
| Agency: | Conservation Halton | Agency: | Halton Region |
| Contact Information: | ebernier@hrca.on.c | Contact Information: | mark.andrews@ha |
| Date: | Nov 24th 2021 | Date: | November 29, 2021 |

## CHECKLIST COMPLETION RECORD (Continued)

| COMPLETED BY (Continued): | |
|---|---|
| Name: _____ | Name: _____ |
| Position _____ | Position _____ |
| Agency: | Agency: |
| Contact Information: | Contact Information: |
| Date: _____ | Date: _____ |

**From:** Pasquini-Smith, Alexsandria <Alex.Pasquini-Smith@halton.ca>
**Sent:** November 26, 2021 12:12 PM
**To:** Kelly, Tate <Tate.Kelly@infrastructureontario.ca>
**Cc:** Elisa Bernier <ebernier@hrca.on.ca>; Campbell, Michaela <Michaela.Campbell@halton.ca>; Colleen Bain <cbain@hrca.on.ca>; Tricia Collingwood <tricia.collingwood@oakville.ca>
**Subject:** RE: 50 Sherwood Heights Drive, Oakville



Hi Tate,

Thank you for your email. As you are aware, it was recently determined that the wetland was not regulated by Conservation Halton. However, it is still appropriate for the Region to require a Scoped EIA to ensure that the wetland is not consider “other wetlands” under Section 115.3 (6) of the ROP and to determine if it contributes to the RNHS and/or Key Features. Further, the scoped EIA would also look at potential significant wildlife habitat.

The EIA scoping checklist has been circulated and I anticipant that it should be provided to you shortly.

I trust this information is of assistance.

Thank you.

Alex

**Alexsandria Pasquini-Smith, MCIP, RPP**
**Intermediate Planner**
Planning Services
Legislative & Planning Services
**Halton Region**
905-825-6057 ext. 7185 | 1-866-442-5866

**Subject:** RE: Watercourse/ Drainage Feature Question - 50 Sherwood Heights Drive
**From:** Diana Friesen <diana.friesen@oakville.ca>
**Date:** 1/12/2021, 11:00 AM
**To:** 'Gina MacVeigh' <gmacveigh@nrsi.on.ca>
**CC:** Heinz Hecht <heinz.hecht@oakville.ca>, Philip Kelly <philip.kelly@oakville.ca>

Hi Gina,

Sorry for the delay and thanks for providing an updated map of the location of the property in question.

In regards to the drainage feature that you have identified as not regulated by the Conservation Authority, for any potential development on this parcel of land, this feature would need to be looked at as part of the sites stormwater management plan in accordance with the town's Development Engineering Procedures and Guidelines. Generally, for any new development, minor and major drainage would need to be controlled to predevelopment conditions. Existing drainage (up to and including the 100 year flows) would need to be safely conveyed through the property to an approved outlet in some form without impacting the property itself or surrounding properties.

I have cc'd our planning department as I would expect they are either already aware or should be made aware of this application submitted to remove the site from the Parkway Belt.

Regards,

---

**From:** Gina MacVeigh [mailto:gmacveigh@nrsi.on.ca]
**Sent:** Friday, December 18, 2020 12:04 PM
**To:** Diana Friesen <diana.friesen@oakville.ca>
**Subject:** Re: Watercourse/ Drainage Feature Question - 50 Sherwood Heights Drive



Hi Diana,

Thanks for responding. I have attached an updated map based on our site visit we completed in October.

Gina

Gina MacVeigh F.W.T.
Aquatic Biologist
**Natural Resource Solutions Inc.**
415 Phillip Street, Unit C
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@nrsinews Natural Resource Solutions Inc.
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On 12/18/2020 11:42 AM, Diana Friesen wrote:

> Hi Gina,

Can you provide a map with the specific boundaries of the parcel in question.

I'm off until the new year, so once we can get more detail on location, I will have a look into your request for info.

Thanks

Diana

**Diana Friesen**
**Water Resources Technologist**
**Development Services**
Town of Oakville | 905-845-6601, ext.3904 | www.oakville.ca

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**From:** Gina MacVeigh [mailto:gmacveigh@nrsi.on.ca]
**Sent:** Wednesday, December 16, 2020 3:45 PM
**To:** Diana Friesen <diana.friesen@oakville.ca>
**Subject:** Watercourse/ Drainage Feature Question - 50 Sherwood Heights Drive



Good afternoon Diana,

We are working with Infrastructure Ontario to complete a Constraints report for a 18.3acre property they have at 50 Sherwood Heights Drive. I have attached a map of the location. We obtained your information from Laura Head who is the regulations officer at CH.

The site is currently located in the Parkway Belt, but an application has been submitted to remove the site from the Parkway Belt, on the basis that the lands are no longer required for the purposes.

A watercourse or drainage feature has been identified on site and we were looking to understand if the Town of Oakville had any development constraints based on this feature. This feature is not considered to be a regulated watercourse by Conservation Halton.

We understand that the Town has a by-law for the protection of watercourses and that there is potential to help assess the watercourse and determine what its function/purpose is and whether it needs to be maintained, or if it can be replicated otherwise.

If you are not the right contact, I would appreciate any guidance in who should be contacted.

Thanks,

Gina

--

Gina MacVeigh F.W.T.
Aquatic Biologist
**Natural Resource Solutions Inc.**
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(p) 519-725-2227 Ext. 405 (f) 519-725-2575
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@nrsinews Natural Resource Solutions Inc.
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Attachments:

NRSI_2494_Map1_ExistingConditions_3K_2020_12_18_GKMmodified.pdf 624 KB

**Subject:** Canceled: Wetland Staking Sherwood Heights
**From:** Elisa Bernier <ebernier@hrca.on.ca>
**Date:** 10/7/2021, 8:38 AM
**To:** Colleen Bain <cbain@hrca.on.ca>, Elaine Gosnell <egosnell@nrsi.on.ca>, Gina MacVeigh <gmacveigh@nrsi.on.ca>, "Amy.Emm@infrastructureontario.ca" <Amy.Emm@infrastructureontario.ca>, "Stephen.Lougheed@infrastructureontario.ca" <Stephen.Lougheed@infrastructureontario.ca>

**Elisa Bernier has canceled this event: Canceled: Wetland Staking Sherwood Heights**

Title: Canceled: Wetland Staking Sherwood Heights

Location: Sherwood Heights ISO lands

When: Friday, October 8, 2021 1:00 PM – 2:00 PM

Organizer: Elisa Bernier <ebernier@hrca.on.ca>

Description: Hello,
Thank you for providing us the soil pit information. Based on the vegetation composition being composed predominantly of phragmites, the size of the actual wetland feature and the lack of hydric soils throughout, CH will not be regulating this feature as a wetland. I am cancelling the Friday wetland staking because of these findings.

Please note that this feature may still provide hydrologic and ecological functions that should be assessed in accordance with municipal natural heritage policies.

Cheers,
Elisa

Attendees:
Colleen Bain <cbain@hrca.on.ca>
Elaine Gosnell <egosnell@nrsi.on.ca>
Gina MacVeigh <gmacveigh@nrsi.on.ca>
Amy.Emm@infrastructureontario.ca <Amy.Emm@infrastructureontario.ca>
Stephen.Lougheed@infrastructureontario.ca <Stephen.Lougheed@infrastructureontario.ca>

**Subject:** RE: 50 Sherwood Heights Drive, Oakville Development Constraints proj2494
**From:** Laura Head <lhead@hrca.on.ca>
**Date:** 1/18/2021, 1:43 PM
**To:** Elaine Gosnell <egosnell@nrsi.on.ca>

Hi Elaine,

There are no size restrictions for individual wetlands to be considered regulated. I don't think we would be looking to complex any of the wetlands in this area. The definition of wetland within our policy is;

> "wetland" means land that,
> (a) is seasonally or permanently covered by shallow water or has a water table close to or at its surface,
> (b) directly contributes to the hydrological function of a watershed through connection with a surface watercourse,
> (c) has hydric soils, the formation of which has been caused by the presence of abundant water, and
> (d) has vegetation dominated by hydrophytic plants or water tolerant plants, the dominance of which has been favoured by the presence of abundant water,
>
> but does not include periodically soaked or wet land that is used for agricultural purposes and no longer exhibits a wetland characteristic referred to in clause (c) or (d).

The process for identifying these features is indicated below. We would not be able to assess the feature and stake any wetland until the middle of June (wetland staking from June to October).

> **2.7 Limit of Wetland**
> The wetland limit is to be established in the field in conjunction with Conservation Halton staff, staff from the local municipality (if necessary) and the applicant. If the applicant is other than the landowner, permission must be received from the landowner prior to staking the wetland. When staking the limit of the wetland, staff of Conservation Halton will require that the applicant's surveyor be in attendance during the site walk.

CH regulates any development 30 metres from wetlands less than two hectares in size and regulates 120 metres from wetlands greater than two hectares and Provincially Significant Wetlands. Once the feature is assessed in the field, a staking, if required, can be completed. Once this is completed we can determine if the feature will be regulated in the future.

Regards,
Laura Head

---

**From:** Elaine Gosnell <egosnell@nrsi.on.ca>
**Sent:** January 11, 2021 10:34 AM
**To:** Laura Head <lhead@hrca.on.ca>
**Subject:** Re: 50 Sherwood Heights Drive, Oakville Development Constraints proj2494

Thank you. Does CH have any area requirements for a wetland to be regulated? OWES uses 2ha as a cut off for including a wetland in a complex, but if there are special features present, it can be considered as a reason for including smaller wetlands. The wetland on-site is less than 1ha.

Elaine Gosnell B.Sc. P.Biol.
Senior Terrestrial and Wetland Biologist
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On 1/8/2021 12:30 PM, Laura Head wrote:

Hi Elaine,

CH ecology staff use OWES to determine if it meets the definition of a wetland and should be regulated.

Laura

---

**From:** Elaine Gosnell <egosnell@nrsi.on.ca>
**Sent:** January 8, 2021 10:14 AM
**To:** Laura Head <lhead@hrca.on.ca>
**Subject:** Re: 50 Sherwood Heights Drive, Oakville Development Constraints proj2494

Hello Laura,

Thanks for getting back to me. Can you give me some details on how staff determine if it is to be regulated? I'd like to advise the client as soon as possible as to how likely it is to be regulated. I would be happy to discuss on the phone if that is easier.

Thanks,

Elaine

On 2021-01-07 2:55 p.m., Laura Head wrote:

> Hi Elaine,
>
> I had a chance to speak with the Regulations group based on that discussion I have the following.
>
> CH's site visit would confirm whether the feature would be a regulated wetland or not. If it is determined to be a regulated wetland, it would have to remain as is and any development on the property would have to meet CH policies (development setbacks, restoration, and/or technical studies). If the feature was determined to not be a regulated wetland, it could be removed. CH does not have policies that support the removal or interference of regulated wetlands.
>
> Laura
>
> ---
>
> **From:** Elaine Gosnell <egosnell@nrsi.on.ca>
> **Sent:** January 7, 2021 11:08 AM
> **To:** Laura Head <lhead@hrca.on.ca>
> **Subject:** Re: 50 Sherwood Heights Drive, Oakville Development Constraints proj2494

Hello Laura,

Happy new year and I hope you had a good holiday! Can you get back to me about this property and the wetland?

Thank you,

Elaine

On 2020-12-21 8:44 a.m., Elaine Gosnell wrote:

> Hi Laura,
>
> As I mentioned in our phone call last week, attached is a map showing the IO property at Sherwood Heights and the natural features that we have observed. I GPS'd the boundary of the wetland and the drainage course on December 14, when it was snow free. The wetland is a Phragmites dominated stand with some areas of cattail and purple loosestrife.
>
> I would appreciate hearing back from you and your team about the wetland, whether it would be regulated, what policies apply to it, if it can be removed or altered.
>
> We will contact the Town regarding the drainage feature.
>
> Thank you.

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On 12/16/2020 11:50 AM, Laura Head wrote:

> Hi Elaine,
>
> That works for me, please call me at 905-336-1158 extension 2333.
>
> Thanks.

**From:** Elaine Gosnell <egosnell@nrsi.on.ca>
**Sent:** December 16, 2020 11:47 AM
**To:** Laura Head <lhead@hrca.on.ca>
**Subject:** Re: 50 Sherwood Heights Drive, Oakville Development Constraints proj2494

Hi Laura,

Can I give you a call at 12? It shouldn't take long. Do I use your office number? Thank you.

Elaine

On 2020-12-15 2:56 p.m., Laura Head wrote:

> Hi Elaine,
>
> My apologies for the delay. I'm available for a call tomorrow between 8:30-10:30 and 11:30 - 2:30 and Friday between 8:30 - 10:30 and 12:30 and 3:30.
>
> Thanks,
> Laura

> **From:** Elaine Gosnell <egosnell@nrsi.on.ca>
> **Sent:** December 11, 2020 12:48 PM
> **To:** Laura Head <lhead@hrca.on.ca>
> **Cc:** Michelle Caissie <mcaissie@hrca.on.ca>
> **Subject:** Re: 50 Sherwood Heights Drive, Oakville Development Constraints proj2494
>
> Hello Laura,
>
> Thank you for your response. Is there a good time that I can give you a call to discuss a bit further?
>
> Thanks,
>
> Elaine
>
> On 2020-11-04 1:43 p.m., Laura Head wrote:
>
> > Hi Elaine,
> >
> > I've reviewed CH's Approximate Regulation Limit mapping and can confirm this property is not regulated by Conservation Halton. The water

features you notice onsite are not considered regulated watercourses; they are likely drainage features. I recommend contacting the Town of Oakville's Development Engineering Department to understand if they have any development constraints based on these features.

Similarly, the wetlands are not indicated on CH mapping. If there is a desire to have these features formally assessed by Conservation Halton, we would do this through a pre-consultation process; wetlands would be assessed and staked if necessary during the wetland staking season (typically June to October).

If there are any questions, please let me know.

Regards,

**Laura Head**
Regulations Officer

**Conservation Halton**
2596 Britannia Road West, Burlington, ON L7P 0G3
905.336.1158 ext. 2333 | Fax 905.336.6684 | lhead@hrca.on.ca
conservationhalton.ca

4816844
607538

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**From:** Michelle Caissie <mcaissie@hrca.on.ca>
**Sent:** November 2, 2020 2:11 PM
**To:** Laura Head <lhead@hrca.on.ca>
**Subject:** FW: 50 Sherwood Heights Drive, Oakville Development Constraints proj2494

**From:** Elaine Gosnell <egosnell@nrsi.on.ca>
**Sent:** November 2, 2020 2:04 PM
**To:** Envserv <envserv@hrca.on.ca>
**Subject:** 50 Sherwood Heights Drive, Oakville Development Constraints proj2494

Hello,

I am working for Infrastructure Ontario to determine natural environment constraints on a parcel of land located at 50 Sherwood Heights Drive in Oakville. The lands are within the Parkway Belt but an application to have them removed has been submitted to MMAH. MTO considers the lands to be surplus and IO is investigating other higher uses for the lands and is carrying out due diligence activities to determine its development potential. A map showing the property is attached to this email.

