



INSIGHT  
ENVIRONMENTAL  
SOLUTIONS INC.

# Environmental Evaluation Report

0 Catherine Street, Windsor



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Rock Developments East Windsor Inc.

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**Date:**

November 8, 2024

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## 1.0 INTRODUCTION

Insight Environmental Solutions Inc., (IES) was retained by Rock Developments East Windsor Inc., to undertake a Species at Risk (SAR) Impact Assessment for the development of a Costco at the property identified as 0 Catherine Street, Windsor, Essex County, Ontario (hereafter described as the 'Subject Property').

This report is designed to satisfy the requirements under 5.3.2 Greenway System Policies of the City of Windsor Official Plan. The property contains Significant Wildlife Habitat (SWH) as defined by the Provincial Policy Statement (2024). The property is also adjacent to an agricultural drain with intermittent flow and could potentially be considered Fish Habitat during certain times of the year. Additionally, the property is within a Regulated Area under Ontario Regulation 41/24 administered by the Essex Region Conservation Authority (ERCA).

The purpose of this report is to identify natural heritage features and functions on or adjacent to the Subject Property, assess impacts of the proposed development, and recommend mitigation measures to ensure that the significant natural features are not adversely affected by the proposed development. This report will demonstrate that the proposed development complies with applicable environmental legislation, policies, and regulations at the provincial, regional, and local levels.

### 1.1 STUDY AREA

The project is located at 0 Catherine Street, Essex County, Windsor, Ontario (17T 339346 4686770). The property includes:

- Part of Lot 18 Concession 1 Petite Cote Sandwich
- Part of Lot 119 Concession 1 Petite Cote Sandwich
- Part of Lot 120 Concession 1 Petite Cote Sandwich

The Subject Property is approximately 600m long (north - south) and 250m wide (east - west) with an area of approximately 14.6 hectares. The Subject Property currently consists of agricultural and disturbed land. It is bordered by a rail corridor to the north, agricultural land to the east, a Home Depot to the south and a meadow to the west. **Figure 1** shows the property in a regional context.

### 1.2 DEVELOPMENT PROPOSAL

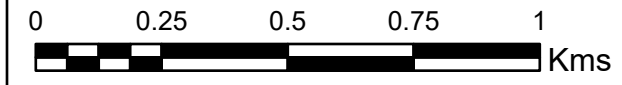
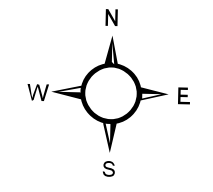
The project proposes to build a Costco and associated parking lot on the southern half of the property. The northern portion of the property measuring 2.6ha will be used for stormwater management (SWM) pond. The remaining 3.1ha located between the proposed Costco and SWM pond will be retained for future commercial use. The Concept Plan for the proposed development can be seen in **Figure 2**.





# Key Plan

0 Catherine Street, Windsor



## Legend

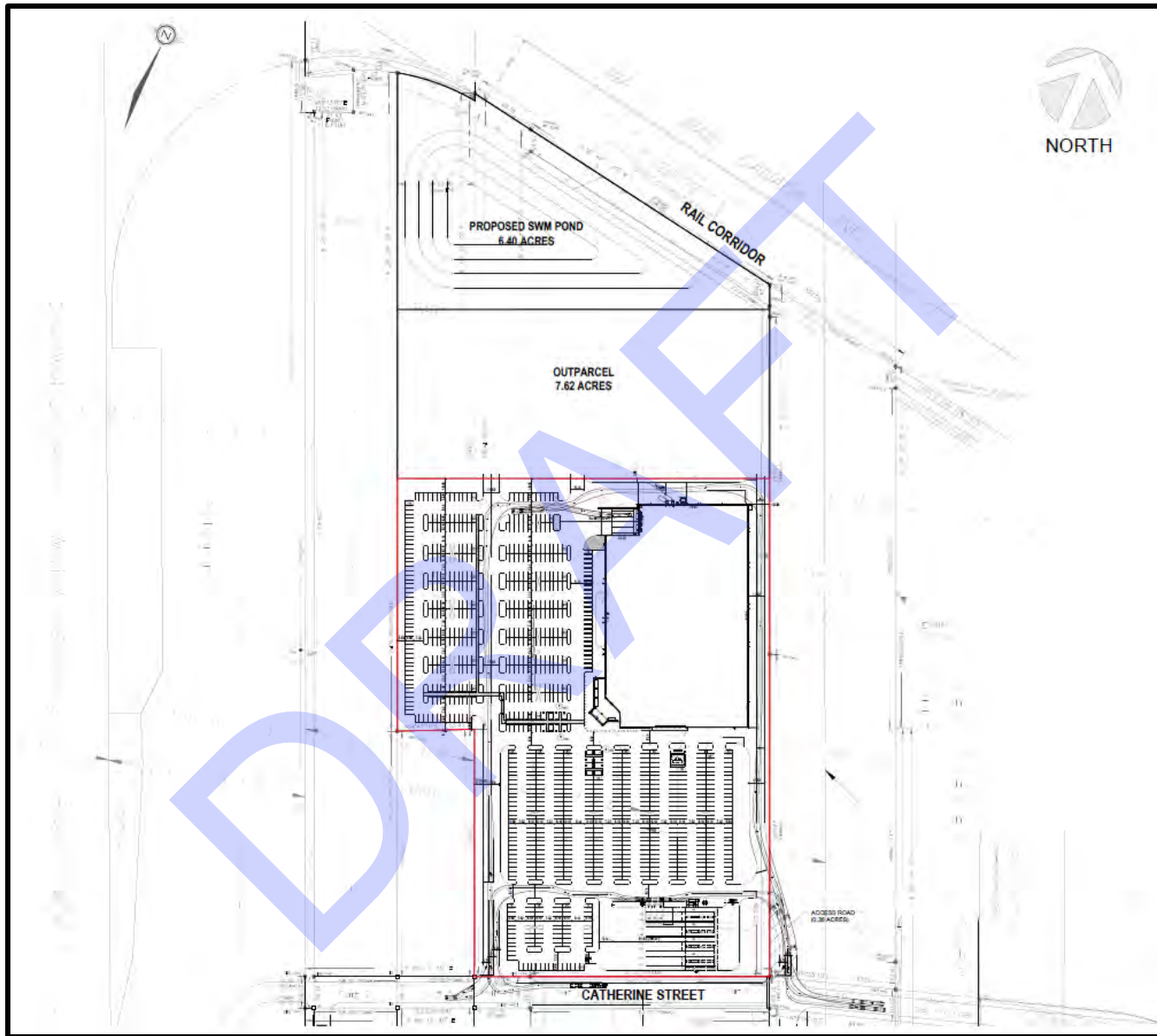
— Legal Parcel

Figure No.: 1  
 Project No.: IES24-211  
 Scale: 1:15,000  
 Date: November 8, 2024  
 Creator: Nicole Wajmer



**INSIGHT  
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Esri Community Maps Contributors: City of Windsor, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, NRCan, Parks Canada





## 2.0 METHODOLOGIES

### 2.1 BACKGROUND REVIEW

Background documents and supporting technical documents containing information relevant to the biophysical features of the Subject Property were gathered and reviewed. This included the following sources:

1. City of Windsor Official Plan (2023)
2. Provincial Policy Statement (2024)
3. Endangered Species Act (2007)
4. Ministry of Natural Resources and Forestry. Make A Map: Natural Heritage Areas. Interactive Map (2024)
5. Ministry of Natural Resources and Forestry Natural Heritage Reference Manual (2010)
6. Ministry of Agriculture, Food and Rural Affairs – AgMaps Interactive Map (2024)
7. Ontario Reptile and Amphibian Atlas (ORAA)
8. Ontario Breeding Bird Atlas (OBBA)
9. Ebird
10. Google Earth Imagery

### 2.2 PROTOCOL FOR VEGETATION COMMUNITY AND STRUCTURE ANALYSIS

Vegetation communities were mapped and described according to the Ecological Land Classification (ELC) system for Southern Ontario (Lee et al., 1998 and 2008), which involved delineating vegetation communities on an aerial photograph of the property and recording pertinent information concerning the structure and composition of the vegetation in each community. At the same time as vegetation community mapping was undertaken, a plotless floral inventory occurred, which consisted of a compilation of a list of plants observed on the property, as well as the height and cover of each layer and the dominant species in each layer.

### 2.3 FLORISTIC QUALITY ASSESSMENT

According to Swink and Wilhelm (1994) Floristic Quality Assessment (FQA) is a method to assess the floristic integrity of vegetation communities. FQA is used to determine the significance and amount of restoration required for individual vegetation communities. This assessment provides a dependable and repeatable method for evaluating the relative significance of vegetation communities in terms of their native floristic composition. This assessment is not intended for use as a stand-alone method, but instead can be applied to complement and support other methods of evaluating the natural quality of a site.

#### 2.3.1 Floristic Quality Index

FQA is applied by calculating a mean Coefficient of Conservatism (CC) value and a Floristic Quality Index (FQI) value from a comprehensive list of plant species obtained from a particular site (Swink and Wilhelm



1994; Wilhelm and Masters 1995). FQI determines the quality of a vegetation community based on its plant species composition and relative abundance.

Coefficients of conservatism range from 0 - 10 and embody an estimated probability that a plant is likely to occur in a landscape relatively unaltered from what is believed to be pre-European settlement condition. Therefore, a coefficient of zero is given to plants that have demonstrated little fidelity to any remnant natural community, while a coefficient of ten is applied to those plants that are almost always restricted to a pre-settlement remnant.

FQI is calculated by summing the CC of an inventory of plants and dividing by the total number of plant taxa (n), yielding the mean coefficient of conservatism (Mean CC = Sum of CC /n). The Mean CC is then multiplied by the square root of the total number of plants (n) to yield the FQI (FQI = Mean CC  $\sqrt{n}$ ). The square root of n is used as a multiplier to transform the Mean CC and allow for better comparison of the FQI between large sites with a high number of species and small sites with fewer species. Other methods used to determine the significance of each vegetation community include relative abundance, size and level of anthropogenic disturbance.

Based upon the above criteria, vegetation communities were classified as follows:

- Rare and Extremely Significant if community FQI value was greater than 50;
- High Significance if community FQI value was between 37 and 49;
- Moderate to High Significance if community FQI value was between 25 and 36;
- Moderate Significance if community FQI value was between 13 and 24; or
- Low Significance if community FQI value was less than 12.

## 2.4 WETNESS INDEX

The Floristic Quality Assessment System for Southern Ontario (1995) identifies several components to assess the floristic integrity of vegetation communities. One of the components is the Wetland Index (W). The wetness index allows a mean wetness value to be calculated which is used for evaluating the predominance of upland or wetland species for a natural area or vegetation community.

The National Wetland Indicator Categories define the estimated probability for which a species occurs in wetlands (Reed 1988, Wilhelm 1989, 1992). Positive signs (+) indicating a dry tendency and negative signs (-) indicating a wet tendency are attached to the three "facultative" categories to express the tendencies for those species (Reed 1988). Coefficients of wetness (CW) values have been assigned by Wilhelm (1989, 1992) to the eleven wetland indicator categories. Plants are designated as Obligate Wetland, Facultative Wetland, Facultative, Facultative Upland, and Obligate Upland.

CW of taxa recorded from a site inventory (n) can be averaged and the mean regarded as a wetness index ( $W = \sum CW /n$ ). If the wetness index is zero or below, then the site has a predominance of wetland species (Wilhelm 1989).

