

Environmental Evaluation Report

0 Catherine Street, Windsor



Prepared For:

Rock Developments East Windsor Inc.

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Date:

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1.0 INTRODUCTION

Insight Environmental Solutions Inc., (IES) was retained by Rock Developments East Windsor Inc., to undertake an Environmental Evaluation Report (EER) 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) and possible habitat of Threatened and Endangered Species as defined by the Provincial Policy Statement (2024). The property is also adjacent to an agricultural drain with intermittent flow, which is 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 Subject 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 mixed meadow to the west. An agricultural drain exists to the north of the property, flowing in an eastward direction. **Figure 1** shows the property in a regional context.

1.2 DEVELOPMENT PROPOSAL

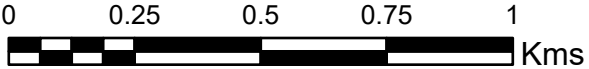
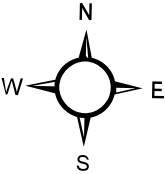
The project plans include the construction of a Costco, along with associated parking facilities, on the southern half of the property. Additionally, an extension of Catherine Street is proposed to access the property, which will be a "Class 1 Collector Road." The extension will traverse the southern property boundaries and adjacent lands. The remaining 2.6 hectares on the northern portion of the property will be designated for stormwater management. A Stormwater Management Facility (SWMF) with a pond and pump house will control storm flow and discharge into an open agricultural drain on the eastern property boundary. The SWMF will service both the proposed development and the Forest Glade Secondary

Planning area, as identified by R.J. Burnside's Environmental Assessment. The remaining 3.1ha located between the proposed Costco and SWMF 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



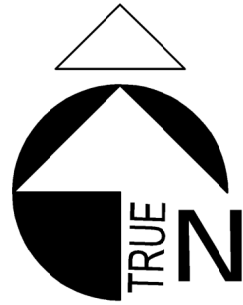
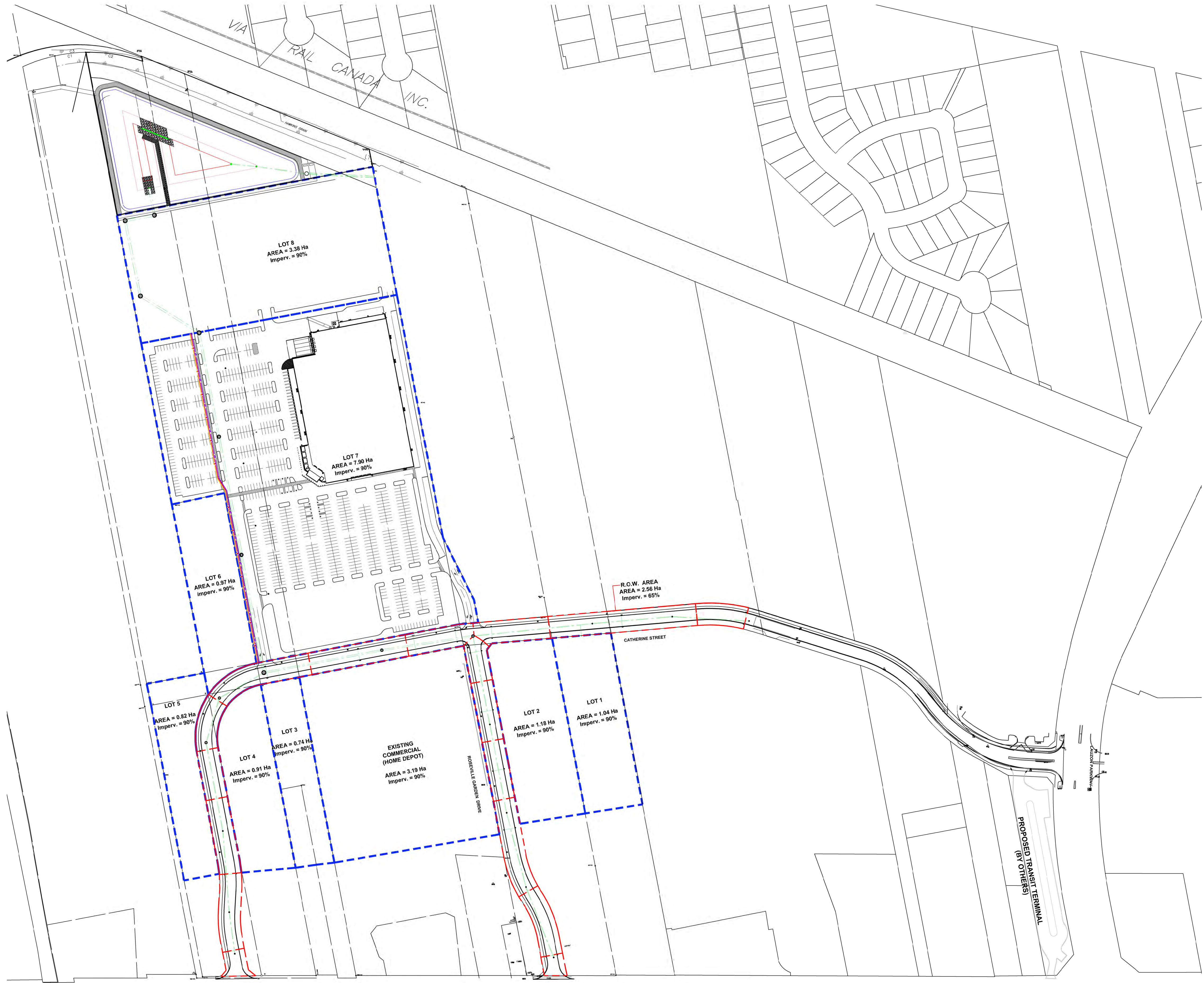
Legend

Legal Parcel

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



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



APPROVED AS TO FORM, IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF ALEO ASSOCIATES INC. AS TO DESIGN AND SPECIFICATION.

CITY ENGINEER
THE CORPORATION OF THE CITY OF WINDSOR
DEPARTMENT OF PUBLIC WORKS



ALEO ASSOCIATES INC.
CONSULTING ENGINEERS

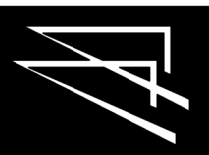
325 DEVONSHIRE ROAD, SUITE 500
WINDSOR, ONTARIO, CANADA N8Y 2L3
TELEPHONE (519) 254-7926

DATE	No.	ISSUED FOR

DATE	DECEMBER 2024
SCALE	1:2000
DRAWN BY	J.P.A.
AUTOCAD REF.	8500.dwg

PROJECT TITLE	FOREST GLADE NORTH PLANNING AREA WINDSOR, ONTARIO
SHEET TITLE	STORM SEWER DRAINAGE AREA PLAN

PROJECT NUMBER	8500
SHEET NUMBER	3 of 27



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 Planning 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 ($\text{Mean CC} = \text{Sum of CC} / n$). The Mean CC is then multiplied by the square root of the total number of plants (n) to yield the FQI ($\text{FQI} = \text{Mean CC} \sqrt{n}$). 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 DRIPLINE STAKING EXERCISE

The dripline of the woodland feature was captured in a staking exercise conducted by a Certified Arborist (ON-2752A) to ensure adherence to best practices in arboricultural assessment and management. Utilizing a high-accuracy GPS unit, the extent of the dripline of the woodland edge precisely staked, allowing for accurate data collection and mapping of the critical root zones. The GPS unit provided +/-3 metre accuracy, ensuring that the staked locations were reliable and can be used for subsequent ecological assessments and management planning. Prior to staking, a thorough evaluation of the surrounding environment was performed to identify any factors that could influence tree health and growth, ensuring a comprehensive approach to the exercise.

2.6 AQUATIC HABITAT ASSESSMENT

A Channel Structure Assessment was conducted utilizing the methodology outlined in Section 4, Module 1 of the Ontario Stream Assessment Protocol (OSAP) Version 10 (2017). This module involves a systematic evaluation of stream morphology and habitat characteristics and initiates with the delineation of the assessment reach. Field data are gathered through visual surveys and precise measurements of critical channel attributes, including width, depth, substrate composition, and bank stability. The assessment encompasses a thorough documentation of structural features such as pools, riffles, and runs, along with their respective dimensions and habitat quality assessments. Furthermore, the presence of anthropogenic structures, such as weirs and culverts, is recorded, and their effects on stream flow dynamics and fish

passage are analysed. To enhance the reliability and comparability of the data, photographic documentation is incorporated, alongside the utilization of standardized assessment forms. This methodology is designed to yield an understanding of channel conditions and their implications for stream health and aquatic habitat.

2.7 HEADWATER DRAINAGE FEATURE ASSESSMENT

The Evaluation, Classification and Management of Headwater Drainage Features Guidelines by Credit Valley Conservation Authority and Toronto and Region Conservation Authority (CVC & TRCA, 2014), hereafter described as “the Guidelines”, were used to classify Headwater Drainage Features (HDF) on the Subject Property and adjacent lands. The Guidelines were developed to provide direction to practitioners for aquatic features that are not covered by existing policy as being important eco-hydrological features but may contribute to the overall health of a subwatershed. The Guidelines provide consistent methodology to evaluate sediment, food, and flow transport to downstream reaches, as well as the use of the features by biota (CVC & TRCA, 2014). According to the Guidelines, modules from the most up-to-date Ontario Stream Assessment Protocol (OSAP; Ministry of Natural Resources and Forestry, 2017), including the Constrained Headwater Sampling, Section 4 Module 10 (OSAP S4.M10; Stanfield, et al., 2017) and/or the Unconstrained Headwater Sampling, Section 4 Module 11 (OSAP S4.M11; Stanfield, et al., 2017) are applied to complete the HDF Assessment. The classification of a HDF is linked to appropriate management options based on the hydrology, fish habitat, and vegetation functions of the feature.

