NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

July 16, 2021 Project 2385

Marion Cabral, Planner
County of Middlesex
399 Ridout Street North
London, Ontario N6A 2P1

Dear Ms. Cabral,

**RE: 6, 10, 14 Elmhurst Street, Kilworth**
**Scoped Development Assessment Report**

Natural Resource Solutions Inc. (NRSI) was retained by Sweid Holdings Inc. to undertake a natural heritage assessment of the three adjoining properties located at 6, 10, and 14 Elmhurst Street in Kilworth, Ontario. Middlesex County has idenfied the need for a Development Assessment Report (DAR) due to Significant Woodland being mapped on the properties. The DAR is required as per Section 3.8 in the Middlesex Centre Official Plan, as portions of these properties are identified as woodland. Schedule A-2 of the Township's Official Plan identifies two areas within the subject lands as 'Natural Environment'. The remaining lands are identified as 'Residential' on the same Schedule. The same areas identified as 'Natural Environment', are identified as 'Significant Woodlands' and are part of the municipality's 'Greenlands System', on Schedule B. The larger woodland unit, located on 6 Elmhurst Street, is part of the Middlesex Natural Heritage System and is zoned as 'Significant Woodland'.

## 1.0 Background Review

A portion of 6 Elmhurst Street is identified as Significant Woodland on Township and County mapping, making it part of the Middlesex Natural Heritage System, as shown on the attached map from Middlesex County. The lands immediately north of Glendon Drive, 60m north of the subject lands, are part of the Komoka Park Reserve Life Science Area of Natural and Scientific Interest (ANSI), and the Komoka Park Provincially Significant Wetland (PSW) Complex is located 370m to the east, adjacent to the Thames River. The ANSI and PSW are shown on the attached provincial map.

Table 1, attached, lists the Species at Risk reported from the study area, which includes all wildlife species reported from the 10x10km wildlife atlas data square (17MH67). Of these species, Eastern Wood-pewee (*Contopus virens*), Eastern Small-footed Myotis (*Myotis leibii*), Little Brown Myotis (*Myotis lucifungus*), and Northern Myotis (*Myotis septentrionalis*) may be found within the subject lands or adjacent areas based on the habitats present.

A screening for Significant Wildlife Habitat (SWH) was undertaken. Bat Maternity Colonies SWH and Special Concern and Rare Wildlife Habitat (for Eastern Wood-pewee) may be present within the woodland north of the subject lands.

The full Species at Risk and SWH screenings are attached in Appendix II and III respectively (the SWH screening is attached to the letter to MECP).

## 2.0 Existing Conditions

The subject lands are comprised of large single-family residential lots. A house fronts Elmhurst Street on each lot, with landscaping, hedgerows, ornamental trees, and sheds or garages behind each house. NRSI biologists were on site February 24, 2020 and June 3, 2021 and identified that the area identified as woodland on 6 Elmhurst Street no longer functions as a forest, as the understory was cleared. The area has been heavily impacted as soil and debris was dumped in this area historically. This area, shown in Photo 1, is dominated by Black Walnut (*Juglans nigra*) with a few Common Hackberry (*Celtis occidentalis*). The woodlot immediately to the north of 6 Elmhurst Street is located on an incline and is comprised primarily of Black Walnut and Norway Spruce (*Picea abies*). Both are most likely of planted origin. The woodlot also contains Black Locust (*Robinia pseudoacacia*), Scots Pine (*Pinus sylvestris*), and sporadic White Pine (*Pinus strobus*). The extent of woodlot off property is not clear, however much of the rear yard of the property to the north is maintained as lawn with mature trees. On an air photo this rear yard looks like woodlot. Towards the west end of the subject lands, the woodland is comprised of Common Hackberry, Red Cedar (*Juniperus virginiana*), and Red Oak (*Quercus rubra*). The groundcover includes a lot of non-natives but also native groundcover including Bristly Gooseberry (Ribes cynosbati), False Solomon's Seal (*Maianthemum racemosum*), and American Pokeweed (*Phytolacca americana*). This area extends onto the subject lands. The dripline was staked by a NRSI arborist on June 3, 2021 and surveyed by LDS. The woodland is delineated on Map 1.

**Photo 1. Black Walnut Stand** (February 24, 2020)

Davey Resource Group (2020) also undertook an assessment of the area identified on background mapping as woodland and concluded that in their "*professional opinion that the woodlot stand within the property at 6 Elmhurst St is not a continuation of the larger woodlot to the north, nor is it significant to the overall area. The stand in question is a monoculture of Black Walnut trees that have been heavily managed over the years with all other species cut out in the*

*significant area of the property. This results in a tree stand that is unable to support any other species, black walnut secretes Juglans that poison the soil to almost all plants but Black walnuts resulting in no other native species able to grow or take root in the area*" (p. 11).

NRSI biologists walked the three properties in February 2020 to note the trees and shrubs present. No significant species were observed. Common species include Black Walnut, Choke Cherry (*Prunus virginianum*), Common Hackberry, Manitoba Maple (*Acer negundo*), Scots Pine, Staghorn Sumac (*Rhus typhina*), and White Ash (*Fraxinus americanum*).