Wetland Category		Definition	Wetness Index	
OBL	Obligate Wetland	Occurs almost always in wetlands under natural conditions (estimated >99% probability)	OBL	-5
FACW	Facultative Wetland	Usually occurs in wetlands, but occasionally found in non-wetlands (estimated 67 -99% probability)	FACW+	-4
			FACW	-3
			FACW-	-2
FAC	Facultative	Equally likely to occur in wetlands or non-wetlands (estimated 34-66% probability)	FAC+	-1
			FAC	0
			FAC-	1
FACU	Facultative Upland	Occasionally occurs in wetlands, but usually occurs in non-wetlands (estimated 1-33% probability)	FACU+	2
			FACU	3
			FACU-	4
UPL	Upland	Occurs almost never in wetlands under natural conditions (estimated <1% probability)	UPL	5

### 2.4.1 Habitat Quality

Habitat quality was determined by evaluating the level of human disturbances (i.e. mowing, dumping, construction, tracks and trails, noise, etc.), the abundance of native species, floristic quality index value, and flora and fauna diversity.

## 2.5 WILDLIFE AND WILDLIFE HABITAT

Wildlife surveys and habitat quality assessments were completed throughout the study area. These surveys were chosen based on consultation with regulatory agencies, a thorough background review of available data and a visual assessment of potential ecological communities from photo interpretation.

### 2.5.1 Incidental Wildlife Surveys

A wildlife assessment within the study area was completed through incidental observations while on site. Any incidental observations of wildlife were noted, as well as other wildlife evidence such as direct observation, vocalizations, dens, tracks, browse and scat. Random searches of natural objects that provide cover (large branches, logs, rocks) were conducted to search for reptiles and amphibians. Aquatic features were scanned using binoculars to identify any basking turtle species. Special focus was placed upon searching for Species at Risk individuals (SAR), habitat and habitat features such as vernal pools, dens, burrows (small and large), snake thermoregulation areas, tree cavities and basking sites.

### 2.5.2 Visual Area Surveys for Reptiles

Visual Encounter Surveys for reptiles were conducted throughout the property in accordance with the Survey Protocol for Ontario's Species at Risk (SAR) Reptiles. Transects were used to search the property for SAR snakes and binoculars were used to scan habitat features (logs, rocks, basking objects) for reptile species along adjacent drain and shallow marsh habitats. Cover objects were opportunistically lifted or

turned over in search of individuals underneath the object when on site. Suitable turtle habitat was considered to be natural areas with standing water and land, including wetlands, lakes, streams and rivers. Basking turtle surveys were completed in the morning searching for turtles on logs, rocks and along the banks of the water features.

## 2.6 SPECIES AT RISK SURVEY (SAR) METHODS

Field surveys were carried out to determine the potential population and distribution of SAR individuals and to delineate the habitat and habitat features within the study area. The survey was carried out to provide detailed and reliable information on SAR presence or absence, suitable habitat, habitat features, location, distance from the proposed development, population size, management concerns and to ensure that the proposed development does not contravene the Endangered Species Act, 2007.

The search efforts were focused on inspecting sites and features with a high probability of supporting SAR. When documenting each SAR specimen/population, habitat or habitat feature the following data was recorded on paper and on a Global Positioning System (GPS):

1. Species (Scientific name)
2. Habitat or habitat feature
3. Location (Universal Transverse Mercator (UTM) co-ordinates)
4. Relative abundance

Points were used to delineate the location. UTM coordinates were recorded on hand-held GPS units, downloaded to a computer, and mapped on an ortho-rectified digital air photo using a Geographic Information System (GIS).

## 3.0 EXISTING CONDITIONS

### 3.1 FIELD SURVEY DATES AND WEATHER CONDITIONS

Details on the local temperatures and weather conditions at the Subject Property during field investigations can be seen in **Table 1**.

**TABLE 1: SURVEY FIELD DATES AND WEATHER CONDITIONS**

Date	Type of Surveys	Temperature (°C)	Cloud Cover (%)	Beaufort Wind Scale <sup>1</sup>	Precipitation Code <sup>2</sup>	Surveyor Names
October 3, 2024	Vegetation Inventory, Ecological Land Classification, Visual Area Survey, SAR Survey, and Incidental Wildlife Survey.	19	10	2 - 3	0	Nicole Wajmer

<sup>1</sup>Beaufort Wind Scale: 0 (Calm); 1 (Light Air); 2 (Light Breeze); 3 (Gentle Breeze); 4 (Moderate Breeze); 5 (Fresh Breeze); 6 (Strong Breeze).

<sup>2</sup>Precipitation Codes: 0 (Clear); 1 (Fog); 2 (Light Drizzle); 3 (Light Rain); 4 (Moderate Rain); 5 (Heavy Rain); 6 (Thunder or Lighting).

### 3.2 NATURAL HERITAGE FEATURES

The Ministry of Natural Resources and Forestry (MNRF) recommends that natural heritage features within 120m of a proposed development and/or site alteration be examined for potential impacts (Natural Heritage Reference Manual, 2010).

According to the Ministry of Natural Resources and Forestry Make-A-Map: Natural Heritage Areas online tool the Subject Property contains a small strip of woodland. Small patches of woodland also exist to the west and east of the property (**Figure 3**).

### 3.3 PHYSIOGRAPHY AND SOILS

According to the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) on-line interactive 'Ag Maps' Application the property is within a "Built Up Area" and the mapping application does not provide any soil data.

### 3.4 HYDROLOGY

The OMAFRA online interactive map indicates that the Subject Property is adjacent to an agricultural drain called Hawkins Drain, which runs parallel to the railway corridor along the northern edge of the property. The Department of Fisheries and Oceans (DFO) classifies Hawkins Drain as a Class F Drain, meaning it is an intermittent watercourse that is dry for at least three months each year and does not support sensitive fish species. During the field investigations, Hawkins Drain was observed to be dry. Additionally, there is a ditch or drain along the eastern edge of the property between agricultural fields, which was also dry during the investigations. It's important to note that the northern edge of the property near Hawkins Drain is within the Regulated Area of the Essex Region Conservation Authority (ERCA; see **Figure 4**).

### 3.5 TOPOGRAPHY

The topography associated with the legal parcel is tableland. According to Lee et al. (1998): tableland is a "Site on a more or less level plain, not associated with any marked topographic feature."



### Figure 3 - Natural Heritage Features














Map created:9/18/2024



Notes:

Enter map notes

#### 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.

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# Figure 4: ERCA Regulated Area



**Essex Region  
Conservation  
Authority**

**Public Interactive Mapping**

**Legend**

- Provincially Significant Wetland (PSW)
- Area of Natural & Scientific Interest (ANSI)
- Significant Valley Land (SVL)
- 1:100 yr Flood Line
- Limit of Regulated Area

**Location**



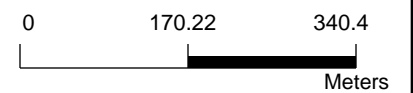
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**Notes**



1: 7,659



11/1/2024

## 3.6 FLORA AND VEGETATION COMMUNITIES

### 3.6.1 Ecological Land Classification Vegetation Communities

The Study Area contains two anthropogenic areas and one natural vegetation community (**Figure 5**). These areas are described briefly below.

The Open Disturbed Area occurs along the southern and part of the western property boundaries. European Reed (*Phragmites australis ssp. australis*) has established along the edges and fencerows in varying densities, from mature dense stands to sparse, linear formations. This area has been colonized by a mix of common, non-native invasive species, which are most concentrated along margins inaccessible to equipment and spread more sparsely toward the north. Evidence of recent grading and skid tracks were also observed in this area. **Photo 1** shows an example of this anthropogenic area during field investigations.

The Open Agriculture (OAG) occupies the remaining portions of the Subject Property and includes two distinct sections, a large OAG and a small OAG, differentiated by crop type. The small OAG field appeared to be more recently tilled with a heavier level of recent disturbance shown through the presence of brush piles and upturned roots within the field. There was also a large section of pooling present in the small OAG field. This pooled area did not contain any vegetation. In 2024, the OAG fields were planted with soy. Soy is also planned for the 2025 growing season. At the time of site investigations, both fields had been harvested and tilled, allowing some time for non-native invasive plants to establish in scattered and patchy patterns across each field, with higher plant densities observed in the small OAG. **Photo 2** shows an example of this anthropogenic area during field investigations.

The Naturalized Deciduous Hedge-row Ecosite (FODM11) abuts the northern property boundary and occurs along the length of the rail line corridor. It is likely that this strip of vegetation was historically part of the woodland to the west but has been removed overtime to create agricultural land. The FODM11 community is characterized by a mix of tree species without typical associations including dominant Manitoba Maple with occasional to rare occurrences of Eastern Cottonwood, Crack Willow and Silver Maple. The FODM11 has less than 60% canopy cover, with extensive gaps in the canopy. A tall shrub layer containing tree regeneration and shrubs is present in the open areas dominated by European Buckthorn with occasional Grey Dogwood, Staghorn Sumac and White Ash. As this community exists outside of the legal parcel a high-level vegetation inventory was conducted along the margins of the feature only. A total of 27 species were observed in this community, 16 (59%) native species exist, while 11 (41%) are classified as non-native. The mean Coefficient of Wetness (CW) for this community is 1.41. This number indicates that there is a predominance of upland species present. The mean Coefficient of Conservatism (CC) for this community is 1.52. This number indicates the floristic quality is not sufficient to identify a community of remnant natural quality. The Floristic Quality Index (FQI) for this community is 7.89 indicating low significance from a natural quality perspective. Disturbance history includes light browse, extensive gaps



in the canopy, tracks and trails, cutting, dumping and invasive species. **Photo 3** shows an example of site conditions as they were during field investigations.

**Table 8** presents the vascular plant taxa found on and adjacent to the Subject Property.



**Photo 1:** Open Disturbed Area, looking southeast.





Photo 2: Large OAG, looking north.



Photo 3: Naturalized Deciduous Hedge-row Ecosite (FODM11), looking east.

### 3.6.2 Flora

A total of 64 vascular plant taxa were recorded within the study area (**Table 2**). Of the 64 species identified to a species level, 35 species (55%) are considered native to Ontario while 29 species (45%) are classified as non-native. No plant SAR were observed however, field investigations confirmed the presence of two provincially significant plant species; Missouri Ironweed (*Eupatorium altissimum*) with a provincial S-Rank of Vulnerable (S3) and Tall Boneset (*Eupatorium altissimum*) with a provincial S-rank of (S1) Critically Imperiled.

A single Missouri Ironweed individual was observed along the western edge of the small OAG community, and a small patch of Tall Boneset was identified along the western margin of the Open Disturbed Area. Since the proposed development will not impact the margins of these communities, both Missouri Ironweed and Tall Boneset will remain undisturbed and protected.

