Garner Road (Wilson Street to Highway 403 Ramp) Municipal Class Environmental Assessment Phase 3 and 4 (Contract Number C11-13-20) – Natural Environment Existing Conditions Report

Final Report

May 6, 2025

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Limitations and Sign-off

The conclusions in the Report titled Garner Road (Wilson St to Highway 403 Ramp) Municipal Class Environmental Assessment Phases 3 and 4 (Contract Number: C11-13-20) – Natural Environment Existing Conditions and Impact Assessment are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

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Acronyms / Abbreviations

AEGD	Airport Employment Growth District
ANSI	Areas of Natural and Scientific Interest
BHA	Butternut Health Assessment
CA	Conservation Authority
CAA	*Conservation Authorities Act*, 1990
CC	Coefficient of Conservatism
CEA	Class Environmental Assessment
cm	centimetres
DBH	Diameter at Breast Height
DFO	Fisheries and Oceans Canada
EC	Existing Conditions
ECCC	Environment and Climate Change Canada
EIS	Environmental Impact Statement
ELC	Ecological Land Classification
END	Endangered
ESA	*Endangered Species Act,* 2007
FWCA	*Fish and Wildlife Conservation Act,* 1997
GIS	Geographic Information System
GRCA	Grand River Conservation Authority
Ha	Hectares
HADD	Harmful alteration, disruption or destruction (to fish and fish habitat)
HCA	Hamilton Conservation Authority
HDF	Headwater Drainage Feature
LIO	Land Information Ontario
m	metres
MBCA	*Migratory Birds Convention Act*, 1994
MMAH	Ministry of Municipal Affairs and Housing
MOECC	Ministry of the Environment and Climate Change Canada; formerly Ministry of Environment (MOE)

NHIC	Natural Heritage Information Centre
PSW	Provincially Significant Wetland
PPS	Provincial Policy Statement
RHOP	Rural Hamilton Official Plan
RoW	Right-of-Way
SAR	Species at Risk
SARA	*Species at Risk Act*, 2002
SARO	Species at Risk in Ontario (List)
SC	Special Concern
SOCC	Species of Conservation Concern
SWH	Significant Wildlife Habitat
THR	Threatened
ToR	Terms of Reference
UHOP	Urban Hamilton Official Plan

1 Introduction

Stantec Consulting Ltd. (Stantec) was retained by the City of Hamilton (City) to complete a Natural Environment Assessment Report for Phases 3 and 4 of the Municipal Class Environmental Assessment (MCEA) for proposed work on Garner Road in Hamilton, Ontario (referred to as 'Project'). The Project Location includes Garner Road and the associated right-of-way (RoW) between Wilson Street and the Highway 403 off ramp Figure 1, Appendix A). The Project is located on municipal lands and is subject to provincial natural heritage legislation [e.g., *Endangered Species Act, 2007*, (ESA)].

To facilitate the Natural Environment Assessment for Phases 3 and 4 of the MCEA for the Project, Stantec completed the following:

- Preparation and submission of Terms of Reference (ToR) to the City, the Hamilton Conservation Authority (HCA), and the Grand River Conservation Authority (GRCA)
- Review of available background information
- Vegetation surveys (i.e., three season flora inventory, vegetation community mapping)
- Wildlife surveys (i.e., amphibian call surveys, breeding bird surveys [BBS], bat roost tree assessment, species at risk [SAR] and Species of Conservation Concern [SOCC] habitat suitability assessment, significant wildlife habitat [SWH] assessment)
- Headwater Drainage Feature (HDF) assessment
- Fish and fish habitat surveys (i.e., aquatic habitat assessment, fish community sampling)
- Assessment of significance of natural heritage features

This Natural Environment Existing Conditions (EC) report was prepared following guidance outlined in the following documents:

- Conservation Authority Baseline Ecological Assessment Requirements for Municipal Class Environmental Assessments (2011) and Environmental Impact Statement (EIS) Guidelines (2015) provided by the City of Hamilton
- The Urban Hamilton Official Plan (2013) and Rural Hamilton Official Plan (2012) and Linkage Assessment Guidelines (March 2015)
- The Significant Wildlife Habitat Technical Guide (Ministry of Natural Resources [MNR] 2000) and supporting Criteria Schedules for Ecoregion 7E (Ministry of Natural Resources and Forestry [MNRF] 2015)

This Natural Environment EC report presents the results of the background information review and field investigations to provide a description of natural environment existing conditions in or adjacent (i.e., within the 120 meters [m]) to the Project location (referred to as the "Study Area") (Figure 1, Appendix A). Additionally, this report provides responses from the municipality, HCA, and GRCA regarding the ToR.

2 Natural Heritage Legislation and Policy Context

The following sections discuss the legislation and policy documents that establish the natural heritage context for the Study Area. These documents were used to identify natural features that require consideration through the development application process and may pose constraints to development. Legislation and policy are presented under separate headers for the federal, provincial and municipal planning context.

2.1 Federal Context

2.1.1 Species at Risk Act

The federal *Species at Risk Act*, 2002 protects and provides recovery strategies for Species at Risk (SAR) listed as extirpated, endangered or threatened under Schedule 1. With respect to terrestrial SAR, this legislation applies to federal lands, federally regulated projects or species with critical habitat on non-federal lands in specific circumstances, unless they are aquatic species or migratory birds listed on Schedule 1. Critical habitat is identified in recovery strategies or action plants for species listed as endangered and threatened under the *Species at Risk Act* (SARA) and is defined as habitat that is vital to the survival or recovery of a species. Most species listed under Schedule 1 of SARA receive habitat protection on non-federal lands under the Ontario *Endangered Species Act*. Species that do not receive protection under the Ontario *Endangered Species Act* and do not have critical habitat identified may be afforded protection under other legislation such as the *Migratory Bird Convention Act*, 1994. In the case of aquatic SAR, the SARA provides protection for aquatic species and habitat, including critical habitats, on both federal and non-federal lands.

Species that are listed as Special Concern under Schedule 1 of the SARA receive management initiatives under the SARA to prevent them from becoming endangered and threatened, but do not receive individual or habitat protection.

Permits are required by those persons/organizations conducting activities that may affect species listed on Schedule 1 of the SARA, as extirpated, endangered, or threatened and which contravene the Act's general or critical habitat prohibitions. The SARA also contains a prohibition against the damage or destruction of their residences (e.g., nest or den). Under Section 73 of the SARA, a permit may be issued to engage in an activity affecting a listed wildlife species or a part of its critical habitat or its residences.

In summary, the Project does not occur on federal lands and is not generally subject to the SARA policies, with exception of aquatic species and migratory birds listed on Schedule 1 as extirpated, endangered or threatened that are identified as potentially overlapping with the Study Area.

2.1.2 Fisheries Act

The *Fisheries Act, 1985* (amended on August 28, 2019; Government of Canada 2019a) is the main federal law governing fisheries in Canada and is administered by Fisheries and Oceans Canada (DFO). The Fisheries Act provides for the management and control of fisheries, the conservation and protection of fish, the protection of fish habitat and pollution prevention. Projects that may impact fish, fish habitat, aquatic species at risk (SAR) and aquatic invasive species may be subject to DFO review. The Fisheries Act prohibits causing the death of fish and the harmful alteration, disruption, or destruction (HADD) of fish habitat, unless authorized by the Minister of Fisheries, Oceans, and the Canadian Coast Guard. Conditions and circumstances for projects to be exempt from review are listed on DFO's Fish and Fish Habitat Protection Program web pages.

Following guidance and criteria provided on DFO's website regarding mitigation, waterbody types and codes of practice, proponents determine whether their projects in or near water will require review by DFO. DFO review is requested through the submission of a 'Request for Review' (RfR) form. Following completion of their review, DFO can proceed in two ways: 1) issue a Letter of Advice indicating that the proposed work complies with the Fisheries Act or, 2) refer the project to the Regulatory Review Unit for site specific review. If the project can avoid impacts to fish and fish habitat, project approval is not required. If impacts that cause a HADD cannot be avoided, proponents must apply for a Fisheries Act Authorization and may be required to develop a habitat offsetting or compensation plan.