## 3.0 Proposed Development

The subject lands are to be redeveloped to include 28 single detached homes and 28 townhouse units on a private road (see the attached Site Plan). All storm runoff from the subject lands will be contained within the site through an internal storm sewer system that will be directed to subsurface infiltration galleries, where water will infiltrate into the ground.

## 4.0 Discussion

### 4.1 Significant Woodland and Natural Heritage System

Section 2.2.1.2 of the Middlesex County Official Plan (2006) states that "*The boundaries and extent of the specific elements of the natural system designated on Schedule A as Natural Environment Areas, and shown on Schedule C as Natural Heritage Features are approximate. Refinements to boundaries may occur through environmental evaluations such as a Development Assessment Report (DAR) in consultation with the Ministry of Natural Resources, the Conservation Authority having jurisdiction and the County. Changes to the boundaries as a result of more detailed analysis shall not require an amendment to the Plan*." In addition, it states that "*Where the private landowner is not satisfied regarding the type and/or extent of specific elements of the Natural System on a property, a re-evaluation may be requested and the County will address the issue in consultation with the Province or Conservation Authority*."

Similarly, Section 3.3 of the Official Plan for Middlesex Centre states that "*features are shown within the Natural Environment Areas designation on Schedule A of this Official Plan. The boundaries of such features may be more precisely defined through environmental evaluations such as a development assessment report to the satisfaction of the Municipality in consultation with appropriate agencies. Development may be permitted in adjacent lands subject to the completion and findings of a development assessment report acceptable to the Municipality. Such developments must not result in a negative impact on the natural areas and functions or ecological processes of the feature in question*."

The woodland north of 6 Elmhurst Street is separated from the larger woodland north of Glendon Drive by more than 20m, making them separate woodland units. Most of it is a plantation of Norway Spruce and Black Walnut, although some native woodland species are present. Towards the east, much of the understory is clearned and managed as manicured yard and mowed grass. The natural woodland has been delineated on Map 1, including the dripline on 6 Elmhurst Street that was staked and surveyd on June 3, 2021.

The woodland north of the subject lands is identified as Significant Woodland and part of the Middlesex County Natural Heritage System, although it is much smaller than mapped by the County or municipality. The woodlot is approximately 0.85ha in size, thereby still meeting the minimum 0.5ha minimum threshold for consideration. It was identified as Significnat Woodland through the *Natural Heritage Study to Identify Significant Woodland Patches in Middlesex County* (UTRCA 2003). The woodland meets criteria 1 and 3, which include "*any woodland patch where 50% of the area is within 750m of a recognized Natural Heritage Feature ("core area")*" and "*any woodland patch within 100m of a woodland patch greater than or equal to 10 hectares*". The woodlot is included given its proximity (~22m) to the large woodland north of Glendon Drive, which is the Komoka Park Reserve Life Science ANSI and a large contiguous woodland that straddles Oxbow Creek (located 300m north of the subject site) and the Thames River (located 330m to the east). Based on its designation as a Significant Woodland, it was included in the Middlesex Natural Heritage System (UTRCA 2014).

Both NRSI and Davey Resource Group concur that the stand of Black Walnut trees within the subject lands does not constitute a woodland, but rather a stand of Black Walnut trees with some Common Hackberry.

The significant woodland and the trees on the adjacent property to the north should be protected through the proposed development. The woodland may provide SWH for bats (maternity roosts) and species of Special Concern (Eastern Wood-pewee)[1]. Since the woodland to the north is on private property, any proposed buffer from the woodland would be on private property as well, and unlikely to be maintained in a natural state. Davey Resource Group (2020) made the case that the Black Walnut stand on 6 Elmhurst Street does not provide a good buffer to the woodland to the north, but the "*fence row of mature large walnut trees between 6 Elmhurst and the adjacent property […] contributes more of a buffer effect than the whole cluster of walnut trees on 6 Elmhurst*" (p.10). The trees within the woodland and the fence row of Black Walnut trees should be protected. A 1m setback from the surveyed dripline is recommended from any grading in order to protect the root zone of these trees. A 2m setback from the northern property line is recommended to protect the trees on the adjacent property.

## 5.0 Impact Assessment

Direct impact is limited to the removal of individual trees, buildings, and sheds within the subject lands, all of which may be used by Species at Risk bats. It is recommended that all buildings, structures, and trees be removed outside of the bat active season, which is between April 1 and September 31. A memo has been submitted to the Ministry of Environment, Conservation and Parks (MECP) with this recommended approach (Appendix III). A response from the MECP has not yet been received.

A homeowner education package will be prepared to encourage homeowners backing onto the significant woodland to retain the trees and to plant native vegetation that will enhance the woodland and provide wildlife habitat. The woodland boundary on Lots 12 and 13 will be marked with decorative bollards to identify the tree protection area. The bollards are not to contain lights.

[1] Eastern Wood-pewee was not observed during the early morning site visit of June 3, 2021.