**TABLE 2: OBSERVED VASCULAR PLANT LIST**

Scientific Name	Common Name	CW <sup>1</sup>	Status		
			SARA (SCH. 1) STATUS <sup>2</sup>	SARO STATUS <sup>3</sup>	SRANK <sup>4</sup>
<i>Abutilon theophrasti</i>	Velvetleaf	3			SE5
<i>Acalypha rhomboidea</i>	Common Three-seeded Mercury	3			S5
<i>Acer negundo</i>	Manitoba Maple	0			S5
<i>Acer saccharinum</i>	Silver Maple	-3			S5
<i>Ambrosia artemisiifolia</i>	Common Ragweed	3			S5
<i>Apocynum androsaemifolium</i>	Spreading Dogbane	5			S5
<i>Apocynum cannabinum</i>	Hemp Dogbane	0			S5
<i>Arctium minus</i>	Common Burdock	3			SE5
<i>Asclepias syriaca</i>	Common Milkweed	5			S5
<i>Brassica nigra</i>	Black Mustard	5			SE5
<i>Brassica rapa</i>	Field Mustard	5			SE5
<i>Bromus inermis</i>	Smooth Brome	5			SE5
<i>Carex plantaginea</i>	Plantain-leaved Sedge	5			S5
<i>Chenopodium album</i>	Common Lamb's-quarters	3			SE5
<i>Cichorium intybus</i>	Wild Chicory	3			SE5
<i>Cirsium arvense</i>	Canada Thistle	3			SE5
<i>Cornus drummondii</i>	Rough-leaved Dogwood	0			S4
<i>Cornus racemosa</i>	Grey Dogwood	0			S5
<i>Cornus sericea</i>	Red-osier Dogwood	-3			S5
<i>Cyperus esculentus</i>	Perennial Yellow Flatsedge	-3			S5

TABLE 2: OBSERVED VASCULAR PLANT LIST

Scientific Name	Common Name	CW <sup>1</sup>	Status		
			SARA (SCH. 1) STATUS <sup>2</sup>	SARO STATUS <sup>3</sup>	SRANK <sup>4</sup>
<i>Daucus carota</i>	Wild Carrot	5			SE5
<i>Dipsacus fullonum</i>	Common Teasel	3			SE5
<i>Echinochloa crus-galli</i>	Large Barnyard Grass	-3			SE5
<i>Eupatorium altissimum</i>	Tall Boneset	5			S1
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	0			S5
<i>Fragaria virginiana</i>	Wild Strawberry	3			S5
<i>Fraxinus americana</i>	White Ash	3			S4
<i>Geum aleppicum</i>	Yellow Avens	0			S5
<i>Hibiscus trionum</i>	Flower-of-an-hour	5			SE4
<i>Lonicera japonica</i>	Japanese Honeysuckle	3			SE2
<i>Medicago lupulina</i>	Black Medick	3			SE5
<i>Melilotus albus</i>	White Sweet-clover	3			SE5
<i>Mentha spicata</i>	Spearmint	-3			SE4
<i>Oenothera biennis</i>	Common Evening-primrose	3			S5
<i>Panicum dichotomiflorum</i>	Fall Panicgrass	-3			SE5
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	3			S4?
<i>Parthenocissus vitacea</i>	Thicket Creeper	3			S5
<i>Persicaria maculosa</i>	Spotted Lady's-thumb	-3			SE5
<i>Phragmites australis ssp. australis</i>	European Reed	-3			SE5
<i>Plantago lanceolata</i>	English Plantain	3			SE5
<i>Populus balsamifera</i>	Balsam Poplar	-3			S5
<i>Populus deltoides</i>	Eastern Cottonwood	0			S5
<i>Prunella vulgaris</i>	Common Self-heal	0			S5
<i>Quercus bicolor</i>	Swamp White Oak	-3			S4
<i>Rhamnus cathartica</i>	European Buckthorn	0			SE5
<i>Rhus typhina</i>	Staghorn Sumac	3			S5
<i>Rumex crispus</i>	Curled Dock	0			SE5
<i>Salix euxina</i>	Crack Willow	0			SE
<i>Setaria faberi</i>	Giant Foxtail	3			SE4
<i>Setaria pumila</i>	Yellow Foxtail	0			SE5
<i>Solanum dulcamara</i>	Bittersweet Nightshade	0			SE5
<i>Solidago altissima</i>	Tall Goldenrod	3			S5
<i>Solidago canadensis</i>	Canada Goldenrod	3			S5
<i>Sonchus arvensis</i>	Field Sow-thistle	3			SE5
<i>Symphotrichum lanceolatum</i>	Paniced Aster	-3			S5
<i>Symphotrichum lateriflorum</i>	Calico Aster	0			S5



TABLE 2: OBSERVED VASCULAR PLANT LIST

Scientific Name	Common Name	CW <sup>1</sup>	Status		
			SARA (SCH. 1) STATUS <sup>2</sup>	SARO STATUS <sup>3</sup>	SRANK <sup>4</sup>
<i>Symphotrichum novae-angliae</i>	New England Aster	-3			S5
<i>Symphotrichum pilosum</i>	Old Field Aster	3			S5
<i>Taraxacum officinale</i>	Common Dandelion	3			SE5
<i>Toxicodendron radicans</i>	Poison Ivy	0			S5
<i>Trifolium repens</i>	White Clover	3			SE5
<i>Vernonia missurica</i>	Missouri Ironweed	0			S3?
<i>Vitis riparia</i>	Riverbank Grape	0			S5
<i>Xanthium strumarium</i>	Rough Cocklebur	0			S5
<i>Vernonia missurica</i>	Missouri Ironweed	0			S3?
<i>Vitis riparia</i>	Riverbank Grape	0			S5
<i>Xanthium strumarium</i>	Rough Cocklebur	0			S5

<sup>1</sup> Coefficient of Wetness (CW): Refer to Section 4.2 for definitions.

Species at Risk Act (SARA) Schedule 1 Status: END (Endangered); THR (Threatened); SC (Special Concern); NAR (Not at Risk)

<sup>2</sup> Species at Risk in Ontario (SARO) Status: END (Endangered); THR (Threatened); SC (Special Concern); NAR (Not at Risk)

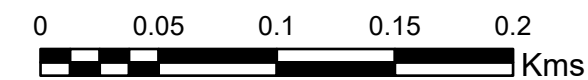
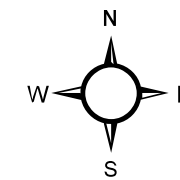
<sup>3</sup> S-Rank (Provincial): S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure), S#B (Breeding), SNA (Species Not Suitable Target for Conservation Activities)





# Existing Conditions

0 Catherine Street, Windsor



## Legend

- Legal Parcel
- Hawkins Drain (Class F)
- Agricultural Drainage Ditch
- Flooded Area
- Brushpile
- Tall Boneset (*Eupatorium altissimum*) - S1
- Missouri Ironweed (*Vernonia missurica*) - S3
- Chimneystack Crayfish (*Fallicambarus fodiens*) Burrow - S3

## ELC

- FOCM11: Naturalized Deciduous Hedge-row Ecosite
- Large OAG: Open Agriculture
- Small OAG: Open Agriculture
- Open Disturbed Area
- MEMM3: Dry - Fresh Mixed Meadow Ecosite

Figure No.: 5  
 Project No.: IES24-211  
 Scale: 1:3,200  
 Date: November 8, 2024  
 Creator: Nicole Wajmer





### 3.7 FAUNA AND WILDLIFE HABITAT

A total of eleven wildlife species were identified within the study area or in the adjacent lands field investigations (**Table 3**). These species were identified either through auditory and visual observations or through evidence of occurrence. Of the eleven species identified, there were nine bird species, one mammal species, and one crustacean species.

#### 3.7.1 Birds

A total of nine bird species were visually observed or identified through breeding calls during field investigations (**Table 3**). Of the nine species of birds that were observed in the Study Area, five species are protected under the *Migratory Birds Convention Act* (MBCA), which protects and conserves migratory birds and their nests during the breeding bird season.

No SAR birds were detected during field investigations. The proposed development is occurring entirely within the agricultural or disturbed lands within the Subject Property. As such, no tree or shrub removal is required to accommodate the proposed development, and no impacts are expected to breeding birds. The fields will be planted with soy in the 2025 growing season which will not provide suitable nesting habitat for rare grassland birds.

#### 3.7.2 Herpetofauna

##### 3.7.2.1 Amphibians

The Ontario Reptile and Amphibian Atlas (ORAA) provides records of the following amphibian species within the 10 Km X 10 Km survey square that encompasses the proposed study area (square 17LG38):

- American Bullfrog (*Lithobates catesbeianus*)
- Green Frog (*Lithobates Clamitans*)
- Northern Leopard Frog (*Lithobates Papiens*)
- Spring Peeper (*Pseudacris crucifer*)
- Western Chorus Frog (*Pseudacris maculata*)
- American Toad (*Anaxyrus Americanus*)
- Mudpuppy (*Necturus maculosus*)

No amphibians were observed during field investigations. An intermittent Class F Drain exists along the northern property border. This feature may provide amphibian breeding habitat as it contains water in the spring. The drain will not be impacted by the proposed development. A large pool of water existed within the recently tilled field on the western side of the property resulting from heavy rainfall events prior to field investigations. This pool of water will likely not provide breeding habitat for amphibians next spring as the field will be planted with crop and actively farmed.

### 3.7.2.2 Reptiles

The Ontario Reptile and Amphibian Atlas (ORAA) provides records of the following amphibian species within the 10 Km X 10 Km survey square that encompasses the proposed study area (square 17LG38):

- Blanding's Turtle (*Emydoidea blandingii*)
- Midland Painted Turtle (*Chrysemys picta marginate*)
- Northern Map Turtle (*Graptemys geographica*)
- Red-eared Slider (*Trachemys scripta elegans*)
- Snapping Turtle (*Chelydra serpentina*)
- Butler's Gartersnake (*Thamnophis butleri*)
- Eastern Foxsnake (*Pantherophis vulpinus*)
- Eastern Gartersnake (*Thamnophis sirtalis sirtalis*)
- Dekay's Brownsnake (*Storeria dekayi*)
- Northern Watersnake (*Nerodia sipedon*)
- Red-bellied Snake (*Storeria occipitomaculata*)
- Five-lined Skink (*Plestiodon fasciatus pop. 1*)

Most of the property consisted of agricultural or disturbed lands and do not provide suitable habitat for the reptiles listed by the ORAA. The agricultural drain located along the northern property border was dry at the time of field investigations and is not large enough to support the life processes of turtles.

The railway corridor and meadow located on adjacent lands to the east of the property provide suitable foraging, movement and thermoregulation habitat for SAR snakes. Brush piles that could be used for cover were noted at the northern property limit as well. Additionally, several Digger Crayfish burrows were noted along the margins of the adjacent meadow community. Butler's Gartersnake (END) are known to utilize these burrows for overwintering hibernaculum habitat. Mitigation measures to protect SAR reptiles can be found in **Section 6.1**.

### 3.7.3 Mammals

One mammal species were detected during field investigations (**Table 3**). White-tailed Deer is tolerant of anthropogenically disturbed habitats and is considered secure (S5) in the province of Ontario.

### 3.7.4 Crustaceans

Chimney (or digger) Crayfish (*Fallicambarus fodiens*) holes were observed along the western property border adjacent to the meadow (**Table 3; Figure 5**). Chimney crayfish construct burrows which are marked by a chimney of mud pellets left over from construction. Chimney crayfish have a provincial s-rank of Vulnerable (S3).