2.1.3 Migratory Birds Convention Act

The *Migratory Birds Convention Act, 1994* (MBCA) prohibits the killing or capturing of migratory birds, as well as the damage, destruction, removal, or disturbance of their nests. The Migratory Birds Regulation, 2022 (MBR), further defines when nests of migratory bird species are protected, with special provisions in place for bird species that reuse their nests (e.g., Pileated Woodpecker, Great Blue Heron).

Most bird species in Canada are protected under the MBCA, as defined by Article I, which names the families and subfamilies of birds protected, and provides clarification of which species are included. In southern Ontario, migratory birds generally nest between April 1 and August 31. Environment and Climate Change Canada (ECCC) can issue permits allowing the destruction of nests for scientific, agricultural, or health and safety purposes. New development and site alterations do not qualify as a permitted activity under the MBCA and failure to comply with the MBCA/MBR could result in a charge.

2.2 Provincial Context

2.2.1 Provincial Planning Statement

This report was prepared to be consistent with Policy 4.1 of the Provincial Planning Statement (MMAH 2024) under the *Planning Act, 1990* and the Natural Heritage Reference Manual (NHRM) for Natural Heritage Policies of the Provincial Policy Statement 2005 Second Edition (NHRM) (Ontario Ministry of Natural Resources (MNR) 2010). PPS Policy 4.1 addresses protection and management of natural

heritage resources. The Study Area falls within Ecoregion 7E. Section 4.1.4 of the PPS, states that development and site alteration shall not be permitted in the following features in Ecoregion 7E:

a) significant wetlands
b) significant coastal wetlands

Section 4.1.5 of the PPS states that development and site alteration shall not be permitted in the following features, unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions in Ecoregion 7E:

a) significant woodlands
b) significant valleylands
c) significant wildlife habitat
d) significant areas of natural and scientific interest
e) coastal wetlands that are not subject to policy 4.1.4(b)

Further, Sections 4.1.6 and 4.1.7 state that development and site alteration shall not be permitted in the following features, except in accordance with provincial and federal requirements:

a) fish habitat
b) habitat of endangered or threatened species

Development or site alteration may be permitted on lands adjacent to the natural heritage features listed above if it is demonstrated that there will be no negative impacts on the natural features or the ecological function for which the area was identified.

The diversity and connectivity of the natural features in an area should be maintained and enhanced, where possible, recognizing linkages between and among natural heritage, surface water and groundwater features (PPS Policy 4.1.2).

2.2.2 Environmental Assessment Act, 1990

The *Environmental Assessment Act* (EAA) S. 13 makes allowance for various classes of activities to be approved under the authority of a Class Environmental Assessment (CEA). This report has been completed to support Phases 3 and 4 of the MCEA for the Project and follows the *Conservation Authority Baseline Ecological Assessment Requirements for Municipal Class Environmental Assessments* (2011) and the *Environmental Impact Statement (EIS) Guidelines* (2015).

2.2.3 Ontario Regulation 41/24 under the Conservation Authorities Act

Ontario Regulation 41/24 (Prohibited Activities, Exemptions and Permits) is administered under the *Conservation Authorities Act,* 1990 (CAA). The regulation prohibits altering watercourses, wetlands or

shorelines, and prohibits development in areas adjacent to river and stream valleys, hazardous lands and wetlands, without the prior written approval from the GRCA and HCA; i.e., issuance of a permit. Permits may not be issued where the control of flooding, erosion, dynamic beaches, and/or soil or bedrock stability are affected, or if the development activities are likely to create conditions in the event of a natural hazard that might jeopardize the health or safety of persons or result in the damage or destruction of property. The decision-making policies for such permits are contained within GRCA's Policies for the Administration of the Prohibited Activities, Exemptions and Permits Regulation Ontario Regulation 41/24 (GRCA 2024) and HCA's Interim Policy Guidelines for the Administration and Implementation of Ontario Regulation 41/24 (HCA 2024).

2.2.4 Endangered Species Act

The *Ontario Endangered Species Act* (ESA; Government of Ontario 2007) and associated Regulations that are amended from time to time, identifies wildlife species considered to be at risk in Ontario and designates them as threatened, endangered, extirpated or of special concern. Provincial SAR are identified and assessed by the Committee on the Status of Species at Risk in Ontario (COSSARO), which is a committee of wildlife experts and scientists, as well as those who provide Aboriginal traditional knowledge. COSSARO classifies species according to their degree of risk based on the best available scientific information, community knowledge and Aboriginal traditional knowledge. When COSSARO classifies a SAR, that classification applies throughout Ontario, unless otherwise noted.

The ESA protects SAR and their habitats by prohibiting anyone from killing, harming, harassing or possessing protected species (those listed as endangered or threatened), and prohibiting any damage or destruction to the habitat of protected species. All protected species are provided with general habitat protections under the ESA, which protects those areas upon which a species depends to carry out its life processes, such as reproduction, rearing, hibernation, migration or feeding.

Any activity that may impact a protected species or its habitat requires the prior issuance of a permit or other authorization from the Ministry of the Environment, Conservation and Parks (MECP). Permits may only be issued under certain circumstances, which are limited to activities required to protect human health and safety, activities that will assist in the protection or recovery of the species, activities that will result in an overall benefit to the species or activities that may provide significant social or economic benefit without jeopardizing the survival or recovery of the species in Ontario.

2.2.5 Fish and Wildlife Conservation Act

The provincial *Fish and Wildlife Conservation Act,* 1997 (FWCA) provides protection of wildlife in Ontario including fish, furbearing mammals, game wildlife and specially protected wildlife through regulations for hunting, trapping, and fishing practices. Game and specially protected mammals, birds, reptiles, amphibians and invertebrates are listed on Schedules 1 to 11 of the FWCA. Definitions provided for hunting including capturing or harassing wildlife (Section 5) and would include activities that collect or handle wildlife for inventories or other scientific purposes, or to relocate wildlife out of harm's way (e.g., during construction activities), including individuals and eggs. Sections 7 and 8 also provide protection for

nest and eggs of specified bird species including raptors, and dens of bears and furbearing animals, and beaver damns. Under the FWCA, the Minister has the authority to authorize activities that would otherwise be prohibited such as the safe capture of wildlife and removal of nests, dens and dams, and impose conditions on an authorization.

2.3 Municipal Planning Context

2.3.1 Urban Hamilton Official Plan

The Urban Hamilton Official Plan (UHOP) came into effect on August 16, 2013, with the exception of select policies, schedules, maps, appendices that remain under appeal. The Study Area is not included in these exceptions; therefore, the Natural Heritage policies of the 2013 UHOP apply to the Study Area.

Schedule B of the UHOP designates the areas of the Natural Heritage System including land identified as *Core Areas* and *Linkages*. OP Section C.2.3.2 defines *Core Areas* as “the most important components in terms of biodiversity, productivity, and ecological and hydrological functions.” Section C.2.7 recognizes Linkages as “natural areas within the landscape that ecologically connect *Core Areas*.” As indicated by the City of Hamilton in the October 21, 2024, comments on the Existing Conditions report in Appendix B, not all Core Areas have been identified on the Schedules within the UHOP. This includes significant habitat for threatened and endangered species, significant wildlife habitat, seeps and springs, and significant valleylands. These features are to be identified and protected as Core Areas in accordance with the policies of the UHOP.

Section C.2.5.2 of the UHOP states that “new development and site alteration shall not be permitted within provincially significant wetlands, significant coast wetlands or significant habitat of threatened and endangered species.” Section C.2.5.3 states that “new development and site alteration shall not be permitted within fish habitat, except in accordance with provincial and federal requirements.” Section C.2.5.4 states that “new development and site alteration shall not be permitted within significant woodlands, significant valleylands, significant wildlife habitat and significant areas of natural and scientific interest unless it has been demonstrated that there shall be no negative impacts on the natural features or on their ecological functions.”