The protection of the woodland to the north will ensure the retention of habitat for Eastern Wood-pewee. Removal of potential bat habitat outside of the bat active season will ensure no impact to Species at Risk bats. This will be confirmed through consultation with the MECP; a response from MECP is still anticipated.

The Stormwater Servicing Brief prepared by LDS (July 14, 2021) identifies an erosion and sediment control plan that should be followed to avoid negative impacts. Erosion and sediment impacts are not anticipated on the woodland to the north, as the woodland is upslope from the subject lands.

A French Drain is to be installed along the rear of Lots 1 through 12. The French Drain is to be installed a minimum of 1m from the surveyed dripline and 2m from the property line, thereby avoiding impact to the trees within the woodland or trees north of the subject lands. The trees should be protected through the construction phase of the project by installing tree protection fencing 1m from the northern property limit and 1m from the woodland boundary, whichever is greater.

The Site Plan shows a privacy fence that is to be installed around the permiter of the subject lands. Within the Significant Woodland (at the rear of Lots 10 through 12, and portions of Lots 9 and 13) the fence is to be installed by hand to avoid vegetation removal and impact to the woodland.

NRSI has worked with the project team to provide a development design that will avoid impact to the Significant Woodland. Negative impacts to significant natural heritage features and functions are not anticpated, pending review by the MECP with regards to Species at Risk bats.

Should you have any questions or comments regarding this scoped DAR, please do not hesitate to contact the undersigned.

Sincerely,
Natural Resource Solutions Inc.

Katharina Richter
Senior Biologist

## Appendix I
## Maps

# 6, 10, 14 Elmhurst Street, Kilworth


0.2 0 0.10 0.2 Kilometers

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

## Legend

- North Middlesex Address Unit
- Thames Centre Address
- Parcels
- Natural Heritage
- Municipal Boundary

## Notes

Middlesex Natural Heritage System (Middlesex Maps)

5/28/2021

Ontario

Ministry of Natural Resources and Forestry

Make-a-Map: Natural Heritage Areas

# 6, 10, 14 Elmhurst Street, Kilworth

Map created:5/28/2021


## Legend

- Assessment Parcel
- ANSI
- Earth Science Provincially Significant/sciences de la terre d'importance provinciale
- Earth Science Regionally Significant/sciences de la terre d'importance régionale
- Life Science Provincially Significant/sciences de la vie d'importance provinciale
- Life Science Regionally Significant/sciences de la vie d'importance régionale
- Evaluated Wetland
- Provincially Significant/considérée d'importance provinciale
- Non-Provincially Significant/non considérée d'importance provinciale
- Unevaluated Wetland
- Woodland
- Conservation Reserve
- Provincial Park
- Natural Heritage System

0.3 0 0.17 0.3 Kilometres

Absence of a feature in the map does not mean they do not exist in this area.

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

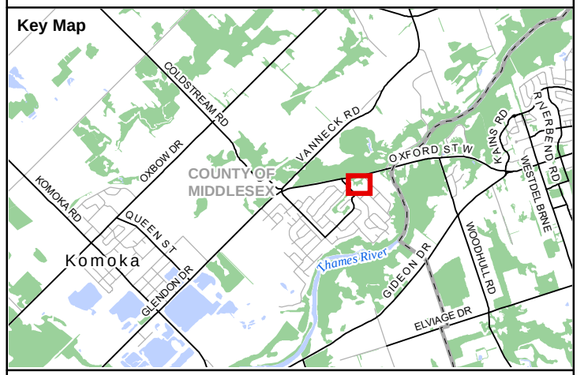





Map 1

# Elmhurst Street Development

## Subject Lands




**Legend**

- Subject Lands
- Dripline (NRSI, June 3, 2021)
- Woodland (NRSI delineation)
- ANSI, Life Science

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists



| | |
|---|---|
| Project:2385<br>Date: June 9, 2021 | NAD83 - UTM Zone 17<br>Size: 11x17"<br>**1:1,000** |