TABLE 3: OBSERVED WILDLIFE SPECIES

Scientific Name	Common Name	Status	Protection				Location
		S-RANK <sup>1</sup>	COSEWIC STATUS <sup>2</sup>	SARA SCHEDULE <sup>3</sup> STATUS	SARO STATUS <sup>4</sup>	MBCA <sup>5</sup>	Outside Of Subject Property
<b>BIRDS</b>							
<i>Columba livia</i>	Rock Pigeon	SNA				^	
<i>Zenaida macroura</i>	Mourning Dove	S5				^	
<i>Charadrius vociferus</i>	Killdeer	S4B				^	
<i>Buteo jamaicensis</i>	Red-tailed Hawk	S5	NAR	NAR			Yes
<i>Colaptes auratus</i>	Northern Flicker	S5				^	Yes
<i>Cyanocitta cristata</i>	Blue Jay	S5					
<i>Corvus brachyrhynchos</i>	American Crow	S5					
<i>Sturnus vulgaris</i>	European Starling	SNA					
<i>Cardinalis cardinalis</i>	Northern Cardinal	S5				^	
<b>MAMMALS</b>							
<i>Odocoileus virginianus</i>	White-tailed Deer	S5					
<b>CRUSTCEANS</b>							
<i>Creaserinus fodiens</i>	Digger Crayfish	S3					

<sup>1</sup> S-Rank (Provincial): S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure), S#B (Breeding), SNA (Species Not Suitable Target for Conservation Activities)

<sup>2</sup> Committee on the Status of Endangered Wildlife in Canada (COSEWIC): EXP (Extirpated), END (Endangered); THR (Threatened); SC (Special Concern); NAR (Not at Risk); NA (Not Active); DD (Data Deficient)

<sup>3</sup> Species at Risk Act (SARA) Schedule 1 Status: END (Endangered); THR (Threatened); SC (Special Concern); NAR (Not at Risk)

<sup>4</sup> Species at Risk in Ontario (SARO) Status: END (Endangered); THR (Threatened); SC (Special Concern); NAR (Not at Risk)

<sup>5</sup> Migratory Birds Convention Act

## 4.0 IMPACTS, POLICY & ENVIRONMENTAL DESIGNATIONS

### 4.1 ENDANGERED SPECIES ACT (2007)

Ontario's *Endangered Species Act, 2007* (ESA) came into effect on June 30, 2008 and replaced the former 1971 Act. Under the ESA, species in Ontario are identified as Extirpated, Endangered, Threatened, or of Special Concern and each species is afforded different levels of protection. The ESA protects species listed as Threatened or Endangered by the Committee on the Status of Species at Risk in Ontario (COSSARO).

Section 9 of the ESA generally prohibits the killing or harming of a Threatened or Endangered species, as well as the destruction of its habitat. Section 10 of the ESA prohibits the damage or destruction of the habitat of all Endangered and Threatened species. A permit from the Ministry of the Environmental Conservation and Parks (MECP) is required under Section 17(2) (c) of the ESA for any works proposed within habitat of a Threatened or Endangered species.

#### 4.1.1 NHIC Species At Risk Records

The NHIC Make-a-Map online application (Square 17LG4183) was investigated to search for records of SAR and species of Conservation Concern within 1 km of the legal parcel. The results of the NHIC Screening can be seen in **Table 8**.

**TABLE 4: SPECIES AT RISK NOTED BY NHIC**

Scientific Name	Common Name	S-Rank <sup>1</sup>	COSEWIC STATUS <sup>2</sup>	SARO STATUS <sup>3</sup>	Suitable Habitat or Feature	Key Habitats Used by Species <sup>4</sup>	Observed During 2024 Field Surveys
<b>NHIC 1 Km Search Species</b>							
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	S4	SC	SC	No	Fresh shallow waters, with slow moving currents, with soft bottoms, basking sites, and aquatic vegetation. Suitable habitat consists of creeks, marshes, ponds, and the shores of lakes (MNRF, 2014). ESA Protection: N/A.	No
Snapping Turtle	<i>Chelydra serpentina</i>	S4	SC	SC	No	Slow-moving water with a soft mud or sand bottom and abundant vegetation (MNRF, 2014). ESA Protection: N/A.	No
Climbing Prairie Rose	<i>Rosa setigera</i>	S2S3	SC	SC	Yes	Grows in early successional habitats around Lake Erie. It colonizes open and disturbed habitats open habitats with moist heavy clay to clay-loam soils such as old fields, abandoned agricultural land, as well as prairie remnants and shrub thickets (MNRF, 2014). ESA Protection: N/A.	No

<sup>1</sup>S-Rank (Provincial): S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure), S#B (Breeding), SNA (Species Not Suitable Target for Conservation Activities)

<sup>2</sup>Committee on the Status of Endangered Wildlife in Canada (COSEWIC): EXP (Extirpated), END (Endangered); THR (Threatened); SC (Special Concern); NAR (Not at Risk); NA (Not Active); DD (Data Deficient)

<sup>3</sup>Species at Risk in Ontario (SARO) Status: END (Endangered); THR (Threatened); SC (Special Concern); NAR (Not at Risk)

<sup>4</sup>Habitat as outlined within MNRF's Species at Risk Website, SARA Registry, or referenced species specific COSEWIC Reports.

## 4.2 CITY OF WINDSOR OFFICIAL PLAN (2023)

<b>Schedule A: Planning Districts and Policy Areas</b>	The property is designated as being within the “ <i>Forest Glade</i> ” planning district and is within the Forest Glade North Secondary Plan.
<b>Schedule A1: Special Policy Areas</b>	The property <u>is not</u> within a Special Policy Area.
<b>Schedule B: Greenway System</b>	The property <u>is not</u> part of a Greenway System.
<b>Schedule C: Development Constraint Areas</b>	This schedule refers the reader to the “ <i>Forest Glade North Secondary Plan.</i> ”
<b>Schedule C1: Development Constraint Areas Archaeological Potential</b>	Small portion along the southern and northern property borders are within an area of “ <i>High Archaeological Potential.</i> ”
<b>Schedule D: Land Use</b>	The property is designated as a “ <i>Business Park</i> ” land use.
<b>Schedule E: City Centre Planning District</b>	This schedule <u>does not</u> apply to the Subject Property.
<b>Schedule F: Roads and Bikeways</b>	This schedule <u>does not</u> apply to the Subject Property.
<b>Schedule F1: Railways</b>	The northern boundary of the Subject Properties abuts a “ <i>Rail Corridors &amp; Rail Yards.</i> ”
<b>Schedule G: Civic Image</b>	This schedule <u>does not</u> apply to the Subject Property.
<b>Schedule H: Baseplan Development Phasing</b>	This schedule <u>does not</u> apply to the Subject Property.
<b>Schedule J: Urban Structure Plan</b>	This schedule <u>does not</u> apply to the Subject Property.

## 4.3 FOREST GLADE NORTH PLANNING AREA (2004)

The Forest Grade Northing Planning Area Secondary Plan was added by OPA#40 on 07/12/2004. It provides direction for the development of the Forest Glade North Planning Area, as designated on Schedule A: Planning Districts & Policy Areas in Volume I: The Primary Plan.



**Schedule FGN-1: Study Area**

The property is within the “*Study Area*” of the Forest Glade North Planning Area. The Study Area is generally described as the area bound by Tecumseh Road East to the south, Lauzon Parkway to the east, the CN rail line to the north and the rear property line of the lands fronting Jefferson Boulevard to the west.

**Schedule FGN-2: Land Use**

The property is designated as “*Business Park.*” An extension of Catherine Street is proposed to access the property, which would be a “*Class 1 Collector Road.*” Business Park uses are proposed within the northwestern portion of the Planning Area and are envisioned to consist of office development, light industrial uses and ancillary commercial uses, including restaurants, retail and personal services that serve the needs of the Business Park employees.

**Schedule FGN-3: Development Constraints**

The property does not contain any Developmental Constraints, but it is within the “*300m Zone of Influence*” from a rail corridor and rail line. The policies of Volume 1: The Primary Plan shall apply with respect to rail corridor and rail yards. Schedule FGN-3: Development Constraints identifies a 75 metre zone of influence abutting the rail yard, within which proponents of development are required to submit a vibration study. Furthermore, Schedule FGN-3: Development Constraints identifies a 300 metre zone of influence within which proponents of development may be required to submit a noise study.

#### 4.4 THE CITY OF WINDSOR COMPREHENSIVE ZONING BY-LAW 8600

The Subject Property is zoned as Holding Business Park (HMD1.4). In the context of the City of Windsor's Zoning By-Law, a holding symbol (often indicated as "H" or similar) is used to indicate that a particular parcel of land is subject to specific conditions before certain uses or developments can occur. The holding symbol allows the city to withhold the development of the land until those conditions are met. Permitted uses within the Manufacturing District (MD1.4) includes:

- Ambulance Service
- Bakery
- Business Office
- Commercial School
- Food Catering Service
- Food Packaging Facility
- Manufacturing Facility
- Medical Appliance
- Facility Medical Office
- Micro-Brewery
- Professional Studio
- Research and Development Facility
- Any of the following Ancillary Uses:
  - Child Care Centre Club
  - Convenience Store
  - Food Convenience Store
  - Food Outlet – Drive-through
  - Food Outlet – Take-out
  - Gas Bar
  - Health Studio

- Personal Service Shop
- Restaurant
- Restaurant with Drive-through
- Veterinary Office
- Warehouse
- Wholesale Store
- Any of the following Existing Uses:
- Motor Vehicle Dealership
- Sports Facility
- Transport Terminal
- Any use accessory to any of the above uses, including a Retail Store

#### 4.5 PROVINCIAL POLICY STATEMENT (2024)

The Provincial Planning Statement (PPS) is a policy statement issued under the authority of section 3 of the *Planning Act* and came into effect on October 20, 2024. The Provincial Planning Statement applies to all decisions in respect of the exercise of any authority that affects a planning matter made on or after October 20, 2024. In respect of the exercise of any authority that affects a planning matter, section 3 of the *Planning Act* requires that decisions affecting planning matters shall be consistent with policy statements issued under the Act

The provincial policy-led planning system recognizes and addresses the complex inter-relationships among environmental, economic, and social factors in land use planning. The PPS supports a comprehensive, integrated, and long-term approach to planning, and recognizes linkages among policy areas.

Section 4.1 in the PPS (2024) deals with natural heritage resources. These policies are further expanded and described in the Natural Heritage Reference Manual (Sections 5-11) (Ontario Ministry of Natural Resources, 2010).

Section 4.1.1 (Natural Heritage) of the PPS states that natural features and areas be protected for the long term. To achieve this goal Sections 4.1.4, 4.1.5, 4.1.6 and 4.1.7 indicate where development and site alteration shall not be permitted. Specifically, these include Significant Wetlands/Coastal Wetlands, Significant Woodlands, Significant Valleylands, Significant Wildlife Habitat, Significant Areas of Natural and Scientific Interest (ANSI), Fish Habitat, Habitats of Endangered and Threatened Species; except in accordance with provincial and federal requirements. Section 4.1.8 goes on to state: “*Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 4.1.4, 4.1.5, and 4.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.*”

The following Sections discuss the protected natural features within the Subject Property, in the 120m adjacent lands, as well as any impacts presented by the development proposal. The property does not contain any wetlands, valleylands or ANSIs.

#### 4.5.1 Significant Woodland

Woodlands are defined by the PPS as treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial levels. The PPS does not permit development or site alteration in *“significant woodlands south and east of the Canadian Shield; ...unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.”*

According to the Natural Heritage Reference Manual (Section 7.3.1: Recommended Evaluation Criteria for Determining Significant Woodlands):

*“Woodlands should be considered significant if:*

- *Woodlands 2ha in size or larger in a sub-watershed with woodland cover less than 5% of the land.*

The watershed in which the property is located has a forest condition grade of “Very Poor” according to the Essex Region Conservation Authority Watershed Report Card 2023 (ERCA, 2023). According to Conservation Ontario’s 2011 Guide to Developing Conservation Authority Watershed Report Cards, a grade of “Very Poor” equates to less than 5% forest cover. As such, woodlands 2 ha in size or larger would be considered Significant Woodland.

The Subject Property contains a hedgerow community (FOCM11) along the northern edge of the property measuring approximately 0.65 ha. As such, the hedgerow would not be considered Significant under the PPS. Additionally, the woodland feature does not contain any interior habitat. The proposed development will not encroach into the woodland feature and no trees or shrubs will be removed.