In Chapter G of the UHOP, Significant Woodland designations are based on size, presence of interior forest, proximity to water or other significant natural areas, age and the presence of rare species including Species at Risk (SAR). For the purposes of this report, Significant Wildlife Habitat (SWH) is based on the Significant Wildlife Habitat (SWH) Criteria Schedules for Ecoregion 7E (Ontario Ministry of Natural Resources and Forestry (MNRF) 2015).

Section C.2.5.10 recommends the following information on buffers to significant natural features:

> Where vegetation protection zone widths have not been specified by watershed and sub-watershed plans, secondary, Environmental assessments and other studies, the following vegetation protection zone widths shall be evaluated and addressed by Environmental Impact Statements. Other agencies, such as Conservation Authorities, may have different vegetation protection zone requirements.

a) Coldwater Watercourse and Critical Habitat – 30-metre vegetation protection zone on each side of the watercourse, measured from the bankfull channel.

b) Warmwater Watercourse and Important and Marginal Habitat – 15 metre vegetation protection zone on each side of the watercourse, measured from the bankfull channel.

c) Unevaluated wetlands – Unevaluated wetlands and locally significant wetlands require a 15 metre vegetation protection zone, measured from the boundary of the wetland, as approved by the Conservation Authority or Ministry of Natural Resources, unless an Environmental Impact Statement recommends a more appropriate vegetation protection zone.

d) Woodlands – 10-metre vegetation protection zone, measured from the edge (drip line) of the woodland.

e) Significant Woodlands – 15-metre vegetation protection zone, measured from the edge (drip line) of the Significant Woodland.

f) Significant Habitat of Threatened or Endangered Species and Significant Wildlife Habitat: the minimum vegetation protection zone shall be determined through Environmental Impact Statements, dependent on the sensitivity of the feature.

Further, Section C.2.5.11 states:

> Vegetation protection zone widths greater or less than those specified above may be required if ecological features and functions warrant it, as determined through an approved Environmental Impact Statement. Widths shall be determined on a site-specific basis, by considering factors such as the sensitivity of the habitat, the potential impacts of the proposed land use, the intended function of the vegetation protection zone, and the physiography of the site.

2.3.1.1 UHOP Secondary Plans

Volume 2 of the UHOP provides Secondary Plan policies and mapping to guide growth and change in smaller geographic areas of the City. Secondary Plans identify more detailed land use densities, design requirements, infrastructure requirements and other implementing actions appropriate for the community. The Project occurs within the Airport Employment Growth District (AEGD) Secondary Plan (Chapter B-8) of the UHOP, and the Ancaster Secondary Plans for the Shaver and Garner Neighbourhoods (Chapter B-2 of the UHOP).

Section 8.2.11 Natural Heritage Principles of Volume 2, Chapter B for the Airport Employment Growth District states that “Through sustainable design and appropriate development the employment district protects and enhances the natural environment. The intent is to: a) Develop in a manner that is sensitive to the natural environment; b) Use innovative, sustainable storm and wastewater infrastructure to protect water quality and source water; c) Protect and integrate provincially and municipally significant natural features, such as streams, valley lands, wetlands, mature trees and forests into the employment district’s development, implement provincial policy and meet municipal policy; d) Use sustainable design to limit the emissions, water and energy consumption of buildings within the employment district; and, e) Connect

the employment district's open space system to surrounding natural areas to allow employees to enjoy and explore the region's natural heritage."

2.3.2 Rural Hamilton Official Plan

The Rural Hamilton Official Plan (RHOP) came into effect on March 7, 2012. Schedule B of the RHOP designates the areas of the Natural Heritage System including land identified as Core Areas and Linkages. RHOP Section C.2.3 defines Core Areas as "the most important components in terms of biodiversity, productivity, and ecological and hydrological functions." According to Section C.2.3.2 "Core areas include key natural heritage features, key hydrologic features, including any associated vegetation protection zones, and provincially significant and local natural areas that are more specifically identified by Schedules B-1 to B- 8 – Detailed Natural Heritage Features." Section C.2.7 recommends that "Linkages be protected and enhanced to sustain the Natural Heritage System wherever possible".

As indicated by the City of Hamilton in the October 21, 2024, comments on the Existing Conditions report in Appendix B, not all Core Areas have been identified on the Schedules within the RHOP. This includes significant habitat for threatened and endangered species, significant wildlife habitat, seeps and springs, and significant valleylands. These features are to be identified and protected as Core Areas in accordance with RHOP policies.

Section C.2.3.4 of the RHOP states that "new development or site alteration shall not be permitted within provincially significant wetlands, significant coast wetlands or significant habitat of threatened and endangered species." Section C.2.4 addresses policies for Core Areas within the Greenbelt Natural Heritage System of the Protected Countryside. Section 2.4.2 states that "within a key natural heritage feature within the Greenbelt Natural Heritage System or a key hydrologic feature anywhere in the Protected Countryside, including any associated vegetation protection zone." Section C.2.5 addresses policies for Core Areas outside of the Greenbelt Plan Area. Section C.2.5.3 states that "new development or site alteration proposed within or adjacent to significant woodlands, significant wildlife habitat, significant valleylands, and significant areas of natural and scientific interest shall not be permitted unless the ecological function of the land has been evaluated, and it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions." Section C.2.5.4 states that "new development and site alteration shall not be permitted within fish habitat, except in accordance with provincial and federal requirements."

2.3.3 Urban Woodland By-Law (CITY OF HAMILTON)

The Urban Woodland Conservation By-law (14-212) regulates woodlands greater than 0.2 ha in size in the Urban Area. The By-law generally prohibits injury or destruction of trees in woodlands. Some exemptions exist in the By-law, including Section 5(d) which states "this By-law does not apply to the injuring or destruction of a tree in a woodland, in accordance with an approved Tree Protection Plan, submitted with an application for a Site Plan, a Plan of Subdivision, or [other application] of the Planning Act, or as a requirement of a Site Plan Agreement or Subdivision Agreement."

The By-law defines woodlands as “land measured to the drip line and including any discontinuity equal to or less than 30 meters in width with at least:

- 1,000 trees of any size, per hectare, calculated in proportion to the actual areas of the woodland,
- 750 trees, with a diameter breast height of over 5 centimeters per hectare, calculated in proportion to the actual area of the woodland,
- 500 trees, with a diameter breast height of over 12 centimeters per hectare, calculated in proportion to the actual area of the woodland, or
- 250 trees, with a diameter breast height of over 20 centimeters per hectare, calculated in proportion to the actual area of the woodland.

3 Methods

3.1 Agency Consultation

A Terms of Reference (ToR) was prepared using the *Conservation Authority Baseline Ecological Assessment Requirements for Municipal Class Environmental Assessments* (2011) and the City of Hamilton's *Environmental Impact Statement (EIS) Guidelines* (2015). HCA indicated the ToR was satisfactory "in general" and made some minor recommendations for additional surveys, including surveys for Butternut (*Juglans cinerea*) and invasive plants. The City of Hamilton provided two sets of comments on the ToR, each of which were addressed in the draft ToR provided in Appendix B. HCA and City of Hamilton correspondence is provided in Appendix B.

The GRCA reviewed the application for the Class EA and provided comments on September 6, 2024 (provided in Appendix B) on watercourses, floodplains, and wetlands associated with the headwaters in accordance with Ontario Regulation 41/24 and GRCA's Board approved policies. These comments have been reflected in this report.

This report also addresses comments provided by the City of Hamilton on the Existing Conditions Section of this report on October 21, 2024 (provided in Appendix B).

Agency consultation has moved to a proponent driven process for provincial agencies (e.g., Ministry of the Environment, Conservation and Parks [MECP]) responsible for SAR and proponents are directed to review the relevant background documentation and related information sources. As such, specific information request packages were not submitted for provincially designated features, SAR, and/or SOCC.

Municipal agencies have also made data on natural heritage features and constraints available on publicly accessible geoportals or web viewers and encourage proponents to complete their own background data reviews. These include HCA and GRCA regulation mapping.