I visited the site in early October and found the property to be mostly cultural meadow with stands of buckthorn and sumac. There are 3 areas that have been colonized by Phragmites

australis, 2 of which are upland stands as determined by soils and other vegetation in those areas. The third area of Phragmites is approximately 0.7ha in size and contains other wetland plant species. This wetland is unmapped on the CH website, and it appears to have developed due to disturbance on the site and a poor drainage outlet. Drainage from this wetland flows into a watercourse which is mapped by CH as an intermittent drain. The wetland and watercourse are not within the mapped regulation limit.

I have a few questions to determine the extent of constraints on this site.

Do you have any information on the watercourse - is it permanent or intermittent, is there anything known about its thermal regime? Would this watercourse be regulated?

I have reviewed CH policies and I am wondering what the status of this wetland area is? Do the policies apply to Phragmites dominated stands that are small, and have developed as a result of human disturbance?

Please feel free to contact me by email or cell phone to discuss.

Thank you,
Elaine Gosnell

--

Elaine Gosnell B.Sc. P.Biol.
Senior Terrestrial and Wetland Biologist
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## Appendix II

Species at Risk and Species of Conservation Concern Screening

| Scientific Name | Common Name | S-RANK[1] | SARO[1] | COSEWIC[2] | SARA[2] | SARA Schedule[2] | Observed by NRSI | Habitat Requirements | Suitable Habitats within Subject Property | Carried Forward to EIS? | Rationale |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Birds** | | | | | | | | | | | |
| *Ammodramus savannarum* | Grasshopper Sparrow | S4B | SC | SC | SC | Schedule 1 | No | Well-drained grassland or prairie with low cover of grasses, taller weeds or sandy soil; hayfields or weedy fallow fields; uplands with ground vegetation of various densities. Requires perches for singing and tracts of grassland generally >5ha.[3,4] | No | No | Though potentially suitable habitat was identified during pre-screening, no observations were made during targetted surveys. |
| *Antrostomus vociferus* | Eastern Whip-poor-will | S4B | THR | T | T | Schedule 1 | No | Areas with a mix of open and forested areas, such as open woodlands, savannas, pine plantations, woodland edges, or openings in more mature deciduous, coniferous and mixed forests. Forages in open areas and uses forested areas for roosting and nesting.[3,4] | No | No | No suitable habitat is present within the subject property. |
| *Centronyx henslowii* | Henslow's Sparrow | S1B | END | E | E | Schedule 1 | No | Large, fallow, grassy area with ground mat of dead vegetation, dense herbaceous vegetation, ground litter and some song perches; neglected weedy fields; wet meadows; cultivated uplands. Requires a minimum tract of grassland of 40 ha, but usually in areas >100 ha.[3,4] | No | No | No suitable habitat is present within the subject property. |
| *Chaetura pelagica* | Chimney Swift | S3B | THR | T | T | Schedule 1 | Yes | Commonly found in urban areas near buildings; nests in chimneys, hollow trees,and crevices of rock cliffs. Feeds over open water.[3,4] | No | No | Though Chimney Swift was observed during breeding bird surveys, no suitable habitat exists within the subject property. No evidence of breeding was observed. |
| *Chordeiles minor* | Common Nighthawk | S4B | SC | SC | T | Schedule 1 | No | Open ground; clearings in dense forests (including burns and logged areas); rock barrens; peat bogs; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.[3,4] | No | No | No suitable habitat is present within the subject property. |
| *Colinus virginianus* | Northern Bobwhite | S1?B | END | E | E | Schedule 1 | No | Grassland, prairie or hay fields with woody cover in form of thickets, tangles of vines, shrubs; fence rows or woodland edges; cropland growing corn, soybeans or small grains and clover or grass; well-drained sandy or loamy soil; pond edges.[3,4] | No | No | No suitable habitat is present within the subject property. |
| *Contopus virens* | Eastern Wood-pewee | S4B | SC | SC | SC | Schedule 1 | No | Mid-canopy layer of forest clearings and edges of deciduous and mixed forest. Abundant in intermediate-age mature forest stands with little understory vegetation.[3,4] | No | No | No forests are present within the subject property |
| *Dolichonyx oryzivorus* | Bobolink | S4B | THR | T | T | Schedule 1 | No | Large (>10 ha), open expansive grasslands, pastures, hayfields, meadows or fallow fields with dense ground cover. Occassionally nest in large (>50 ha) fields of winter wheat and rye in southwestern Ontario. [3,4] | No | No | No suitable sized habitat is present within the subject property. |
| *Hirundo rustica* | Barn Swallow | S4B | THR | SC | T | Schedule 1 | Yes | Farmlands, rural areas and other open or semi-open areas near body of water. Nests almost exclusively on human-made structures such as open barns, buildings, bridges and culverts.[3,4] | No | No | Foraging habitat is present throughout the subject property, however, no suitable nesting locations are present. |
| *Hylocichla mustelina* | Wood Thrush | S4B | SC | T | T | Schedule 1 | No | Carolinian and Great Lakes-St. Lawrence forest zones. Undisturbed moist mature deciduous or mixed forest with deciduous sapling growth. Near pond or swamp. Must have some trees higher than 12 m.[3,4] | No | No | No forests are present within the subject property. |
| *Riparia riparia* | Bank Swallow | S4B | THR | T | T | Schedule 1 | No | Nests in burrows in natural and human-made settings with vertical faces in silt and sand deposits. Ususally on banks of river and lakes, but also found in sand and gravel pits.[3,4] | No | No | No steep banks are present within the subject property. |

| Scientific Name | Common Name | S-RANK[1] | SARO[1] | COSEWIC[2] | SARA[2] | SARA Schedule[2] | Observed by NRSI | Habitat Requirements | Suitable Habitats within Subject Property | Carried Forward to EIS? | Rationale |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Sturnella magna* | Eastern Meadowlark | S4B, S3N | THR | T | T | Schedule 1 | No | Open pastures, hayfields, grasslands or grassy meadows with elevated singing perches (small trees, shrubs or fence posts). Also weedy borders of croplands, roadsides, orchards, airports, shrubby overgrown fields or other open areas. Generally prefers larger tracts of habitat >10 ha, but will sometimes use smaller tracts.[3,4] | No | No | Though potentially suitable habitat was identified during pre-screening, no observations were made during targetted surveys. |
| **Herpetofauna** | | | | | | | | | | | |
| **Turtles** | | | | | | | | | | | |
| *Chelydra serpentina* | Snapping Turtle | S4 | SC | SC | SC | Schedule 1 | No | Slow-flowing rivers and streams, lakes, and permanent or semi-permanent wetlands with soft substrates and vegetation. Key habitat requirements: open areas with structures for basking, open sand or gravel areas for nesting, shallow areas with soft substrates to bury in, soft banks or substrates for hibernation.[3] | No | No | No suitable habitat is present within the subject property. |
| *Graptemys geographica* | Northern Map Turtle | S3 | SC | SC | SC | Schedule 1 | No | Large bodies of water such as rivers and lakes with soft bottoms, aquatic vegetation, abundant mollusc prey, and basking structures such as logs or rocks. Nesting occurrs in open areas with soft substrates such as sand or gravel. Hibernate on the bottom of deep areas of lakes or deep, slow-moving sections of rivers.[3] | No | No | No suitable habitat is present within the subject property. |
| **Snakes** | | | | | | | | | | | |
| **Salamanders** | | | | | | | | | | | |
| **Frogs and Toads** | | | | | | | | | | | |
| *Pseudacris triseriata* pop.1 | Western Chorus Frog (Great Lakes - St. Lawrence - Canadian Shield population) | S4 | NAR | T | T | Schedule 1 | No | Moist forest, prairie, meadows, cultural meadows, or marshes. Breeds in shallow, temporary, fishless wetlands, including flooded ditches, marshes, flooded fields, pastures, temporary ponds, pools, and swamps. Hibernates in terrestrial habitats under rocks, logs, leaf litter, loose soil, or in animal burrows.[21] | No | No | No suitable habitat is present within the subject property. |
| **Mammals** | | | | | | | | | | | |
| *Myotis lucifungus* | Little Brown Myotis | S3 | END | E | E | Schedule 1 | No | Uses caves, quarries, tunnels, hollow trees or buildings for roosting. Winters in humid caves. Maternity sites in dark warm areas such as attics and barns. Feeds primarily in wetlands and forest edges.[3,4] | No | No | No suitable habitat is present within the subject property. |
| *Myotis septentrionalis* | Northern Myotis | S3 | END | E | E | Schedule 1 | No | Roosts in houses and man-made structures but prefers hollow trees or under loose bark. Hibernates in mines or caves. Hunts within forest, below the canopy.[3,4] | No | No | No suitable habitat is present within the subject property. |
| **Butterflies** | | | | | | | | | | | |
| *Danaus plexippus* | Monarch | S2N, S4B | SC | END | SC | Schedule 1 | Yes | Adults found in a diversity of habitats with a variety of wildflowers. Caterpillars are confined to meadows and open areas where milkweeds grow (larval food plants).[3] | No | No | Though larval food plant is present within the subject property, and individuals were observed, the subject property does not support adequate food sources for Monarch breeding. |
| *Erynnis martialis* | Mottled Duskywing | S2 | END | E | NS | No Schedule | No | Dry habitats with sparse vegetation, including open barrens, sandy patches among woodlands, and alvars. In Ontario, eggs are deposited only on New Jersey Tea (*Ceanothus americanus*) and Prairie Redroot (*Ceanothus herbaceus*).[3] | No | No | No suitable habitat is present within the subject property. |
| *Pieris virginiensis* | West Virginia White | S3 | SC | | | | No | Rich, moist, deciduous woods with populations of Two-leaved Toothwort (*Cardimine diphylla*; larval food plant).[3] | No | No | No suitable habitat is present within the subject property. |

## Appendix III

Significant Wildlife Habitat Screening

**Significant Wildlife Habitat Assessment Tables**

**Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Subject Property |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Waterfowl Stopover and Staging Areas (Terrestrial)** | | | | | |
| Rationale:<br>Habitat important to migrating waterfowl | American Black Duck<br>Northern Pintail<br>Gadwall<br>Blue-winged Teal<br>Green-winged Teal<br>American Wigeon<br>Northern Shoveler<br>Tundra Swan | CUM1<br>CUT1<br>- Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.<br>- Fields with seasonal flooding and waste grain in the Long Point, Rondeau, Lake. St. Clair, Grand Bend and Pt. Pelee areas may be important to Tundra Swans. | Fields with sheet water during Spring (mid March to May).<br>• Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl.<br>• Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available[cxlviii]<br><br>Information Sources<br>• Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence.<br>• Reports and other information available from Conservation Authorities (CAs)<br>• Sites documented through waterfowl planning processes (eg. EHJV implementation plan)<br>• Field Naturalist Clubs<br>• Ducks Unlimited Canada<br>• Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area | Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]<br>• Any mixed species aggregations of 100[i] or more individuals required.<br>• The area of the flooded field ecosite habitat plus a 100-300m radius buffer dependant on local site conditions and adjacent land use is the significant wildlife habitat[cxlviii].<br>• Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates).<br>• SWHMIST[cxlix] Index #7 provides development effects and mitigation measures. | Suitable habitat not present, site located in an urban area surrounded by the QEW and residential development. **Not SWH.** |
| **Wildlife Habitat: Waterfowl Stopover and Staging Areas (Aquatic)** | | | | | |

**Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Subject Property |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| Rationale:<br>Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district | Canada Goose<br>Cackling Goose<br>Snow Goose<br>Green-winged Teal<br>American Black Duck<br>Northern Pintail<br>Northern Shoveler<br>American Wigeon<br>Gadwall<br>Blue-winged Teal<br>Hooded Merganser<br>Common Merganser<br>Red-breasted Merganser<br>Lesser Scaup<br>Greater Scaup<br>Common Goldeneye<br>Bufflehead<br>Long-tailed Duck<br>Surf Scoter<br>White-winged Scoter<br>Black Scoter<br>Canvasback<br>Redhead<br>Ruddy Duck<br>Brant<br>White-winged Scoter<br>Black Scoter | MAS1<br>MAS2<br>MAS3<br>SAS1<br>SAM1<br>SAF1<br>SWD1<br>SWD2<br>SWD3<br>SWD4<br>SWD5<br>SWD6<br>SWD7 | • Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify.<br>• These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water).<br><br>Information Sources<br>• Environment Canada<br>• Naturalist clubs often are aware of staging/stopover areas<br>• OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging.<br>• Sites documented through waterfowl planning processes (eg. EHJV implementation plan)<br>• Ducks Unlimited projects<br>• Element occurrence specification by Nature Serve: http://www.natureserve.org<br>• Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area | Studies carried out and verified presence of:<br>• Aggregations of 100[i] or more of listed species for 7 days[i], results in >700 waterfowl use days.<br>• Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH[cxlix]<br>• The combined area of the ELC ecosites and a 100m radius area is the SWH[cxlviii]<br>• Wetland area and shorelines associated with sites identified within the SWHTG[cxlviii] Appendix K[cxlix] are significant wildlife habitat.<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]<br>• Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded).<br>• SWHMIST[cxlix] Index #7 provides development effects and mitigation measures. | Suitable habitat is not present within the subject property. Highly urban setting reduces viability of this feature being present. **Not SWH.** |

**Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Subject Property |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Shorebird Migratory Stopover Area** | | | | | |
| Rationale:<br>High quality shorebird stopover habitat is extremely rare and typically has a long history of use | Greater Yellowlegs<br>Lesser Yellowlegs<br>Marbled Godwit<br>Hudsonian Godwit<br>Black-bellied Plover<br>American Golden-Plover<br>Semipalmated Plover<br>Solitary Sandpiper<br>Spotted Sandpiper<br>Semipalmated Sandpiper<br>Pectoral Sandpiper<br>White-rumped Sandpiper<br>Baird's Sandpiper<br>Least Sandpiper<br>Purple Sandpiper<br>Stilt Sandpiper<br>Short-billed Dowitcher<br>Red-necked Phalarope<br>Whimbrel<br>Ruddy Turnstone<br>Sanderling<br>Dunlin | BBO1<br>BBO2<br>BBS1<br>BBS2<br>BBT1<br>BBT2<br>SDO1<br>SDS2<br>SDT1<br>MAM1<br>MAM2<br>MAM3<br>MAM4<br>MAM5 | Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats.<br><br>Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH.<br><br>Information Sources<br>• Western hemisphere shorebird reserve network<br>• Canadian Wildlife Service (CWS) Ontario Shorebird Survey<br>• Bird Studies Canada<br>• Ontario Nature<br>• Local birders and naturalist clubs<br>• Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area | Studies confirming:<br>• Presence of 3 or more of listed species and > 1000[f] shorebird use days during spring or fall migration period (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period).<br>• Whimbrel stop briefly (<24hrs) during spring migration, any site with >100[f] Whimbrel used for 3 years or more is significant.<br>• The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area[cxlviii]<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]<br>• SWHMIST[cxlix] Index #8 provides development effects and mitigation measures. | Suitable habitat is not present within the subject property.<br>**Not SWH.** |
| **Wildlife Habitat: Raptor Wintering Area** | | | | | |

**Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Subject Property |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| Rationale:<br>Sites used by multiple species, a high number of individuals and used annually are most significant | Rough-legged Hawk<br>Red-tailed Hawk<br>Northern Harrier<br>American Kestrel<br>Snowy Owl<br><br>Special Concern:<br>Short-eared Owl<br>Bald Eagle | Hawks/Owls:<br>Combination of ELC Community Series; need to have present one Community Series from each land class.<br>Forest:<br>FOD, FOM, FOC<br><br>Upland:<br>CUM, CUT, CUS, CUW<br><br>Bald Eagle:<br><br>Forest Community Series: FOD, FOM, FOC, SWD, SWM, or SWC, on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area). | The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors.<br><br>Raptor wintering (hawk/owl) sites need to be > 20ha[cxlviii, cxlix] with a combination of forest and upland[xvi, xvii, xviii, xix, xx, xxi].<br><br>Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands[cxlix]<br><br>Field area of the habitat is to be wind swept with limited snow depth or accumulation.<br><br>Eagle sites have open water and large trees and snags aviable for roosting[cxlix]<br><br>Information Sources<br>• OMNRF Districts<br>• Natural clubs<br>• Natural Heritage Information Centre (NHIC) Raptor Winter Concentration Area<br>• Data from Bird Studies Canada<br>• Reports and other information available from CAs<br>• Results of Christmas Bird Counts | Studies confirm the use of these habitats by:<br>• One or more Short-eared Owls, or, One of more Bald Eagles or; at least 10 individuals and two listed hawk/owl species<br>• To be significant a site must be used regularly (3 in 5 years)[cxlix] for a minimum of 20 days by the above number of birds[j].<br>• The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area.<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]<br>• SWHMIST[cxlix] Index #10 and #11 provides development effects and mitigation measures. | Lack of suitable size of forest and open area does not support Raptor Wintering Area habitat. Highly urban setting reduces viability of this feature being present. **Not SWH.** |

**Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Subject Property |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Bat Hibernacula** | | | | | |
| Rationale:<br>Bat hibernacula, are rare habitats in all Ontario landscapes. | Big Brown Bat<br>Eastern Pipistrelle/Tri-colored Bat | Bat Hibernacula may be found in these ecosites:<br>CCR1<br>CCR2<br>CCA1<br>CCA2<br>(Note: buildings are not considered to be SWH) | Hibernacula may be found in caves, mine shafts, underground foundations and Karsts.<br><br>Active mine sites should not be considered<br><br>The locations of bat hibernacula are relatively poorly known.<br><br>Information Sources<br>• OMNRF for possible locations and contact for local experts<br>• Natural Heritage Information Centre (NHIC) Bat Hibernaculum<br>• Ministry of Northern Development and Mines for location of mine shafts<br>• Clubs that explore caves (eg. Sierra Club)<br>• University Biology Departments with bat experts | • All sites with confirmed hibernating bats are SWH[í].<br>• The area includes 200m radius around the entrance of the hibernaculum[cxlviii, ccvii, í]. for the development types and 1000m for wind farms [ccv.]<br>• Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the[ccv]."Bats and Bat Habitats: Guidelines for Wind Power Projects" [ccv]<br>• SWHMIST[cxlix] Index #1 provides development effects and mitigation measures. | No caves, mineshafts, or other appropriate habitat is present within the subject property. **Not SWH.** |
| **Wildlife Habitat: Bat Maternity Colonies** | | | | | |
| Rationale:<br>Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes. | Big Brown Bat<br>Silver-haired Bat | Maternity colonies considered SWH are found in forested Ecosites.<br><br>All ELC Ecosites in ELC Community Series:<br>FOD<br>FOM<br>SWD<br>SWM | Maternity colonies can be found in tree cavities, vegetation and often in building [sxxii, xxv, xxvi, xxvii, xxxi] (buildings are not considered to be SWH).<br>• Maternity roosts are not found in caves and mines in Ontario[xxii].<br>• Maternity colonies located in Mature deciduous or mixed forest stands[ccix, ccx] with >10/ha large diameter (>25cm dbh) wildlife trees[ccvii].<br>• Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3[ccxiv] or class 1 or 2[ccxii].<br>• Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred[ccx].<br><br>Information Sources<br><br>• OMNRF for possible locations and contact for local experts<br>• University Biology Departments with bat experts | Maternity Colonies with confirmed use by:<br>• >10 Big Brown Bats[í]<br>• >5 Adult Female Silver-haired Bats[í]<br>• The area of the habitat includes the entire woodland or the forest stand ELC Ecosite containing the maternity colonies[í].<br>• Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"[ccv].<br>• SWHMIST[cxlix] Index #12 provides development effects and mitigation measures. | Subject property is open lands, with no forested areas. Not suitable for Bat Maternity Colonies. **Not SWH.** |

**Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Subject Property |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Bat Migratory Stopover Area** | | | | | |
| | Hoary Bat<br>Eastern Red Bat<br>Silver-haired Bat | No specific ELC types. | Long distance migratory bats typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migrations concentrate these species of bats at stopover areas. The location and characteristics of stopover habitats are generally unknown.<br><br>Information Sources<br>• OMNR for possible locations and contact for local experts<br>• University of Waterloo, Biology Department | Long Point (42°35'N, 80°30'E to 42°33'N, 80°03'E) has been identified as a significant stop-over habitat for fall migrating Silver-haired Bats, due to significant increases in abundance, activity and feeding that was documented during fall migration[ccxv].<br>• The confirmation criteria and habitat areas for this SWH are still being determined.<br>• SWHDSS[cxlix] Index #38 provides development effects and mitigation measures. | SWH is undefined. Due to the lack of natural habitat and urban nature of the surrounding area, it is highly unlikely this feature is present.<br>**Not SWH.** |
| **Wildlife Habitat: Turtle Wintering Area** | | | | | |
| **Rationale:**<br>Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant. | Midland Painted Turtle<br><br>Special Concern:<br>Northern Map Turtle<br>Snapping Turtle | Snapping and Midland Painted Turtles:<br>ELC Community Classes: SW, MA, OA and SA<br>ELC Community Series: FEO and BOO<br><br>Northern Map Turtle: Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat. | • For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates.<br><br>• Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen[cix, cx, cxi, cxviii].<br><br>• Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH<br><br>Information Sources<br>• EIS studies carried out by Conservation Authorities<br>• Field naturalists clubs<br>• OMNRF Ecologist or Biologist<br>• Natural Heritage Information Centre (NHIC) | • Presence of 5 over-wintering Midland Painted Turtles is significant[i].<br>• One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant[i].<br>• The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH.<br>• Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – Apr)[cvii]. Congregation of turtles is more common where wintering areas are limited and therefore significant[cix, cx, cxi, cxii].<br>• SWHMIST[cxlix] Index #28 provides development effects and mitigation measures for turtle wintering habitat. | Suitable habitat is not present within the subject property.<br>**Not SWH.** |

**Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Subject Property |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Reptile Hibernaculum** | | | | | |
| Rationale:<br>Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant | Snakes:<br>Eastern Gartersnake<br>Northern Watersnake<br>Northern Red-bellied Snake<br>Northern Brownsnake<br>Smooth Green Snake<br>Northern Ring-necked Snake<br><br>Special Concern:<br>Milksnake<br>Eastern Ribbonsnake | For all snakes, habitat may be found in any ecosite in southern Ontario other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats.<br><br>Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator. The existence of rock piles or slopes, stone fences, and crumbling foundations assist in identifying candidate SWH. | For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural locations. Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line[xliv, l, li, lii, cxii]. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover.<br><br>Information Sources<br>• In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells).<br>• Reports and other information available from CAs<br>• Local naturalists and experts, as well as university herpetologists may also know where to find some of these sites.<br>• Natural Heritage Information Centre (NHIC) | Studies confirming:<br>• Presence of snake hibernacula used by a minimum of five individuals of a snake sp., or, individuals of two or more snake spp.<br>• Congregations of a minimum of five individuals of a snake sp., or, individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct)[i].<br>• Note: If there are Special Concern Species present, then site is SWH<br>• Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30m buffer is the SWH[i].<br>• SWHMIST[cxlix] Index #13 provides development effects and mitigation measures for snake hibernacula. | Suitable habitat is not present within the subject property. No areas of hibernacula were observed during thesite visits. **Not SWH.** |
| **Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)** | | | | | |
| Rationale:<br>Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario. | Cliff Swallow<br>Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies) | Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles<br>Cliff faces, bridge abutments, silos, barns<br><br>Habitat found in the following ecosites:<br>CUM1 CUT1<br>CUS1 BLO1<br>BLS1 BLT1<br>CLO1 CLS1<br>CLT1 | • Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area.<br>• Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles.<br>• Does not include a licensed/permitted Mineral Aggregate Operation.<br><br>Information Sources<br>• Reports and other information available from CAs<br>• Ontario Breeding Bird Atlas[ccv].<br>• Bird Studies Canada: Nature Counts http://www.birdscanada.org/birdmon/<br>• Field Naturalist clubs | Studies confirming:<br>• Presence of 1 or more nesting sites with 8[cxlvix] or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season.<br>• A colony identified as SWH will include a 50m radius habitat area from the peripheral nests[ccvii].<br>• Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi].<br>• SWHMIST[cxlix] Index #4 provides development effects and mitigation measures. | Suitable habitat is not present throughout the subject property. **Not SWH.** |

**Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Subject Property |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)** | | | | | |
| Rationale:<br>Large colonies are important to local bird population, typically sites are only known colony in area and are used annually. | Great Blue Heron<br>Black-crowned Night-Heron<br>Great Egret<br>Green Heron | SWM2 SWM3<br>SWM5 SWM6<br>SWD1 SWD2<br>SWD3 SWD4<br>SWD5 SWD6<br>SWD7 FET1 | • Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used.<br>• Most nests in trees are 11 to 15 m from ground, near the top of the tree.<br><br>Information Sources<br>• Ontario Breeding Bird Atlas[ccv], colonial nest records.<br>• Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF).<br>• Natural Heritage Information Centre (NHIC) Mixed Wader Nesting Colony<br>• Aerial photographs can help identify large heronries.<br>• Reports and other information available from CAs<br>• MNRF District Offices<br>• Field naturalist clubs | Studies confirming:<br>• Presence of 2 or more active nests of Great Blue Heron or other list species.<br>• The habitat extends from the the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH[cc, ccvii].<br>• Confirmation of active colonies must be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells<br>• SWHMIST[cxlix] Index #5 provides development effects and mitigation measures. | Suitable habitat is not present throughout the subject property. **Not SWH.** |
| **Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Ground)** | | | | | |
| Rationale:<br>Colonies are important to local bird population, typically sites are only known colony in area and are used annually. | Herring Gull<br>Great Black-backed Gull<br>Little Gull<br>Ring-billed Gull<br>Common Tern<br>Caspian Tern<br>Brewer's Blackbird | Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map).<br><br>Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird)<br><br>MAM1 – 6<br>MAS1 – 3<br>CUM<br>CUT<br>CUS | • Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas.<br>• Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands.<br><br>Information Sources<br>• Ontario Breeding Bird Atlas[ccv], rare/colonial species records.<br>• Canadian Wildlife Service<br>• Reports and other information available from CAs<br>• Natural Heritage Information Centre (NHIC) Colonial Waterbird Nesting Area<br>• MNRF District Offices<br>• Field naturalist clubs | Studies confirming:<br>• Presence of >25 active nests for Herring Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern[i].<br>• Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant[i].<br>• Presence of 5 or more pairs for Brewer's Blackbird[i].<br>• The edge of the colony and a minimum 150m radius area of the habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH[cc, ccvii].<br>• Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi].<br>• SWHMIST[cxlix] Index #6 provides development effects and mitigation measures. | Suitable habitat is not present throughout the subject property. **Not SWH.** |

**Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Subject Property |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Migratory Butterfly Stopover Areas** | | | | | |
| Rationale:<br>Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter | Painted Lady<br>Red Admiral<br><br>Special Concern:<br>Monarch | Combination of ELC Community Series; need to have present one Community Series from each landclass:<br><br>Field:<br>CUM<br>CUT<br>CUS<br><br>Forest:<br>FOC FOD<br>FOM CUP<br><br>Anecdotally, a candidate sight for butterfly stopover will have a history of butterflies being observed. | A butterfly stopover area will be a minimum of 10ha in size with a combination of field and forest habitat present, and will be located within 5km of Lake Ontario and Erie[cxlix].<br>• The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south [xxxii, xxxiii, xxxiv, xxxv, xxxvi].<br>• The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat [cxlviii, cxlix].<br>• Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes [xxxvii, xxxviii, xxxix, xl, xli].<br><br>Information Sources<br>• MNRF District Offices<br>• Natural Heritage Information Centre (NHIC)<br>• Agriculture Canada in Ottawa may have list of butterfly experts.<br>• Field Naturalist Clubs<br>• Toronto Entomologists Association<br>• Conservation Authorities | Studies confirm:<br>• The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct)[xliii]. MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day[xxxvii], significant variation can occur between years and multiple years of sampling should occur[xl, xlii].<br>• Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD<br>• MUD of >5000 or >3000 with the presence of Painted Ladies or White Admiral's is to be considered significant[i].<br>• SWHMIST[cxlix] Index #16 provides development effects and mitigation measures. | The subject property is >5km from Lake Ontario. It is within a largely urban and disturbed area and not suitable as this SWH type. **Not SWH.** |
| **Wildlife Habitat: Landbird Migratory Stopover Areas** | | | | | |

**Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Subject Property |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| Rationale:<br>Sites with a high diversity of species as well as high numbers are most significant | All migratory songbirds<br><br>Canadian Wildlife Service Ontario website:<br>http://www.on.ec.gc.ca/wildlife_e.html<br><br>All migrant raptors species<br><br>Ontario Ministry of Natural Resources:<br>Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors) | All Ecosites associated with these ELC Community Series:<br>FOC<br>FOM<br>FOD<br>SWC<br>SWM<br>SWD | Woodlots need to be >5 ha[i] in size and within 5km [iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv] of Lake Ontario and Erie. If woodlands are rare in an area of shoreline, woodland fragments 2-5ha can be considered for this habitat<br>• If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Erie or Ontario are more significant[cxlix].<br>• Sites have a variety of habitats: forest, grassland and wetland complexes[cxlix].<br>• The largest sites are more significant[cxlix]<br>• Woodlots and forest fragments are important habitats to migrating birds[ccxviii], these features located along the shore and located within 5km of Lake Ontario and Lake Erie are Candidate SWH[cxlviii].<br><br>Information Sources<br>• Bird Studies Canada<br>• Ontario Nature<br>• Local birders and naturalist clubs<br>• Ontario Important Bird Areas (IBA) Program | Studies confirm:<br>• Use of the habitat by >200 birds/day and with >35 spp. with at least 10 bird spp. recorded on at least 5 different survey dates[i]. This abundance and diversity of migrant bird species is considered above average and significant.<br>• Studies should be completed during spring (March/May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi].<br>• SWHMIST[cxlix] Index #9 provides development effects and mitigation measures. | The subject property is >2km of Lake Ontario and does not contain any woodlots. Suitable habitat is not present within the subject property.<br>**Not SWH.** |

**Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Subject Property |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Deer Winter Congregation Areas** | | | | | |
| Rationale:<br>Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions [cxlviii] | White-tailed Deer | All Forested Ecosites with these ELC Community Series:<br>FOC<br>FOM<br>FOD<br>SWC<br>SWM<br>SWD<br><br>Conifer plantations (CUP) smaller than 50 ha may also be used. | • Woodlots >100 ha in size or if large woodlots are rare in a planning area woodlots>50ha[í].<br>• Deer movement during winter in Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands[cxlviii].<br>• Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha[ccxxiv].<br>• Woodlots with high densities of deer due to artificial feeding are not significant[í].<br><br>Information Sources<br>• MNRF District Offices<br>• LIO/NRVIS | Studies confirm:<br>• Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF[cxlviii].<br>• Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF[í].<br>• Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques[ccxxiv], ground or road surveys, or a pellet count deer density survey[ccxxv].<br>• SWHMIST[cxlix] Index #2 provides development effects and mitigation measures. | Suitable habtiat is not present within the subject property.<br>**Not SWH.** |

**Significant Wildlife Habitat Assessment Tables**

**Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.**

| Rare Vegetation Community[1] | Candidate SWH | | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|
| | ELC Ecosite Codes[1] | Habitat Description[1] | Detailed Information and Sources[1] | Defining Criteria[1] | Assessment Details |
| **Cliff and Talus Slopes** | | | | | |
| Rationale:<br>Cliffs and Talus Slopes are extremely rare habitats in Ontario. | Any ELC Ecosite within Community Series:<br><br>TAO CLO<br>TAS CLS<br>TAT CLT | A Cliff is vertical to near vertical bedrock >3m in height.<br><br>A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris. | Most cliff and talus slopes occur along the Niagara Escarpment.<br><br>Information Sources<br>• The Niagara Escarpment Commission has detailed information on location of these habitats.<br>• OMNRF Districts<br>• Natural Heritage Information Centre (NHIC) has location information available on their website<br>• Field naturalist clubs<br>• Conservation Authorities | • Confirm any ELC Vegetation Type for Cliffs or Talus Slopes[lxxviii]<br><br>• SWHMIST[cxlix] Index #21 provides development effects and mitigation measures. | Cliffs and/or talus slopes are not present within the subject property. **Not SWH.** |
| **Sand Barrens** | | | | | |
| Rationale:<br>Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry. | ELC Ecosites:<br>SBO1<br>SBS1<br>SBT1<br><br>Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%. | Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%. | A sand barren area >0.5ha in size<br><br>Information Sources<br>• OMNRF Districts<br>• Natural Heritage Information Centre (NHIC) has location information available on their website<br>• Field naturalist clubs<br>• Conservation Authorities | • Confirm any ELC Vegetation Type for Sand Barrens[lxxviii]<br>• Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotics sp)[i].<br>• SWHMIST[cxlix] Index #20 provides development effects and mitigation measures. | Sand barrens are not present within the subject property. **Not SWH.** |

**Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.**

| Rare Vegetation Community[1] | Candidate SWH | | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|
| | ELC Ecosite Codes[1] | Habitat Description[1] | Detailed Information and Sources[1] | Defining Criteria[1] | Assessment Details |
| **Alvar** | | | | | |
| Rationale:<br>Alvars are extremely rare habitats in Ecoregion 7E | ALO1<br>ALS1<br>ALT1<br>FOC1<br>FOC2<br>CUM2<br>CUS2<br>CUT2-1<br>CUW2<br><br>**Five Alvar Indicator Species:**<br>1) Carex crawei<br>2) Panicum philadelphicum<br>3) Eleocharis compressa<br>4) Scutellaria parvula<br>5) Trichostema brachiatum<br><br>These indicator species are very specific to Alvars within Ecoregion 7E[cxlix] | An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover[lxxviii]. | An Alvar site > 0.5ha in size[lxxv].<br>Alvar is particularly rare in Ecoregion 7E where the only known sites are found in the western islands of Lake Erie[cxcix].<br><br>Information Sources<br>• Alvars of Ontario (2000), Federation of Ontario Naturalists[lxxvi].<br>• Ontario Nature – Conserving Great Lakes Alvars[ccviii].<br>• Natural Heritage Information Centre (NHIC) has location information available on their website<br>• OMNRF Staff<br>• Field Naturalist clubs<br>• Conservation Authorities | Field studies identify four of the five **Alvar indicator species**[lxxv] at a candidate Alvar site is Significant<br>• Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics).<br>• The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses[lxxv].<br>• SWHMIST[cxlix] Index #17 provides development effects and mitigation measures. | Alvars are not present within the subject property. **Not SWH.** |
| **Old Growth Forest** | | | | | |
| Rationale:<br>Due to historic logging practices and land clearance for agriculture, old growth forest is rare in Ecoregion 7E. | Forest Community Series:<br>FOD<br>FOC<br>FOM<br>SWD<br>SWC<br>SWM | Old growth forests are characterized by heavy mortality or turnover of overstorey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris. | Woodland area is >0.5ha<br><br>Information Sources<br>• OMNRF Forest Resource Inventory mapping<br>• OMNRF Districts<br>• Field naturalist clubs<br>• Conservation Authorities<br>• Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations.<br>• Municipal forestry departments | Field Studies will determine:<br>• If dominant trees species of the ecosite are >140 years old, then stand is Significant Wildlife Habitat[cxlviii].<br>• The forested area containing the old growth characteristics will have experienced no recognizable forestry activities [cxlviii] (cut stumps will not be present)<br>• Determine ELC Vegetation Type for forest area containing the old growth characteristics[lxxviii].<br>• SWHMIST[cxlix] Index #23 provides development effects and mitigation measures. | Old growth forest is not present within the subject property. **Not SWH.** |

**Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.**

| Rare Vegetation Community[1] | Candidate SWH | | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|
| | ELC Ecosite Codes[1] | Habitat Description[1] | Detailed Information and Sources[1] | Defining Criteria[1] | Assessment Details |
| **Savannah** | | | | | |
| Rationale:<br>Savannahs are extremely rare habitats in Ontario. | TPS1<br>TPS2<br>TPW1<br>TPW2<br>CUS2 | A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.<br><br>In Ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario)[cc]. | No minimum size to site[l]<br>Site must be restored or a natural site.<br>Remnant sites such as railway right of ways are not considered to be SWH.<br><br>Information Sources<br>• OMNRF Districts<br>• Natural Heritage Information Centre (NHIC) has location data available on their website<br>• Field naturalists clubs<br>• Conservation Authorities | Field studies confirm one or more of the Savannah indicator species listed in[lxxv] Appendix N should be present[l]. Note: Savannah plant spp. list from Ecoregion 7E should be used.<br><br>• Area of the ELC Vegetation type is the SWH[lxxviii].<br><br>• Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics).<br><br>• SWHMIST[cxlix] Index #18 provides development effects and mitigation measures. | Savannah is not present within the subject property. **Not SWH.** |
| **Tallgrass Prairie** | | | | | |
| Rationale:<br>Tallgrass Prairies are extremely rare habitats in Ontario. | TPO1<br>TPO2 | A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover.<br><br>In Ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario)[cc]. | No minimum size to site[l]. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH.<br><br>Information Sources<br>• Natural Heritage Information Centre (NHIC has location information available on their website<br>• OMNRF Districts<br>• Field naturalists clubs<br>• Conservation Authorities | Field studies confirm one or more of the Prairie indicator species listed in[lxxv] Appendix N should be present[l]. Note: Prairie plant spp. list from Ecoregion 7E should be used.<br><br>• Area of the ELC Vegetation Type is the SWH[lxxviii].<br><br>• Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics).<br><br>• SWHMIST[cxlix] Index #19 provides development effects and mitigation measures. | Tallgrass prairie is not present within the subject property. **Not SWH.** |

**Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.**

| Rare Vegetation Community[1] | Candidate SWH | | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|
| | ELC Ecosite Codes[1] | Habitat Description[1] | Detailed Information and Sources[1] | Defining Criteria[1] | Assessment Details |
| **Other Rare Vegetation Communities** | | | | | |
| Rationale:<br>Plant communities that often contain rare species which depend on the habitat for survival. | Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG[cxlviii]. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH. | Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps. | ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M[cxlviii].<br><br>The OMNRF/NHIC will have up to date listing for rare vegetation communities.<br><br>Information Sources<br>• Natural Heritage Information Centre (NHIC) has location information available on their website<br>• OMNRF Districts<br>• Field naturalists clubs<br>• Conservation Authorities | Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG[cxlviii].<br><br>• Area of the ELC Vegetation Type polygon is the SWH.<br><br>• SWHMIST[cxlix] Index #37 provides development effects and mitigation measures. | No rare vegetation communities identified through the initial site visit. Site has a history of disturbance and is dominated by cultural and non-native vegetation. **Not SWH.** |

**Significant Wildlife Habitat Assessment Tables**

**Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Waterfowl Nesting Area** | | | | | |
| Rationale:<br>Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant | American Black Duck<br>Northern Pintail<br>Northern Shoveler<br>Gadwall<br>Blue-winged Teal<br>Green-winged Teal<br>Wood Duck<br>Hooded Merganser<br>Mallard | All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH:<br>MAS1 MAS2<br>MAS3 SAS1<br>SAM1 SAF1<br>MAM1 MAM2<br>MAM3 MAM4<br>MAM5 MAM6<br>SWT1 SWT2<br>SWD1 SWD2<br>SWD3 SWD4<br><br>**Note: includes adjacency to Provincially Significant Wetlands** | A waterfowl nesting area extends:<br>120m[cxlix] from a wetland (>0.5ha) or a wetland (>0.5ha) with small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120m of each individual wetland where waterfowl nesting is known to occur[cxlix].<br>• Upland areas should be at least 120m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests.<br>• Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites.<br><br>Information Sources<br>• Ducks Unlimited staff may know the locations of particularly productive nesting sites.<br>• OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat.<br>• Reports and other information available from CAs | Studies confirmed:<br>• Presence of 3 or more nesting pairs for listed species excluding Mallards[i], or,<br>• Presence of 10 or more nesting pairs for listed species including Mallards[j].<br>• Any active nesting site of an American Black Duck is considered significant.<br>• Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]<br>• A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120m[cxlviii] from the wetland and will provide enough habitat for waterfowl to successfully nest.<br>• SWHMIST[cxlix] Index #25 provides development effects and mitigation measures. | Suitable wetland habitat is not present within the subject property. **Not SWH.** |
| **Wildlife Habitat: Bald Eagle and Osprey Nesting, Foraging and Perching Habitat** | | | | | |

**Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| Rationale:<br>Nest sites are fairly uncommon in Ecoregion 7E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat. | Osprey<br><br>Special Concern:<br>Bald Eagle | ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands. | Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water.<br><br>Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy.<br><br>Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms).<br><br>Information Sources<br>• Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario<br>• MNRF values information (LIO/NRVIS) will list known nesting locations, Note: data from NRVIS is provided as a point format and does not include all the habitat.<br>• Nature Counts, Ontario Nest Records Scheme data<br>• OMNRF Districts<br>• Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented<br>• Reports and other information available from CAs<br>• Field naturalists clubs | Studies confirm the use of these nests by:<br>• One or more active Osprey or Bald Eagle nests in an area[cxlviii].<br>• Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH.<br>• For an Osprey, the active nest and a 300m radius around the nest or the contiguous woodland stand is the SWH[ccvii], maintaining undisturbed shorelines with large trees within this area is important[cxlviii].<br>• For a Bald Eagle the active nest and a 400-800m radius around the nest is the SWH[cvi, ccvii]. Area of the habitat from 400-800m is dependant on site lines from the nest to the development and inclusion of perching and foraging habitat[cvi].<br>• To be significant a site must be used annually. When found inactive, the site must be known to be inactive for ≥3 years or suspected of not being used for >5 years before being considered not significant[ccvii].<br>• Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August.<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]<br>• SWHMIST[cxlix] Index #26 provides development effects and mitigation measures. | No water features or forested areas are present within the subject property. **Not SWH.** |

**Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Woodland Raptor Nesting Habitat** | | | | | |
| Rationale:<br>Nests sites for these species are rarely identified; these area sensitive habitats are often used annually by these species. | Northern Goshawk<br>Cooper's Hawk<br>Sharp-shinned Hawk<br>Red-shouldered Hawk<br>Barred Owl<br>Broad-winged Hawk | May be found in all forested ELC Ecosites.<br><br>May also be found in SWC, SWM, SWD and CUP3 | All natural or conifer plantation woodland/forest stands combined >30ha or with >4ha of interior habitat[lxxxviiii, lxxxix, xc, xci, xciii, xciv, xcv,xcvi, cxxxiii]. Interior habitat determined with a 200m buffer[cxlviii].<br>• Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands.<br>• In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.<br><br>Information Sources<br>• OMNRF Districts<br>• Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented.<br>• Check data from Bird Studies Canada<br>• Reports and other information available from CAs | Studies confirm:<br>• Presence of 1 or more active nests from species list is considered significant[cxlviii].<br>• Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha of habitat is the SWH[ccvii].(the 28ha habitat area would be applied where optimal habitat is irregularly shaped around the nest)<br>• Barred Owl – A 200m radius around the nest is the SWH[ccvii].<br>• Broad-winged Hawk and Coopers Hawk – A 100m radius around the nest is the SWH[ccvii].<br>• Sharp-Shinned Hawk – A 50m radius around the nest is the SWH[ccvii].<br>• Conduct field investigations from early March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area.<br>• SWHMIST[cxlix] Index #27 provides development effects and mitigation measures. | Suitable habitat is not present within the subject property. **Not SWH.** |
| **Wildlife Habitat: Turtle Nesting Area** | | | | | |
| Rationale:<br>These habitats are rare and when identified will often be the only breeding site for local populations of turtles. | Midland Painted Turtle<br><br>Special Concern:<br>Northern Map Turtle<br>Snapping Turtle | Exposed mineral soil (sand or gravel) areas adjacent (<100m)[cxlviii] or within the following ELC Ecosites:<br>MAS1<br>MAS2<br>MAS3<br>SAS1<br>SAM1<br>SAF1<br>BOO1<br>FEO1 | • Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals.<br>• For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH.<br>• Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.<br><br>Information Sources<br>• Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels).<br>• Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them.<br>• Natural Heritage Information Center (NHIC)<br>Field naturalist clubs | Studies confirm:<br>• Presence of 5 or more nesting Midland Painted Turtles[i]<br>• One or more Northern Map Turtle or Snapping Turtle nesting is a SWH[i]<br>• The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH[cxlviii].<br>• Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat[cxlix].<br>• Field investigations should be conducted in prime nesting season typically late spring to early summer. Observation studies observing the turtles nesting is a recommended method.<br>• SWHMIST[cxlix] Index #28 provides development effects and mitigation measures for turtle nesting habitat. | No suitable turtle habitat is present on the subject property or adjacent. Subject property is located in highly disturbed and urban landscape. **Not SWH**. |

**Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Seeps and Springs** | | | | | |
| Rationale:<br>Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams | Wild Turkey<br>Ruffed Grouse<br>Spruce Grouse<br>White-tailed Deer<br>Salamander spp. | Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs. | Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system[cxvii, cxlix].<br>• Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species[cxlix, cxx, cxxi, cxxii, cxiii, cxiv].<br><br>Information Sources<br>• Topographical Map<br>• Thermography<br>• Hydrological surveys conducted by CAs and MOE<br>• Field naturalists and landowners<br>• Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped | Field Studies confirm:<br>• Presence of a site with 2 or more[j] seeps/springs should be considered SWH.<br>• The area of a ELC forest ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation of the habitat[cxlviii].<br>• SWHMIST[cxlix] Index #30 provides development effects and mitigation measures. | No seepages or forest present within the subject property. **Not SWH.** |
| **Wildlife Habitat: Amphibian Breeding Habitat (Woodland)** | | | | | |
| Rationale:<br>These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations | Eastern Newt<br>Blue-spotted Salamander<br>Spotted Salamander<br>Gray Treefrog<br>Spring Peeper<br>Western Chorus Frog<br>Wood Frog | All Ecosites associated with these ELC Community Series:<br>FOC<br>FOM<br>FOD<br>SWC<br>SWM<br>SWD<br><br>Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians. | • Presence of a wetland, pond or woodland pool (including vernal pools) >500m$^2$ (about 25m diameter) [ccvii] within or adjacent (within 120m) to a woodland (no minimum size)[clxxxii, lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx]. Some small wetlands may not be mapped and may be important breeding pools for amphibians.<br>• Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat[cxlviii].<br><br>Information Sources<br>• Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records<br>• Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property.<br>• OMNRF Districts and wetland evaluations<br>• Field naturalist clubs<br>• Canadian Wildlife Service Amphibian Road Call Survey<br>• Ontario Vernal Pool Association: http://www.ontariovernalpools.org | Studies confirm:<br>• Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3.<br>• A combination of observational study and call count surveys [cviii] will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands.<br>• The habitat is the wetland area plus a 230m radius of woodland area[lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx, lxxi]. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat.<br>• SWHMIST[cxlix] Index #14 provides development effects and mitigation measures. | No woodlands are present on the property or adjacent. Suitable habitat is not present within the subject property. **Not SWH.** |

**Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Amphibian Breeding Habitat (Wetland)** | | | | | |
| Rationale:<br>Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario Landscapes | Eastern Newt<br>American Toad<br>Spotted Salamander<br>Four-toed Salamander<br>Blue-spotted Salamander<br>Gray Treefrog<br>Western Chorus Frog<br>Northern Leopard Frog<br>Pickerel Frog<br>Green Frog<br>Mink Frog<br>Bullfrog | ELC Community Classes SW, MA, FE, BO, OA and SA.<br><br>Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands. | • Wetlands >500m$^2$ (about 25m diameter)[ccvii] supporting high species diversity are significant: some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats[clxxxiv].<br>• Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators.<br>• Bullfrogs require permanent water bodies with abundant emergent vegetation.<br><br>Information Sources<br>• Ontario Herpetofaunal Summary Atlas (or other similar atlases)<br>• Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count.<br>• OMNRF Districts and wetland evaluations<br>• Reports and other information available from CAs | Studies confirm:<br>• Presence of breeding population of 1or more of the listed newt/salamander species or 2 or more of the listed frog or toad species and with at least 20 breeding individuals (adults and eggs masses)[lxxi, lxxiii] or 2 or more of the listed frog/toad species with Call Level of 3. or; Wetland with confirmed breeding Bullfrogs are significant[l].<br>• The ELC ecosite wetland area and the shoreline are the SWH.<br>• A combination of observational study and call count surveys cviii to determine breeding/larval stages will be required during the spring (May March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands.<br>• If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule.<br>• SWHMIST[cxlix] Index #15 provides development effects and mitigation measures. | No evidence of breeding amphibians was observed during targetted surveys. **Not SWH.** |
| **Wildlife Habitat: Woodland Area-Sensitive Bird Breeding Habitat** | | | | | |
| Rationale:<br>Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds. | Yellow-bellied Sapsucker<br>Red-breasted Nuthatch<br>Veery<br>Blue-headed Vireo<br>Northern Parula<br>Black-throated Green Warbler<br>Blackburnian Warbler<br>Black-throated Blue Warbler<br>Ovenbird<br>Scarlet Tanager<br>Winter Wren<br>Pileated Woodpecker<br><br>Special Concern:<br>Cerulean Warbler<br>Canada Warbler | All Ecosites associated with these ELC Community Series:<br>FOC<br>FOM<br>FOD<br>SWC<br>SWM<br>SWD | • Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs. old) forest stands or woodlots >30ha[cv, cxxxi, cxxxii, cxxxiii, cxxxiv, cxxxv, cxxxvi, cxxxvii, cxxxviii, cxxxix, cxl, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cl, cli, clii, cliii, cliv, clv, clvi, clvii, clviii, clix].<br>• Interior forest habitat is at least 200m from forest edge habitat[clxiv].<br><br>Information Sources<br>• Local birder clubs<br>• Canadian Wildlife Service (CWS) for the location of forest bird monitoring<br>• Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species.<br>• Reports and other information available from CAs | Studies confirm:<br>• Presence of nesting or breeding pairs of 3 or more of the listed wildlife species[l].<br>• Note: any site with breeding Cerulean Warblers or Canada Warbler is to be considered SWH[l].<br>• Conduct field investigations in early summer when birds are singing and defending their territories.<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]<br>• SWHMIST[cxlix] Index #34 provides development effects and mitigation measures. | No woodlands present on property. Suitable habitat is not present within the subject property. **Not SWH.** |

**Significant Wildlife Habitat Assessment Tables**

**Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Marsh Bird Breeding Habitat** | | | | | |
| Rationale:<br>Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes. | American Bittern<br>Virginia Rail<br>Sora<br>Common Gallinule<br>American Coot<br>Pied-billed Grebe<br>Marsh Wren<br>Sedge Wren<br>Common Loon<br>Green Heron<br>Trumpeter Swan<br><br>Special Concern:<br>Black Tern<br>Yellow Rail | MAM1<br>MAM2<br>MAM3<br>MAM4<br>MAM5<br>MAM6<br>SAS1<br>SAM1<br>SAF1<br>FEO1<br>BOO1<br><br>For Green Heron:<br>All SW, MA and CUM1 sites | • Nesting occurs in wetlands<br>• All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present[cxxiv].<br>• For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water.<br><br>Information Sources<br>• OMNRF Districts and wetland evaluations<br>• Field naturalist clubs<br>• Natural Heritage Information Centre (NHIC)<br>• Reports and other information available from CAs<br>• Ontario Breeding Bird Atlas[ccv] | Studies confirm:<br>• Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or breeding by any combination of 4 or more of the listed species[i].<br>• Note: any wetland with breeding of 1 or more Trumpeter Swans, Black Terns, Green Heron or Yellow Rail is SWH[i].<br>• Area of the ELC ecosite is the SWH<br>• Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats.<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]<br>• SWHMIST[cxlix] Index #35 provides development effects and mitigation measures | Suitable habitat is not present within the subject property. Phragmites wetland on site not suitable. **Not SWH.** |
| **Wildlife Habitat: Open Country Bird Breeding Habitat** | | | | | |
| Rationale:<br>This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records. | Upland Sandpiper<br>Grasshopper Sparrow<br>Vesper Sparrow<br>Northern Harrier<br>Savannah Sparrow<br><br>Special Concern:<br>Short-eared Owl | CUM1<br>CUM2 | Large grassland areas (includes natural and cultural fields and meadows) >30ha[clx, clxi, clxii, clxiii, clxiv, clxv, clxvi, clxvii, clxviii, clxix]. Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years)[i].<br><br>Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older.<br><br>The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species.<br><br>Information Sources<br>• Agricultural land classification maps Ministry of Agriculture<br>• Local birder clubs<br>• Ontario Breeding Bird Atlas[ccv]<br>• EIS Reports and other information available from CAs | Field Studies confirm:<br>• Presence of nesting or breeding of 2 or more of the listed species[i].<br>• A field with 1 or more breeding Short-eared Owls is to be considered SWH.<br>• The area of SWH is the contiguous ELC ecosite field areas.<br>• Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories.<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]<br>• SWHMIST[cxlix] Index #32 provides development effects and mitigation measures | The subject property does not meet the size requirement of >30ha. Additional spring surveys will confirm. **Not SWH.** |

**Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Shrub/Early Successional Bird Breeding Habitat** | | | | | |
| Rationale:<br>This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records. | Indicator Spp:<br>Brown Thrasher<br>Clay-coloured Sparrow<br><br>Common Spp.<br>Field Sparrow<br>Black-billed Cuckoo<br>Eastern Towhee<br>Willow Flycatcher<br><br>Special Concern:<br>Yellow-breasted Chat<br>Golden-winged Warbler | CUT1<br>CUT2<br>CUS1<br>CUS2<br>CUW1<br>CUW2<br><br>Patches of shrub ecosites can be complexed into a larger habitat such as woodland area for some bird species. | Large natural field areas succeeding to shrub and thicket habitats >10ha[clxiv] in size. Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years)[i].<br><br>Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species[clxxiii].<br><br>Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands.<br><br>Information Sources<br>• Agricultural land classification maps, Ministry of Agriculture.<br>• Local bird clubs<br>• Ontario Breeding Bird Atlas[ccv]<br>• Reports and other information available from CAs | Field Studies confirm:<br>• Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species[i].<br>• A field with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat[i].<br>• The area of the SWH is the contiguous ELC ecosite field/thicket area.<br>• Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]<br>• SWHMIST[cxlix] Index #33 provides development effects and mitigation measures. | The subject property and adjacent lands contain thicket and meadow which combined could meet the size requirement of >10ha. None of the indicator species were observed during breeding bird surveys. **Not SWH.** |
| **Wildlife Habitat: Terrestrial Crayfish** | | | | | |
| Rationale:<br>Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. [Ccii] | Chimney or Digger Crayfish (*Fallicambarus fodiens*)<br><br>Devil Crawfish or Meadow Crayfish (*Cambarus Diogenes*) | MAM1<br>MAM2<br>MAM3<br>MAM4<br>MAM5<br>MAM6<br>MAS1<br>MAS2<br>MAS3<br>SWD<br>SWT<br>SWM<br><br>CUM1 with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish | Wet meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish.<br>• Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water.<br>• Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed.<br><br>Information Sources<br>• Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998. | Studies Confirm:<br>• Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable marsh meadow or terrestrial sites[cci].<br>• Area of ELC Ecosite or an ecoelement area of meadow marsh or swamp within the large ecosite area is the SWH<br>• Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult [cci]<br>• SWHMIST[cxlix] Index #36 provides development effects and mitigation measures. | No suitable habitat is found within the subject property. **Not SWH.** |

**Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Special Concern and Rare Wildlife Species** | | | | | |
| Rationale:<br>These species are quite rare or have experienced significant population declines in Ontario | All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre (NHIC). | All plant and animal element occurrences (EO) within a 1 or 10km grid.<br><br>Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy. | When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites[bxviii].<br><br>Information Sources<br>• Natural Heritage Information Centre (NHIC) will have the Special Concern and Provincially Rare (S1-S3, SH) species lists and element occurrences for these species.<br>• NHIC Website: "Get Information" http://nhic.mnr.gov.on.ca<br>• Ontario Breeding Bird Atlas[ccv]<br>• Expert advice should be sought as many of the rare spp. have little information available about their requirements. | Studies Confirm:<br>• Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable.<br>• The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat neess to be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat for foraging habitat.<br>• SWHMIST[cxlix] Index #37 provides development effects and mitigation measures. | Species of special concern observed lacked any adequate habitat within the subject property.<br>**Not SWH.** |

**Significant Wildlife Habitat Assessment Tables**

**Table 5. Characteristics of Animal Movement Corridors for Ecoregion 7E.**

| | Wildlife Species[1] | Candidate SWH | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|
| | | ELC Ecosite Codes[1] | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **Wildlife Habitat: Amphibian Movement Corridors** | | | | | |
| Rationale:<br>Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations. | Eastern Newt<br>American Toad<br>Blue-spotted Salamander<br>Spotted Salamander<br>Four-toed Salamander<br>Gray Treefrog<br>Northern Leopard Frog<br>Pickerel Frog<br>Western Chorus Frog | Corridors may be found in all ecosites associated with water.<br>• Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1. | Movement corridors between breeding habitat and summer habitat[clxxiv, clxxv, clxxvi, clxxvii, clxxviii, clxxix, clxxx, clxxxi]<br><br>Movement corridors must be considered when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat – Wetland) of this Schedule[i].<br><br>Information Sources<br>• MNRF District Office<br>• Natural Heritage Information Centre NHIC<br>• Reports and other information available from CAs<br>• Field naturalist Clubs | • Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites.<br>• Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant[cxlix].<br><br>• Corridors should have at least 15m of vegetation on both sides of waterwaycxlix or be up to 200m widecxlix of woodland habitat and with gaps <20m[cxlix]<br>• Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat[cxlix].<br>• SWHMIST[cxlix] Index #40 provides development effects and mitigation measures. | Suitable habtiat is not present within the subject property.<br>**Not SWH.** |

**Significant Wildlife Habitat Assessment Tables**

**Table 6. Exceptions for Ecodistricts within Ecoregion 6E.**

| | Wildlife Habitat and Species | Candidate SWH | | | Confirmed SWH | Study Area |
|---|---|---|---|---|---|---|
| | | Ecosites | Habitat Description | Habitat Criteria and Information Sources[1] | Defining Criteria[1] | Assessment Details |
| **EcoDistrict** | | | | | | |
| **7E-2** | Bat Migratory<br><br>Stopover Area Rationale:<br>Stopover areas for long distance migrant bats are important during fall migration.<br><br>Hoary Bat<br>Eastern Red Bat<br>Silver-haired Bat | No specific ELC types | | • Long distance migratory bats typically migrate during late summer and early fall migrating summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migration may concentrate these species of bats at stopover areas.<br>• This is the only known bat migratory stopover habitats based on current information.<br><br><u>Information Sources</u><br>• OMNRF for possible locations and contact for local experts<br>• University of Waterloo, Biology Department | • Long Point (42°35'N, 80°30'E, to 42°33'N, 80°03'E) has been identified as a significant stop-over habitat for fall migrating Silver-haired bats, due to significant increases in abundance, activity and feeding that was documented during fall migration[ccxv].<br>• The confirmation criteria and habitat areas for this SWH are still being determined.<br>• SWHMIST[cxlix] Index #38 provides development effects and mitigation measures | Suitable habitat is not present within the subject property. **Not SWH.** |