#### 4.5.2 Significant Wildlife Habitat

Wildlife habitat is defined by the PPS as areas where plants, animals and other organisms live, and find adequate amounts of food, water, shelter, and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory or non-migratory species. The PPS does not permit development or site alteration in *“Significant Wildlife Habitat; unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.”*

##### 4.5.2.1 Special Concern and Rare Species

Three provincially rare species were noted on the Subject Property including Tall Boneset (S1), Missouri Ironweed. (S3) and Chimney Crayfish (S3). As per the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E, Significant Wildlife Habitat (SWH) is triggered for *“All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species.”* The area of the habitat to the finest ELC scale that protects the habitat form and function is protected under SWH. Mitigation measures to protect Chimney Crayfish and



Missouri Ironweed can be seen in **Section 5.2.2**. Mitigation measures for Tall Boneset can be seen in **Section 6.1**.

#### 4.5.2.2 *Terrestrial Crayfish*

The habitat of Terrestrial Crayfish including Chimney/Digger Crayfish are only found in southwest Ontario is considered SWH as their habitats are rare. The presence of 1 of more individuals or their chimneys (burrow) in a suitable moist terrestrial site triggers SWH. The proposed development will avoid the burrow of Chimney Crayfish and additional mitigation measures to protect this species can be seen in **Section 6.1**.

#### 4.5.3 Fish Habitat

Supporting healthy fish communities positively contributes to the social and economic interests of the province and local communities. Fish Habitat, as per PPS policy 2.1.5, is defined by the Fisheries Act (2013) and means “*spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes*”. These habitats are afforded protection, via the policies in sections 2.1.5 and 2.1.6 of the PPS, from development and site alteration except in accordance with other applicable legislations. Adjacent lands are protected from development and site alteration unless they are evaluated to avoid disruption to ecological functions.

The Subject Property does not contain any Fish Habitat as defined by the PPS. Hawkins Drain, a Class F agricultural drain abuts the northern property border. While this drain was dry at the time of field investigations, Class F intermittent drains could function as fish habitat during certain points in the year depending on specific conditions, such as the presence of fish populations, the frequency of water flow, and ecological context. Mitigation measures to pre-emptively protect potential Fish Habitat are further discussed in **Section 5.2.1**.

#### 4.5.4 Significant Habitat of Endangered and Threatened Species

An Endangered or Threatened species is defined by the PPS as a species that is listed or categorized as an “Endangered or Threatened species” on the Ontario Ministry of Natural Resources’ Official Species at Risk List, as updated and amended from time to time. The PPS does not permit development and site alteration in “*significant habitat of Endangered species and Threatened species.*”

The proposed development is occurring entirely within the OAG field and within the disturbed areas as shown on **Figure 5**. As such, the habitat of Threatened or Endangered Species will not be impacted.

However, the deciduous hedgerow along the northern property border may function as a movement corridor for SAR snakes such as Eastern Foxsnake (Endangered). Suitable basking and cover objects were noted within this feature including woody debris and brush piles. Additionally, the edge of the MEMM3 community contained several Chimney Crayfish burrows, a known hibernaculum site for Butler’s Gartersnake (Endangered). Mitigation measures to exclude SAR snakes from the worksite must be

implemented to ensure that the project is in compliance with the ESA. Mitigation measures for SAR reptiles can be seen in **Section 6.2**.

## 4.6 CONSERVATION AUTHORITIES ACT (1990)

The Conservation Authorities Act provides the framework to prevent, eliminate and minimize risk to life and property from flood and erosion hazards and encourage the conservation and restoration of natural resources. It empowers Conservation Authorities (CA) to regulate development activities in or adjacent to watercourses and wetlands, which may interfere with their functions.

### 4.6.1 Ontario Regulation 41/24: Prohibited Activities, Exemptions and Permits (2024)

Section 2(1), (2) and (3) of Ontario Regulation 41/24 states that:

*“2. (1) For the purposes of subparagraph 2 iii of subsection 28 (1) of the Act, river or stream valleys include river or stream valleys that have depressional features associated with a river or stream, whether or not they contain a watercourse, the limits of which are determined as follows:*

- 1. Where the river or stream valley is apparent and has stable slopes, the valley extends from the stable top of the bank, plus 15 metres, to a similar point on the opposite side.*
- 2. Where the river or stream valley is apparent and has unstable slopes, the valley extends from the predicted long term stable slope projected from the existing stable slope or, if the toe of the slope is unstable, from the predicted location of the toe of the slope as a result of stream erosion over a projected 100-year period, plus 15 metres, to a similar point on the opposite side.*
- 3. Where the river or stream valley is not apparent, the valley extends,*
  - (i) to the furthest of the following distances:*
    - A. the distance from a point outside the edge of the maximum extent of the flood plain under the applicable flood event standard to a similar point on the opposite side, and*
    - B. the distance from the predicted meander belt of a watercourse, expanded as required to convey the flood flows under the applicable flood event standard to a similar point on the opposite side, and*
  - (ii) an additional 15-metre allowance on each side, except in areas within the jurisdiction of the Niagara Peninsula Conservation Authority.*

*(2) For the purposes of subparagraph 2 iv of subsection 28 (1) of the Act, areas adjacent or close to the shoreline of the Great Lakes-St. Lawrence River System or to inland lakes that may be affected by flooding, erosion or dynamic beach hazards include,*

(a) *the area starting from the furthest offshore extent of the authority's boundary to the furthest of the following distances:*

- (i) *the 100-year flood level, plus the appropriate allowance for wave uprush, and, if necessary, for other water-related hazards, including ship-generated waves, ice piling and ice jamming, except in respect of Wanapitei Lake in the Nickel District Conservation Authority, the applicable flood event standard for that lake being the one set out in item 1 of Table 16 of Schedule 1,*
- (ii) *the predicted long-term stable slope projected from the existing stable toe of the slope or from the predicted location of the toe of the slope as that location may have shifted as a result of shoreline erosion over a 100-year period, and*
- (iii) *where a dynamic beach is associated with the waterfront lands, an allowance of 30 metres inland to accommodate dynamic beach movement, except in the areas within the jurisdictions of the Mattagami Region Conservation Authority, the Nickel District Conservation Authority and the North Bay-Mattawa Conservation Authority where the allowance is 15 metres inland; and*

(b) *the area that is an additional 15 metres allowance inland from the area described in clause (a).*

(3) *For the purposes of subparagraph 2 v of subsection 28 (1) of the Act, other areas in which development activities are prohibited are the areas within an authority's area of jurisdiction that are within 30 metres of a wetland."*

O. Reg. 41/24 defines and establishes regulated areas where development could be subject to flooding or erosion, or where interference with wetlands and alterations to shorelines and watercourses might have an adverse effect on environmental features. The northern property boundary is within the Regulated Area of ERCA (**Figure 4**). Under O. Reg. 41/24, any proposed development, interference or alteration to watercourses or wetlands within a Regulated Area requires a permit from ERCA.

#### **4.7 MIGRATORY BIRDS CONVENTION ACT (1994)**

According to the Minister of Justice (2017) the Migratory Birds Convention Act (MBCA, 1994) is intended to "implement a convention for the protection and conservation of migratory birds in Canada and the United States" ... "The purpose of this act is to implement the convention by protecting and conserving migratory birds — as populations and individual birds — and their nests" a "migratory bird means a migratory bird referred to in the convention, and includes the sperm, eggs, embryos, tissue cultures and parts of the bird." According to the regulations in subsection 12 (1)(h): 12(1) "the governor in council may make any regulations that the governor in council considers necessary to carry out the purposes and provisions of this act and the convention, including regulations" ... "(h) for prohibiting the killing, capturing,



*injuring, taking, or disturbing of migratory birds or the damaging, destroying, removing or disturbing of nests” (Minister of Justice 1994, 2017).*

Environment and Climate Change Canada administers the requirements under the MBCA. As such, dates and protocol have been recommended below to ensure vegetation removal is undertaken outside of the breeding bird season. Refer to **Section 5.0** of this EIS for more information regarding mitigation measures to avoid impacts breeding birds.

## **5.0 MITIGATION TO AVOID IMPACTS TO NATURAL HERITAGE FEATURES**

Mitigation refers to the avoidance or reduction of impacts associated with the proposed works through best practices. When applied correctly, mitigation is intended to reduce the potential for impacts to ensure that the natural heritage features and functions will continue uninhibited by the proposed development. Thus, mitigation would be required to ensure that there is no negative impact, and the development can proceed in conformity with the relevant planning documents and in compliance with environmental law. The suggested mitigation measures include construction timing, site selection, contaminant and spill management, operation of machinery, buffers for natural features and rare species, and best management practices for construction. The various mitigation measures are further discussed below.

### **5.1 PROJECT PLANNING**

#### **5.1.1 Timing**

Future construction activities for residential development should be timed to respect windows for breeding seasons of birds, wildlife, and the spawning season for fish to protect the individual the lifecycles of animals and the organisms upon which they feed. Schedule work to avoid wet, windy, and rainy periods that may increase erosion and sedimentation. The duration of construction activities should be minimized to reduce potential disturbances to local wildlife.

The proposed development is occurring within the agricultural lands and disturbed area and will not require tree or shrub clearing. However, there is one Balsam Popular tree located behind the existing Home Depot. If removal of this tree is required to accommodate the extension of Catherine Street, it should be removed outside of the breeding bird window (April 1<sup>st</sup> – August 30<sup>th</sup>) to avoid destruction of active bird nests protected by the *Migratory Birds Convention Act* (1994).

#### **5.1.2 Site Selection**

The development envelope has been designed to utilize agricultural lands and lower quality disturbed habitats on the Subject Property. One provincially significant plant, Tall Boneset may require

transplanting to ensure that is not impacted by the proposed road extension for Catherine Street (**Section 6.1**).

All other natural habitats and sensitive species/habitat features as shown on **Figure 5** will be retained as part of the proposed development. The removal of natural woody debris, rocks, sand, or other materials from the Subject Property should be kept to a minimum when possible.

### 5.1.3 Contaminant and Spill Management

Plan activities such that materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, poured concrete or other chemicals do not leach into the ground or enter the watercourse. A “spill response plan” should be developed and implemented immediately in the event of a sediment release or spill of a deleterious substance. An emergency spill kit should be kept onsite as well as the appropriate contingency materials to absorb or contain any petroleum products, major/minor spills, and landscaping chemicals and fertilizers that may be accidentally discharged, should be on the site at all times.

### 5.1.4 Operation of Machinery

All machinery should arrive onsite in a clean condition. Wash, refuel and service machinery, and store fuel and other materials for the machinery, in such a way as to prevent any deleterious substances from leaching into the ground or entering the watercourse. Remove all construction materials from site upon project completion.

## 5.2 PROTECTION BUFFERS

### 5.2.1 Fish Habitat Buffer

The PPS recommends that a 30m buffer be provided to Fish Habitat. Maintaining vegetated buffers around Fish Habitat is essential to control erosion, maintain bank stabilization, to provide shade and decrease water temperatures and provide organic deposition for benthic and fish communities. As such a 30m buffer has been applied to Hawkins Drain (**Figure 6**). The majority of the 30m buffer is naturally vegetated by the Naturalized Deciduous Hedge-row Ecosite (FODM11). Vegetated buffers comprised of trees and shrubs possess intricate root systems that play a fundamental role in stabilizing the banks of nearby water bodies. Additionally, trees and shrubs provide essential shade to aquatic ecosystems, thereby moderating water temperatures. Such shade helps mitigate the adverse effects of excessive solar heating, which can be detrimental to aquatic organisms.

IES acknowledges that although Hawkins Drain has not been officially designated as Fish Habitat due to its intermittent nature, establishing a 30-meter buffer around this feature is an important protective measure for other reasons. This buffer helps safeguard the FODM11 community, which is likely to serve as a vital movement corridor for wildlife, particularly along the rail line adjoining naturalized areas. Movement corridors are crucial for many species, including snakes, as they provide safe passage between

habitats, allowing for the migration, foraging, and mating necessary for genetic diversity and population stability. These corridors not only facilitate movement but also help mitigate the risks of mortality from roadways and other barriers. By protecting and enhancing these ecological pathways, we contribute to the resilience of snake populations and the overall health of the ecosystem.