3.2 Background Data Collection Sources

The following background documentation and related information sources were reviewed to identify natural heritage features and constraints within the Study Area:

- Greenbelt Plan (MMAH 2017)
- Rural Hamilton Official Plan (RHOP) (City of Hamilton 2012)
- Urban Hamilton Official Plan (UHOP) (City of Hamilton 2013); including the Airport Employment Growth District (AEGD) Secondary Plan (Chapter B-8) and the Ancaster Secondary Plans for the Shaver and Garner Neighbourhoods (Chapter B-2)
- AEGD Subwatershed Study and Stormwater Master Plan (SWMP) Implementation Document (Aquafor Beech Ltd. 2017)

- GRCA policies (GRCA 2024) and regulation mapping (GRCA 2023)
- HCA policies (HCA 2024) and regulation mapping (HCA 2023)
- The Provincial Planning Statement (PPS) (MMAH 2024)
- Satellite imagery (Google Earth Pro 2023)
- Ontario's Natural Heritage Information Centre (NHIC) (MNRF 2023a)
- Land Information Ontario (LIO) Natural Heritage Mapping (MNRF 2023b)
- Constructed Drains digital dataset (MNRF 2023c)

Natural heritage information gathered during the literature review was used to identify potentially significant natural heritage features within the Study Area.

A list of SAR and SOCC with potential to occur within the Study Area was developed by reviewing the following sources:

- Ontario's NHIC (MNRF 2023a)
- Species at Risk Public Registry (ECCC 2023)
- Fisheries and Oceans Canada (DFO) Aquatic Species at Risk Mapping (DFO 2023a)
- Species at Risk in Ontario List (SARO) (MECP 2023)
- Ontario Breeding Bird Atlas (Cadman et al. 2007)
- Atlas of Mammals in Ontario (Dobbyn 1994)
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2020)
- Ontario Butterfly Atlas Online (Macnaughton et al. 2023)
- Ontario Moth Atlas (OMA) (Kaposi, Macnaughton, and Edwards 2023)
- Ontario Odonata Atlas Database (MNRF 2023d)
- iNaturalist Canada (iNaturalist 2023)
- eBird Canada (eBird 2022)

These resources generally do not provide specific locations of species occurrences, with accuracy ranging from 1 kilometer (km) x 1 km (NHIC database) to 10 km x 10 km (wildlife atlases) or to municipal boundaries or watersheds. Results were screened to assess their relevance to the Study Area and species were removed from consideration if no suitable habitat was observed within the Study Area or if recorded observations were not recent (i.e., circa 2000) where dates were provided.

3.3 Field Investigations

Field Investigations conducted for the Project are summarized in Table 4.1. Field investigations were completed in spring, summer and fall 2021 to describe natural heritage features within the Study Area. Investigations included surveys for vegetation, wildlife, breeding birds, HDFs, and fish and fish habitat, and are discussed in Sections 3.3.1 to 3.3.7.

Lands outside of the legal boundaries of the Garner Road RoW but within the Study Area were predominantly evaluated based on secondary sources, as outlined in Section 3.2, and from the edge of the property due to access restrictions on privately owned lands. Where feasible/accessible, adjacent lands were visited.

Table 3.1 Field Investigation Summary

Type of Field Work	Date(s) of Field Work	Personnel
Vegetation Surveys		
Spring Botanical	May 18, 2021	J. Ball
Summer Botanical and Ecological Land Classification	July 15, 2021	J. Ball
Fall Botanical	September 29, 2021	S. Spisani
Wildlife Surveys		
Amphibian Call Surveys	April 23, 2021	J. Ball/S. Spisani
	May 18, 2021	M. Ellah/L. Williams
	June 9, 2021	M. Ellah/L. Williams
Breeding Bird Surveys	June 9, 2021	D. Giesbrecht
	June 17, 2021	D. Giesbrecht
Bat Roost Tree Assessment	May 4, 2021	J. Ball
Significant Wildlife Habitat Assessment	May 18, 2021	J. Ball
Incidental Wildlife Observations	During all field visits	All Staff
Headwater Drainage Feature Surveys		
Visit #1	March 30, 2021	M. Faiella
Visit #2	May 4, 2021	M. Ellah/M. Faiella
Visit #3	July 15, 2021	J. Ball
Fish and Fish Habitat Surveys		
Aquatic Habitat Assessment	May 4, 2021	M. Ellah/M. Faiella
Fish Community Sampling	May 4, 2021	M. Ellah/M. Faiella

3.3.1 Vegetation Survey and Ecological Land Classification

Vegetation community mapping for the Study Area was conducted according to the *Ecological Land Classification [ELC] system for southern Ontario* (Lee et al. 1998) and where appropriate, the updated ELC Catalogue (2008). Vegetation communities were delineated on satellite photographs and verified in the field. Provincial significance of vegetation communities was based on the rankings assigned by the NHIC (MNRF 2023a). A list of vascular plant species identified in the Study Area from the roadside was

compiled during vegetation surveys conducted in three seasons. The nomenclature and provincial status of all plant species was based on a vascular plant species list provided by the NHIC (MNRF 2023a). Identification of potentially sensitive native plant species was based on their assigned coefficient of conservatism (CC) value, as determined by Oldham et al. (1995). This CC value, ranging from 0 (low) to 10 (high), is based on a species' tolerance of disturbance and fidelity to a specific natural habitat. Species with a CC value of 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters.

Delineation of wetland features followed methodology outlined in the *Ontario Wetland Evaluation System; Southern Manual prepared by MNRF* (MNRF 2014). Interpretation of aerial imagery and the '50% wetland vegetation' rule was used to map points along a contour line where relative plant species cover consisted mostly of wetland species.

3.3.2 Amphibian Call Surveys

Amphibian call counts were completed in accordance with the *Marsh Monitoring Program protocols* established by Bird Studies Canada (2008). Surveys took place in April, May, and June 2021 under suitable weather conditions with low winds.

Each survey station included a 100 m radius semicircle with the observer located at the center and listening for a three-minute period. 14 stations were chosen where there was potentially suitable breeding habitat in the Study Area. Call stations are shown on Figure 4, Appendix A.

At each station for each survey, all calling toads and frogs identified over the three-minute time period were recorded. Call levels were described using values of 1, 2, or 3, and, where possible, an estimate of the number of individuals calling. Level 1 indicates that individuals could be counted, and calls were not simultaneous. Level 2 indicates that individual calls were distinguishable with some simultaneous calling, and a reasonable estimate of the number of calling individuals was made. Level 3 indicates a full chorus with continuous and overlapping calls and no estimate of the number of individuals was possible. Toads and frogs calling from outside of the survey station were also noted. A summary of call survey dates, times and weather is provided in Table 3.2.

Table 3.2 Amphibian Call Count Survey Dates, Times, and Weather Conditions

Date	Time (24 hrs)	Temp. (°C)	Wind (Beaufort)	Cloud (%)	Precipitation (mm)
April 23, 2021	2050 – 2133	8	2-3	20	0
May 18, 2021	2118 – 2206	21	1-2	0	0
June 9, 2021	2138 – 2219	20	2	30	0

3.3.3 Breeding Bird Surveys

Breeding bird surveys were conducted on June 9 and 17, 2021. Surveys consisted of walking systematically through the Study Area, recording all species of birds that were seen or heard within each of the different vegetation communities. A highest breeding evidence code as described by the Atlas of the Breeding Birds of Ontario, 2001-2005 (Cadman et al. 2007) was assigned to each of the species based on the field observation. All birds seen or heard in suitable habitat during the breeding season were assumed to be breeding.

Fourteen (14) point count stations were established within the Study Area and are shown on Figure 4, Appendix A. Point count methods followed *Environment and Climate Change Canada's (ECCC) Breeding Bird Survey* (ECCC 2018). A tally of each bird species was recorded during the three-minute survey period that included an approximation of the location and direction of each bird observation within or just beyond a 100 m radius. A highest breeding evidence code as described by Cadman et al. (2007) was assigned to each of the species observed.