To distinguish HDFs from watercourses, the following definitions were utilized per the OSAP and the CVC & TRCA documents:

- HDFs are non-permanently flowing drainage features that may not have defined bed or banks; they are first-order and zero-order intermittent and ephemeral channels, swales, and connected headwater wetlands, but do not include rills or furrows.
- Features within a valley are typically not considered HDFs.
- A HDF has a catchment of at least 2.5 ha in size.

Per the Guidelines, more than one field assessment is required to accurately assess hydrology. The Guidelines recommend the OSAP Headwater module be completed in three assessment periods at each sampling location to assess the HDF’s throughout the year. The assessment periods include spring freshet (late March – mid-April), late April – May and July – August.

Once field surveys are complete, the HDFs are assessed in four steps, based on criteria outlined in the Guidelines, to classify each HDF:

1. **Hydrology Classification:** Flow conditions are classified into hydrology types.
2. **Riparian Classification:** The feature is classified with regard to riparian vegetation.
3. **Fish and Fish Habitat Classification:** Fish and fish habitat is classified based on the presence of fish and allochthonous transport is considered.

4. **Terrestrial Habitat Classification:** Features are classified based on the presence of breeding amphibians, wetlands and stepping stone habitat.

Finally, the results of Steps 1 to 4 are summarized and used in the Flow Chart within the CVC & TRCA Guidelines (**Table 1**) to assign a Management Recommendation. Potential management recommendations as identified in the Guidelines include protection, conservation, mitigation, recharge, maintain terrestrial linkage and no management required. Definitions of the management recommendations are presented in **Table 2**.

TABLE 1: CVC & TRCA FLOW CHART

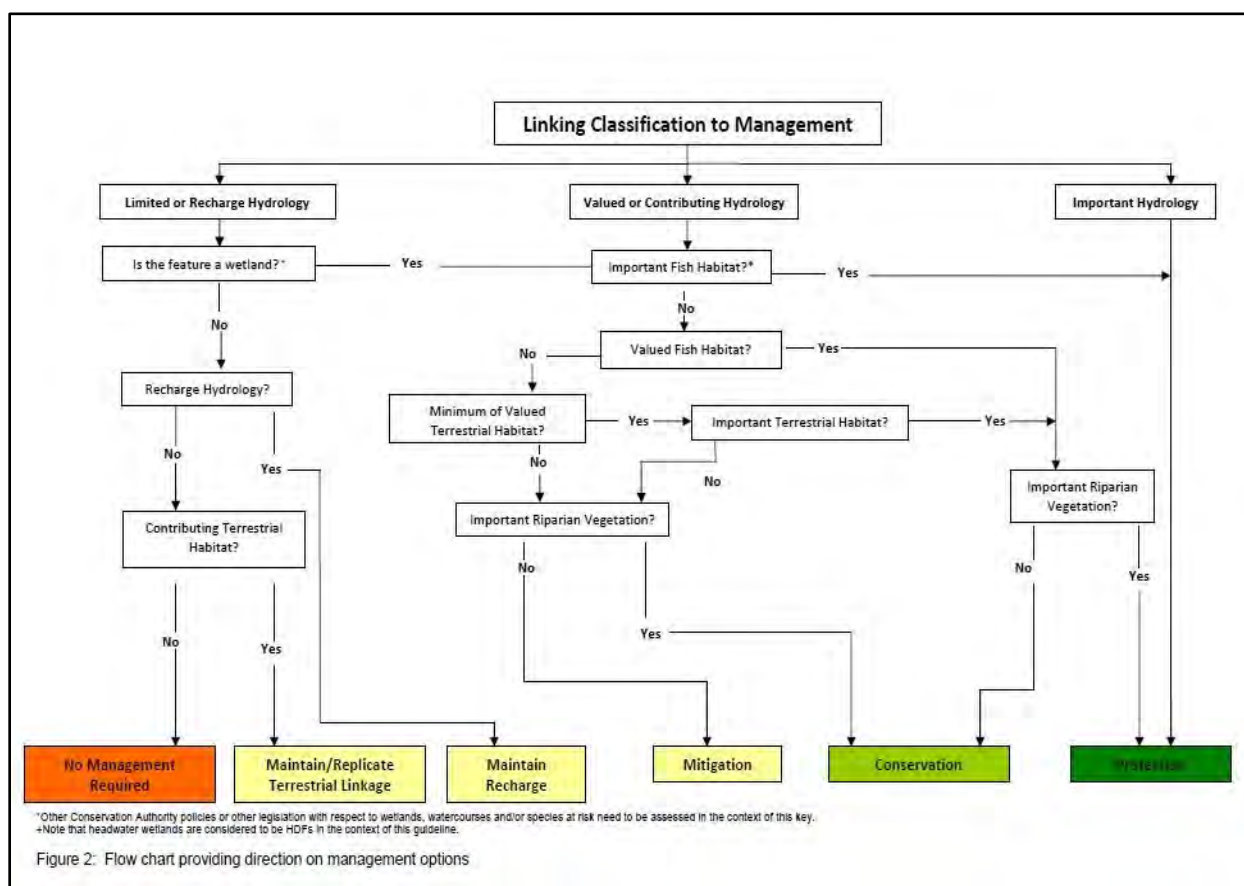


TABLE 2: DEFINITIONS OF MANAGEMENT RECOMMENDATIONS (CVC & TRCA, 2014)

HDF Management Recommendation	Definition
Protection (Important Functions)	<ul style="list-style-type: none"> Protect and/or enhance the existing feature and its riparian zone corridor, and groundwater discharge or wetland in-situ; Maintain hydroperiod; Incorporate shallow groundwater and base flow protection techniques such as infiltration treatment;

TABLE 2: DEFINITIONS OF MANAGEMENT RECOMMENDATIONS (CVC & TRCA, 2014)

HDF Management Recommendation	Definition
	<ul style="list-style-type: none"> • Use natural channel design techniques or wetland design to restore and enhance existing habitat features, if necessary; realignment not generally permitted; and • Design and locate the stormwater management system (e.g., extended detention outfalls) are to be designed and located to avoid impacts (i.e., sediment, temperature) to the feature.
Conservation (Valued Functions)	<ul style="list-style-type: none"> • Maintain, relocate and/or enhance drainage feature and its riparian corridor; • If catchment drainage has been previously removed or will be removed due to diversion of stormwater flows, restore lost functions through enhanced lot level controls (i.e., restore original catchment using clean roof drainage), as feasible; • Maintain or replace on-site flows using mitigation measures and/or wetland creation, if necessary; • Maintain or replace external flows; • Use natural channel design techniques to maintain or enhance overall productivity of the reach; and • Drainage feature must connect to downstream.
Mitigation (Contributing Functions)	<ul style="list-style-type: none"> • Replicate or enhance functions through enhanced lot level conveyance measures, such as well-vegetated swales (herbaceous, shrub and tree material) to mimic online wet vegetation pockets, or replicate through constructed wetland features connected to downstream; • Replicate on-site flow and outlet flow at the top end of the system to maintain feature functions with vegetated swales, bioswales, etc. If catchment drainage has been previously removed, due to diversion of stormwater flows, restore lost functions through enhanced lot level controls (i.e., restore original catchment using clean roof drainage); and • Replicate functions by lot level conveyance measures (e.g., vegetated swales) connected to the natural heritage system, as feasible and/or Low Impact Development (LID) stormwater options (refer to Conservation Authority Water Management Guidelines for details).
Mitigation (Recharge Functions)	<ul style="list-style-type: none"> • Maintain overall water balance by providing mitigation measures to infiltrate clean stormwater, unless the area qualifies as an Area of High Aquifer Vulnerability under the Oak Ridges Moraine Conservation Plan (ORMCP) or Significant Recharge Areas under the Source Water Protection Act. These areas will be subject to specific policies under their respective legislation. • Terrestrial features may need to be assessed separately through an Environmental Impact Study to determine whether there are other terrestrial functions associated with them.
Mitigation (Terrestrial Functions)	<ul style="list-style-type: none"> • Maintain the corridor between the other features through in-situ protection or if the other features require protection, replicate, and enhance the corridor elsewhere.

TABLE 2: DEFINITIONS OF MANAGEMENT RECOMMENDATIONS (CVC & TRCA, 2014)

HDF Management Recommendation	Definition
	<ul style="list-style-type: none"> If the feature is wider than 20 m, it may need to be assessed separately through an Environmental Impact Study to determine whether there are other terrestrial functions associated with it.
No Management Required (Limited Functions)	<ul style="list-style-type: none"> The feature that was identified during desktop pre-screening has been field verified to confirm that no feature and/or functions associated with HDFs are present on the ground and/or there is no connection downstream. These features are generally characterized by lack of flow, evidence of cultivation, furrowing, the presence of a seasonal crop, and lack of natural vegetation. No management recommendations required.

2.8 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.

2.8.1 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.

2.8.2 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.

2.9 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 3**.

TABLE 3: SURVEY FIELD DATES AND WEATHER CONDITIONS

Date	Type of Surveys	Temperature (°C)	Cloud Cover (%)	Beaufort Wind Scale ¹	Precipitation Code ²	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
December 17, 2024	Vegetation Inventory, Ecological Land Classification, Aquatic Assessment, Headwater Drainage Feature Assessment and Dripline Staking.	2	100	2 - 3	0	Nicole Wajmer and Jennifer Neill

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

²Precipitation Codes: 0 (Clear); 1 (Fog); 2 (Light Drizzle); 3 (Light Rain); 4 (Moderate Rain); 5 (Heavy Rain); 6 (Thunder or Lightning).