### 5.2.2 Significant Wildlife Habitat (SWH) Buffer

The establishment of a 5-meter buffer along the adjacent meadow edge is crucial for the conservation of provincially rare species such as the Chimney Crayfish (*Creaserinus fodiens*) and Missouri Ironweed (*Vernonia missurica*), as well as the protection of their associated habitats. Chimney Crayfish burrows serve as essential hibernation sites for the Butler's Gartersnake (*Thamnophis butleri*), a provincially endangered species that relies on this microhabitat for survival during colder months. The buffer zone will not only safeguard these critical ecological features from anthropogenic disturbances but also support the overall biodiversity of the adjacent MEMM3 community. Maintaining this protective strip enhances habitat connectivity, mitigates edge effects, and safeguards the integrity of the ecological processes necessary for the survival of these rare species, thus contributing to regional conservation efforts.

## 5.3 RECOMMENDATIONS TO ENHANCE THE PROPOSED SWM POND

The establishment of the SWM pond in the northern section of the property presents a significant opportunity to enhance the adjacent natural communities, including the linear hedgerow. IES recommends the strategic planting of native trees and shrubs around the SWM pond to promote biodiversity and improve habitat quality for local fauna. Furthermore, relocating the existing brush piles from the Development Area to this newly created habitat would provide essential thermoregulation and cover for snake species. In addition to the brush piles, the incorporation of other snake habitat features are proposed, including strategically placed rocks and nesting boxes, to further enrich this area's ecological complexity. By optimizing the SWM pond and its surroundings in this manner, the project could achieve a net ecological gain, fostering a more resilient and vibrant local ecosystem.

## 5.4 GOOD HOUSEKEEPING AND CONSTRUCTION PRACTICES

The most critical time for the protection of natural heritage features is during the construction phase. Best management practices should be used to minimize erosion potential before, during and after construction.

- A construction barrier fence and/or a sediment and erosion control fence must be installed before any construction activity is to occur to ensure no harm to the natural system. The fence must be installed according to **Section 6.2** to ensure that SAR reptiles are properly excluded from the worksite.
- Soil stockpiles should be established in locations 30m or greater from the hedgerow/agricultural drain and within the silt fencing protecting the natural system. If the



stockpiles must be within 30m of the features, they should be protected with sediment fence on the down gradient side of the pile.

- An erosion and sediment control plan should be reviewed by construction crews to ensure protection of the natural heritage and hazard features during construction.
- The grading of the lot should ensure any overland flow is infiltrated to the soil and not directed toward the agricultural drain or hedgerow features on the property by overland flow paths.
- The size of the disturbed area (development envelope) must be limited by minimizing non-essential grading.
- Construction should commence only when all materials required for construction are at hand to minimize the duration of work.
- All equipment maintenance and refueling should be controlled to prevent any discharge of petroleum products.
- Include emergency contacts for a Wildlife Biologist in case of conflict with wildlife during construction: Nicole Wajmer (519) 829-9463 [nicole.wajmer@insightenvironmental.ca](mailto:nicole.wajmer@insightenvironmental.ca)

## 6.0 MITIGATION TO AVOID IMPACTS TO SPECIES AT RISK

### 6.1 MITIGATION FOR TALL BONESET (S1)

Tall Boneset (*Eupatorium altissimum*) was observed in the disturbed area that is being considered for the extension of Catherine Street. This plant has a provincial S-rank of S1, indicating that it is Critically Imperiled in Ontario. Additionally, the vicinity surrounding the plant is classified as Significant Wildlife Habitat (SWH) under the Provincial Policy Statement (PPS). Given that stormwater management ponds are usually constructed and landscaped before new developments proceed, it is advisable to transplant the Tall Boneset to the designated area for the SWM pond before the street extension takes place.

To successfully transplant Tall Boneset, first assess a suitable location that matches the conditions of a stormwater management pond. Clear the designated area of any debris and invasive species, ensuring the soil is conducive to Tall Boneset growth, amending it if necessary. The optimal transplanting time is in early spring or fall during the plant's dormant period. When digging up the plant, preserve as much of the root system as possible using a sharp spade or shovel. Transport the uprooted plant in a container or wrapped in damp burlap to maintain moisture. In the new location, dig a hole twice the width of the root ball and the same depth, position the plant centrally, and backfill with soil, ensuring the crown is level with the soil. Water the plant thoroughly post-planting to help settle the soil and reduce transplant shock. Finally, monitor the transplanted Tall Boneset for any signs of stress or illness, providing ongoing care through regular watering and protection from pests or weeds.

## 6.2 MITIGATION FOR SAR REPTILES

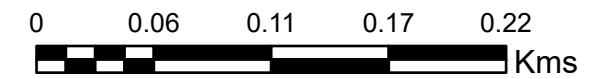
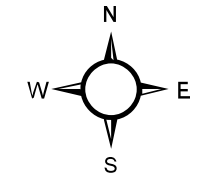
While the Subject Property does not contain suitable habitat to support SAR snakes or turtles, incidental encounters with these species may occur due to the property being within to the agricultural rail corridor to the north or the meadow located to the east of the Subject Property. Chimney Crayfish burrows were observed along the margins of the western property boundary and are known to provide hibernaculum habitat to Butler's Gartersnake (END). As such, it is imperative to incorporate mitigation measures into the project planning to ensure that SAR reptiles are excluded from the worksite (**Figure 6**).

1. All on-site personnel must be made aware of the potential presence of Species at Risk (SAR) snakes, specifically Butler's Gartersnake (END) and Eastern Foxsnake (END).
2. **Reptile exclusion fencing should be placed around the development envelope to ensure that SAR Reptiles do not enter the worksite. Fencing should be installed according to the Ontario Species at Risk Branch Best Practices Technical Note: Reptile and Amphibian Exclusion Fencing (2013). To prevent the entanglement of SAR snakes, an alternative product such as Curlex Net-free® blanket or the use of riprap over geotextile fabric is recommended. This document can be seen in Appendix B.**
3. Fencing should be placed at least 10m to the east of the western property boundary to ensure that Chimney Crayfish burrows are not disturbed.
4. Once reptile exclusion fencing has been erected, a Visual Area Survey should be conducted to ensure that there are no individuals trapped inside.
5. Construction machinery and equipment that is left idle for over 1 hour or is parked overnight on the property between April 1st to November 30th must be surveyed for the presence of Eastern Foxsnake before (re)ignition. This visual examination should include all lower components of the machinery, including operational extensions and running gear.
6. Any SAR individual that is present on the property should be reported to the Ministry of Environment, Conservation and Parks (MECP) within 48 hours of the observation or the next working day, whichever comes first.
7. If a SAR individual is encountered, the individual must be allowed to disperse from the project site under its own ability, and project machinery and equipment must maintain a minimum operating distance of 30 meters from the individual. MECP must be contacted if this cannot be done.
8. If an injured or deceased SAR is found, the specimen must be placed in a non-airtight container maintained at an appropriate temperature and MECP staff must be contacted immediately.







# Existing Conditions

0 Catherine Street, Windsor



## Legend

- Legal Parcel
- Hawkins Drain (Class F)
- Agricultural Drainage Ditch
- Flooded Area
-  Brushpile
-  Tall Boneset (*Eupatorium altissimum*) - S1
-  Missouri Ironweed (*Vernonia missurica*) - S3
-  Chimney Crayfish (*Fallicambarus fodiens*) Burrow - S3
- - - Snake Exclusion Fencing
- Fish Habitat Buffer (30m)
- Chimney Crayfish Burrow Buffer (5m)

## ELC

- FOCM11: Naturalized Deciduous Hedge-row Ecosite
- Large OAG: Open Agriculture
- Small OAG: Open Agriculture
- Open Disturbed Area
- MEMM3: Dry - Fresh Mixed Meadow Ecosite

Figure No.: 6  
 Project No.: IES24-211  
 Scale: 1:15,000  
 Date: November 8, 2024  
 Creator: Nicole Wajmer





## 7.0 CONCLUDING STATEMENT

Based on the results of this Environmental Evaluation Report the following conclusion and recommendations are presented:

1. Insight Environmental Solutions Inc., (IES) was retained by Rock Developments East Windsor Inc., to undertake a Species at Risk (SAR) Impact Assessment for the development of a Costco at the property identified as 0 Catherine Street, Windsor, Essex County, Ontario
2. The project proposes to build a Costco and associated parking lot on the southern half of the property. The northern portion of the property measuring 2.6ha will be used for stormwater management (SWM) pond. The remaining 3.1ha located between the proposed Costco and SWM pond will be retained for future commercial use.
3. The property contains Significant Wildlife Habitat (SWH) as defined by the Provincial Policy Statement (2024). The property is also adjacent to an agricultural drain with intermittent flow and could potentially be considered Fish Habitat during certain times of the year.
4. The northern property boundary is within a Regulated Area under Ontario Regulation 41/24 administered by the Essex Region Conservation Authority (ERCA).
5. Three provincially significant species were detected during field investigations including Tall Boneset (S1), Missouri Ironweed. (S3) and Chimney Crayfish (S3). These species trigger Significant Wildlife Habitat under the Provincial Policy Statement.
6. No provincially or federally listed Species at Risk (SAR) were identified during field investigations.
7. The property is designated as Business Park in the City of Windsor Official Plan (OP). There is a Holding designation on the Manufacturing District (MD1.4) under the City of Windsor Comprehensive Zoning By-Law 8600.
8. The suggested mitigation measures include construction timing, site selection, contaminant and spill management, operation of machinery, buffers for natural features and rare species, and best management practices for construction.
9. Mitigation measures for Species at Risk for Tall Boneset and SAR Reptiles.

Based upon the current assessment of the natural system on the Subject Property, together with a review of municipal and provincial policies; it is reasonable to conclude that there should not be any adverse impacts to the natural system on or adjacent to the Subject Property. Therefore, the proposed development should be approved.

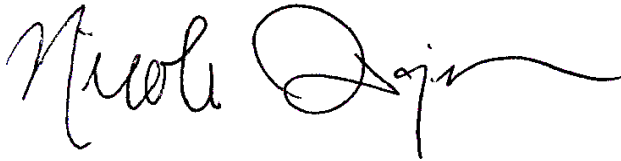
## 8.0 CLOSURE

Insight Environmental Solutions Inc. trusts that the material presented in this report will satisfy the requirements to move forward with the proposed activities. The data and conclusions contained in this letter are based upon work performed by qualified professionals in accordance with accepted scientific

methods and protocols. The information should be interpreted and implemented only in relation to the specific project as identified. This report was prepared for Rock Developments East Windsor Inc., and the undersigned accepts no responsibility for future use by other parties.

We thank you for the opportunity to be part of this project and should you have any questions, please do not hesitate to contact us.