Surveys were conducted between a half an hour before sunrise and 10:00 a.m. Weather conditions (i.e., precipitation and visibility) were within the parameters required by monitoring programs such as *Environment and Climate Change Canada (ECCC) Breeding Bird Survey* (ECCC 2018). Survey effort and weather is summarized in Table 3.3.

Table 3.3 Breeding Bird Survey Dates, Times, and Weather Conditions

Date	Time (24hrs)	Temp. (°C)	Wind (Beaufort)	Cloud (%)	Precipitation (mm)
June 9, 2021	0509 – 0604	19	1-2	10	0
June 17, 2021	0557 – 0657	11	0-1	20	0

3.3.4 Bat Roost Tree Assessment

A bat maternity colony assessment was conducted on May 4, 2021, during leaf-off within the Project Location. The survey protocol followed the recommended methods in the *MNRF Guelph District Bat and Bat Habitat Surveys of Treed Habitats* (MNRF 2017) which was based in part on the *Bat and Bat Habitat Guidelines* (MNR 2011).

According to the MNRF Guelph District protocol, the best candidate trees for maternity colonies are likely to contain several characteristics (to be considered a potential treed roost habitat, not all habitat characteristics listed below needed to be present), which include:

- Height – where trees are tallest in the stand
- Diameter – where trees have a large diameter at breast height (DBH)
- Loose/peeling bark – where trees have a large amount of peeling/loose bark
- Cavity height – where cavity height is high on the tree (>10 m high)

- Open canopy – located in an area of open canopy for accessibility in and out of tree
- Decay – where the tree exhibits early stages of decay

Surveys focused on all trees that were > 10 centimetres (cm) in DBH in the Study Area.

The following data were also recorded for any trees over 10 cm DBH that had cavities or a large amount of peeling bark:

- GPS location
- tree species
- DBH
- tree height
- cavity height

3.3.5 Species at Risk Habitat Suitability Assessment

SAR habitat assessments were conducted concurrently with vegetation surveys and focused on identifying potential SAR habitat (e.g., SAR snake hibernacula, bat SAR maternity roost trees) or occurrences (e.g., butternut). SAR habitat assessments were completed for species protected under the ESA that may occur in the area, including species identified in the NHIC database and Ontario wildlife atlases during the background review. If encountered, these features were identified, recorded, and assessed for potential use by SAR. All wildlife species observed by sight, sound and/or through distinctive signs (e.g., tracks, scat) were also recorded.

The presence of SAR was determined using targeted surveys for vegetation, amphibians, and breeding birds. For other species, habitat assessments were conducted to determine their likelihood of occurrence. SAR with suitable habitat and at least one recent record and/or an overlapping range in the Study Area were considered to have a reasonable probability of occurring.

3.3.6 Significant Wildlife Habitat Assessment

The MNRF's Significant Wildlife Habitat Technical Guide (SWHTG) (MNR 2000) describes SWH in four categories:

- Seasonal concentration areas
- Rare vegetation communities or specialized habitats for wildlife
- Habitats of SOCC (excluding the habitats of END or THR species)
- Animal movement corridors

Habitats within the Study Area were assessed for candidate SWH, as defined in the Ecoregion 7E-5 Criterion Schedule (MNRF 2015). Wildlife observations and evidence of wildlife (e.g., tracks, burrows, vocalizations) were recorded during site visits. SOCC with suitable habitat and at least one existing

record and/or an overlapping range within the Study Area were considered to have a reasonable probability of occurring.

3.3.7 Fish and Fish Habitat/Headwater Drainage Feature Assessment

Headwater drainage feature assessment and fish habitat and fish community sampling were completed at 11 stations (Figure 4, Appendix A) between March 30, 2021, and July 15, 2021, during three separate visits.

3.3.7.1 Headwater Drainage Feature Assessment

Headwater drainage feature assessments were conducted at 11 stations identified as surface water features or potential headwater drainage features, as identified through the background review described in Section 2.2 (Figure 4, Appendix A). The assessments were conducted in accordance with the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (TRCA and CVC 2014). The HDF Guidelines were developed to provide direction for features that are not clearly covered by existing policy and legislation as being important eco-hydrological features (e.g., perennial streams and provincially significant wetlands), but may contribute to the overall health of a watershed (TRCA and CVC 2014). Some of the surface water features assessed are within the regulation limits of either the GRCA or HCA and the HDF assessment data were used to support the characterization of conditions at the 11 stations assessed. The HDF assessments were completed on March 30, May 4, and July 15, 2021 (Table 3.1).

3.3.7.2 Aquatic Habitat Assessment

Aquatic habitat information was collected within the Garner Road RoW on May 4, 2021, at the 11 assessment stations identified as surface water features or potential headwater drainage features, as identified through the background review described in Section 2.2 (Figure 4, Appendix A).

Habitat characteristics were recorded including but not limited to channel dimensions, substrate, morphology, cover for fish, riparian conditions as defined by the *Ontario Stream Assessment Protocol* (Stanfield 2017). Where sufficient water was present, water quality parameters were measured in situ using a handheld water quality multiprobe (YSI) just below the water surface. Photographs were taken to document aquatic ecological conditions on the date of the field investigation.

3.3.7.3 Fish Community Sampling

Stantec completed a presence/absence fish community survey and fish habitat surveys at six stations on May 4, 2021 (Figure 4, Appendix A). Where sufficient water was present (i.e., at least approximately 5 cm depth), two certified electrofishing operators completed the surveys under a license to collect fish for scientific purpose (#1097293) issued by the MNRF Guelph District Office. Electrofishing followed methods described in the *Ontario Stream Assessment Protocol* (OSAP) manual for single pass surveys. Where water depth was insufficient for electrofishing, Stantec completed the presence/ absence fish community

surveys using dip nets for three minutes per station. Five stations were not fished, as they were dry at the time of the field investigation.

3.4 Evaluation of Significance

Per the *Baseline Ecological Assessment Requirements for Municipal Class Environmental Assessments* (2011), the following technical documents were used to describe terrestrial natural heritage features and assess their significance and sensitivity:

- The Provincial Planning Statement (PPS) (MMAH 2024)
- The Significant Wildlife Habitat (SWH) Technical Guide (MNR 2000) and Significant Wildlife Habitat Ecoregion Criteria Schedules for 7E (MNRF 2015)
- Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement (MNR 2010)
- Significant Wildlife Habitat Mitigation Support Tool (MNR 2014)

3.4.1 Significant Wetlands

The PPS defines wetlands as:

> *"…lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case, the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. The four major types of wetlands are swamps, marshes, bogs, and fens. Periodically soaked or wetlands being used for agricultural purposes which no longer exhibit wetland characteristics are not considered to be wetlands for the purposes of this definition."*

And defines wetlands as significant when:

> *"…identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time…"*

Provincially Significant Wetlands (PSWs) are natural areas designated by MNR that are considered significant based on a range of high-value features and functions. PSWs were identified for the Study Area using LIO Natural Heritage Mapping (MNR 2023b). Locally Significant Wetlands may also be assigned significance on a municipal scale and are mapped in Schedule B-4 of the UHOP and RHOP. However, not all wetlands have been evaluated for significance by MNRF or local agencies.

3.4.2 Significant Woodlands

According to the PPS, woodlands are defined as:

> *"treed areas that provide environmental and economic benefits to both the private landowner and the general public, such as erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial levels."*

And significant woodlands are defined as:

> *"…an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history;…"*

The City of Hamilton provides criteria for identifying Significant Woodlands and maps them on Schedule B-2 of the UHOP and RHOP. Mapped woodlands, and woodlands that meet the criteria in the PPS, UHOP and RHOP are considered significant.

The UHOP and RHOP provide criteria to identify significant woodlands including criteria related to size, interior forest, proximity to significant natural features, proximity to water, age and presence of rare species. According to Chapter G, woodlands are considered significant if two or more of the criteria are met.