0 20 40 60 Metres

N

Path: X:\2385_KilworthDevNHA\NRSI_2385_Map1_Subject Lands_1K_2021_06_09_LEH.mxd

## Appendix II
## Species at Risk Screening

| *Scientific Name* | Common Name | S-RANK[1] | ESA/ COSSARO[1] | COSEWIC[1,2] | SARA[2] | Background Source | Observed by NRSI | Habitat Preference[1,3,4,5,6] | Suitable Habitats within Subject Lands | Rationale |
|---|---|---|---|---|---|---|---|---|---|---|
| **Birds** | | | | | | | | | | |
| *Ammodramus savannarum* | Grasshopper Sparrow | S4B | SC | SC | | BSC 2006 | | Well-drained grassland or prairie with low cover of grasses, taller weeds on sandy soil; hayfields or weedy fallow fields; uplands with ground vegetation of various densities; perches for singing; requires tracts of grassland >10ha. | No | No suitable habitats are present within the subject lands. |
| *Chaetura pelagica* | Chimney Swift | S4B, S4N | THR | T | Schedule 1 | BSC 2006 | | Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water. | No | No large cavity trees or suitable chimneys are present within the subjct lands. |
| *Chordeiles minor* | Common Nighthawk | S4B | SC | T | Schedule 1 | BSC 2006 | | Open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs. | No | No suitable habitats are present within the subject lands. |
| *Contopus virens* | Eastern Wood-pewee | S4B | SC | SC | | BSC 2006 | | Open, deciduous, mixed or coniferous forest; predominated by oak with little understorey; forest clearings, edges; farm woodlots, parks. | Possible | Suitable woodland and treed habitats are found within and adjacent to the subject lands. |
| *Dolichonyx oryzivorus* | Bobolink | S4B | THR | T | No Schedule | BSC 2006 | | Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha. | No | No suitable habitats are present within the subject lands. |
| *Haliaeetus leucocephalus* | Bald Eagle | S2N,S4B | SC | NAR | | BSC 2006 | | Require large continous area of deciduous or mixed woods around large lakes, rivers; require area of 255hafor nesting, shelter, feeding, roosting; prefer open woods with 30 to 50% canopy cover; nest in tall trees 50 to 200m from shore; require tall dead, partially dead trees within 400m of nest for perching; sensitive to toxic chemicals. | No | No suitable habitats are present within the subject lands. |
| *Hirundo rustica* | Barn Swallow | S4B | THR | T | | BSC 2006 | | Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water. | No | Suible nesting habitat and foraging habitat is not present within the subject lands. |
| *Hylocichla mustelina* | Wood Thrush | S4B | SC | T | | BSC 2006 | | Carolinian and Great Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12 m. | No | No suitable habitats are present within the subject lands. |
| *Ixobrychus exilis* | Least Bittern | S4B | THR | T | Schedule 1 | BSC 2006 | | Deep marshes, swamps, bogs; marshy borders of lakes, ponds, streams, ditches; dense emergent vegetation of cattail, bulrush, sedge; nests in cattails; intolerant of loss of habitat and human disturbance. | No | No suitable habitats are present within the subject lands. |
| *Parkesia motacilla* | Louisiana Waterthrush | S3B | THR | SC | Schedule 1 | BSC 2006 | | The Louisiana waterthrush is usually found in steep, forested ravines with fast-flowing streams. Although it prefers running water, especially clear, coldwater streams, it also less frequently inhabits heavily wooded, deciduous swamps having large pools of open water. It nests among the roots of fallen trees, in niches of stream banks, and in or under mossy logs. | No | No suitable habitats are present within the subject lands. |
| *Riparia riparia* | Bank Swallow | S4B | THR | T | | BSC 2006 | | Sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water; nesting sites are limiting factor for species presence. | No | No suitable habitats are present within the subject lands. |
| *Sturnella magna* | Eastern Meadowlark | S4B | THR | T | No Schedule | BSC 2006 | | Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size. | No | No suitable habitats are present within the subject lands. |

| *Scientific Name* | Common Name | S-RANK[1] | ESA/ COSSARO[1] | COSEWIC[1,2] | SARA[2] | Background Source | Observed by NRSI | Habitat Preference[1,3,4,5,6] | Suitable Habitats within Subject Lands | Rationale |
|---|---|---|---|---|---|---|---|---|---|---|
| *Vermivora chrysoptera* | Golden-winged Warbler | S4B | SC | T | Schedule 1 | BSC 2006 | | Early successional habitat; shrubby, grassy abandoned fields with small deciduous trees bordered by low woodland and wooded swamps; alder bogs; deciduous, damp woods; shrubbery clearings in deciduous woods with saplings and grasses; brier-woodland edges; requires >10 ha of habitat. | No | No suitable habitats are present within the subject lands. |
| **Herpetofauna** | | | | | | | | | | |
| *Chelydra serpentina serpentina* | Common Snapping Turtle | S3 | SC | SC | Schedule 1 | Ontario Nature 2019 | | Permanent or semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms. The species often uses soft soil or clean dry sand on south-facing slopes for nest sites and may nest at some distance from water. | No | No suitable habitats are present within the subject lands. |
| *Emydoidea blandingii* | Blanding's Turtle (Great Lakes/St Lawrence population) | S3 | THR | T | Schedule 1 | Ontario Nature 2019 | | Shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft muddy bottoms and aquatic vegetation; basks on logs, stumps or banks; surrounding natural habitat is important in summer as they frequently move from aquatic habitat to terrestrial habitats; hibernates in bogs; not readily observed. | No | No suitable habitats are present within the subject lands. |
| *Graptemys geographica* | Northern Map Turtle | S3 | SC | SC | Schedule 1 | Ontario Nature 2019 | | Large bodies of water with soft bottoms, and aquatic vegetation; basks on logs or rocks or on beaches and grassy edges, will bask in groups; uses soft soil or clean dry sand for nest sites; may nest at some distance from water. | No | No suitable habitats are present within the subject lands. |
| *Heterodon platirhinos* | Eastern Hog-nosed Snake | S3 | THR | T | Schedule 1 | Ontario Nature 2019 | | The Eastern Hog-nosed Snake specializes in hunting and eating toads, and usually only occurs where toads can be found. Eastern Hog-nosed Snakes prefer sandy, well-drained habitats such as beaches and dry forests where they can lay their eggs and hibernate. | No | No suitable habitats are present within the subject lands. |
| *Regina septemvittata* | Queensnake | S2 | END | E | Schedule 1 | Ontario Nature 2019 | | The Queensnake is an aquatic species that is seldom found more than a few metres from the water. It prefers rivers, streams and lakes with clear water, rocky or gravel bottoms, lots of places to hide, and an abundance of crayfish. Queensnakes will often hibernate in groups with other snakes, amphibians and even crayfish. Suitable hibernation sites include abutments of old bridges and crevices in bedrock. | No | No suitable habitats are present within the subject lands. |
| **Mammals** | | | | | | | | | | |
| *Microtus pinetorum* | Woodland Vole | S3? | SC | SC | Schedule 1 | Dobbyn 1994 | | In Ontario, the Woodland Vole lives in mature deciduous forest in the Carolinian region where there is a deep litter layer that allows it to burrow. | No | No suitable habitats are present within the subject lands. |
| *Myotis leibii* | Eastern Small-footed Myotis | S2S3 | END | | | Dobbyn 1994 | | Roosts in caves, mine shafts, crevices or buildings that are in or near woodland; hibernates in cold dry caves or mines; maternity colonies in caves or buildings; hunts in forests. | Yes | The buildings within the subject lands may provide suitable habitat. |
| *Myotis lucifungus* | Little Brown Myotis | S5 | END | E | Schedule 1 | Dobbyn 1994 | | 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, forest edges. | Yes | The trees and buildings within the subject lands may provide suitable habitat. |
| *Myotis septentrionalis* | Northern Myotis | S3 | END | E | Schedule 1 | Dobbyn 1994 | | Hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, man-made structures but prefers hollow trees or under loose bark; hunts within forest, below canopy. | Yes | The trees and buildings within the subject lands may provide suitable habitat. |