3.2 NATURAL HERITAGE FEATURES

The Ministry of Natural Resources and Forestry (MNR) 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 have deep flowing water. Additionally, there is a ditch or drain along the eastern edge of the property between agricultural fields, which was 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

0.3 0 0.17 0.3 Kilometres

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

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

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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



Figure 4: ERCA Regulated Area



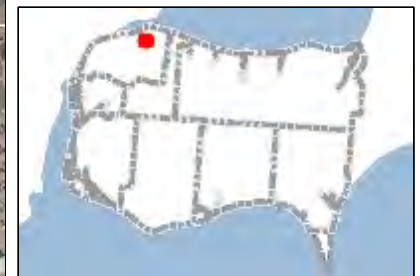
**Essex Region
Conservation
Authority**

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 (Subject Property and adjacent lands) contains two anthropogenic areas and three natural vegetation communities (**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. A segment of the proposed extension of Catherine Street will take place within this community. **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 water 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 Fresh - Moist Deciduous Woodland Ecosite (WODM5) extends along the northern property boundary and is distributed across several small polygons. These polygons are predominantly composed of young trees interspersed with occasional canopy veterans. The WODM5 exhibits a semi-closed canopy observing $35\% < \text{tree cover} < 60\%$ with a cultural legacy. One WODM5 polygon, on the eastern property boundary contains a prominent standing pool of water, bordered by Eastern Cottonwood (*Populus deltoides*). Several central polygons exhibit vertical cuts along their southern edges, with exposed tree roots visible. These cuts measure approximately 1 to 1.5 meters in height. The remaining polygons exhibit a heterogeneous composition of tree species lacking typical associations. The canopy is primarily dominated by Manitoba Maple (*Acer negundo*), with occasional to rare occurrences of Eastern Cottonwood, Silver Maple (*Acer saccharinum*), and Bur Oak (*Quercus macrocarpa*). The tall shrub layer (2–10 m) is characterized by regenerating young trees, predominantly Green Ash (*Fraxinus pennsylvanica*), with occasional to rare occurrences of White Elm (*Ulmus americana*), Hackberry (*Celtis occidentalis*), and Common Apple (*Malus pumila*). A total of 26 species were observed in this community, 17 (65%) native species exist, while nine (35%) are classified as non-native. The mean Coefficient of Wetness (CW) for this community is 1.08. This number indicates that there is a slight predominance of upland species present. The mean Coefficient of Conservatism (CC) for this community is 2.08. 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 10.59 indicating low significance from a natural quality perspective. Disturbance history includes light browse, gaps in the canopy, flooding, tracks and trails, cutting, dumping and invasive species. **Photo 3** shows an example of site conditions as they were during field investigations.

The Fresh - Moist Deciduous Thicket Ecosite (THDM5) surrounds the WODM5 polygons and extends down to the southern edge of the Hawkins Drain. The THDM5 is dominated by a mix of common native and exotic shrub species with shrub cover > 25%; tree cover < 25%; varying from scattered and patchy to continuous. A total of 41 species were observed in this community, 22 (54%) native species exist, while 19 (46%) are classified as non-native. The mean CW for this community is 0.73. This number indicates that there is a slight predominance of upland species present. This number is slightly lower than expected due to the presence of several facultative and obligate wetland species occurring at the interface of this community and the Hawkins Drain (some within the drain bed itself). The mean CC for this community is 1.22. This number indicates the floristic quality is not sufficient to identify a community of remnant natural quality. The FQI for this community is 7.81 indicating low significance from a natural quality perspective. Disturbance history includes light browse, anthropogenic disturbance (CSP Culverts), steep banks and invasive species. **Photo 4** shows an example of site conditions as they were during field investigations.

The Fresh - Moist Mixed Meadow Ecosite (MEMM4) is located on the adjacent lands to the west and along the northern bank of the Hawkins Drain. The MEMM4 is an open herbaceous community with tree and shrub cover < 25%, ranging from scattered and patchy to continuous meadow. The MEMM4 ecosite located on the adjacent lands is a higher-quality mixed meadow characterized by greater native species diversity and the presence of several provincially significant plants. Portions of this MEMM4 polygon exhibit areas of standing, pooled water, with facultative wetland species present; however, their coverage does not exceed 50%. The MEMM4 located along the northern bank of the drain is dominated by invasive species and demonstrates relatively low species diversity in comparison. A total of 48 species were observed in this community, 23 (48%) native species exist, while 25 (52%) are classified as non-native. The mean CW for this community is 1.33. This number indicates that there is a slight predominance of upland species present. The mean CC for this community is 1.04. This number indicates the floristic quality is not sufficient to identify a community of remnant natural quality. The FQI for this community is 10.43 indicating low significance from a natural quality perspective. Disturbance history includes light browse, flooding and invasive species. The southeast corner of this community will require removal to accommodate the proposed extension of Catherine Street. **Photo 5** shows an example of site conditions as they were during field investigations.

All vegetation communities within the Study Area are considered widespread and common in Ontario and are secure globally. **Table 4** 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: Fresh - Moist Deciduous Woodland Ecosite (WODM5), looking northeast.



Photo 4: Fresh - Moist Deciduous Thicket Ecosite (THDM5), looking north.



Photo 5: Fresh - Moist Mixed Meadow Ecosite (MEMM4), looking north.

3.6.2 Flora

A total of 115 vascular plant taxa were recorded within the study area (**Table 4**). Of the 115 species identified to a species level, 59 species (51%) are considered native to Ontario while 56 species (49%) are classified as non-native. No plant SAR were observed however, field investigations confirmed the presence of three provincially significant plant species; Missouri Ironweed (*Eupatorium altissimum*) and Stiff Goldenrod (*Solidago rigida*) both with a provincial S-Rank of Vulnerable (S3) and Tall Boneset (*Eupatorium altissimum*) with a provincial S-rank of (S1) Critically Imperiled.

A single individual of Missouri Ironweed was observed along the western edge of the small OAG community, while a single individual of Stiff Goldenrod was identified within the MEMM4 community on the adjacent lands. Additionally, a small patch of Tall Boneset was documented along the southern property boundary in the Open Disturbed Area, with several additional individuals observed within the MEMM4 community on adjacent lands to the west. All of the provincially significant plant individuals, except one, were observed in the northern half of the MEMM4. As the proposed Catherine Street road extension will occur within the southeast corner of the MEMM4 community, and protective measures will be implemented for its remaining margins, the Missouri Ironweed, Stiff Goldenrod, and Tall Boneset populations found in the northern half of the MEMM4 will remain undisturbed and safeguarded. However, the small patch of Tall Boneset located along the southern property boundary in the Open Disturbed Area will require removal. To mitigate the impact of removing this S1-ranked plant species, seed collection was conducted on December 17th, 2024, as agreed upon by City of Windsor staff and Jennifer

Neill. These seeds will be utilized to augment plantings within the SWM pond, ensuring the preservation and propagation of this species in the local landscape.

TABLE 4: OBSERVED VASCULAR PLANT LIST

Scientific Name	Common Name	CW ¹	Status		
			SARA (SCH. 1) STATUS ²	SARO STATUS ³	SRANK ⁴
<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>Acer saccharum</i>	Sugar Maple	3			S5
<i>Alisma subcordatum</i>	Southern Water-plantain	-5			S4?
<i>Alliaria petiolata</i>	Garlic Mustard	0			SE5
<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>Barbarea vulgaris</i>	Bitter Wintercress	0			SE5
<i>Brassica nigra</i>	Black Mustard	5			SE5
<i>Brassica rapa</i>	Field Mustard	5			SE5
<i>Bromus arvensis</i>	Field Brome	3			SE1
<i>Bromus inermis</i>	Smooth Brome	5			SE5
<i>Butomus umbellatus</i>	Flowering-rush	-5			SE5
<i>Carex crinita</i>	Fringed Sedge	-5			S5
<i>Carex plantaginea</i>	Plantain-leaved Sedge	5			S5
<i>Carex vulpinoidea</i>	Fox Sedge	-5			S5
<i>Celtis occidentalis</i>	Common Hackberry	0			S4
<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
<i>Dactylis glomerata</i>	Orchard Grass	3			SE5
<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

TABLE 4: OBSERVED VASCULAR PLANT LIST

Scientific Name	Common Name	CW ¹	Status		
			SARA (SCH. 1) STATUS ²	SARO STATUS ³	SRANK ⁴
<i>Epilobium hirsutum</i>	Hairy Willowherb	-3			SE5
<i>Epilobium parviflorum</i>	Small-flowered Hairy Willowherb	3			SE4
<i>Erigeron canadensis</i>	Canada Horseweed	3			S5
<i>Eupatorium altissimum</i>	Tall Boneset	5			S1
<i>Eupatorium serotinum</i>	Late Boneset	0			SE1
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	0			S5
<i>Festuca rubra</i>	Red Fescue	3			S5
<i>Fragaria virginiana</i>	Wild Strawberry	3			S5
<i>Fraxinus americana</i>	White Ash	3			S4
<i>Fraxinus pennsylvanica</i>	Red Ash	-3			S4
<i>Geum aleppicum</i>	Yellow Avens	0			S5
<i>Geum canadense</i>	Canada Avens	0			S5
<i>Geum macrophyllum</i>	Large-leaved Avens	-3			S5
<i>Glechoma hederacea</i>	Ground-ivy	3			SE5
<i>Hibiscus trionum</i>	Flower-of-an-hour	5			SE4
<i>Hypericum perforatum</i>	Common St. John's-wort	5			SE5
<i>Impatiens capensis</i>	Spotted Jewelweed	-3			S5
<i>Juncus compressus</i>	Compressed Rush	-3			SE5
<i>Juncus tenuis</i>	Path Rush	0			S5
<i>Juncus torreyi</i>	Torrey's Rush	-3			S5
<i>Leonurus cardiaca</i>	Common Motherwort	5			SE5
<i>Lepidium densiflorum</i>	Common Peppergrass	3			SE5
<i>Lolium arundinaceum</i>	Tall Ryegrass	3			SE5
<i>Lonicera japonica</i>	Japanese Honeysuckle	3			SE2
<i>Lonicera maackii</i>	Maack's Honeysuckle	5			SE2
<i>Lonicera tatarica</i>	Tatarian Honeysuckle	3			SE5
<i>Lythrum salicaria</i>	Purple Loosestrife	-5			SE5
<i>Malus pumila</i>	Common Apple	5			SE4
<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