## Appendix IV

Vascular Flora Species Reported from the Study Area

**Plant Species Reported from the Study Area - IO Sherwood Heights, Oakville (Project #2494)**

| Scientific Name | Common Name | SRANK | SARO | COSEWIC | SARA | SARA Schedule | Ecodistrict 7E-4 (GTA) | NHIC Data* | NRSI Observed | CUM1-1 | CUT1 | MAM2 | CUT1-4 | CUT1-1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MNRF 2021a | MNRF 2021a | Government of Canada 2021 | Government of Canada 2021 | Government of Canada 2021 | Oldham 2017 | MNRF 2021b | NRSI Results From 2021 | | | | | |
| *Isoetes x robusta* | *(Isoetes echinospora X Isoetes septentrior* | SNA | | | | | | | | | | | | |
| **Gymnosperms** | **Conifers** | | | | | | | | | | | | | |
| **Cupressaceae** | **Cypress Family** | | | | | | | | | | | | | |
| *Juniperus virginiana* | Eastern Red Cedar | S5 | | | | | U | | X | X | X | | | |
| **Dicotyledons** | **Dicots** | | | | | | | | | | | | | |
| **Aceraceae** | **Maple Family** | | | | | | | | | | | | | |
| *Acer saccharum* | Sugar Maple | S5 | | | | | C | | X | | X | | | |
| **Anacardiaceae** | **Sumac or Cashew Family** | | | | | | | | | | | | | |
| *Rhus typhina* | Staghorn Sumac | S5 | | | | | C | | X | X | X | | | X |
| *Toxicodendron radicans* | Poison Ivy | S5 | | | | | | | X | X | | | X | |
| *Toxicodendron radicans var. rydbergii* | Western Poison Ivy | S5 | | | | | C | | X | X | X | | X | |
| **Apiaceae** | **Carrot or Parsley Family** | | | | | | | | | | | | | |
| *Daucus carota* | Wild Carrot | SE5 | | | | | IC | | X | X | X | | X | |
| *Pastinaca sativa* | Wild Parsnip | SE5 | | | | | IC | | X | X | | | | |
| **Asclepiadaceae** | **Milkweed Family** | | | | | | | | | | | | | |
| *Asclepias syriaca* | Common Milkweed | S5 | | | | | C | | X | X | X | | X | |
| **Asteraceae** | **Composite or Aster Family** | | | | | | | | | | | | | |
| *Achillea millefolium* | Common Yarrow | SE5? | | | | | IX | | X | X | X | | X | |
| *Ambrosia artemisiifolia* | Common Ragweed | S5 | | | | | C | | X | X | | | | |
| *Arctium minus* | Common Burdock | SE5 | | | | | IC | | X | X | X | | | |
| *Artemisia vulgaris* | Common Wormwood | SE5 | | | | | IR | | X | X | | | | |
| *Carduus nutans* | Nodding Thistle | SE5 | | | | | IR | | X | X | | | | X |
| *Cichorium intybus* | Chicory | SE5 | | | | | IC | | X | X | | | | |
| *Cirsium arvense* | Creeping Thistle | SE5 | | | | | IC | | X | X | | X | | |
| *Cirsium vulgare* | Bull Thistle | SE5 | | | | | IC | | X | X | | | | |
| *Erigeron annuus* | Annual Fleabane | S5 | | | | | C | | X | X | | | X | |
| *Erigeron hyssopifolius* | Daisy Fleabane | S5 | | | | | | | X | X | X | | X | |
| *Inula helenium* | Elecampane | SE5 | | | | | IC | | X | X | X | | | |
| *Lactuca serriola* | Prickly Lettuce | SE5 | | | | | IC | | X | X | | | | |
| *Leucanthemum vulgare* | Oxeye Daisy | SE5 | | | | | IC | | X | X | | | | |
| *Pilosella aurantiaca* | Orange Hawkweed | SE5 | | | | | IU | | X | X | | | | |
| *Senecio vulgaris* | Common Ragwort | SE5 | | | | | IR | | X | X | | | | |
| *Solidago altissima* | Tall Goldenrod | S5 | | | | | | | X | X | | | | X |
| *Solidago juncea* | Early Goldenrod | S5 | | | | | R | | X | | X | | | |
| *Sonchus arvensis* | Field Sow-thistle | SE5 | | | | | IC | | X | X | | | | |
| *Taraxacum officinale* | Common Dandelion | SE5 | | | | | IC | | X | X | X | | | |
| *Tragopogon pratensis* | Meadow Goat's-beard | SE5 | | | | | IC | | X | X | | | | |
| **Boraginaceae** | **Borage Family** | | | | | | | | | | | | | |
| *Echium vulgare* | Common Viper's Bugloss | SE5 | | | | | IC | | X | X | | | | |
| *Myosotis laxa* | Small Forget-me-not | S5 | | | | | C | | X | X | | | | |
| **Brassicaceae** | **Mustard Family** | | | | | | | | | | | | | |
| *Alliaria petiolata* | Garlic Mustard | SE5 | | | | | IC | | X | X | X | | | X |
| *Barbarea vulgaris* | Bitter Wintercress | SE5 | | | | | IC | | X | X | X | | | |
| *Hesperis matronalis* | Dame's Rocket | SE5 | | | | | IC | | X | X | | | | X |
| *Lepidium campestre* | Field Peppergrass | SE5 | | | | | IC | | X | X | | | | |
| **Buxaceae** | **Boxwood Family** | | | | | | | | | | | | | |
| *Pachysandra terminalis* | Japanese-spurge | SE1 | | | | | IR | | X | X | | | | |
| **Caprifoliaceae** | **Honeysuckle Family** | | | | | | | | | | | | | |
| *Lonicera periclymenum* | European Honeysuckle | SEH | | | | | | | X | X | | | X | |
| *Lonicera tatarica* | Tatarian Honeysuckle | SE5 | | | | | IC | | X | | X | | | X |
| *Lonicera x bella* | *(Lonicera morrowii X Lonicera tatarica)* | SNA | | | | | hyb | | X | X | X | | X | |
| *Sambucus nigra* | Black Elderberry | SEH | | | | | | | X | X | | | | |
| **Caryophyllaceae** | **Pink Family** | | | | | | | | | | | | | |
| *Dianthus armeria* | Deptford Pink | SE5 | | | | | IC | | X | X | X | | | |
| **Chenopodiaceae** | **Goosefoot Family** | | | | | | | | | | | | | |
| *Chenopodium album* | White Goosefoot | SE5 | | | | | IC | | X | X | | X | | |
| **Clusiaceae** | **St. John's-wort Family** | | | | | | | | | | | | | |
| *Hypericum canadense* | Canadian St. John's-wort | S4? | | | | | | | X | X | | | X | |
| *Hypericum perforatum* | Common St. John's-wort | SE5 | | | | | IC | | X | | | | | X |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Triadenum virginicum* | Virginia St. John's-wort | S4 | | | | | | | X | | | X | | |
| **Convolvulaceae** | **Morning-glory Family** | | | | | | | | | | | | | |
| *Convolvulus arvensis* | Field Bindweed | SE5 | | | | | IC | | X | X | | | | |
| **Cornaceae** | **Dogwood Family** | | | | | | | | | | | | | |
| *Cornus racemosa* | Gray Dogwood | S5 | | | | | C | | X | X | X | | X | |
| **Dipsacaceae** | **Teasel Family** | | | | | | | | | | | | | |
| *Dipsacus fullonum* | Common Teasel | SE5 | | | | | IC | | X | X | X | X | X | X |
| **Elaeagnaceae** | **Oleaster Family** | | | | | | | | | | | | | |
| *Elaeagnus umbellata* | Autumn Olive | SE3 | | | | | IU | | X | X | | | | |
| **Euphorbiaceae** | **Spurge Family** | | | | | | | | | | | | | |
| *Euphorbia cyparissias* | Cypress Spurge | SE5 | | | | | IR | | X | X | | | X | |
| *Euphorbia virgata* | Russian Leafy Spurge | SE5? | | | | | IU | | X | X | | | X | X |
| **Fabaceae** | **Pea Family** | | | | | | | | | | | | | |
| *Lotus corniculatus* | Garden Bird's-foot Trefoil | SE5 | | | | | IC | | X | X | X | | | |
| *Medicago lupulina* | Black Medic | SE5 | | | | | IC | | X | | X | | | |
| *Securigera varia* | Common Crown-vetch | SE5 | | | | | IC | | X | X | | | | |
| *Trifolium aureum* | Yellow Clover | SE5 | | | | | IR | | X | X | | | | |
| *Trifolium repens* | White Clover | SE5 | | | | | IC | | X | X | X | | | |
| *Vicia cracca* | Tufted Vetch | SE5 | | | | | IC | | X | X | X | | X | X |
| **Gentianaceae** | **Gentian Family** | | | | | | | | | | | | | |
| *Centaurium pulchellum* | Branching Centaury | SE3 | | | | | IU | | X | X | | | | |
| **Lamiaceae** | **Mint Family** | | | | | | | | | | | | | |
| *Nepeta cataria* | Catnip | SE5 | | | | | IC | | X | X | X | | | X |
| **Lythraceae** | **Loosestrife Family** | | | | | | | | | | | | | |
| *Lythrum salicaria* | Purple Loosestrife | SE5 | | | | | IC | | X | X | X | X | | |
| **Moraceae** | **Mulberry Family** | | | | | | | | | | | | | |
| *Morus alba* | White Mulberry | SE5 | | | | | IC | | X | X | | | | |
| **Oleaceae** | **Olive Family** | | | | | | | | | | | | | |
| *Fraxinus americana* | White Ash | S4 | | | | | C | | X | | X | | | |
| *Fraxinus pennsylvanica* | Green Ash | S4 | | | | | C | | X | X | X | | | |
| *Ligustrum vulgare* | European Privet | SE5 | | | | | IU | | X | | X | | | X |
| **Onagraceae** | **Evening-primrose Family** | | | | | | | | | | | | | |
| *Circaea canadensis* | Broad-leaved Enchanter's Nightshade | S5 | | | | | C | | X | | X | | | |
| *Epilobium ciliatum ssp. ciliatum* | Northern Willowherb | S5 | | | | | | | X | | X | | | |
| *Oenothera biennis* | Common Evening-primrose | S5 | | | | | U | | X | X | | | | |
| **Oxalidaceae** | **Wood Sorrel Family** | | | | | | | | | | | | | |
| *Oxalis stricta* | Upright Yellow Wood-sorrel | SE5 | | | | | C | | X | | | | X | |
| **Polygonaceae** | **Smartweed Family** | | | | | | | | | | | | | |
| *Fallopia dumetorum* | Hedge Bindweed | SEH | | | | | | | X | X | | | | |
| *Rumex crispus* | Curly Dock | SE5 | | | | | IC | | X | X | | | | |
| *Rumex obtusifolius* | Bitter Dock | SE5 | | | | | IU | | X | | X | | | |
| **Ranunculaceae** | **Buttercup Family** | | | | | | | | | | | | | |
| *Ranunculus caricetorum* | Northern Swamp Buttercup | S5 | | | | | | | X | | X | | | |
| **Rhamnaceae** | **Buckthorn Family** | | | | | | | | | | | | | |
| *Frangula alnus* | Glossy Buckthorn | SE5 | | | | | IR | | X | X | | | X | |
| *Rhamnus cathartica* | Common Buckthorn | SE5 | | | | | IC | | X | X | X | | X | X |
| **Rosaceae** | **Rose Family** | | | | | | | | | | | | | |
| *Amelanchier laevis* | Smooth Serviceberry | S5 | | | | | U | | X | | | | X | |
| *Crataegus sp.* | Hawthorn sp. | | | | | | | | X | X | X | | X | |
| *Crataegus mollis* | Downy Hawthorn | S4S5 | | | | | | | X | | X | | | |
| *Crataegus monogyna* | English Hawthorn | SE4 | | | | | IC | | X | | X | | | |
| *Fragaria virginiana* | Wild Strawberry | S5 | | | | | C | | X | | X | | | |
| *Geum aleppicum* | Yellow Avens | S5 | | | | | X | | X | | X | | | |
| *Geum urbanum* | Wood Avens | SE3 | | | | | IX | | X | | X | | | |
| *Potentilla recta* | Sulphur Cinquefoil | SE5 | | | | | IC | | X | X | | | | |
| *Prunus serotina* | Black Cherry | S5 | | | | | C | | X | | X | | | |
| *Rosa blanda* | Smooth Rose | S5 | | | | | U | | X | | X | | | |
| *Rosa canina* | Dog Rose | SE2 | | | | | IR | | X | X | X | | X | |
| *Rosa rubiginosa* | Briar Rose | SE4 | | | | | | | X | X | X | | X | |
| *Rubus idaeus* | Common Red Raspberry | S5 | | | | | | | X | X | | | | |
| **Rubiaceae** | **Madder Family** | | | | | | | | | | | | | |
| *Galium aparine* | Cleavers | S5 | | | | | U | | X | X | X | | | X |
| **Scrophulariaceae** | **Figwort Family** | | | | | | | | | | | | | |
| *Linaria vulgaris* | Butter-and-eggs | SE5 | | | | | IC | | X | X | | | | |
| *Verbascum thapsus* | Common Mullein | SE5 | | | | | IC | | X | X | X | | | X |
| **Solanaceae** | **Nightshade Family** | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Solanum dulcamara* | Bittersweet Nightshade | SE5 | | | | | IC | | X | | X | X | | |
| **Ulmaceae** | **Elm Family** | | | | | | | | | | | | | |
| *Ulmus americana* | American Elm | S5 | | | | | C | | X | X | X | | X | X |
| *Ulmus pumila* | Siberian Elm | SE3 | | | | | IC | | X | X | | | | |
| **Vitaceae** | **Grape Family** | | | | | | | | | | | | | |
| *Parthenocissus vitacea* | Thicket Creeper | S5 | | | | | C | | X | X | X | | X | |
| *Vitis riparia* | Riverbank Grape | S5 | | | | | C | | X | X | | X | | X |
| **Monocotyledons** | **Monocots** | | | | | | | | | | | | | |
| **Cyperaceae** | **Sedge Family** | | | | | | | | | | | | | |
| *Carex bebbii* | Bebb's Sedge | S5 | | | | | C | | X | X | X | | | |
| **Juncaceae** | **Rush Family** | | | | | | | | | | | | | |
| *Juncus filiformis* | Thread Rush | S5? | | | | | | | X | X | | | | |
| *Juncus tenuis* | Path Rush | S5 | | | | | C | | X | X | | | | |
| **Liliaceae** | **Lily Family** | | | | | | | | | | | | | |
| *Asparagus officinalis* | Garden Asparagus | SE5 | | | | | IC | | X | X | X | | | |
| **Poaceae** | **Grass Family** | | | | | | | | | | | | | |
| *Agrostis gigantea* | Redtop | SE5 | | | | | IC | | X | | X | X | | |
| *Bromus inermis* | Smooth Brome | SE5 | | | | | IC | | X | X | | | X | |
| *Dactylis glomerata* | Orchard Grass | SE5 | | | | | IC | | X | X | | | | |
| *Elymus repens* | Creeping Wildrye | SE5 | | | | | IC | | X | X | | | | |
| *Phalaris arundinacea* | Reed Canary Grass | S5 | | | | | C | | X | X | | | | |
| *Phleum pratense* | Common Timothy | SE5 | | | | | IC | | X | X | | | | |
| *Phragmites australis* | Common Reed | SU | | | | | | | X | X | | X | | |
| *Poa compressa* | Canada Bluegrass | SE5 | | | | | IC | | X | X | | | | |
| *Poa pratensis* | Kentucky Bluegrass | S5 | | | | | | | X | X | X | X | X | X |
| **Typhaceae** | **Cattail Family** | | | | | | | | | | | | | |
| *Typha angustifolia* | Narrow-leaved Cattail | SE5 | | | | | IC | | X | | | X | | |
| **TOTAL** | | | | | | | | **0** | **108** | **84** | **52** | **11** | **26** | **18** |