| *Scientific Name* | Common Name | S-RANK[1] | ESA/ COSSARO[1] | COSEWIC[1,2] | SARA[2] | Background Source | Observed by NRSI | Habitat Preference[1,3,4,5,6] | Suitable Habitats within Subject Lands | Rationale |
|---|---|---|---|---|---|---|---|---|---|---|
| *Taxidea taxus jacksoni* | American Badger (Southwestern Ontario population) | S1 | END | E | Schedule 1 | Dobbyn 1994 | | In Ontario, badgers are found in a variety of habitats, such as tall grass prairie, sand barrens and farmland. These habitats provide badgers with small prey, including groundhogs, rabbits and small rodents. | No | No suitable habitats are present within the subject lands. |
| **Insects** | | | | | | | | | | |
| *Danaus plexippus* | Monarch | S2N,S4B | SC | END | | Macnaughton et al. 2021 | | Open areas with Milkweed species (*Asclepias spp.* ). | No | Suitable habitat is not present. The subject lands are manicured properties. |
| *Erynnis brizo* | Sleepy Duskywing | S1 | | | | Macnaughton et al. 2021 | | Oak or oak-pine scrub, chaparral, barrens; on well-drained sandy or shaly soils. | No | No suitable habitats are present within the subject lands. |
| *Asterocampa clyton* | Tawny Emperor | S3 | | | | Macnaughton et al. 2021 | | Densely wooded riparian areas, dry woods, open woods, cities, fencerows, parks. | No | No suitable habitats are present within the subject lands. |
| *Asterocampa celtis* | Hackberry Emperor | S3 | | | | Macnaughton et al. 2021 | | Along wooded streams, forest glades and river edges, wooded roadsides, towns. | No | No suitable habitats are present within the subject lands. |
| **Fish** | | | | | | | | | | |
| *Ichthyomyzon fossor* | Northern Brook Lamprey (GL-USL Pop.) | S3 | SC | SC | Schedule 1 | MNRF 2021 | | The Northern Brook Lamprey inhabits clear, coolwater streams. The larval stage requires soft substrates such as silt and sand for burrowing which are often found in the slow-moving portions of a stream. Adults are found in areas associated with spawning, including fast flowing riffles comprised of rock or gravel. Spawning occurs in May and June. The males construct small, often inconspicuous, nests by picking up pebbles with their mouths and moving them to form the rims of shallow depressions. The sticky eggs are deposited in the nest and adhere to the substrate. | No | No suitable habitats are present within the subject lands. |
| **Plants** | | | | | | | | | | |
| *Carex trichocarpa* | Hairy-fruited Sedge | S3 | | | | MNRF 2021 | | Soggy thickets, wet prairies, prairie swales, fens, sedge meadows, low-lying areas along streams, calcareous seeps, and roadside ditches. | No | No suitable habitats are present within the subject lands. |
| *Desmodium illinoense* | Illinois Tick-trefoil | SX | EXP | XT | Schedule 1 | MNRF 2021 | | The Illinois Tick-trefoil is a tallgrass prairie species that grows in dry to moderately moist rich soils. It colonizes grassland areas opened up by burning or disturbance. | No | No suitable habitats are present within the subject lands. |
| *Fraxinus quadrangulata* | Blue Ash | S2? | THR | T | Schedule 1 | MNRF 2021 | | Floodplains, shallow soil over limestone. | No | No suitable habitats are present within the subject lands. |