TABLE 4: OBSERVED VASCULAR PLANT LIST

Scientific Name	Common Name	CW ¹	Status		
			SARA (SCH. 1) STATUS ²	SARO STATUS ³	SRANK ⁴
<i>Phalaris arundinacea</i>	Reed Canarygrass	-3			S5
<i>Phleum pratense</i>	Common Timothy	3			SE5
<i>Phragmites australis ssp. australis</i>	European Reed	-3			SE5
<i>Pilosella aurantiaca</i>	Orange Hawkweed	5			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 alba</i>	White Oak	3			S5
<i>Quercus bicolor</i>	Swamp White Oak	-3			S4
<i>Quercus macrocarpa</i>	Bur Oak	3			S5
<i>Ranunculus acris</i>	Common Buttercup	0			SE5
<i>Rhamnus cathartica</i>	European Buckthorn	0			SE5
<i>Rhus typhina</i>	Staghorn Sumac	3			S5
<i>Rosa multiflora</i>	Multiflora Rose	3			SE5
<i>Rosa rubiginosa</i>	Sweetbriar Rose	3			SE4
<i>Rubus idaeus ssp. idaeus</i>	European Red Raspberry	3			SE1
<i>Rubus occidentalis</i>	Black Raspberry	5			S5
<i>Rumex crispus</i>	Curled Dock	0			SE5
<i>Salix euxina</i>	Crack Willow	0			SE
<i>Scirpus atrovirens</i>	Dark-green Bulrush	-5			S5
<i>Scirpus cyperinus</i>	Common Woolly Bulrush	-5			S5
<i>Setaria faberi</i>	Giant Foxtail	3			SE4
<i>Setaria pumila</i>	Yellow Foxtail	0			SE5
<i>Setaria viridis</i>	Green Foxtail	5			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>Solidago rigida</i>	Stiff Goldenrod	3			S3
<i>Solidago rugosa</i>	Rough-stemmed Goldenrod	0			S5
<i>Sonchus arvensis</i>	Field Sow-thistle	3			SE5
<i>Symphyotrichum lanceolatum</i>	Panicled Aster	-3			S5
<i>Symphyotrichum lateriflorum</i>	Calico Aster	0			S5
<i>Symphyotrichum novae-angliae</i>	New England Aster	-3			S5
<i>Symphyotrichum pilosum</i>	Old Field Aster	3			S5
<i>Taraxacum officinale</i>	Common Dandelion	3			SE5

TABLE 4: OBSERVED VASCULAR PLANT LIST

Scientific Name	Common Name	CW ¹	Status		
			SARA (SCH. 1) STATUS ²	SARO STATUS ³	SRANK ⁴
<i>Toxicodendron radicans</i>	Poison Ivy	0			S5
<i>Trifolium repens</i>	White Clover	3			SE5
<i>Typha latifolia</i>	Broad-leaved Cattail	-5			S5
<i>Ulmus americana</i>	White Elm	-3			S5
<i>Verbascum thapsus</i>	Common Mullein	5			SE5
<i>Verbena hastata</i>	Blue Vervain	-3			S5
<i>Vernonia missurica</i>	Missouri Ironweed	0			S3?
<i>Vicia cracca</i>	Tufted Vetch	5			SE5
<i>Vitis riparia</i>	Riverbank Grape	0			S5
<i>Xanthium strumarium</i>	Rough Cocklebur	0			S5

¹ Coefficient of Wetness (CW): Refer to Section 2.4 for definitions.

² Species at Risk Act (SARA) Schedule 1 Status: END (Endangered); THR (Threatened); SC (Special Concern); NAR (Not at Risk)

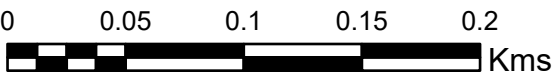
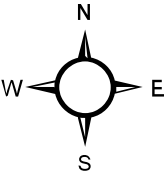
³ Species at Risk in Ontario (SARO) Status: END (Endangered); THR (Threatened); SC (Special Concern); NAR (Not at Risk)

⁴ 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
- Study Area
- Tall Boneset (*Eupatorium altissimum*) - S1
- Missouri Ironweed (*Vernonia missurica*) - S3
- Stiff Goldenrod (*Solidago rigida*) - S3
- Chimneystack Crayfish (*Fallicambarus fodiens*) Burrow - S3
- Brushpile, Rock Pile or Uprooted Tree
- Hawkins Drain (Class F)
- Agricultural Drainage Ditch
- Pooling/Standng Water

CSP Culverts

- Buried (Potential Snake Hibernaculum)
- Fuctioning

ELC

- WODM5: Fresh - Moist Deciduous Woodland Ecosite
- THDM5: Fresh - Moist Deciduous Thicket Ecosite
- MEMM4: Fresh - Moist Mixed Meadow Ecosite
- Large OAG: Open Agriculture
- Small OAG: Open Agriculture
- Open Disturbed Area

Figure No.: 5
Project No.: IES24-211
Scale: 1:3,200
Date: January 24, 2025
Creator: Nicole Wajmer



3.7 AQUATIC HABITAT ASSESSMENT

An Aquatic Assessment was conducted along Hawkins Drain to evaluate the current aquatic and ecological conditions in the area. Despite being classified as a Class F Drain, indicative of an intermittent watercourse, significant amounts of slowly flowing water were observed during the December field investigations. The banks of the drain were found to be relatively steep and densely vegetated. Notably, a CN railway runs along the top of the northern bank, while the southern banks are characterized by woodland (WODM5) and thicket (THDM5) features present on the Subject Property. Evidence of erosion at the toe of the slope and riparian areas suggests that the drain is capable of supporting higher flow in different seasons. Additionally, several small headwater drainage features originating from the Subject Property discharge into Hawkins Drain, further contributing to its hydrology. Based on these observations, it is likely that Hawkins Drain can sustain warm water fish species, enhancing its ecological value. **Table 5** summarizes the results of the aquatic assessment and **Figure 6** shows survey points within them.

3.7.1 Summary of Outlets on Property and Adjacent Lands

The northern edge of the Subject Property and adjacent land features contain seven existing outlets (Outlets A to G) that are intended to facilitate the flow of water from the Subject Property/adjacent lands into Hawkins Drain (**Figure 6**). These outlets are described below:

1. **Outlet A:** Located west of the property, this outlet consists of a drainage ditch about 0.55m wide, with water flowing northward into Hawkins Drain. The water depth is approximately 5-10cm, and the banks are highly vegetated with woody debris, contributing to high feature roughness. The water flows through rip rap armoring around a pumphouse.
2. **Outlet B:** Situated in the middle of the northern edge, this outlet features a 50cm diameter Corrugated Steel Pipe (CSP) culvert. The inlet to the culvert is buried and is non-functional. The outlet is perched about 2m above Hawkins Drain and covered in filter fabric. The area surrounding the culvert outlet is armoured by rip rap. This feature could now function as a potential hibernaculum habitat for snakes.
3. **Outlet C:** Located approximately 50m to the east of Outlet B, this outlet is in similar condition to Outlet B, featuring a crushed CSP culvert that is also non-functional. This feature could now function as a potential hibernaculum habitat for snakes.
4. **Outlet D:** Approximately 50m east of Outlet C, this outlet shares the same conditions as Outlets B and C—a non-functional CSP culvert. This feature could now function as a potential hibernaculum habitat for snakes.
5. **Outlet E:** Approximately 50m east of Outlet D, this outlet shares the same conditions as Outlets B, C and D —a non-functional CSP culvert. This feature could now function as a potential hibernaculum habitat for snakes. A small headwater drainage feature is present at this location that flows around the buried culvert, emptying into Hawkins Drain.

6. **Outlet F:** This outlet has a functional CSP culvert about 12m long. A defined headwater drainage feature flows through it, with rip rap armoring at the outlet, which is also perched about 2m above Hawkins Drain.
7. **Outlet G:** Is a manmade agricultural ditch located along the eastern property border. This outlet actively drains water between two agricultural fields into Hawkins Drain, with rip rap lining its outlet. This feature is discussed further in **Section 3.8**.



Picture 6: Hawkins drain, looking east, during December 2024 field investigations.



Picture 7: Hawkins Drain, looking east, during December 2024 field investigations.