**Insight Environmental Solutions Inc.**



**Nicole Wajmer**  
**Insight Environmental Solutions Inc.**  
*Principal Wildlife Biologist*  
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# APPENDICES

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**APPENDIX A: NAME AND  
QUALIFICATIONS OF RETAINED  
CONSULTANT**



*Wildlife Biologist – Nicole Wajmer, Hon. B.Sc., M.Sc.*

Nicole is a wildlife biologist, GIS technician and managing partner of Insight Environmental Solutions Inc. She completed the Wildlife Biology undergraduate and Integrative Biology graduate program at the University of Guelph and learned Geomatic Information Systems at Fanshaw Collage. Nicole has a wide range of aquatic and terrestrial experiences from her time working in various sectors of biology including industry, government, and academia. She has strong interests in conservation biology and has been involved in recovery programs for the Endangered Northern Spotted Owl and Eastern Loggerhead Shrike. She has successfully completed certifications for First Aid and CPR, ACUC Dive Master, Ontario Benthos Biomonitoring, Backpack 2 Electrofishing, Ontario Stream Assessment Protocol, Ontario Fish Identification, the Department of Fisheries and Oceans Freshwater Mussel Identification Course, Instream Fish Habitat Restoration Techniques, Butternut Health Expert Workshop and the Ontario Reptile and Amphibian Survey Course. She has completed the Combined Field Survey Training Workshop with Bat Survey Solutions to learn contact and non-contact survey techniques for studying bats, including capture methods, bat removal and handling skills, in-field species identification metrics, and non-contact survey methods, using various tools such as photo, video, and audio recordings, and full-spectrum bat detectors, conducted at prime field locations with ongoing long-term bat surveys. Nicole has contributed to a wide range of environmental and restoration projects throughout Ontario including Species at Risk (SAR) Assessments, Environmental Impact Studies (EIS), Natural Heritage Evaluations (NHE), Environmental Impact Assessments (EIA) as well as Land Management and Aquatic Restoration Plans.

*Ecologist – Jennifer Neill, BFA, Dip. Env. Technician, ISA Certified Arborist*

Jennifer is a senior ecologist and managing partner of Insight Environmental Solutions Inc. She holds an honours graduate from the Environmental Technician - Sampling and Monitoring program at Seneca College, a Bachelor of Fine Arts from the Ontario College of Art and Design (OCAD U) and is currently pursuing a Diploma in Ecological Land Design at Gaia College. Jennifer has managed numerous large and small-scale environmental projects throughout Ontario. Her contributions include, detailed terrestrial and aquatic botanical inventories (native, cultivated, and exotic species), ecological land classification, invasive species management plans, incidental wildlife surveys, benthic macro-invertebrate identification, Ontario Species at Risk (SAR) individual identification, SAR habitat evaluation, Arborist Reports, Land Management, Aquatic and Terrestrial Ecological Restoration and/or Compensation Planting Plans. Jen is a certified Arborist under the International Society of Arboriculture (ISA) and is a Butternut Health Expert (BHE). She is also certified under the Ontario Stream Assessment Protocol, Ontario Fish Identification, the Ontario Benthos Biomonitoring Network, RX100 Low Complexity Prescribed Burn Worker, Firesmart 101, the Ontario Wetland Evaluation System, Ecological Land Classification and is an Organic Master Gardener. Jennifer has a strong interest in Botany and the native flora of Ontario and holds a seven-year position on the Board of Directors for Tallgrass Ontario (TgO).

**APPENDIX B: THE ONTARIO SPECIES AT  
RISK BRANCH BEST PRACTICES TECHNICAL  
NOTE: REPTILE AND AMPHIBIAN  
EXCLUSION FENCING (2013).**

# SPECIES AT RISK BRANCH BEST PRACTICES TECHNICAL NOTE

## REPTILE AND AMPHIBIAN EXCLUSION FENCING

Version 1.1

July 2013





July 2013

Ontario Ministry of Natural Resources  
Species at Risk Branch

**Recommended Citation:**

OMNR. 2013. Reptile and Amphibian Exclusion Fencing: Best Practices, Version 1.0. Species at Risk Branch Technical Note. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. 11 pp.

**Cover illustration:** Photograph by Matthew J. Aresco, Conservation Director, Nokuse Plantation

Before an activity can be initiated, permissions, approvals or authorizations may be required from MNR (e.g. Endangered Species Act authorization, Wildlife Scientific Collector’s Authorization) or other agencies, levels of government (e.g. a conservation authority, municipality, federal or provincial government), or landowners. It is your responsibility to ensure that all necessary permissions, approvals and authorizations are acquired prior to proceeding with your activity.

This document presents information as of the point in time of publication and is meant to be updated through time as improved information becomes available.

*Cette publication hautement spécialisée, Reptile and Amphibian Exclusion Fencing Best Practices n’est disponible qu’en anglais en vertu du Règlement 671/92 qui en exempte l’application de la Loi sur les services en français. Pour obtenir de l’aide en français, veuillez communiquer avec le ministère des Richesses naturelles au Pamela Wesley, 705-755-5217.*

**Document History**

Revision Number	Revision Date	Summary of Changes	Originated	Reviewed	Authorized
1.1	June, 2013	Pre-publishing edits	June, 2013	June, 2013	June, 2013

## REPTILE AND AMPHIBIAN EXCLUSION FENCING - BEST PRACTICES -

The purpose of this guidance document is to provide an overview of proven design and installation techniques for reptile and amphibian exclusion fencing. Though this document points to site and species-specific design requirements, it is important to recognize that every situation is different. This guidance is not meant to replace site-specific advice obtained from local MNR staff or experienced exclusion fencing contractors. Moreover, exclusion fences are only effective when well planned, properly constructed, and maintained.

Exclusion fencing seeks to eliminate access to specific areas where activities that could harm animals are occurring (e.g. active aggregate operations, construction sites, and roads). The selection and installation of exclusion fencing can present some challenges, particularly if multiple species are being excluded. For example, some reptiles and amphibians are able to dig under fencing while others can climb over. Some may also take advantage of burrows dug by other animals. To maintain effectiveness, the bottom of the fence should be buried or secured firmly to the ground and minimum height recommendations (Table 1) are considered.

Exclusion fence design should consider the target species as well as those that might be unintentionally impacted. Fencing material should not pose a risk of entanglement or permit individuals to pass underneath or between openings. Landscape features such as topography and substrate need to be considered as they may constrain fencing design.

Including plans for fencing in advance of a project can increase efficiency and fence

effectiveness. For example, long-term road projects that will include a permanent sound barrier could design the sound barrier such that it also meets the specifications of the required exclusion fence.

### EFFECTIVE FENCE CHARACTERISTICS

The fence burial and height recommendations listed in Table 1 below have been compiled from scientific literature, established management practices, and practitioner best advice. These are general recommendations and at times other specifications may be more appropriate. For instance, in areas where the substrate does not permit fence burial, weighing down the fence with heavy items (e.g. sand bags) or backfilling may be acceptable. Where needed, speak with your local MNR staff or experienced exclusion fencing contractor to develop site-specific plans.

If multiple species are being excluded from the same area, and the species-specific fencing specifications differ, the uppermost minimum height and greatest depth recommendation should be used (Table 1). If you are excluding both Blanding's Turtle and Gray Ratsnake, for example, the exclusion fence should be a minimum of 2 m tall (see Gray Ratsnake section below for additional details).

Exclusion fences should be installed prior to emergence from hibernation. A survey of the enclosed/secluded area should be conducted immediately following fence installation to ensure that no individuals have been trapped on the wrong side of the fence.

**Table 1. Recommended burial depth and height requirements of exclusion fencing for reptiles and amphibians. Recommended height is the height of the fence after it has been installed including the buried components and any installed overhangs or extended lips.**

SPECIES	RECOMMENDED DEPTH OF FENCE BURIED (cm) *	RECOMMENDED HEIGHT OF FENCE (cm) **
Turtles – general	10 – 20	60
Eastern Musk Turtle, Wood Turtle	10 – 20	50
Massasauga, Eastern Hog-nosed Snake, Butler’s Gartersnake, Queensnake	10 – 20	60
Gray Ratsnake & Eastern Foxsnake	10 – 20	200
Fowler’s Toad	10 – 20	50
Snakes - general	10 – 20	100
Common Five-lined Skink	10 – 20	unknown
Salamanders	10 – 20	30

\* does not include the 10 cm horizontal lip that should extend outward an additional 10 – 20 cm (see Figure 2)

\*\* the height of fencing has been provided as an approximate. Fencing materials may in fact not be available in proportions that would allow for these precise measurements. It is most effective, if the height and burial depth recommendations are met.

## DURATION OF ACTIVITIES & DEGREE OF ANTICIPATED DISTURBANCE

The type of disturbance, the proximity to disturbance, and the planned fence longevity are factors that influence which type of exclusion fence is most effective. For short-term activities (i.e. 1 to 6 months) such as minor road repairs, a light-duty geotextile fence is appropriate. Longer term or permanent fencing projects, however, require more durable materials such as – heavy-duty geotextile, wood, concrete, woven-wire, sheet metal, vinyl panels, or galvanized mesh.

## GEOTEXTILE FENCES

Geotextile fences (e.g. silt fences) come in many types and qualities. They can be very effective for the temporary exclusion of reptiles and amphibians. For the purposes of this document, temporary use ranges from a few months up to 2-3 years. Winter

weather is generally damaging to geotextile materials and the cost of maintenance over the long-term should be considered during the planning phase. Depending upon the quality, geotextile can be resistant to UV degradation and the bio-chemical soil environment.

### Light-duty Geotextile Fencing:

Light-duty geotextile fencing is made of nylon material and is typically purchased with wooden stakes pre-attached at 2 m to 3 m intervals (Plate 1). It can also come without pre-attached stakes. Light-duty geotextiles are largely intended for projects with shorter durations of only a few months in duration and up to one season.

**Geotextile fencing with nylon mesh lining should be avoided due to the risk of entanglement by snakes.**



To use light-duty geotextile fencing:

- Fencing fabric is effective if attached to wooden, heavy plastic or metal stakes using heavy-duty wire staples or tie-wire (Figure 2).
- Secure the fence on posts that are placed at 2 m to 3 m apart. If using the greater recommended distance between posts, additional maintenance may be required to maintain effectiveness.
- Securely drive the stakes into the ground to a recommended depth of 30 cm. The fencing fabric should be buried to the recommended specifications in Table 1 and back-filled with soil.
- For snakes, supporting posts should be staked on the activity side (e.g. on the side facing the aggregate stock pile or the road - Figure 2).
- Light-duty geotextile fences are not effective where rocks or other hard surfaces prevent proper anchoring of fence posts and burial of the fence fabric.
- Light-duty geotextile fences are not effective where a large amount of concentrated run-off is likely or to cross streams, ditches or waterways without specific modifications.
- Contact your local MNR staff or experienced exclusion fencing contractor for advice and recommendations.
- See general best practices section below for additional details.

Generally, light-duty geotextile fences are not effective if they exceed 1 metre in height unless purposely manufactured for greater height (e.g. stakes placed at closer intervals or cross braces). If greater height is required consider using heavy duty geotextile, hardware cloth or other fencing materials.



**Plate 1. Light-duty geotextile fencing with pre-attached wooden stakes used to exclude turtles from a road as seen on a regular maintenance check (photo credit: Brad Steinberg).**

### Heavy-duty Geotextile Fencing:

Heavy-duty geotextile fencing is typically constructed of a thick felt-like fabric. It may also be called 'double row' or 'trenched' fencing. For support, this fencing uses a woven wire fence (e.g. chain link) or some other structure (Plate 2). It is recommended that a minimum density of 270R or equivalent woven geotextile fabric is used.

Heavy-duty geotextile material can be effective for up to 2 or 3 years with proper maintenance. This type of fencing can be damaged by small mammals chewing through or torn by heavy debris (e.g. tree branches). Therefore, it may be best suited to turtles, which are less likely to take advantage of holes or tears in the fabric. If

used to exclude snakes or other animals, more maintenance may be required.

Heavy-duty geotextile fencing:

- The wire fence should be installed on the activity side to prevent animals from leveraging and climbing into the exclusion area while allowing the animal to escape if they find themselves on the wrong side (Figure 2).
- Geotextile fences across streams, ditches or waterways should have case-specific modifications.
- Contact your local MNR staff or experienced exclusion fencing contractor for advice.
- See light-duty geotextile section above and general best practices below for additional details.