## Appendix III
## Correspondence with MECP

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

June 7, 2021 Project No. 2385

Ministry of the Environment, Conservation and Parks
Species at Risk

Dear Ministry Staff,

**Re: Kilworth Natural Heritage Assessment**

Natural Resource Solutions Inc. (NRSI) has been retained by Sweid Holdings Inc. to undertake a natural heritage assessment of the three adjoining properties located at 6, 10, and 14 Elmhurst Street in Kilworth, Ontario. The subject lands are located south of Glendon Drive. The Komoka Park Reserve Life Science Area of Natural and Scientific Interest is located 60m to the north of the subject lands, and the Komoka Park Provincially Significant Wetland (PSW) Complex is located 370m to the east, adjacent to the Thames River. See attached map for location of the subject lands relative to the natural features.

The subject lands are comprised of large single-family residential lots. A house fronts Elmhurst Street on each lot, with landscaping, hedgerows, ornamental trees, and sheds or garages behind each house. NRSI biologists were on site February 24, 2020 and June 3, 2021 and identified that the area identified as woodland on 6 Elmhurst Street no longer functions as a forest, as the understory was cleared. The area has been heavily impacted as soil and debris was dumped in this area historically. This area is dominated by Black Walnut (*Juglans nigra*) with a few Common Hackberry (*Celtis occidentalis*). The woodlot immediately to the north of 6 Elmhurst Street is located on an incline and is comprised primarily of Black Walnut and Norway Spruce (*Picea abies*). Both are most likely of planted origin. The woodlot also contains Black Locust (*Robinia pseudoacacia*), Scots Pine (*Pinus sylvestris*), and sporadic White Pine (*Pinus strobus*). The extent of woodlot off property is not clear, however much of the rear yard of the property to the north is maintained as lawn with mature trees; on an air photo this rear yard looks like woodlot. Towards the west end of the subject lands, the woodland is comprised of Common Hackberry, Red Cedar (*Juniperus virginiana*), and Red Oak (*Quercus rubra*). The groundcover includes a lot of non-natives but also native groundcover including Bristly Gooseberry (Ribes cynosbati), False Solomon's Seal (*Maianthemum racemosum*), and American Pokeweed (*Phytolacca americana*).

NRSI has conducted a thorough background review of all wildlife atlas data available from square 17MH65, including:

- Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature, 2019),
- Ontario Breeding Bird Atlas (OBBA) (BSC et al., 2008),
- Ontario Butterfly Atlas (MacNaughton et al., 2021),
- Ontario Odonata Atlas Database (OOAD) (NHIC 2021),
- Atlas of the Mammals of Ontario (Dobbyn, 1994),
- Make A Map: Natural Heritage Areas (MNRF 2021), and
- Aquatic Species at Risk Map (DFO 2019).

The NHIC database was reviewed for information available from square 17MH6756 that overlaps the subject lands.

In addition to species lists and natural heritage features, NRSI has completed a screening table for Significant Wildlife Habitat (SWH) and SAR/SCC for the subject property. Both the SWH and SAR/SCC screening tables are provided in Appendix I and Appendix II respectively. There are no SAR located on site, although there is potential for bat SAR to be present. It is NRSI's recommendation that the trees, buildings, and any other structures (garages, sheds) be removed outside of the active bat period (April 1 to September 30) to avoid potential impact to SAR bats. Please confirm this approach is acceptable to the MECP.

NRSI would be more than happy to discuss questions or concerns you may have regarding this project. Please do not hesitate to contact me if you require additional information.

Sincerely,
Natural Resource Solutions Inc.

Ashley Cantwell, B.Sc., P.Biol
Terrestrial and Aquatic Biologist

## References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**MAP**

Ontario

Ministry of Natural Resources and Forestry

Make-a-Map: Natural Heritage Areas

# 6, 10, 14 Elmhurst Street, Kilworth

Map created:5/28/2021


## Legend

- Assessment Parcel
- ANSI
- Earth Science Provincially Significant/sciences de la terre d'importance provinciale
- Earth Science Regionally Significant/sciences de la terre d'importance régionale
- Life Science Provincially Significant/sciences de la vie d'importance provinciale
- Life Science Regionally Significant/sciences de la vie d'importance régionale
- Evaluated Wetland
- Provincially Significant/considérée d'importance provinciale
- Non-Provincially Significant/non considérée d'importance provinciale
- Unevaluated Wetland
- Woodland
- Conservation Reserve
- Provincial Park
- Natural Heritage System

0.3 0 0.17 0.3 Kilometres

Absence of a feature in the map does not mean they do not exist in this area.

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.