TABLE 5: HEADWATER DRAINAGE FEATURE REACH CHARACTERISTICS AND FIELD NOTES

Aquatic Survey Point Name	Type of Waterbody	Mean Depth at Crossover Point (cm)/Wetted Stream Width (m)	Hydraulic Head ¹	Instream Cover ²	Substrate Type ³	Bank Stability ⁴	Riparian Vegetation ⁵	Notes
1	Stream / Class F Agricultural Drain	18.3 / 2.5	Pools	Dead woody material, macrophytes and garbage	100% Fines	North: Eroding South: Eroding	1.5 – 10m: Meadow (north) Meadow (south) 10 – 30m: Meadow (north) Scrubland (south) 30 – 100m: Lawn (north) Cropped Land (south)	Some erosion on toe of slope and lower bank with some exposed roots. Banks are relatively steep and highly vegetated with >60% cover.
2	Stream / Class F Agricultural Drain	15.8 / 1.6	Pools	Round Rock, living or dead woody material, macrophytes and bank material.	100% Fines	North: Eroding South: Eroding	1.5 – 10m: Meadow (north) Meadow (south) 10 – 30m: Meadow (north) Scrubland (south) 30 – 100m: Lawn (north) Cropped Land (south)	Steep eroding banks that are highly vegetated with >60% cover.
3	Stream / Class F Agricultural Drain	9.7 / 1.7	Pools	Living or dead woody material, macrophytes and bank material.	100% Fines	North: Eroding South: Eroding	1.5 – 10m: Meadow (north) Meadow (south) 10 – 30m: Meadow (north) Scrubland (south) 30 – 100m: Lawn (north) Cropped Land (south)	Large chunks of bank have eroded into stream. Banks are showing less evidence of erosion. Banks are highly vegetated with >60% cover. Garbage in stream includes large plastic debris.
4	Stream / Class F	12.6 / 1.7	Pools	Round Rock, living or dead woody material,	100% Fines	North: Eroding South: Protected	1.5 – 10m: Meadow (north) Meadow (south)	Steep, highly vegetated banks with >60% cover. A buried CSP

TABLE 5: HEADWATER DRAINAGE FEATURE REACH CHARACTERISTICS AND FIELD NOTES

Aquatic Survey Point Name	Type of Waterbody	Mean Depth at Crossover Point (cm)/Wetted Stream Width (m)	Hydraulic Head ¹	Instream Cover ²	Substrate Type ³	Bank Stability ⁴	Riparian Vegetation ⁵	Notes
	Agricultural Drain			macrophytes, bank material and garbage.			10 – 30m: Meadow (north) Scrubland (south) 30 – 100m: Lawn (north) Cropped Land (south)	culvert exits the woodland feature at this point.
5	Stream / Class F Agricultural Drain	14 / 2	Pools	Living or dead woody material, macrophytes, bank material and garbage.	100% Fines	North: Eroding South: Eroding	1.5 – 10m: Meadow (north) Meadow (south) 10 – 30m: Meadow (north) Scrubland (south) 30 – 100m: Lawn (north) Cropped Land (south)	Stream contains many pieces of woody debris and bank material, restricting flow at this point. Steep highly vegetated banks with >60% cover. Garbage along the north bank includes old 2x4 lumber and wooden fence posts. A film on the water surface is present from low flow conditions.
6	Stream / Class F Agricultural Drain	13 / 2.1	Pools	Living or dead woody material, macrophytes, bank material and garbage.	100% Fines	North: Eroding South: Eroding	1.5 – 10m: Meadow (north) Meadow (south) 10 – 30m: Meadow (north) Scrubland (south) 30 – 100m: Lawn (north) Cropped Land (south)	Instream macrophytes are abundant with large patches of flowering rush. Steep, highly vegetated banks with >60% cover. Garbage includes plastic water bottles and other debris.
7	Stream / Class F	15 / 2.2	Pools	Living or dead woody material,	100% Fines	North: Eroding South: Eroding	1.5 – 10m: Meadow (north) Meadow (south)	Instream macrophytes are abundant with large patches of

TABLE 5: HEADWATER DRAINAGE FEATURE REACH CHARACTERISTICS AND FIELD NOTES

Aquatic Survey Point Name	Type of Waterbody	Mean Depth at Crossover Point (cm)/Wetted Stream Width (m)	Hydraulic Head ¹	Instream Cover ²	Substrate Type ³	Bank Stability ⁴	Riparian Vegetation ⁵	Notes
	Agricultural Drain			macrophytes, bank material and garbage.			10 – 30m: Meadow (north) Scrubland (south) 30 – 100m: Lawn (north) Cropped Land (south)	Flowering-rush and Broad-leaved Cattail. Steep, highly vegetated banks with >60% cover. Garbage includes plastic water bottles. North bank is steeper than southern bank.
8	Stream / Class F Agricultural Drain	14 / 2.1	Pools	Living or dead woody material, macrophytes and bank material.	100% Fines	North: Eroding South: Protected	1.5 – 10m: Meadow (north) Meadow (south) 10 – 30m: Meadow (north) Scrubland (south) 30 – 100m: Lawn (north) Cropped Land (south)	Steep, highly vegetated banks with >60% cover. Banks steeper at this location compared to rest of stream (almost 90 degrees). A functioning CSP culvert is located at this point and drains water from a small HDF found on the Subject Property. Macrophytes include Flowering-rush, Southern Water-plantain and Broad-leaved Cattail.
9	Stream / Class F Agricultural Drain	14.2 / 2.1	Pools	Living or dead woody material, macrophytes,	100% Fines	North: Eroding South: Protected	1.5 – 10m: Meadow (north) Meadow (south) 10 – 30m: Meadow (north) Scrubland (south)	Steep, highly vegetated banks with >60% cover. A drainage ditch between two agricultural fields actively drains into the stream at

TABLE 5: HEADWATER DRAINAGE FEATURE REACH CHARACTERISTICS AND FIELD NOTES

Aquatic Survey Point Name	Type of Waterbody	Mean Depth at Crossover Point (cm)/Wetted Stream Width (m)	Hydraulic Head ¹	Instream Cover ²	Substrate Type ³	Bank Stability ⁴	Riparian Vegetation ⁵	Notes
				and bank material.			30 – 100m: Lawn (north) Cropped Land (south)	this point. The outlet of the ditch is armoured by gabion stone.

¹ **Pools:** 0 – 3mm HH; **Glides:** 4 – 7mm HH, evidence of little turbulence and moderate velocities; **Slow Riffles:** 8 – 17mm HH, fast velocities; **Fast Riffles:** >17mm HH, very fast velocities.

² **Flat Rock** – longitudinal axis is at least twice as long as the shortest axis; **Round Rock** – Longitudinal axis is less than twice as long as the shortest axis; **Living or Dead Woody Materials** – including mats of twigs and shrubs; **Macrophytes** – Living aquatic and terrestrial non-woody plants; **Bank Material** – which contain soils (i.e. undercuts and slumped banks or parts of banks which have become dislodged and are now laying in the main channel; **Other** – Any other type of material not covered by above categories such as tires, refrigerators, cars, etc.

³ **Gavia feces** – Dense mat of detritus found in deposition areas; **Fines** (Sand, Silt, Clay) – < 2mm; **Gravel** – 2 to 100mm; **Cobble** – 101 to 1000mm; **Bedrock** – >1000mm

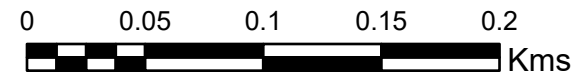
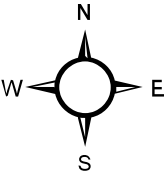
⁴ **Eroding Bank** – (Steep >45°), erodible materials, undercut by at least 5cm or shows signs of recent slumping and no/little vegetation present; **Vulnerable Bank** – (Steep >45°), erodible materials, shows no recent signs of erosion (e.g undercuts or slumping) and protected by a mat or live vegetation; **Protected Bank** – (Steep >45°), non-erodible materials such as rock boulders or hardened clay, vegetation may or may not be present, includes banks armoured by humans; **Deposition Zone** – (Gentle <45°), generally materials which have been deposited by the river during its flood condition.

⁵ **None** – Over 75% of the soil has no vegetation; **Lawn** – Grasses that are not allowed to reach a mature state due to mowing; **Cropped Land** – Planted in agricultural crops in most years, plants typically arranged in rows and may be subject to periodic tillage; **Meadow** – < 25% tree/shrub cover and characterized by grasses and forbs; **Scrubland** >25% and <60% trees or shrubs interspersed with grasses and sedges (a transitional area between meadow and forest, with trees generally less than 10cm in diameter at breast height; **Wetland** – Areas that are seasonally or permanently flooded and support vegetation adapted to wet conditions; **Forest** – 60% of the canopy is covered by the crowns of trees.



Aquatic Assessment

0 Catherine Street, Windsor



Legend

- Legal Parcel
- Outlet Locations
- Aquatic Survey Point Locations
- Hawkins Drain (Class F)
- Agricultural Drainage Ditch
- Headwater Drainage Features (HDF) (Not Assessed)
- Pooling/Standng Water

CSP Culverts

- Buried (Potential Snake Hibernaculum)
- Fuctioning

ELC

- WODM5: Fresh - Moist Deciduous Woodland Ecosite
- THDM5: Fresh - Moist Deciduous Thicket Ecosite
- MEMM4: Fresh - Moist Mixed Meadow Ecosite
- Large OAG: Open Agriculture
- Small OAG: Open Agriculture
- Open Disturbed Area

Figure No.: 6
Project No.: IES24-211
Scale: 1:3,200
Date: January 24, 2025
Creator: Nicole Wajmer



3.8 HEADWATER DRAINAGE FEATURE ASSESSMENT AND CHARACTERIZATION

Reach delineation is a method in which a channel is spatially grouped by characteristics and processes. Consequently, within a specific reach, the attributes, functions, and processes of the channel tend to remain relatively consistent. These reaches can serve as valuable tools for identifying management goals and opportunities for restoration. The determination of reaches is influenced by various factors, such as hydrology, gradient, environmental context, meandering patterns, and the composition of riparian vegetation.

To conduct the assessment the HDF was separated into two main reaches. While smaller HDFs that flowed northward ultimately emptying into Hawkins Drain were observed within the THDM5 and WODM5 communities, they were not formally evaluated as they will be retained and protected through mitigation measures as part of the proposed development. The reach delineation, data point locations, and culverts can be seen in **Figure 6**. Results from the HDF Assessment are summarized in **Table 6**.