*NHIC Atlas Square(s): 17PJ01

## Appendix V

Bird Species Reported from the Study Area

**Bird Species Reported from the Study Area - IO Sherwood Heights, Oakville (Project #2494)**

| Scientific Name | Common Name | SRANK | SARO | COSEWIC | SARA | SARA Schedule | OBBA* | NHIC Data** | NRSI Observed: Highest Level of Breeding Evidence | Cultural Meadow | Cultural Thicket | CUM - MAM | NRSI Incidentals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MNRF 2021a | MNRF 2021a | Government of Canada 2021 | Government of Canada 2021 | Government of Canada 2021 | BSC et al. 2006 | MNRF 2021b | NRSI Results from 2020-2021 | | | | |
| **Anatidae** | **Ducks, Geese & Swans** | | | | | | | | | | | | |
| *Aix sponsa* | Wood Duck | S5B, S3N | | | | | CO | | | | | | |
| *Anas platyrhynchos* | Mallard | S5 | | | | | CO | | | | | | |
| *Anas rubripes* | American Black Duck | S4 | | | | | PR | | | | | | |
| *Branta canadensis* | Canada Goose | S5 | | | | | CO | | **OB** | OB | | | |
| *Cygnus olor* | Mute Swan | SNA | | | | | CO | | | | | | |
| **Odontophoridae** | **New World Quails** | | | | | | | | | | | | |
| *Colinus virginianus* | Northern Bobwhite | S1?B | END | E | E | Schedule 1 | | X | | | | | |
| **Columbidae** | **Pigeons & Doves** | | | | | | | | | | | | |
| *Columba livia* | Rock Pigeon | SNA | | | | | CO | | **OB** | | | OB | |
| *Zenaida macroura* | Mourning Dove | S5 | | | | | CO | | **PR** | OB | PO | PR | OB |
| **Cuculiformes** | **Cuckoos & Anis** | | | | | | | | | | | | |
| *Coccyzus americanus* | Yellow-billed Cuckoo | S4B | | | | | PO | | | | | | |
| *Coccyzus erythropthalmus* | Black-billed Cuckoo | S4S5B | | | | | CO | | | | | | |
| **Caprimulgidae** | **Goatsuckers** | | | | | | | | | | | | |
| *Antrostomus vociferus* | Eastern Whip-poor-will | S4B | THR | T | T | Schedule 1 | PR | | | | | | |
| *Chordeiles minor* | Common Nighthawk | S4B | SC | SC | T | Schedule 1 | PO | | | | | | |
| **Apodidae** | **Swifts** | | | | | | | | | | | | |
| *Chaetura pelagica* | Chimney Swift | S3B | THR | T | T | Schedule 1 | CO | | **OB** | | OB | | |
| **Trochilidae** | **Hummingbirds** | | | | | | | | | | | | |
| *Archilochus colubris* | Ruby-throated Hummingbird | S5B | | | | | PO | | | | | | |
| **Charadriidae** | **Plovers & Lapwings** | | | | | | | | | | | | |
| *Charadrius vociferus* | Killdeer | S4B | | | | | CO | | **OB** | | | OB | OB |
| **Scolopacidae** | **Sandpipers & Allies** | | | | | | | | | | | | |
| *Actitis macularia* | Spotted Sandpiper | S5B | | | | | CO | | | | | | |
| *Scolopax minor* | American Woodcock | S4B | | | | | PR | | **PO** | PO | PO | | |
| **Ardeidae** | **Herons & Bitterns** | | | | | | | | | | | | |
| *Ardea herodias* | Great Blue Heron | S4 | | | | | CO | | | | | | |
| *Butorides virescens* | Green Heron | S4B | | | | | PO | | | | | | |
| **Cathartidae** | **Vultures** | | | | | | | | | | | | |
| *Cathartes aura* | Turkey Vulture | S5B, S3N | | | | | PR | | | | | | |
| **Accipitridae** | **Hawks, Kites, Eagles & Allies** | | | | | | | | | | | | |
| *Accipiter cooperii* | Cooper's Hawk | S4 | NAR | NAR | NS | No schedule | CO | | | | | | |
| *Accipiter striatus* | Sharp-shinned Hawk | S5 | NAR | NAR | NS | No schedule | CO | | | | | | |
| *Buteo jamaicensis* | Red-tailed Hawk | S5 | NAR | NAR | NS | No schedule | CO | | **OB** | | | | OB |
| **Strigidae** | **Typical Owls** | | | | | | | | | | | | |
| *Bubo virginianus* | Great Horned Owl | S4 | | | | | CO | | | | | | |
| *Megascops asio* | Eastern Screech-Owl | S4 | NAR | NAR | NS | No schedule | PR | | | | | | |
| **Alcedinidae** | **Kingfishers** | | | | | | | | | | | | |
| *Megaceryle alcyon* | Belted Kingfisher | S5B, S4N | | | | | CO | | | | | | |
| **Picidae** | **Woodpeckers** | | | | | | | | | | | | |
| *Colaptes auratus* | Northern Flicker | S5 | | | | | CO | | **PO** | | PO | | |
| *Dryobates pubescens* | Downy Woodpecker | S5 | | | | | CO | | **PR** | | PR | | |
| *Dryobates villosus* | Hairy Woodpecker | S5 | | | | | CO | | | | | | |
| *Dryocopus pileatus* | Pileated Woodpecker | S5 | | | | | CO | | | | | | |
| **Falconidae** | **Caracaras & Falcons** | | | | | | | | | | | | |
| *Falco sparverius* | American Kestrel | S4 | | | | | CO | | | | | | |
| **Tyrannidae** | **Tyrant Flycatchers** | | | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Contopus virens* | Eastern Wood-Pewee | S4B | SC | SC | SC | Schedule 1 | PR | | | | | | |
| *Empidonax alnorum* | Alder Flycatcher | S5B | | | | | PO | | | | | | |
| *Empidonax minimus* | Least Flycatcher | S5B | | | | | PO | | | | | | |
| *Empidonax traillii* | Willow Flycatcher | S4B | | | | | PR | | **PO** | | PO | | |
| *Myiarchus crinitus* | Great Crested Flycatcher | S5B | | | | | CO | | | | | | |
| *Sayornis phoebe* | Eastern Phoebe | S5B | | | | | PO | | | | | | |
| *Tyrannus tyrannus* | Eastern Kingbird | S4B | | | | | CO | | **PO** | | PO | | |
| **Vireonidae** | **Vireos** | | | | | | | | | | | | |
| *Vireo gilvus* | Warbling Vireo | S5B | | | | | PR | | | | | | |
| *Vireo olivaceus* | Red-eyed Vireo | S5B | | | | | CO | | | | | | |
| **Corvidae** | **Crows & Jays** | | | | | | | | | | | | |
| *Corvus brachyrhynchos* | American Crow | S5 | | | | | CO | | **OB** | | OB | | OB |
| *Cyanocitta cristata* | Blue Jay | S5 | | | | | CO | | **CO** | PO | CO | | OB |
| **Alaudidae** | **Larks** | | | | | | | | | | | | |
| *Eremophila alpestris* | Horned Lark | S4 | | | | | PR | | | | | | |
| **Hirundinidae** | **Swallows** | | | | | | | | | | | | |
| *Hirundo rustica* | Barn Swallow | S4B | THR | SC | T | Schedule 1 | CO | | **OB** | OB | OB | OB | |
| *Petrochelidon pyrrhonota* | Cliff Swallow | S4S5B | | | | | CO | | | | | | |
| *Progne subis* | Purple Martin | S3B | | | | | PR | | | | | | |
| *Riparia riparia* | Bank Swallow | S4B | THR | T | T | Schedule 1 | PR | | | | | | |
| *Stelgidopteryx serripennis* | Northern Rough-winged Swallow | S4B | | | | | CO | | **OB** | | | OB | |
| *Tachycineta bicolor* | Tree Swallow | S4S5B | | | | | PR | | **OB** | | | OB | |
| **Paridae** | **Chickadees & Titmice** | | | | | | | | | | | | |
| *Baeolophus bicolor* | Tufted Titmouse | S3 | | | | | PR | | | | | | |
| *Poecile atricapillus* | Black-capped Chickadee | S5 | | | | | CO | | **PO** | PO | | | OB |
| **Sittidae** | **Nuthatches** | | | | | | | | | | | | |
| *Sitta canadensis* | Red-breasted Nuthatch | S5 | | | | | CO | | | | | | |
| *Sitta carolinensis* | White-breasted Nuthatch | S5 | | | | | CO | | | | | | |
| **Certhiidae** | **Creepers** | | | | | | | | | | | | |
| *Certhia americana* | Brown Creeper | S5 | | | | | PO | | | | | | |
| **Troglodytidae** | **Wrens** | | | | | | | | | | | | |
| *Thryothorus ludovicianus* | Carolina Wren | S4 | | | | | CO | | | | | | |
| *Troglodytes aedon* | House Wren | S5B | | | | | CO | | | | | | |
| **Polioptilidae** | **Gnatcatchers** | | | | | | | | | | | | |
| *Polioptila caerulea* | Blue-gray Gnatcatcher | S4B | | | | | PR | | | | | | |
| **Regulidae** | **Kinglets** | | | | | | | | | | | | |
| *Regulus calendula* | Ruby-crowned Kinglet | S5B, S3N | | | | | | | **OB** | | | | OB |
| *Regulus satrapa* | Golden-crowned Kinglet | S5 | | | | | | | **OB** | | | | OB |
| **Turdidae** | **Thrushes** | | | | | | | | | | | | |
| *Catharus fuscescens* | Veery | S5B | | | | | PO | | | | | | |
| *Hylocichla mustelina* | Wood Thrush | S4B | SC | T | T | Schedule 1 | PR | | | | | | |
| *Turdus migratorius* | American Robin | S5 | | | | | CO | | **CO** | PO | CO | | OB |
| **Mimidae** | **Mockingbirds, Thrashers & Allies** | | | | | | | | | | | | |
| *Dumetella carolinensis* | Gray Catbird | S5B, S3N | | | | | CO | | **PR** | | PR | | OB |
| *Mimus polyglottos* | Northern Mockingbird | S4 | | | | | CO | | | | | | |
| *Toxostoma rufum* | Brown Thrasher | S4B | | | | | CO | | | | | | |
| **Sturnidae** | **Starlings** | | | | | | | | | | | | |
| *Sturnus vulgaris* | European Starling | SNA | | | | | CO | | **PR** | | PR | OB | OB |
| **Bombycillidae** | **Waxwings** | | | | | | | | | | | | |
| *Bombycilla cedrorum* | Cedar Waxwing | S5 | | | | | CO | | **PO** | PO | PO | | |
| **Passeridae** | **Old World Sparrows** | | | | | | | | | | | | |
| *Passer domesticus* | House Sparrow | SNA | | | | | CO | | | | | | |
| **Fringillidae** | **Finches & Allies** | | | | | | | | | | | | |
| *Haemorhous mexicanus* | House Finch | SNA | | | | | CO | | | | | | |
| *Spinus tristis* | American Goldfinch | S5 | | | | | CO | | **PR** | PO | PR | | OB |
| **Emberizidae** | **New World Sparrows & Allies** | | | | | | | | | | | | |
| *Ammodramus savannarum* | Grasshopper Sparrow | S4B | SC | SC | SC | Schedule 1 | PO | | | | | | |
| *Centronyx henslowii* | Henslow's Sparrow | S1B | END | E | E | Schedule 1 | | X | | | | | |
| *Melospiza melodia* | Song Sparrow | S5 | | | | | CO | | **PR** | PR | PR | PR | OB |
| *Passerculus sandwichensis* | Savannah Sparrow | S5B, S3N | | | | | CO | | | | | | |
| *Pipilo erythrophthalmus* | Eastern Towhee | S4B, S3N | | | | | PR | | | | | | |
| *Pooecetes gramineus* | Vesper Sparrow | S4B | | | | | PO | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Spizella passerina* | Chipping Sparrow | S5B, S3N | | | | | CO | | | | | | |
| *Spizella pusilla* | Field Sparrow | S4B, S3N | | | | | PO | | | | | | |
| *Zonotrichia albicollis* | White-throated Sparrow | S5 | | | | | | | **OB** | | | | OB |
| *Zonotrichia leucophrys* | White-crowned Sparrow | S5B, S3N | | | | | | | **OB** | | | | OB |
| **Icteridae** | **Troupials & Allies** | | | | | | | | | | | | |
| *Agelaius phoeniceus* | Red-winged Blackbird | S5 | | | | | CO | | **CO** | CO | CO | CO | OB |
| *Dolichonyx oryzivorus* | Bobolink | S4B | THR | T | T | Schedule 1 | PO | | | | | | |
| *Icterus galbula* | Baltimore Oriole | S4B | | | | | CO | | **PR** | | PR | | |
| *Molothrus ater* | Brown-headed Cowbird | S5 | | | | | CO | | **PR** | | PR | | |
| *Quiscalus quiscula* | Common Grackle | S5 | | | | | CO | | **CO** | OB | CO | | OB |
| *Sturnella magna* | Eastern Meadowlark | S4B, S3N | THR | T | T | Schedule 1 | PR | | | | | | |
| **Parulidae** | **Wood Warblers** | | | | | | | | | | | | |
| *Geothlypis philadelphia* | Mourning Warbler | S5B | | | | | PO | | | | | | |
| *Geothlypis trichas* | Common Yellowthroat | S5B, S3N | | | | | PR | | | | | | |
| *Seiurus aurocapilla* | Ovenbird | S5B | | | | | PO | | | | | | |
| *Setophaga pensylvanica* | Chestnut-sided Warbler | S5B | | | | | PO | | | | | | |
| *Setophaga petechia* | Yellow Warbler | S5B | | | | | CO | | **PR** | | PR | | OB |
| *Setophaga pinus* | Pine Warbler | S5B, S3N | | | | | PR | | | | | | |
| *Setophaga ruticilla* | American Redstart | S5B | | | | | PR | | | | | | |
| **Cardinalidae** | **Cardinals, Grosbeaks & Allies** | | | | | | | | | | | | |
| *Cardinalis cardinalis* | Northern Cardinal | S5 | | | | | CO | | **PR** | PO | PR | | |
| *Passerina cyanea* | Indigo Bunting | S5B | | | | | CO | | | | | | |
| *Pheucticus ludovicianus* | Rose-breasted Grosbeak | S5B | | | | | CO | | | | | | |
| *Piranga olivacea* | Scarlet Tanager | S5B | | | | | PO | | | | | | |
| **Total** | | | | | | | **91** | **2** | **33** | **13** | **22** | **9** | **18** |