# APPENDIX I

Significant Wildlife Habitat Screening Tables

**Significant Wildlife Habitat Assessment Tables**

**Table 1. Characteristics of Seasonal Concentration Areas 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 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"[cclxi]<br>• Any mixed species aggregations of 100[l] 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. | No cultural meadow or cultural thicket ecosite types are present within the subject lands.<br><br>**Not SWH** |

**Table 1. Characteristics of Seasonal Concentration Areas 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 Stopover and Staging Areas (Aquatic)** | | | | | |
| 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 lands.<br><br>**Not SWH** |

**Table 1. Characteristics of Seasonal Concentration Areas 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: 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[i] 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[i] 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. | No shoreline habitat is present within the subject lands.<br><br>**Not SWH** |

**Table 1. Characteristics of Seasonal Concentration Areas 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: Raptor Wintering Area** | | | | | |
| 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[l].<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. | Suitable habitat is not present within the subject lands.<br><br>**Not SWH** |

**Table 1. Characteristics of Seasonal Concentration Areas 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: 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[i].<br>• The area includes 200m radius around the entrance of the hibernaculum[cxlviii, ccvii, i]. 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 cave ecosite types are present within the subject lands.<br><br>**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[i]<br>• >5 Adult Female Silver-haired Bats[i]<br>• The area of the habitat includes the entire woodland or the forest stand ELC Ecosite containing the maternity colonies[i].<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. | Suitable woodland habitat is not present within the subject lands, but may be present in the woodland to the north.<br><br>**Candidate SWH** |

**Table 1. Characteristics of Seasonal Concentration Areas 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: Turtle Wintering Area** | | | | | |
| **Rationale:** 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:<br>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].<br>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 habitats are not present within the subject lands.<br><br>**Not SWH** |

**Table 1. Characteristics of Seasonal Concentration Areas 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: 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. | Snake emergent surveys were not completed, but nothing on the properties would indicate possible snake hibernaculum.<br><br>**Not SWH** |

**Table 1. Characteristics of Seasonal Concentration Areas 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: 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. | No eroding banks, hills, pits, slopes or piles are present within the subject lands.<br><br>**Not SWH** |
| **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 within the subject lands.<br><br>**Not SWH** |

**Table 1. Characteristics of Seasonal Concentration Areas 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: 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 | Islands, peninsulas, or sparsely vegetated fields which could provide suitable habitat are not present within the subject lands.<br><br>**Not SWH** |

**Table 1. Characteristics of Seasonal Concentration Areas 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: 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].<br>MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site.<br>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[j].<br>• SWHMIST[cxlix] Index #16 provides development effects and mitigation measures. | The subject lands are not located within 5km of the Lake Ontario or Lake Erie Shoreline.<br><br>**Not SWH** |

**Table 1. Characteristics of Seasonal Concentration Areas 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: Landbird Migratory Stopover Areas** | | | | | |
| 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 lands are not located within 5km of the Lake Ontario or Lake Erie Shoreline.<br><br>**Not SWH** |
| **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[i].<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[i].<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[i].<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. | No suitable forested ecosite types are large enough within or adjacent to the subject lands to support deer winter congregations.<br><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. | Cliff or talus ecosite types are not present within the subject lands.<br><br>**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)[l].<br>• SWHMIST[cxlix] Index #20 provides development effects and mitigation measures. | Sand barren ecosite types are not present within the subject lands.<br><br>**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. | Alvar ecosite types are not present within the subject lands.<br><br>**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 ecosite types are not present within the subject lands.<br><br>**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[f]<br>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>• 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[bxxv] Appendix N should be present[f]. Note: Savannah plant spp. list from Ecoregion 7E should be used.<br><br>• Area of the ELC Vegetation type is the SWH[bxxviii].<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 ecosite types are not present within the subject lands.<br><br>**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[f]. 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[bxxv] Appendix N should be present[f]. Note: Prairie plant spp. list from Ecoregion 7E should be used.<br><br>• Area of the ELC Vegetation Type is the SWH[bxxviii].<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 ecosite types are not present within the subject lands.<br><br>**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 are found within the subject lands.<br><br>**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[l], or,<br>• Presence of 10 or more nesting pairs for listed species including Mallards[l].<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 habitat is not present within the subject lands.<br><br>**Not SWH** |
| **Wildlife Habitat: Bald Eagle and Osprey Nesting, Foraging and Perching Habitat** | | | | | |
| 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. | Forested shorelines are not present within the subject lands and study area.<br><br>**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[lxxxviii, 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 | Forested areas are present within the study area; however the forest south of Glendon Drive is too small to support this SWH (Glendon Drive provides a separation of >20m).<br><br>**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. | Marshes, shorlines, shallow aquatic, bogs or fens ecosite types are not present within the subject lands.<br><br>**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[cxix, 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. | Suitable habitat is not found within the subject lands.<br><br>**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: | 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].<br>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. | Suitable habitat is not present within the subject lands.<br><br>**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[i].<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 | Suitable habitat is not present within the subject lands.<br><br>**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[i].<br>• Note: any site with breeding Cerulean Warblers or Canada Warbler is to be considered SWH[j].<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. | Suitable habitat is not present within the subject lands.<br><br>**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"[cccxi]<br>• SWHMIST[cxlix] Index #35 provides development effects and mitigation measures | Suitable habitat is not present within the subject lands.<br><br>**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"[cccxi]<br>• SWHMIST[cxlix] Index #32 provides development effects and mitigation measures | Suitable habitat is not present within the subject lands.<br><br>**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. | Suitable habitat is not present within the subject lands.<br><br>**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. | Suitable habitat is not present within the subject lands.<br><br>**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[lxxviii].<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. | Suitable habitat for SCC species may be present. See the SAR/SCC screening table.<br><br>**Candidate 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. | There are no significant amphibian breeding areas within the study area, and therefore no significant amphibian movement corridors present.<br><br>**Not SWH** |