3.8.1 Reach 1 – Hawkins Drain

Hawkins Drain is a channelized watercourse, classified as a Class F intermittent drain by DFO, typically remains dry for at least three months each year; however, during December 2024 field investigations, it was observed to contain relatively deep flowing water. Multiple outlets along the northern property border facilitate water flow from the THDM5 and WODM5 communities into the drain, yet only the eastern CSP culvert (Outlet F) and Reach B (Agricultural Ditch) are operating effectively, as the inlets to the other drainage culverts have become buried. Although there is some evidence of bank erosion, the area is predominantly covered with dense vegetation, indicating a relatively healthy ecosystem. This drain likely acts as a movement corridor for local wildlife.

3.8.2 Reach 2 – Agricultural Ditch

The man-made channelized HDF is a constructed ditch situated between two agricultural fields, designed to facilitate the movement of water and sediment northward into Hawkins Drain. Evidence of past disturbances, including the removal of trees and the clearing of stumps and logs, suggests that the area was actively modified to create this drainage system. At its northern outlet, the drain passes through part of the THDM5 community and is reinforced with rip rap to prevent erosion. During the December 2024 field investigations, water was observed actively flowing through the feature, following a heavy rain event that had occurred the previous day. This channel not only serves its drainage purpose but also likely transports agricultural chemicals from the adjacent fields into Hawkins Drain.

Vegetation at the end of ditch is dominated by European Reed, Sweetbriar, Panicked Aster, Tall Goldenrod, Reed Canarygrass, Yellow Avens, Grass-leaved Goldenrod and Rough-leaved Dogwood.



Photo 8: Hawkins Drain, looking east, during December 17th, 2024, site visit.



Photo 9: Agricultural Ditch, looking north, during October 3rd, 2024, site visit.

TABLE 6: HEADWATER DRAINAGE FEATURE REACH CHARACTERISTICS AND FIELD NOTES

Assessment Period ¹ and Date(s)	Reach ID and Point Number(s)	Reach Length (m)	Bankfull Width (m)	Bankfull Depth (mm)	Feature Type ²	Flow Conditions ³	Sediment Transport ⁴	Sediment Deposition ⁵	Feature Roughness ⁶	Riparian Vegetation ⁷						Field Notes
										0 – 1.5m		1.5 –10m		10 – 30m		
										Left	Right	Left	Right	Left	Right	
17/12/24	Reach A (Hawkins Drain)	1650	12	330	2	4	6	5	2	4	4	4	5	3	2	<ul style="list-style-type: none">While Classified as a Class F, intermittent drain that is dry for at least three months of the year by DFO, the feature contained deep, slowly flowing water at the time of field investigations.While several outlets exist along the northern property border to aid the flow of water from the THDM5 and WODM5 communities into the drain, only the most eastern CSP culvert (Outlet F) and Reach B (Agricultural Ditch) are functioning as intended. The inlets to all other drainage culverts have become buried.Banks show some evidence of erosion but are highly vegetated.
17/12/24	Reach B (Agricultural Ditch)	495	4.5	100	2	2/4	6	5	4	3	3	3	3	3	3	<ul style="list-style-type: none">Channelized ditch between two agricultural fieldsMoves water and sediment northward, emptying into Hawkins Drain.Evidence of past cutting and disturbance to remove trees likely to create drain through stumps and logs.Drain passes through THDM5 community at northern outlet.Outlet G into Hawkins Drain is armoured with rip rap.Water actively flowing through feature into Hawkins Drain at the time of field investigations. While spate conditions, a heavy rain event had occurred the previous day.

¹Assessment Period and Date(s): Spring Freshet (Late March – mid-April), Late April – May and July – August. More than one field assessment is required in order to assess hydrology.

²Feature Type: (1) Defined Natural Channel, (2) Channelized or Constrained, (3) Multi-thread, (4) No Defined Feature, (5) Tiled, (6) Wetland, (7) Swale, (8) Roadside Ditch, (9) Pond Outlet.

³Flow Conditions: (1) No Surface Water, (2) Standing Water, (3) Interstitial Flow, (4) Surface Flow Minimal, (5) Surface Flow Substantial. *If Class 5 is selected provide Flow Measures.

⁴Sediment Transport (Adjacent Lands and/or Valley Feature): (1) None, (2) Rill, (3) Rills/Gulley, (4) Gulley, (5) Tile Outlet Scour, (6) Sheet Erosion, (7) Instream Bank Erosion, (8) Other.

⁵Sediment Deposition: (1) None, (2) Minimal, (3) Moderate, (4) Substantial, (5) Extensive.

⁶Feature Roughness: (1) Minimal, (2) Moderate, (4) High, (4) Extreme.

⁷Riparian Vegetation: (1) None, (2) Lawn, (3) Cropped Land, (4) Meadow, (5) Scrubland, (6) Wetland, (7) Forest

3.8.3 Headwater Drainage Functional Classifications and Management Assessment

It is important to note that the headwaters contained within the Subject Property and adjacent lands were assessed on December 17th, 2024, outside of all the recommended assessment periods as identified in the Guidelines. The HDF assessment protocol is limited to field observations and is inherently biased, limiting the scope of observations to a number of external factors such as weather, timing, resources, and land access among other factors. As such, if the headwaters were evaluated within the specified assessment period(s) the feature characteristics and assigned functional classifications have the potential to change and therefore result in different management requirements. The results to date, for the HDFs are presented below in **Table 7** and **Figure 7**.

TABLE 7: SUMMARY OF FOUR STEP FUNCTIONAL CLASSIFICATION AND MANAGEMENT RECOMMENDATIONS

Drainage Feature Segment	STEP 1	STEP 2	STEP 3	STEP 4	Management Recommendation
	Hydrology	Riparian	Fish Habitat	Terrestrial Habitat	
Reach 1 (Hawkins Drain)	Important Functions	Important Functions	Valued Functions	Contributing Functions	Protection
Reach 2 (Agricultural Ditch)	Contributing Functions	Limited Functions	Contributing Functions	Limited Functions	Mitigation

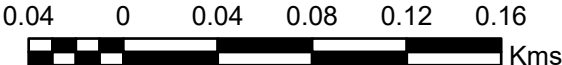
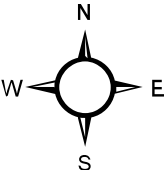
Reach 1 (Hawkins Drain) has important functions for hydrology and riparian habitat. The water is likely present throughout most of the year whether it be flowing or standing surface water. Additionally, the southern bank between 1.5 – 10m is dominated by thicket/scrubland communities. Reach 1 contains a minimum of valued habitat for fish, providing seasonal areas for feeding, cover, refuge and migration. It contains a minimum of contributing functions for terrestrial habitat as it supports a movement corridor that connects upstream and downstream features. As such, the management recommendation for Reach 1 is Protection.

Reach 2 (Agricultural Drain) has contributing functions for hydrology and fish habitat as ephemeral water flow in the spring or after large precipitation events transport allochthonous materials downstream to fish-bearing reaches and provides sources of food. Reach 2 has limited functions for riparian and terrestrial habitats as adjacent riparian and terrestrial habitats consist of cropped land. As such, the management recommendation is Mitigation. Refer to **Section 5.3** for mitigation recommendations for the HDFs.



Headwater Drainage Feature Assessment

0 Catherine Street, Windsor



Legend

- Legal Parcel
- Outlet Locations
- Aquatic Survey Point Locations
- Pooling/Standing Water
- Reach 1 Hawkins Drain (Class F) - Protection
- Reach 2 - Agricultural Drainage Ditch - Mitigation
- Headwater Drainage Features (HDF) (Not Assessed)

CSP Culverts

- Buried (Potential Snake Hibernaculum)
- Fuctioning

ELC

- WODM5: Fresh - Moist Deciduous Woodland Ecosite
- THDM5: Fresh - Moist Deciduous Thicket Ecosite
- MEMM4: Fresh - Moist Mixed Meadow Ecosite
- Large OAG: Open Agriculture
- Small OAG: Open Agriculture
- Open Disturbed Area

Figure No.: 7
Project No.: IES24-211
Scale: 1:3,200
Date: January 24, 2025
Creator: Nicole Wajmer



3.9 FAUNA AND WILDLIFE HABITAT

A total of eleven wildlife species were identified within the study area or in the adjacent lands field investigations (**Table 8**). 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.

3.9.1 Birds

A total of nine bird species were visually observed or identified through calls during field investigations (**Table 8**). 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 Costco, parking lots and SWMF is occurring entirely within the agricultural or disturbed lands within the Subject Property. As such, no tree or shrub removal is required to accommodate these components of the proposed development, and no impacts are expected to breeding birds. The fields on the Subject Property will be planted with soy in the 2025 growing season which will not provide suitable nesting habitat for rare grassland birds. However, the proposed extension of Catherine Street will cross the southern boundary through the Open Disturbed Area, proceed to the adjacent MEMM4 community to the west, and then connect with Tecumseth Road. The proposed extension will remove a portion of the MEMM4 community, which may serve as a habitat for grassland birds. Formal breeding bird surveys were not conducted by IES because the project began in October 2024.

3.9.2 Herpetofauna

3.9.2.1 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 in the spring as water

was present during the December site visit. 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.

3.9.2.2 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 contained flowing water at the time of field investigations, which could potentially support the life processes of turtles during certain times of the year.

The railway corridor and MEMM4 located on adjacent lands to the north and west 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 MEMM4 community. Butler's Gartersnake (END) are known to utilize these burrows for overwintering hibernaculum habitat. The THDM5 and WODM5 communities along the northern property border contained several decommission/buried CSP culverts which could be functioning as potential snake hibernaculum habitat. Mitigation measures to protect SAR reptiles can be found in **Section 6.1**.