*OBBA Atlas Square: 17PJ01
**NHIC Atlas Square: 17PJ016

## Appendix VI

Herpetofauna Species Reported from the Study Area

**Reptile and Amphibian Species Reported from the Study Area - IO Sherwood Heights (Project #2494)**

| Scientific Name | Common Name | SRANK | SARO | COSEWIC | SARA | SARA Schedule | ORAA* | NHIC Data** | NRSI Observed |
|---|---|---|---|---|---|---|---|---|---|
| | | MNRF 2021a | MNRF 2021a | Government of Canada 2021 | Government of Canada 2021 | Government of Canada 2021 | Ontario Nature 2019 | MNRF 2021b | NRSI Results from 2020 - 2021 |
| **Turtles** | | | | | | | | | |
| *Chelydra serpentina* | Snapping Turtle | S4 | SC | SC | SC | Schedule 1 | X | | |
| *Chrysemys picta marginata* | Midland Painted Turtle | S4 | | SC | SC | Schedule 1 | X | | |
| *Graptemys geographica* | Northern Map Turtle | S3 | SC | SC | SC | Schedule 1 | X | | |
| *Trachemys scripta* | Pond Slider | SNA | | | | | X | | |
| **Snakes** | | | | | | | | | |
| *Diadophis punctatus* | Northern Ring-necked Snake | S4 | | | | | X | | |
| *Lampropeltis triangulum* | Milksnake | S4 | NAR | SC | SC | Schedule 1 | X | | |
| *Opheodrys vernalis* | Smooth Greensnake | S4 | | | | | X | | |
| *Nerodia sipedon sipedon* | Northern Watersnake | S5 | NAR | NAR | NS | No schedule | X | | |
| *Storeria dekayi* | Dekay's Brownsnake | S5 | NAR | NAR | NS | No schedule | X | | |
| *Storeria occipitomaculata* | Red-bellied Snake | S5 | | | | | X | | |
| *Thamnophis sirtalis sirtalis* | Eastern Gartersnake | S5 | | | | | X | | |
| **Salamanders** | | | | | | | | | |
| *Ambystoma jeffersonianum* | Jefferson Salamander | S2 | END | E | E | Schedule 1 | X | | |
| *Ambystoma maculatum* | Spotted Salamander | S4 | | | | | X | | |
| *Notophthalmus viridescens viridescens* | Red-spotted Newt | S5 | | | | | X | | |
| *Plethodon cinereus* | Eastern Red-backed Salamander | S5 | | | | | X | | |
| **Frogs and Toads** | | | | | | | | | |
| *Anaxyrus americanus* | American Toad | S5 | | | | | X | | |
| *Hyla versicolor* | Gray Treefrog | S5 | | | | | X | | |
| *Pseudacris triseriata pop. 2* | Western Chorus Frog (Great Lakes / St. La | S4 | NAR | T | T | Schedule 1 | X | | |
| *Pseudacris crucifer* | Spring Peeper | S5 | | | | | X | | |
| *Lithobates clamitans* | Green Frog | S5 | | | | | X | | |
| *Lithobates pipiens* | Northern Leopard Frog | S5 | NAR | NAR | NS | No schedule | X | | |
| *Lithobates sylvaticus* | Wood Frog | S5 | | | | | X | | |
| **Total** | | | | | | | **22** | **0** | **0** |

*ORAA Atlas Square: 17PJ01
**NHIC Atlas Square: 17PJ01

## Appendix VII

Mammal Species Reported from the Study Area

**Mammal Species Reported from the Study Area - IO Sherwood Heights (Project #2494)**

| Scientific Name | Common Name | SRANK | SARO | COSEWIC | SARA | SARA Schedule | Ontario Mammal Atlas | NHIC Data** | NRSI Observed | NRSI Observed | NRSI Observed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MNRF 2021a | MNRF 2021a | Government of Canada 2021 | Government of Canada 2021 | Government of Canada 2021 | Dobbyn 1994 | MNRF 2021b | NRSI Results from 2020-2021 | 2020 | 2021 |
| **Didelphimorphia** | **Opossums** | | | | | | | | | | |
| *Didelphis virginiana* | Virginia Opossum | S4 | | | | | X | | | | |
| **Eulipotyphla** | **Shrews, Moles, Hedgehogs, and Allies** | | | | | | | | | | |
| *Blarina brevicauda* | Northern Short-tailed Shrew | S5 | | | | | X | | | | |
| *Condylura cristata* | Star-nosed Mole | S5 | | | | | X | | | | |
| *Parascalops breweri* | Hairy-tailed Mole | S4 | | | | | X | | | | |
| *Sorex cinereus* | Masked Shrew | S5 | | | | | X | | | | |
| *Sorex fumeus* | Smoky Shrew | S5 | | | | | X | | | | |
| *Sorex hoyi* | Pygmy Shrew | S4 | | | | | X | | | | |
| *Sorex palustris* | Water Shrew | S5 | | | | | X | | | | |
| **Chiroptera** | **Bats** | | | | | | | | | | |
| *Eptesicus fuscus* | Big Brown Bat | S4 | | | | | X | | | | |
| *Lasionycteris noctivagans* | Silver-haired Bat | S4 | | | | | X | | | | |
| *Lasiurus borealis* | Eastern Red Bat | S4 | | | | | X | | | | |
| *Lasiurus cinereus* | Hoary Bat | S4 | | | | | X | | | | |
| *Myotis lucifugus* | Little Brown Myotis | S3 | END | E | E | Schedule 1 | X | | | | |
| *Myotis septentrionalis* | Northern Myotis | S3 | END | E | E | Schedule 1 | X | | | | |
| **Lagomorpha** | **Rabbits and Hares** | | | | | | | | | | |
| *Lepus americanus* | Snowshoe Hare | S5 | | | | | X | | | | |
| *Lepus europaeus* | European Hare | SNA | | | | | X | | | | |
| *Sylvilagus floridanus* | Eastern Cottontail | S5 | | | | | X | | X | X | |
| **Rodentia** | **Rodents** | | | | | | | | | | |
| *Castor canadensis* | Beaver | S5 | | | | | X | | | | |
| *Erethizon dorsatum* | Porcupine | S5 | | | | | X | | | | |
| *Glaucomys sabrinus* | Northern Flying Squirrel | S5 | | | | | X | | | | |
| *Marmota monax* | Woodchuck | S5 | | | | | X | | | | |
| *Microtus pennsylvanicus* | Meadow Vole | S5 | | | | | X | | | | |
| *Mus musculus* | House Mouse | SNA | | | | | X | | | | |
| *Ondatra zibethicus* | Muskrat | S5 | | | | | X | | | | |
| *Peromyscus leucopus* | White-footed Mouse | S5 | | | | | X | | | | |
| *Peromyscus maniculatus* | Deer Mouse | S5 | | | | | X | | | | |
| *Rattus norvegicus* | Norway Rat | SNA | | | | | X | | | | |
| *Sciurus carolinensis* | Eastern Gray Squirrel | S5 | | | | | X | | X | X | X |
| *Tamias striatus* | Eastern Chipmunk | S5 | | | | | X | | | | |
| *Tamiasciurus hudsonicus* | Red Squirrel | S5 | | | | | X | | | | |
| *Zapus hudsonius* | Meadow Jumping Mouse | S5 | | | | | X | | | | |
| **Canidae** | **Canines** | | | | | | | | | | |
| *Canis latrans* | Coyote | S5 | | | | | X | | X | X | X |
| *Vulpes vulpes* | Red Fox | S5 | | | | | X | | | | |
| **Mephitidae** | **Skunks and Stink Badgers** | | | | | | | | | | |
| *Mephitis mephitis* | Striped Skunk | S5 | | | | | X | | | | |
| **Mustelidae** | **Weasels and Allies** | | | | | | | | | | |
| *Lontra canadensis* | North American River Otter | S5 | | | | | X | | | | |
| *Mustela erminea* | Ermine | S5 | | | | | X | | | | |
| *Mustela frenata* | Long-tailed Weasel | S4 | | | | | X | | | | |
| *Neovison vison* | American Mink | S4 | | | | | X | | | | |
| **Procyonidae** | **Raccoons and Allies** | | | | | | | | | | |
| *Procyon lotor* | Northern Raccoon | S5 | | | | | X | | X | | X |
| **Ursidae** | **Bears** | | | | | | | | | | |
| *Ursus americanus* | American Black Bear | S5 | NAR | NAR | NS | No schedule | X | | | | |
| **Artiodactyla** | **Deer and Bison** | | | | | | | | | | |
| *Alces americanus* | Moose | S5 | | | | | X | | | | |
| *Odocoileus virginianus* | White-tailed Deer | S5 | | | | | X | | X | X | X |
| **Total** | | | | | | | **42** | **0** | **5** | **4** | **4** |

*Mammal Atlas Square Numbers: PU
**NHIC Atlas Squares: 17PJ016

## Appendix VIII

Butterfly Species Reported from the Study Area

**Butterfly Species Reported from the Study Area - IO Sherwood Heights, Oakville (Project #2494)**

| Scientific Name | Common Name | SRANK | SARO | COSEWIC | SARA | SARA Schedule | Ontario Butterfly Atlas* | NRSI Observed |
|---|---|---|---|---|---|---|---|---|
| | | MNRF 2021a | MNRF 2021a | Government of Canada 2021 | Government of Canada 2021 | Government of Canada 2021 | Macnaughton et al. 2020 | NRSI Results from 2020 - 2021 |
| **Hesperiidae** | **Skippers** | | | | | | | |
| *Ancyloxypha numitor* | Least Skipper | S5 | | | | | X | |
| *Epargyreus clarus* | Silver-spotted Skipper | S4 | | | | | X | |
| *Erynnis baptisiae* | Wild Indigo Duskywing | S4 | | | | | X | |
| *Erynnis icelus* | Dreamy Duskywing | S5 | | | | | X | |
| *Erynnis juvenalis* | Juvenal's Duskywing | S5 | | | | | X | |
| *Erynnis lucilius* | Columbine Duskywing | S4 | | | | | X | |
| *Erynnis martialis* | Mottled Duskywing | S2 | END | E | NS | No schedule | X | |
| *Euphyes dion* | Dion Skipper | S4 | | | | | X | |
| *Euphyes vestris* | Dun Skipper | S5 | | | | | X | |
| *Hylephila phyleus* | Fiery Skipper | SNA | | | | | X | |
| *Pholisora catullus* | Common Sootywing | S4 | | | | | X | |
| *Poanes hobomok* | Hobomok Skipper | S5 | | | | | X | |
| *Polites mystic* | Long Dash Skipper | S5 | | | | | X | |
| *Polites origenes* | Crossline Skipper | S4 | | | | | X | |
| *Polites peckius* | Peck's Skipper | S5 | | | | | X | |
| *Polites themistocles* | Tawny-edged Skipper | S5 | | | | | X | |
| *Pompeius verna* | Little Glassywing | S4 | | | | | X | |
| *Thorybes pylades* | Northern Cloudywing | S5 | | | | | X | |
| *Thymelicus lineola* | European Skipper | SNA | | | | | X | |
| *Wallengrenia egeremet* | Northern Broken Dash | S5 | | | | | X | |
| **Papilionidae** | **Swallowtails** | | | | | | | |
| *Battus philenor* | Pipevine Swallowtail | SNA | | | | | X | |
| *Papilio cresphontes* | Giant Swallowtail | S4 | | | | | X | |
| *Papilio glaucus* | Eastern Tiger Swallowtail | S5 | | | | | X | |
| *Papilio polyxenes* | Black Swallowtail | S5 | | | | | X | |
| **Pieridae** | **Whites and Sulphurs** | | | | | | | |
| *Colias eurytheme* | Orange Sulphur | S5 | | | | | X | |
| *Colias philodice* | Clouded Sulphur | S5 | | | | | X | X |
| *Pieris oleracea* | Mustard White | S4 | | | | | X | |
| *Pieris rapae* | Cabbage White | SNA | | | | | X | X |
| *Pieris virginiensis* | West Virginia White | S3 | SC | | | | X | |
| **Lycaenidae** | **Harvesters, Coppers, Hairstreaks, Blues** | | | | | | | |
| *Celastrina lucia* | Northern Spring Azure | S5 | | | | | X | |
| *Celastrina sp.* | Azure species | SNA | | | | | X | |
| *Cupido comyntas* | Eastern Tailed Blue | S5 | | | | | X | |
| *Glaucopsyche lygdamus* | Silvery Blue | S5 | | | | | X | |
| *Lycaena hyllus* | Bronze Copper | S5 | | | | | X | |
| *Satyrium acadica* | Acadian Hairstreak | S4 | | | | | X | |
| *Satyrium calanus* | Banded Hairstreak | S4 | | | | | X | |
| *Satyrium caryaevorus* | Hickory Hairstreak | S4 | | | | | X | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Satyrium liparops* | Striped Hairstreak | S5 | | | | | X | |
| **Nymphalidae** | **Brush-footed Butterflies** | | | | | | | |
| *Aglais milberti* | Milbert's Tortoiseshell | S5 | | | | | X | |
| *Boloria bellona* | Meadow Fritillary | S5 | | | | | X | |
| *Cercyonis pegala* | Common Wood-Nymph | S5 | | | | | X | |
| *Coenonympha tullia* | Common Ringlet | S5 | | | | | X | |
| *Danaus plexippus* | Monarch | S2N,S4B | SC | E | SC | Schedule 1 | X | X |
| *Euphydryas phaeton* | Baltimore Checkerspot | S4 | | | | | X | |
| *Junonia coenia* | Common Buckeye | SNA | | | | | X | |
| *Lethe anthedon* | Northern Pearly-Eye | S5 | | | | | X | |
| *Lethe appalachia* | Appalachian Brown | S4 | | | | | X | |
| *Lethe eurydice* | Eyed Brown | S5 | | | | | X | |
| *Libytheana carinenta* | American Snout | SNA | | | | | X | |
| *Limenitis archippus* | Viceroy | S5 | | | | | X | |
| *Limenitis arthemis arthemis* | White Admiral | S5 | | | | | X | |
| *Limenitis arthemis astyanax* | Red-spotted Purple | S5 | | | | | X | |
| *Megisto cymela* | Little Wood-Satyr | S5 | | | | | X | |
| *Nymphalis antiopa* | Mourning Cloak | S5 | | | | | X | X |
| *Nymphalis l-album* | Compton Tortoiseshell | S5 | | | | | X | |
| *Phyciodes cocyta* | Northern Crescent | S5 | | | | | X | |
| *Phyciodes tharos* | Pearl Crescent | S4 | | | | | X | X |
| *Polygonia comma* | Eastern Comma | S5 | | | | | X | |
| *Polygonia interrogationis* | Question Mark | S5 | | | | | X | |
| *Polygonia progne* | Gray Comma | S5 | | | | | X | |
| *Polygonia satyrus* | Satyr Comma | S4 | | | | | X | |
| *Speyeria aphrodite* | Aphrodite Fritillary | S5 | | | | | X | |
| *Speyeria cybele* | Great Spangled Fritillary | S5 | | | | | X | |
| *Vanessa atalanta* | Red Admiral | S5B | | | | | X | |
| *Vanessa cardui* | Painted Lady | S5B | | | | | X | |
| *Vanessa virginiensis* | American Lady | S5 | | | | | X | |
| **Total** | | | | | | | **66** | **5** |

*TEA Atlas Square: 17PJ01
**NHIC Atlas Square: 17PJ01