3.4.3 Significant Valleylands

According to the PPS, valleylands are defined as:

> *"a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year."*

As it applies to valleylands, significant means:

> *"ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system; …*

Significant Valleylands are designated by Conservation Authorities, MNRF or municipalities.

3.4.4 Significant Areas of Natural and Scientific Interest

The PPS defines Areas of Natural and Scientific Interest (ANSI) as:

> *"…areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education."*

ANSIs are designated and delineated by MNRF and mapped in the LIO database (2016). They are also mapped in Schedules B-1 and B-7 of the UHOP and RHOP. All ANSIs overlapping the Study Area are considered significant.

3.4.5 Species at Risk

SAR are defined as:

- Endangered and threatened species that are on the Species at Risk in Ontario (SARO) list and protected by the provincial *Endangered Species Act,* 2007 (ESA)
- Endangered and threatened aquatic species and migratory birds that are listed on Schedule 1 of the federal *Species at Risk Act,* 2002 (SARA) and protected by the SARA

Non-aquatic species or migratory birds on Schedule 1 of SARA are excluded because protection is generally not provided outside of federal lands.

A list of potential SAR that could occur in the Study Area was generated using the following criteria:

- Records of the species that overlap with the Study Area from background sources
- SAR with ranges that overlap with the Study Area
- The presence of suitable habitat in the Study Area

The presence of SAR was determined using targeted surveys for vegetation, breeding birds, bats, and amphibians. For other species, habitat assessments were conducted to determine their likelihood of occurrence. SAR with suitable habitat and at least one (1) recent record and/or an overlapping range in the Study Area were considered to have a reasonable probability of occurring.

3.4.6 Significant Wildlife Habitat

The PPS identifies wildlife habitat 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."*

And identifies wildlife habitat as significant when:

> *"ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System… Criteria for determining significance may be recommended by the Province, but municipal approaches that achieve the same objective may also be used."*

The Significant Wildlife Habitat Technical Guide organizes SWH into four categories: Habitats of Seasonal Concentrations of Animals, Rare Vegetation Communities or Specialized Habitats for Wildlife, Habitats of Species of Conservation Concern, and Animal Movement Corridors.

The Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement defines SOCC as follows:

- Species that are rare or substantially declining, or have a high percentage of their global population in Ontario
- Special Concern species identified under the ESA on the SARO List
- Species identified as nationally endangered or threatened by the Committee on the Status of Endangered Wildlife in Canada or SARA, which are not protected in regulation under Ontario's ESA

Provincial ranks (S ranks) are used by the NHIC to set protection priorities for rare species and vegetation communities. They are based on the number of occurrences in Ontario and are not legal designations. Species with provincial ranks of S1 to S3 are tracked by the MNRF and considered SOCC. Provincial S ranks are defined as follows:

S1: Critically imperiled; usually fewer than 5 occurrences

S2: Imperiled; usually fewer than 20 occurrences

S3: Vulnerable; usually fewer than 100 occurrences

S4: Apparently secure; uncommon but not rare, usually more than 100 occurrences

S5: Secure, common, widespread and abundant

Similar to the approach for SAR, the probability of each SOCC to be present in the Study Area was assessed using the following criteria:

- Records of the species in the Study Area
- SOCC with ranges that overlap with the Study Area
- The presence of suitable habitat in the Study Area

SOCC with suitable habitat and at least one (1) existing record and/or an overlapping range in the Study Area were considered to have a reasonable probability of occurring. Features and habitats in the Study Area were evaluated against criteria outlined in the four (4) SWH guidance documents. Features or habitats that meet the definition of SWH are considered significant.

3.4.7 Fish and Fish Habitat

The *Fisheries Act* defines fish habitat as:

> *"…waters frequented by fish and any other areas on which fish depend directly or indirectly in order to carry out their life processes including spawning grounds and nursery, rearing, food supply and migration areas."*

The fish and fish habitat protection provisions of the *Fisheries Act* apply to all fish and fish habitat in Canada (DFO 2023b).

4 Results

4.1 Background Data Collection

4.1.1 Physical Geography and Landscape Ecology

The Study Area is within the Niagara Forest Section of the Deciduous Forest Region (Rowe 1972) and Ecoregion 7E: Lake Erie-Lake Ontario (MNRF 2023a). Forest communities in the Niagara Forest Section of the Deciduous Forest Region are dominated by broadleaved trees such as beech, sugar maple, basswood, red maple, red oak, white oak, and bur oak. The Niagara Forest Section of the Deciduous Forest Region contains the main distribution in Canada of black walnut, sycamore, swamp white oak, and shagbark hickory, as well as more widely distributed butternut, bitternut hickory, rock elm, silver maple, and blue beech (Rowe 1972).

More specifically, the Study Area is in the Niagara Ecodistrict (7E-5). This Ecodistrict is characterized predominately of fine-textured, calcareous, glaciolacustrine deposits. Approximately 75% of the area within the Ecodistrict has been converted to pasture and cropland. Scattered deciduous forests occupy about 17% of natural land cover within the Ecodistrict. Mixed and coniferous forests, marshes, bogs, and fens occupy 5% of natural land cover within the Ecodistrict. Land use is largely developed/active agriculture, pastures or abandoned fields, as well as settlements and associated infrastructure throughout (Wester et al. 2018).

4.1.2 Significant Natural Features

Significant natural areas include Provincially Significant Wetlands (PSWs), Areas of Natural and Scientific Interest (ANSIs), Provincial Parks, Conservation Reserves, or known areas of SWH that overlap with the Study Area.

According to information provided inthe LIO database (MNR 2023b) there are unevaluated wetlands and wooded areas within the Study Area. No PSWs, ANSIs, Provincial Parks, Conservation Reserves, or known areas of SWH occur within the Study Area; Dundas Valley Earth Science ANSI and Dundas Valley Forests Life Science ANSI are located approximately 2 km north of the road alignment. Deer overwintering areas which are SWH occur north and immediately south of the Study Area. These significant natural features are shown on Figure 2, Appendix A.

The UHOP and RHOP designate the following Key Natural Heritage and Hydrological Features in the Study Area:

- Schedule B-2 in both the UHOP and RHOP plans identify woodlands within the Study Area as “Key Natural Heritage Feature Significant Woodlands”.
- Schedule B-4 in both plans identify wetlands within the Study Area as “Key Natural Heritage/ Hydrologic Feature Wetlands”.

- Schedule B-8 in both plans identify streams within the Study Area as “Key Hydrologic Feature Streams”.

4.1.3 Species at Risk

The results of the background review, as described in 2.2 identified 22 SAR records within the vicinity of the Study Area (Appendix C). The list of SAR records within the Study Area includes three plants, one mollusc, one amphibian, 11 birds, and six mammals. Seven of the 22 records of SAR were documented in the 1 km^2 NHIC squares identified within the Study Area (i.e., 17NH7882, 17NH7982, 17NH8082, 17NH7983, 17NH8083, 17NH8183, 17NH8283, 17NH8384, 17NH8483, 17NH8484).

4.1.4 Species of Conservation Concern

The results of the background review, as described in 2.2 identified 33 SOCC records within the Study Area (Appendix C). The list of SOCC records within the Study Area includes two plants, ten insects, four turtles, and 17 birds. Four of the 33 SOCC records were documented in the 1 km^2 NHIC squares identified within the Study Area (i.e., 17NH7882, 17NH7982, 17NH8082, 17NH7983, 17NH8083, 17NH8183, 17NH8283, 17NH8384, 17NH8483, 17NH8484).

4.1.5 Fish and Fish Habitat

The Study Area crosses a watershed divide with the eastern area draining north to Ancaster Creek and the western area draining south to the Grand River (Figure 2, Appendix A). The Study Area includes 11 mapped drainage features.

There are six mapped watercourses that cross Garner Road or are within the Study Area (MNRF 2023b). All six mapped watercourses have an intermittent thermal regime. The watercourse associated with Station W05 has a coldwater thermal regime; the mapped watercourses associated with Station W06 and Station W07 have a warmwater thermal regime. There is no assigned thermal regime for the other three mapped watercourses. There are no constructed drains within the Study Area (MNRF 2023c).