3.9.3 Mammals

One mammal species was detected during field investigations (**Table 8**). White-tailed Deer is tolerant of anthropogenically disturbed habitats and is considered secure (S5) in the province of Ontario.

3.9.4 Crustaceans

Chimneystack (or digger) Crayfish (*Fallicambarus fodiens*) holes were observed along the western property border adjacent to the meadow (**Table 8; 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 8: OBSERVED WILDLIFE SPECIES

Scientific Name	Common Name	Statu s	Protection				Location
		S-RANK ¹	COSEWIC STATUS ²	SARA SCHEDULE ³ STATUS	SARO STATUS ⁴	MBCA ⁵	Outside Of Subject Property
BIRDS							
<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				^	
MAMMALS							
<i>Odocoileus virginianus</i>	White-tailed Deer	S5					
CRUSTCEANS							
<i>Creaserinus fodiens</i>	Digger Crayfish	S3					

¹ 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)

² 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)

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

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

⁵ 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 9**.

TABLE 9: SPECIES AT RISK NOTED BY NHIC

Scientific Name	Common Name	S-Rank ¹	COSEWIC STATUS ²	SARO STATUS ³	Suitable Habitat or Feature	Key Habitats Used by Species ⁴	Observed During 2024 Field Surveys
NHIC 1 Km Search Species							
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	S4		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

TABLE 9: SPECIES AT RISK NOTED BY NHIC

Scientific Name	Common Name	S-Rank ¹	COSEWIC STATUS ²	SARO STATUS ³	Suitable Habitat or Feature	Key Habitats Used by Species ⁴	Observed During 2024 Field Surveys
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

¹S-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)

²Committee 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)

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

⁴Habitat 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)

Schedule A: Planning Districts and Policy Areas

The property is designated as being within the “Forest Glade” planning district and is within the Forest Glade North Secondary Plan.

Schedule A1: Special Policy Areas

The property is not within a Special Policy Area.

Schedule B: Greenway System

The property is not part of a Greenway System.

Schedule C: Development Constraint Areas

This schedule refers the reader to the “Forest Glade North Secondary Plan.”

Schedule C1: Development Constraint Areas Archaeological Potential	Small portion along the southern and northern property borders are within an area of “ <i>High Archaeological Potential</i> .”
Schedule D: Land Use	The property is designated as a “ <i>Business Park</i> ” land use.
Schedule E: City Centre Planning District	This schedule <u>does not</u> apply to the Subject Property.
Schedule F: Roads and Bikeways	This schedule <u>does not</u> apply to the Subject Property.
Schedule F1: Railways	The northern boundary of the Subject Properties abuts a “ <i>Rail Corridors & Rail Yards</i> .”
Schedule G: Civic Image	This schedule <u>does not</u> apply to the Subject Property.
Schedule H: Baseplan Development Phasing	This schedule <u>does not</u> apply to the Subject Property.
Schedule J: Urban Structure Plan	This schedule <u>does not</u> apply to the Subject Property.

4.3 FOREST GLADE NORTH PLANNING AREA (2004)

The Forest Grade North 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 “ <i>Study Area</i> ” 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 “ <i>Business Park</i> .” An extension of Catherine Street is proposed to access the property, which would be a “ <i>Class 1 Collector Road</i> .” 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 “ <i>300m Zone of Influence</i> ” 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 PLANNING 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 Fresh - Moist Deciduous Woodland Ecosite (WODM5) that extends along the northern property boundary and is distributed across several small polygons. A total of five WODM5 polygons exist that measure approximately 0.4 ha. Additionally, the woodland feature is relatively isolated in the landscape and does not contain any interior habitat. Therefore, the WODM5 would not be considered Significant under the PPS. The proposed development will be located outside of the staked dripline, ensuring sufficient protection for the critical root zones and anchor and transport roots within it. As such, no impacts are anticipated to the WODM5 community.

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

Four provincially rare species were noted on the Subject Property including Tall Boneset (S1), Missouri Ironweed (S3), Stiff Goldenrod (S3) and Chimney Crayfish (S3). As per the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E, all 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 the SWH 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**. Stiff Goldenrod will not be impacted by the proposed development as it was located in the northern half of the MEMM4 community identified as SWH. Vegetation surveys were conducted in late fall and winter. The MEMM4 community on adjacent land to the west was surveyed at a high level as it is located on private property, with efforts concentrated mainly on the northern half. It should be noted that surveys conducted in-season, with authorized access, may enable more extensive search efforts and potentially identify additional provincially rare plant species in the southern and northern parts of the community.

4.5.2.2 Terrestrial Crayfish

The habitat of Terrestrial Crayfish including Chimney/Digger Crayfish are only found in southwestern Ontario and is considered SWH as their habitats are rare. The presence of 1 or 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. This drain contained a significant amount of water during field investigations and could provide habitat to fish. Mitigation measures to protect 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 Subject Property and adjacent MEMM4 community contain suitable habitat features to support Butler’s Gartersnake (END) and Eastern Foxsnake (END). The woodland (WODM5) and thicket (THDM5) communities could function as foraging and movement habitat for SAR snakes. Additionally, the buried CSP culverts found throughout these communities may provide potential hibernaculum habitat for snakes. Suitable basking and cover objects were noted within this feature including woody debris and brush piles. Additionally, the edge of the MEMM4 community contained several Chimney Crayfish burrows, a known hibernaculum site for Butler’s Gartersnake (**Figure 5**).

The proposed development will involve some clearing of brush piles within the OAG communities but will preserve the majority of suitable habitat for SAR snakes, particularly the THDM5 and WODM5 ecosites located along the northern border of the property. To protect these areas from encroachment, snake exclusion fencing will be installed around the dripline of the habitat feature, and there will be no need to remove any trees or shrubs. All potential hibernaculum features within the decommissioned culverts will also be retained. However, the proposed road extension of Catherine Street will remove a portion of the lower quality MEMM4 community which would be used for foraging habitat. While snake exclusion fencing is recommended to ensure that SAR snakes do not enter the worksite, consultation with the

Ministry of the Environment, Conservation and Parks (MECP) is required to ensure that the project will not contravene the Endangered Species Act. Next steps 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 Nickle 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 Costco, parking lots and SWMF will occur within the agricultural lands (OAG) and Open Disturbed Area and will not require any 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 1st – August 30th) to avoid destruction of active bird nests protected by the *Migratory Birds Convention Act* (1994). Work involving the riparian areas for the proposed outlet into Hawkins Drain will adhere to the spring restricted timing window for fish (March 15 – July 15 of any given year).

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 will require removal to accommodate the proposed road extension for Catherine Street (**Section 6.1**). 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 agricultural ditch or Hawkins Drain. 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 on cool water streams and a 15m buffer on warm water streams. 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 buffer of approximately 30m been applied to Hawkins Drain (**Figure 6**), with the limit of this buffer adhering to the staked dripline of the WODM5/THDM5 communities. No tree removal will be required to accommodate the proposed SWMF.

The majority of this buffer is naturally vegetated by the woodland (WODM5) and thicket (THDM5) communities. Vegetated buffers comprised of thicket possess intricate root systems that play a fundamental role in stabilizing the banks of nearby water bodies. Additionally, woodlands 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.

Establishing a buffer of approximately 30m around this feature is an important protective measure for various reasons. This buffer will encapsulate and safeguard the WODM5 and THDM5 communities, which are likely to serve as a vital movement corridor for wildlife and provide SAR snake habitat, 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. Protecting and enhancing these ecological pathways contribute to the resilience of snake populations and the overall health of the ecosystem.

A minor temporary encroachment into this buffer is needed for the proposed SWM pond outlet, which will use the existing agricultural ditch. The existing agricultural ditch that will be used for the new SWM pond outlet is currently dominated by European Reed (*Phragmites australis ssp. australis*) with other invasive exotics and some common native species. By lining the agricultural ditch with riprap to create the new SWM outlet into Hawkins Drain not only will enhance the existing habitat within the drain to benefit SAR snakes but will also provide indirect invasive species management by excavating and removing the European Reed and other exotics.

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 MEMM4 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 HEADWATER DRAINAGE FEATURE MANAGEMENT

5.3.1 Reach 1 – Hawkins Drain

The recommended management for Reach 1 – Hawkins Drain is Protection. As per the CVC and TRCA regulations, the following management activities should be considered:

- Protect and/or enhance the existing feature and its riparian zone corridor, and groundwater discharge or wetland in-situ;
- Maintain hydroperiod;

- Incorporate shallow groundwater and base flow protection techniques such as infiltration treatment;
- Use natural channel design techniques or wetland design to restore and enhance existing habitat features, if necessary; realignment not generally permitted;
- Design and locate the stormwater management system (e.g. extended detention outfalls) are to be designed and located to avoid impacts (i.e. sediment, temperature) to the feature.