**Plate 2. Example of a heavy-duty geotextile fencing used to exclude snake species (photo credit: Jeremy Rouse).**

## HARDWARE CLOTH FENCES

Hardware cloth (also known as galvanized mesh or Birdscreen) is durable, cost effective and useful for excluding reptiles and amphibians. The fence should be made of heavy galvanized hardware cloth with a ¼ inch mesh. For fences intended to exclude small snakes, a ⅛ inch mesh may be more effective. In contrast, fencing intended to exclude turtle species can have a larger mesh size (e.g. ½ inch). Larger mesh may have a longer lifespan as it is constructed from a thicker material compared to smaller mesh sizes.

To use hardware cloth fencing:

- Secure the fence on posts placed a recommended 2.5 m apart with the stakes on the activity side (Figure 2).
- Pull the mesh taut and staple or secure with screws and a metal stripping to prevent the mesh from being ripped when pressure is applied.
- Installing a top rail or folding the mesh over a taut smooth wire reduces tearing (Plates 3 and 4).
- An outward facing lip installed on the species side ensures that snakes and amphibians are unable to climb or jump over the fence (Figure 2; Plate 4)
- Tears can be mended with 18-gauge galvanized wire.
- See general best practices section below for additional details.





**Plate 3. Example of a galvanized mesh fencing used for the long-term exclusion of snakes and turtles from the adjacent highway (photo credit: Megan Bonenfant).**



**Plate 4. Long-term to permanent exclusion fencing using galvanized mesh with over-hanging lip to prevent animals from climbing or jumping over (photo credit: Megan Bonenfant).**

## WOOD LATH SNOW FENCING

In certain circumstances, wood lath snow fencing can be effective at excluding turtles. This fencing is typically constructed from soft wood slats that have been woven together with 13-gauge wire and is then attached to steel fence posts which have been driven into the ground.

Wood lath fencing is cost effective and can easily be laid down during the winter to prevent damage. The durability of the material, however, is not meant for very long-term use (e.g. more than 3 years), unless regular maintenance occurs.

To use wood lath snow fencing:

- The fencing should be attached to heavy plastic or metal stakes using heavy-duty wire staples or tie-wire.
- The stakes are recommended to be placed at 2 to 3 m intervals and securely driven into the ground 30 cm or more.
- Wood lath snow fencing across streams, ditches or waterways should have case-specific modifications.
- Wood lath snow fencing lends itself well to being combined with other types of material to ensure complete exclusion.
- See general best practices section below for additional details.



**Plate 5. Example of a wood lath snow fencing used to exclude turtles (photo credit: Karine Beriault).**

## EXCLUSION FENCING FOR GRAY RATSNAKE AND EASTERN FOXSNAKE

Gray Ratsnake and Eastern Foxsnake are the largest snakes in Ontario - reaching nearly 2 m in length. They are also excellent climbers. For this reason, fencing intended to exclude either of these species has additional recommended design specifications.



- The fence should be at least 2 m high.
- The material on the species side (Figure 2) should be smooth to prevent the snakes from climbing into the excluded area.
- Stakes should be on the activity side of the fence (Figure 2).
- Due to the increase in fence height, it is valuable to decrease the distance between posts or install diagonal braces.
- See general best practices section below for additional details.

### CONCRETE, SHEET METAL & VINYL WALLS

Concrete, metal or vinyl walls can stand alone or be combined with woven wire or chain link fences. They are durable, require minimal maintenance and are effective in excluding target species from high risk areas and guiding them to crossing structures or other desired locations (Plates 6 and 7). This fence type is comprised of a continuous vertical face of concrete, metal or vinyl sheeting with no gaps. Concrete walls can be installed as either pre-cast sections or pour directly in place.



**Plate 6. Stand-alone continuous concrete wall used to exclude salamander species installed as pre-cast forms (photo credit: Steven Roorda).**



**Plate 7. Pre-formed vinyl sheeting fence intended to exclude salamanders for a construction site (photo credit: Herpetosure Ltd.)**

The wall height depends upon the target species, but they are usually between 45 and 60 cm tall and buried 25 cm. Concrete, metal or vinyl exclusion fencing is most appropriate for salamanders, skinks, small snakes, and small turtles. For large turtle species, a chain link fence can be installed directly on top of the concrete wall for complete exclusion.

### HABITAT CONNECTIVITY

Habitat connectivity is the connectedness between patches of suitable habitat or the degree to which the landscape facilitates animal movement. Exclusion fencing installed along roads or other large projects can effectively reduce or eliminate habitat connectivity for animals. In these scenarios, exclusion fencing should be considered with eco-passages in order to maintain connectivity. Fencing in isolation should be viewed as a temporary method to reduce mortality until species movement can be restored. Where eco-passages are not feasible they should be identified for consideration with any future road work or development to improve connectivity.

During the installation of fencing with an eco-passage, it is important that the fencing sits flush with the passage to ensure that

there are no gaps where animals can squeeze through.



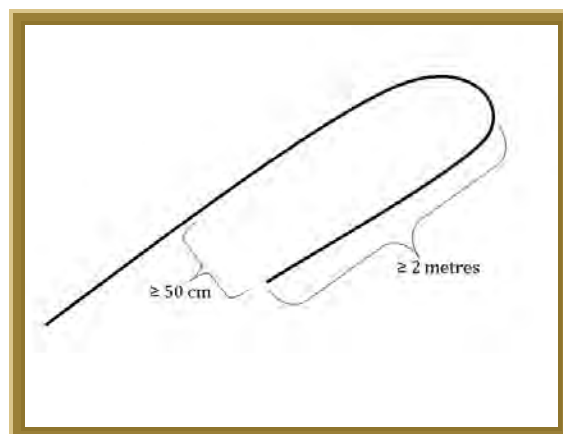
**Plate 7. A wood turtle travelling through a dry eco-passage. Ecopassages such as this help to ensure the long-term connectivity of seasonal habitat for this and other reptile and amphibian species (photo credit: Amy Mui).**

#### GENERAL BEST PRACTICES:

- To deter digging, bury the fence 10 cm down with an additional 10 cm horizontal lip (Figure 2).
- Backfill and compact soil along the entire length on both sides of the fence (Figure 2).
- Once the fence is installed, a survey should be done to ensure that no individuals have been trapped inside (speak with MNR for survey advice).
- Exclusion fencing intended to exclude snakes should have the stakes installed on the activity side (opposite the normal requirement for sediment control fencing) to prevent snakes from using the stakes to maneuver over the fencing.
- For snakes and toads, the fence should have an overhanging lip on the species side (Figure 2).
- Fences should be inspected after spring thaw and at regular intervals throughout the active season, especially following heavy rain events. This is particularly important

for geotextile fences. Any damage that affects the integrity of the fence (e.g. tears, loose edges, collapses, etc.) should be fixed promptly.

- Tall or woody vegetation on the species side of the fence should be managed if there is a risk that it may enable the animals to climb over. This is most important during spring and fall. Proceed cautiously to not harm animals protected plant species during vegetation removal.
- When installing an eco-passage, fencing or exclusion walls should be used as a guiding system to direct animals to passage openings.
- Natural screens such as trees or shrubs can help to reduce road access and can be combined with fencing to provide protection of individuals from predation.
- Install fences with a turn-around at the ends furthest from the wetland habitat and at any access areas to assist in redirecting animals away from any fence openings (Figure 1).
- Curving the ends of the fencing inward (i.e. away from the road or construction site) may help to reduce access to these locations. The ends may also be tied off to natural features on the landscape such as trees or rock cuts.



**Figure 1. Diagram of the ends of the fence designed to curve inward in order to direct animals away from the area of exclusion.**

**WATER MOVEMENT & DRAINAGE**

- In areas where surface water run-off may erode a soil-based backfill, consider using rocks or sand bags. Ensure these materials cannot be used by animals to climb over the fence.
- Where possible, minimize the number of water crossings: when necessary, it should occur where flow is minimal.
- Fence posts in waterways or areas prone to seasonal flooding should be driven rather than dug – unless following established best practices.
- Fencing should be placed above the high water mark anticipated for high water events such as spring freshet or periods of heavy or continuous rainfall.

**TOPOGRAPHY:**

- Fence posts should be closer together in undulating topography.
- Fences installed on slopes have a different effective height depending upon whether the animal will be approaching from the up or down slope. The fence height can be adjusted accordingly.

**Improvements or questions regarding exclusion fencing can be brought to the local MNR Species at Risk Biologist or other MNR staff.**

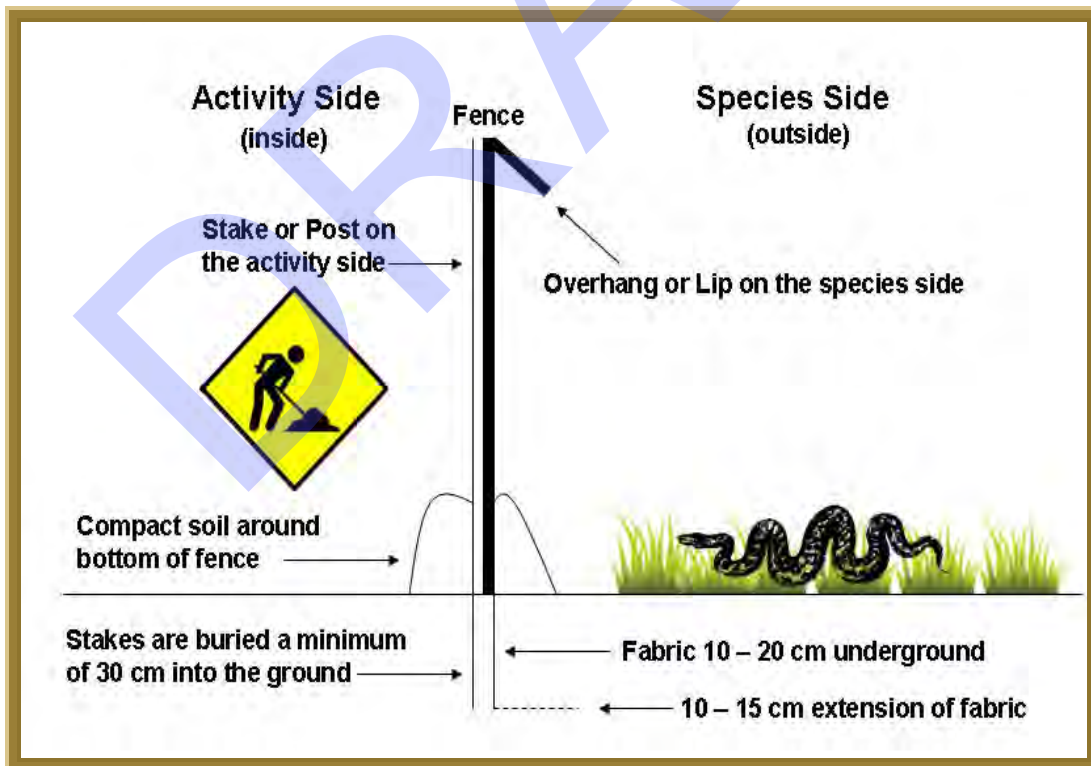


Figure 1. A side view of a basic exclusion fence including an overhang or flexible lip to deter animals from climbing or jumping over the fence. Placement of the stake on the Activity Side or on the inside of excluded area is also illustrated. This is particularly important for snake species which may use the stakes to maneuver over the fence.

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**For additional information:**

Visit the species at risk website at [ontario.ca/speciesatrisk](http://ontario.ca/speciesatrisk)  
Contact your MNR district office  
Contact the Natural Resources Information Centre  
1-800-667-1940  
TTY 1-866-686-6072  
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[ontario.ca/mnr](http://ontario.ca/mnr)