There is a record of Creek Chub and Fathead Minnow in the watercourse at Station WC06 (MNRF 2023b). According to the background data, there are no records of aquatic SAR within the Study Area (DFO 2023a; MNRF 2023a).

According to GRCA and HCA mapping (2023), Stations W01 – W08 are located within the jurisdiction of GRCA and Stations W09 – W11 are located within the jurisdiction of HCA. Within the Study Area, the lands at or adjacent to W01, W02, W05, W06, W07, and W08 are regulated by the GRCA; lands at or adjacent to W9, W10 and W11 are regulated by HCA.

4.2 Field Investigations

The results of the field investigations as outlined in Section 3.3 are summarized in Sections 3.3.1 to 3.3.7. A photographic record of site conditions is included in Appendix D.

4.2.1 Vegetation Communities

The Study Area is primarily comprised of constructed communities described by ELC. The remainder of the Study Area is comprised of meadow, woodland, forest, agricultural, swamp, marsh, and shallow water. Descriptions of vegetation communities present in the Study Area are in Table 4.1 below. Vegetation communities located within the Study Area are shown in Figure 3, Appendix A.

Table 4.1 Ecological Land Classification Community Descriptions

ELC Communities		Community Descriptions	Total Area (ha)
Meadow Communities			
ME	Meadow	Meadow community located north of Garner Road east of Shaver Road.	0.32
MEGM3	Dry -Fresh Graminoid Meadow	Dry graminoid meadow located at the Garner Road and Wilson Street West merge.	0.41
MEMM3	Dry-Fresh Mixed Meadow	Dry mixed meadow community located north and south of Garner Road throughout the Study Area.	5.66
MEMM4	Fresh - Moist Mixed Meadow	Moist mixed meadow community located north and south of Garner Road adjacent to the RoW.	0.84
Woodland Communities			
WODM4	Dry - Fresh Deciduous Woodland	Dry deciduous woodland community located south of Garner Road.	1.85
WODM5	Fresh - Moist Deciduous Woodland	Moist deciduous woodland located north of Garner Road.	0.15
Forest Communities			
FOCM1-2	Dry – Fresh White Pine – Red Pine Coniferous Forest	Dry coniferous forest located south of Garner Road in the west portion of the Study Area.	0.86
FOCM6	Naturalized Coniferous Plantation	This community occurs south of Garner Road throughout the Study Area.	1.90
FOM	Mixed Forest	Mixed forest located north and south of Garner Road throughout the Study Area.	2.39
FOD	Deciduous Forest	Deciduous forest located north and south of Garner Road throughout the Study Area.	2.81
FODM2-2	Dry – Fresh Oak – Hickory Deciduous Forest	Hickory deciduous forest located north of Garner Road east of Hamilton Drive.	1.05
FODM7	Fresh – Moist Lowland Deciduous Forest	Moist deciduous forest located north and south of Garner Road throughout the Study Area.	2.87

ELC Communities		Community Descriptions	Total Area (ha)
FODM7-7	Fresh – Moist Manitoba Maple Lowland Deciduous Forest	Moist Manitoba maple deciduous forest located north of Garner Road west of McClure Road.	0.17
FODM11	Naturalized Deciduous Hedgerow	This community occurs north and south of Garner Road throughout the Study Area.	1.35
Agricultural Communities			
OAG	Open Agriculture	Agricultural field located in southeast portion of the Study Area.	0.23
OAGM1	Annual Row Crops	Agricultural fields located south of Garner Road.	9.58
Constructed Communities			
CGL	Greenlands	Greenland spaces located north and south of Garner Road throughout the Study Area.	6.81
CGL_2	Parkland	Parkland spaces located north and south of Garner Road throughout the Study Area.	3.94
CGL_4	Recreational	Recreational properties associated with Bishop Tonnos Turfield.	1.90
CVI	Transportation and Utilities	Constructed property located south of Garner Road west of Fiddlers Green Road.	0.25
CVI_1	Transportation	This community is comprised of roadways and associated RoW. RoW consists of granular shoulders and mowed grassy buffer that separates RoW from other ELC communities.	25.84
CVR	Residential	Community comprised of residential buildings located north and south of Garner Road throughout the Study Area.	2.93
CVR_1	Low Density Residential	Community comprised of low-density residential buildings located north and south of Garner Road throughout the Study Area.	5.18
CVR_3	Single Family Residential	Community comprised of single-family residential buildings located north and south of Garner Road throughout the Study Area.	18.24
CVR_4	Rural Property	Community comprised of rural buildings (e.g., barns, house) located north and south of Garner Road throughout the Study Area.	10.33
CVC	Commercial and Institutional	Commercial properties located north and south of Garner Road throughout the Study Area.	12.99
CVC_1	Business	Business property located north of Garner Road west of Panabaker Drive.	1.25
CVC_2	Light Industry	Community comprised of light industry buildings located north of Wilson Street West east of Mason Drive.	0.35

ELC Communities		Community Descriptions	Total Area (ha)
Swamp Communities			
SWDM4-1	Willow Mineral Deciduous Swamp	Willow deciduous swamp located south of Garner Road between Highway 6 and Fiddlers Green Road.	0.42
SWTM3	Willow Mineral Deciduous Thicket Swamp	Willow deciduous thicket swamp located north of Garner Road west of Panabaker Road.	0.33
Marsh Communities			
MAMM1-12	Common Reed Graminoid Mineral Meadow Marsh	Common reed meadow marsh located north and south of Garner Road throughout the Study Area.	2.07
MASM1-12	Common Reed Mineral Shallow Marsh	Common reed shallow marsh located north of Garner Road adjacent to the Bishop Tonnos Turfield.	0.32
Shallow Water Communities			
SA	Shallow Water	Community comprised of stormwater management ponds.	1.24
Total			**126.83**

4.2.2 Vascular Plant Species

A list of vascular plant species documented during botanical field investigations from the roadside is located in Appendix E. One hundred and sixty-six (166) distinctive vascular plants were recorded in the Study Area. Seventy-three (73) of the 166 plants documented had a provincial rank of S4 or S5, indicating they are common in Ontario. Three of the 166 plants documented had a provincial rank of S1 or S2, indicating they are rare in Ontario (honey-locust, Kentucky coffee-tree, butternut) (Figure 4, Appendix A). Two of the 166 plants documented are SAR (Kentucky coffee-tree [THR], butternut [END); however, as per O.Reg. 230/08 Kentucky coffee-tree is only THR in the County of Elgin, the County of Essex, the County of Lambton, the County of Middlesex, the County of Norfolk, the County of Oxford and the Municipality of Chatham-Kent. Seventy-eight (78) of the 166 plants documented are native to Ontario; the remaining 88 plants documented are exotic.

No highly sensitive plant species (CC = 9-10) were documented during the botanical inventory. Both Kentucky coffee-tree and honey locust are commonly planted in southern Ontario and are introduced to Hamilton (Schwetz 2014).

There were no plant species identified in the Study Area that are listed as rare in the Hamilton Natural Areas Inventory (2014).

Watercress (*Nasturtium officinale*), an indicator species for groundwater seepage, was observed near watercourse crossing W06 in the RoW (CVI_1) within the Study Area (Figure 4, Appendix A).

Giant hogweed (*Heracleum mantegazzianum*), an invasive and noxious plant species was observed near watercourse crossing W06 in the the RoW (CVI_1) within the Study Area (Figure 4, Appendix A)

4.2.3 Amphibians

Four species of amphibians were recorded at ten of the 14 amphibian call stations during the amphibian surveys: American toad (AMTO), Green Frog (GRFR), Gray Treefrog (GRTR) and Spring Peeper (SPPE) (Table 4.2). Call stations are shown on Figure 4, Appendix A. All four species recorded during the amphibian surveys have a provincial rank of S5, indicating they are common in Ontario (Appendix F).

Results are summarized below in Table 4.2.