While the proposed development will maintain Hawkins Drain, the project proposes to outlet the water from the SWM pond into this feature. It is recommended that SWM design a system that maintains the current thermal and hydrological regime of Hawkins Drain. Mitigation measures to consider in SWM pond design could include:

1. Wetland Creation
 - a. Constructed Wetlands: Create a constructed wetland downstream of the pond to further treat stormwater, allowing for sediment settling, nutrient uptake, and pollutant removal.
 - b. Buffer Zones: Establish a wetland buffer around the pond to filter runoff before it enters the stream, enhancing water quality and providing habitat.
2. Native Vegetative Plantings
 - a. Riparian Buffers: Plant native vegetation along the banks of the pond and the stream to increase bank stability, reduce erosion, and provide shade.
 - b. Diverse Plant Species: Use a mix of grasses, shrubs, and trees that are native to the region, as they can provide habitat, improve biodiversity, and enhance soil stability.
3. Erosion Control Practices
 - a. Geotextiles and Erosion Control Matting: Use these materials to stabilize soil on the banks until vegetation is established.
 - b. Silt Fences and Sediment Basins: Implement silt fences or sediment basins to capture sediment before it can enter the stream.
4. Temperature Control Measures
 - a. Shade Trees: Plant trees along the pond edges to provide shade, thereby reducing water temperatures and maintaining cooler conditions in the stream.
 - b. Floating Vegetation: Introduce floating aquatic plants like water lilies or duckweed to provide shade and reduce water temperatures through evapotranspiration.
5. Water Quality Improvement Techniques
 - a. Bioretention Areas: Design bioretention areas near the pond to filter pollutants through soil and vegetation.
 - b. Infiltration Trenches: Construct infiltration trenches to allow stormwater to percolate into the ground, reducing runoff and increasing groundwater recharge.
6. Hydrologic Modifications

- a. Controlled Outflow Structures: Implement controlled outflow structures to manage the rate and volume of water leaving the pond, reducing the potential for erosion downstream.
 - b. Detention Time: Increase the detention time within the pond to allow for sedimentation and pollutant breakdown.
7. Maintenance Practices
 - a. Regular Inspections: Conduct regular inspections of the pond and its surrounding vegetation to identify and address erosion, sediment buildup, or invasive species.
 - b. Sediment Removal: Periodically remove accumulated sediment from the pond to maintain its capacity and effectiveness in treating stormwater.
8. Monitoring and Adaptive Management
 - a. Water Quality Monitoring: Regularly monitor water quality to assess the effectiveness of the mitigation measures and adjust as necessary.
 - b. Adaptive Management Strategies: Be prepared to adapt strategies based on monitoring results and changing conditions.

5.3.2 Reach 2 – Agricultural Ditch

The recommended management for Reach 2 – Agricultural Ditch is Mitigation. As per the CVC and TRCA regulations, the following management activities should be considered:

- Replicate or enhance functions through enhanced lot level conveyance measures, such as well-vegetated swales (herbaceous, shrub and tree material) to mimic online wet vegetation pockets, or replicate through constructed wetland features connected to downstream;
- Replicate on-site flow and outlet flows at the top end of system to maintain feature functions with vegetated swales, bioswales, etc. If catchment drainage has been previously removed due to diversion of stormwater flows, restore lost functions through enhanced lot level controls (i.e. restore original catchment using clean roof drainage);
- Replicate functions by lot level conveyance measures (e.g. vegetated swales) connected to the natural heritage system, as feasible and/or Low Impact Development (LID) stormwater options (refer to Conservation Authority Water Management Guidelines for details).

The proposed development plans to retain Hawkins Drain. This feature would discharge stormwater from the proposed SWM pond easterly along a riprap lined channel to dissipate energy and reduce erosion. It is recommended that LID stormwater options be included within the design.

5.4 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 features, including the WODM5 and THDM5 communities. IES recommends the strategic planting of native trees, shrubs, grasses and forbs around the SWM pond

to promote biodiversity and improve habitat quality for local fauna. Additionally, the plan will integrate snake habitat creation into the design of the SWM pond. The habitat features will include strategically placed brush piles, 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. A stand-alone Stormwater Management Pond Planting Plan that integrates snake habitat features will be prepared by IES and submitted with the application package.

5.5 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.

- Protective fencing must be installed before any construction activity is to occur to ensure no harm to the natural system.
- No work should be completed on the property until consultation with MECP has occurred and mitigation measures including Snake Exclusion Fencing has been approved.
- Soil stockpiles should be established in locations 30m or greater from the natural system and agricultural drain and within the 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. If the stockpiles are to remain for more than one growing season, they should be seeded with a cover crop to stabilize the piles.
- 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 natural 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

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 Open Disturbed Area that is proposed 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). To mitigate the impact of removing this S1-ranked plant species, seed collection was conducted on December 17th, 2024, as agreed upon by City of Windsor staff and Jennifer Neill. These seeds will be utilized to augment plantings within the proposed SWM Pond Planting Plan, ensuring the preservation and propagation of this species in the local landscape.

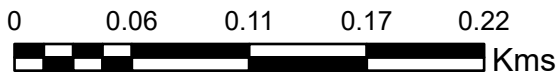
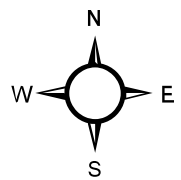
6.2 CONSULTATION WITH MECP FOR SAR SNAKES

The proposed development will involve some clearing of brush piles within the OAG communities but will preserve the majority of suitable habitat for SAR snakes, particularly the WODM5 and THDM5 ecosites located along the northern border of the property. The WODM5 and THDM5 contains habitat features that could support SAR snakes including foraging, thermoregulation, movement and hibernaculum habitat. Old buried CSP culverts within the feature could also be functioning as possible hibernation habitat for snakes. To protect these areas from encroachment, snake exclusion fencing will be installed around the dripline of the feature, and there will be no need to remove any trees or shrubs. All potential hibernaculum features within the decommissioned culverts will also be retained. However, the proposed road extension of Catherine Street will remove a portion of the lower quality MEMM4 community which provides potential habitat to support the foraging, mating, movement and thermoregulation of Butler's Gartersnake and/or Eastern Foxsnake. Additionally, 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, consultation is required with MECP to determine if a permit under the Endangered Species Act is required. Next steps are presented in **Section 7.0**



Impacts and Mitigation

0 Catherine Street, Windsor



Legend

- Legal Parcel
- Proposed Road Extension for Catherine Street
- Site Plan (Jan. 2025)
- Proposed SWM Habitat Enhancement Area
- Digger Crayfish Buffer (5m)
- Snake Exclusion Fencing
- Hawkins Drain (Class F)
- Agricultural Drainage Ditch
- Headwater Drainage Feature (HDF)
- Existing Brushpile, Rock Pile or Uprooted Tree
- Chimneystack Crayfish (*Fallicambarus fodiens*) Burrow - S3
- Tall Boneset (*Eupatorium altissimum*) - S1
- Stiff Goldenrod (*Solidago rigida*) - S3
- Missouri Ironweed (*Vernonia missurica*) - S3
- CSP Culverts
- Buried (Potential Snake Hibernaculum)
- Functioning

Figure No.: 8
Project No.: IES24-211
Scale: 1:15,000
Date: January 31, 2025
Creator: Nicole Wajmer



7.0 NEXT STEPS/REQUIRED CONSULTATION

Before proceeding with the proposed development, it is necessary to consult with Regulatory Authorities to determine if any additional permits are needed. Engaging with these authorities will help ensure that the development complies with all relevant provincial and federal laws and policies. The following documentation will be submitted for review:

1. A Request for Review (RFR) Form will be submitted to the Department of Fisheries and Oceans (DFO) for impacts of outletting the SWM pond into Hawkins Drains (Fish Habitat).
2. An Information Gathering Form (IGF) and an Avoidance Alternative Form (AAF) to the Ministry of Environment, Conservation and Parks to discuss potential impacts to SAR snakes including Butler's Gartersnake (END) and Eastern Foxsnake (END).
3. Permit Application to be submitted to the Essex Region Conservation Authority (ERCA) to complete work within the Regulated Area.

8.0 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 an Environmental Evaluation Report (EER) and 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 the construction of a Costco, along with associated parking facilities, on the southern half of the property. Additionally, an extension of Catherine Street is proposed to access the property, which would be a "Class 1 Collector Road." The extension will traverse the southern property boundaries and adjacent lands. The remaining 2.6 hectares on the northern portion of the property will be designated for stormwater management. A SWM pond and pump house will control storm flow and discharge into an open agricultural drain on the eastern property boundary. The SWMF will service both the proposed development and the Forest Glade Secondary Planning area, as identified by R.J. Burnside's Environmental Assessment. The remaining 3.1ha located between the proposed Costco and SWMF will be retained for future commercial use.
3. The property contains Significant Wildlife Habitat (SWH) and possible Habitat of Threatened and Endangered Species as defined by the Provincial Policy Statement (2024). The property is also adjacent to Hawkins Drain which is considered Fish Habitat.
4. The northern property boundary is within a Regulated Area under Ontario Regulation 41/24 administered by the Essex Region Conservation Authority (ERCA).

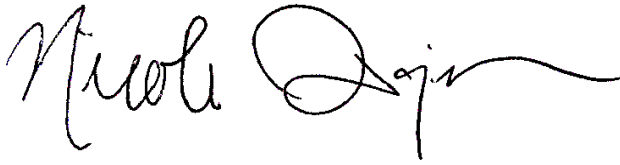
5. Four provincially significant species were detected during field investigations including Tall Boneset (S1), Missouri Ironweed (S3), Stiff Goldenrod (S3) and Chimney Crayfish (S3). These species trigger Significant Wildlife Habitat under the PPS.
6. No provincially or federally listed Species at Risk (SAR) were identified during field investigations. However, the property contains suitable habitat features to support Eastern Foxsnake (END) and Butler's Gartersnake (END).
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. A Stormwater Management Planting Plan that includes the integration of snake habitat features and best management practices for construction. Mitigation/potential permits for SAR is also required.
9. Next steps include consulting with DFO, MECP and ERCA to attain any necessary permits to support the proposed development.
10. Development or Site Alteration should not occur until all proper environmental consultation has been completed and required permits are in place.

9.0 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.



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APPENDICES

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 Fanshawe College. 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 plant Species at Risk (SAR) individual identification, SAR habitat evaluation, Environmental Impact Studies (EIS), Natural Heritage Evaluations (NHE), Environmental Impact Assessments (EIA), Oak Ridges Moraine (ORM) Conformity Statements, 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).