# APPENDIX II

Species at Risk / Species of Conservation Concern Screening Table

**Table 1. Species at Risk Reported from the Study Area**

| Common Name | *Scientific Name* | S-RANK[1] | ESA/COSSARO[1] | COSEWIC[1,2] | SARA[2] | Background Source |
|---|---|---|---|---|---|---|
| **Birds** | | | | | | |
| Grasshopper Sparrow | *Ammodramus savannarum* | S4B | SC | SC | | BSC 2006 |
| Chimney Swift | *Chaetura pelagica* | S4B, S4N | THR | T | Schedule 1 | BSC 2006 |
| Common Nighthawk | *Chordeiles minor* | S4B | SC | T | Schedule 1 | BSC 2006 |
| Eastern Wood-pewee | *Contopus virens* | S4B | SC | SC | | BSC 2006 |
| Bobolink | *Dolichonyx oryzivorus* | S4B | THR | T | No Schedule | BSC 2006 |
| Bald Eagle | *Haliaeetus leucocephalus* | S2N,S4B | SC | NAR | | BSC 2006 |
| Barn Swallow | *Hirundo rustica* | S4B | THR | T | | BSC 2006 |
| Wood Thrush | *Hylocichla mustelina* | S4B | SC | T | | BSC 2006 |
| Least Bittern | *Ixobrychus exilis* | S4B | THR | T | Schedule 1 | BSC 2006 |
| Louisiana Waterthrush | *Parkesia motacilla* | S3B | THR | SC | Schedule 1 | BSC 2006 |
| Bank Swallow | *Riparia riparia* | S4B | THR | T | | BSC 2006 |
| Eastern Meadowlark | *Sturnella magna* | S4B | THR | T | No Schedule | BSC 2006 |
| Golden-winged Warbler | *Vermivora chrysoptera* | S4B | SC | T | Schedule 1 | BSC 2006 |
| **Herpetofauna** | | | | | | |
| Common Snapping Turtle | *Chelydra serpentina serpentina* | S3 | SC | SC | Schedule 1 | Ontario Nature 2019 |
| Blanding's Turtle (Great Lakes/St Lawrence population) | *Emydoidea blandingii* | S3 | THR | T | Schedule 1 | Ontario Nature 2019 |
| Northern Map Turtle | *Graptemys geographica* | S3 | SC | SC | Schedule 1 | Ontario Nature 2019 |
| Eastern Hog-nosed Snake | *Heterodon platirhinos* | S3 | THR | T | Schedule 1 | Ontario Nature 2019 |
| Queensnake | *Regina septemvittata* | S2 | END | E | Schedule 1 | Ontario Nature 2019 |
| **Mammals** | | | | | | |
| Woodland Vole | *Microtus pinetorum* | S3? | SC | SC | Schedule 1 | Dobbyn 1994 |
| Eastern Small-footed Myotis | *Myotis leibii* | S2S3 | END | | | Dobbyn 1994 |
| Little Brown Myotis | *Myotis lucifungus* | S5 | END | E | Schedule 1 | Dobbyn 1994 |
| Northern Myotis | *Myotis septentrionalis* | S3 | END | E | Schedule 1 | Dobbyn 1994 |
| American Badger (Southwestern Ontario population) | *Taxidea taxus jacksoni* | S1 | END | E | Schedule 1 | Dobbyn 1994 |
| **Insects** | | | | | | |
| Monarch | *Danaus plexippus* | S2N,S4B | SC | END | | Macnaughton et al. 2021 |
| Sleepy Duskywing | *Erynnis brizo* | S1 | | | | Macnaughton et al. 2021 |
| Tawny Emperor | *Asterocampa clyton* | S3 | | | | Macnaughton et al. 2021 |
| Hackberry Emperor | *Asterocampa celtis* | S3 | | | | Macnaughton et al. 2021 |
| **Fish** | | | | | | |
| Northern Brook Lamprey (GL-USL Pop.) | *Ichthyomyzon fossor* | S3 | SC | SC | Schedule 1 | MNRF 2021 |
| **Plants** | | | | | | |
| Hairy-fruited Sedge | *Carex trichocarpa* | S3 | | | | MNRF 2021 |
| Illinois Tick-trefoil | *Desmodium illinoense* | SX | EXP | XT | Schedule 1 | MNRF 2021 |
| Blue Ash | *Fraxinus quadrangulata* | S2? | THR | T | Schedule 1 | MNRF 2021 |

[1] MNRF 2021

[2] Government of Canada 2021