Table 4.2 Amphibian Call Level Codes and Species Results

Station	Date	Species				Notes
		AMTO	GRFR	GRTR	SPPE	
AMP03	April 23, 2021				1-5	Approximately 100 m south of Station AMP03.
	May 18, 2021	1-2	1-1	1-3	1-4	-
AMP05	April 23, 2021				2-10	20 m North of road.
	May 18, 2021	2-3		2-1		-
AMP06	May 18, 2021	2-5				-
AMP08	May 18, 2021	1-2				Heard possibly from pond on private property.
	June 9, 2021			2-4		-
AMP09	April 23, 2021	1-3			2-10	-
	May 18, 2021			2-6	1-2	Two SPPE individuals clearly heard at opposing ends of pond (north and south). GRTR seem to be evenly spread around the pond.
	June 9, 2021		2-6	2-20		-
AMP10	May 18, 2021	1-2				Possibly calling from ditch.
AMP11	May 18, 2021	2-3				Two AMTO closer to and one further on east end of pond.
	June 9, 2021		1-1			-
AMP12	May 18, 2021	1-2			2-6	Heard AMTO close to trees near phragmites. Hard to hear in distance but small group of SPPE calling probably outside project area.
AMP13	May 18, 2021	1-2				Very hard to hear over traffic but about 2 individuals calling.

Station	Date	Species				Notes
		AMTO	GRFR	GRTR	SPPE	
AMP14	May 18, 2021	1-3	1-1			Two AMTO close, one further away other side of pond. One GRFR heard at beginning of survey.
	June 9, 2021		1-1	2-4		-

4.2.4 Breeding Birds

In total, 22 avian species were recorded during breeding bird surveys including point counts and walking surveys or were recorded during amphibian breeding surveys during the breeding season (i.e., American Woodcock)) (Appendix F). Locations of the 14 bird point count stations are shown in Figure 4, Appendix A. All species with the exception of Ring-billed Gull (are presumed to be breeding in the Study Area. All 22 species recorded during the breeding bird surveys have a provincial rank of S4 or S5, indicating they are common in Ontario. Vesper Sparrow (a species listed as moderately significant in the Hamilton Natural Areas Inventory [HCA 2014]) was identified during the second breeding bird survey in the BBS2 survey area.

Migratory birds and their nests are protected under the *Migratory Birds Convention Act*, 1994 (MBCA) and are afforded protection on all lands. Structures within the Study Area may provide nesting habitat for Barn Swallow, which is a SOCC and protected by the MBCA (Figure 4, Appendix A). No bird nests were observed within the Study Area. Although there were no Barn Swallow observed during the breeding bird surveys, there is potential for Barn Swallow and other migratory bird species listed on Schedule 1 of the MBCA to occur on structures and in vegetation in the RoW.

4.2.5 Bats

Forty-one (41) candidate bat maternity roost trees were observed in the FOM, FOD, and CVI_1 within the RoW during the bat roost tree assessment as described above in Section 3.4.4 (Appendix G). The locations and species of the 41-candidate bat maternity roost trees are shown in Figure 4, Appendix A. Six of the 41 candidate bat maternity roost trees are good examples of preferred habitat for bat maternity colonies, meeting six out of the eight suitability criteria outlined in the *MNRF Guelph District Bat and Bat Habitat Surveys of Treed Habitats* (MNRF 2017). Twenty (20) of the 41 candidate bat maternity roost trees are considered to be examples of low-quality candidate bat maternity colony trees, meeting less than three out of the eight suitability criteria. The remaining 14 candidate bat maternity roost trees are considered to be examples of medium quality candidate bat maternity colony trees (Appendix G).

4.2.6 Incidental Wildlife Observations

Incidental wildlife observations during field investigations in the Study Area included American Woodcock, American toad, monarch (adults), eastern cottontail, striped skunk, and sulphur moth. American Woodcock, American toad, eastern cottontail, striped skunk, and sulphur moth have been included in the

Wildlife Species List in Appendix F; Monarch a SOCC (provincial SC species), is included in Appendix C. Adult monarch were observed in July in the MAMM1-2 and in September in the ROW during the summer and fall botanical surveys, respectively (Figure 4, Appendix A). All other incidental species observed are common and secure in Ontario, with no provincial designation.

4.2.7 Fish and Fish Habitat/Headwater Drainage Features

4.2.7.1 Fish and Fish Habitat

Four of the 11 stations had sufficient water for electrofishing (i.e., W05, W06, W07, W11). Station W08 and Station W10 did not have sufficient water for electrofishing and were sampled using dipnets. There was no water at Stations W01, W02, W03, W04, and W09. Fish were captured at two (i.e., W05, W11) of the six stations where presence/ absence fish community surveys were completed. The following four species of fish were captured during fish community sampling: white sucker*,* pumpkinseed, fathead minnow, and creek chub. All four species captured during the fish community sampling have a provincial rank of S5, indicating they are common in Ontario (Appendix F).

Four of the 11 stations had sufficient water present at the time of the surveys to measure water quality parameters. Results of water quality measurements are included in Appendix H.

The following summary of conditions at the eleven stations assessed informs both the HDF Assessment and the fish habitat assessment.

Station W01

This watercourse is mapped as an intermittent flow and a warmwater thermal regime (MNRF 2023b). This watercourse has been altered to convey stormwater from the adjacent roads and developments. A constructed/armored channel is present south of Garner Road. The channel connects to a stormwater pond (SWP) north of Garner Road.

Station W02

This feature is mapped as an intermitted watercourse with a warmwater thermal regime (MNRF 2023b). This watercourse has been altered to convey stormwater from the adjacent roads and developments to a SWP north of Garner Road. A constructed armored channel was observed north of Garner Road. No channel was observed south of Garner Road.

Station W03

This feature is mapped as an intermitted watercourse with a warmwater thermal regime north and south of Garner Road (MNRF 2023c). No channel was visible north of Garner Road. A concrete channel is present south of Garner Road. A pond (25 m x 45 m) is present downstream (south) of the road with unknown depth. This feature provides contributing fish habitat as it provides seasonal flows to downstream locations with potential fish habitat.

Station W04

This feature is mapped as an intermitted watercourse with a warmwater thermal regime south of Garner Road only (MNRF 2023c). No watercourse is mapped north of Garner Road. No channel or culvert were found in the RoW.

Station W05

This feature is mapped as an intermitted watercourse with a coldwater thermal regime north and south of Garner Road (MNRF 2023c). A defined natural channel was observed upstream and downstream of Garner Road during field surveys. The channel is diverted under Garner Road through a 2.5 m round CSP culvert. The culvert is perched by approximately 0.2 m. North of Garner Road conditions could not be observed due to a wood fence that blocked the channel from view.

The channel south of Garner Road had a steep embankment at the edge of the road showing signs of recent erosion. Substrate observed included cobble, gravel, sand, and silt. Morphology of the channel included riffle and run. Fish species captured at this station include White Sucker and Creek Chub.

Station W06

This feature is mapped as an intermitted watercourse with a warmwater thermal regime south of Garner Road only (MNRF 2023c). A non-evaluated wetland is mapped north of Garner Road. A defined natural channel was observed upstream and downstream of Garner Road during field surveys. The channel is diverted under Garner Road through a culvert which consists of two parts. The upstream (north) part is a 1.5 m CSP culvert, and the downstream part is a 1.2 m concrete open foot box.

The channel north of Garner Road is next to a steep embankment with signs of recent erosion. Substrate north of the road included cobble, gravel, sand, and silt. Morphology of the channel included riffle and run. No fish were visually observed on March 30, 2021.

The substrate south (downstream) of Garner Road consisted mainly of silt and muck. Morphology of the channel included pool and flat. No fish were visually observed on March 30, 2021. The channel was dry on March 30 and May 4, 2021. This feature provides contributing fish habitat as it provides seasonal flows to downstream locations with potential fish habitat.

Station W07

This feature is mapped as an intermitted watercourse with a warmwater thermal regime south and north of Garner Road (MNRF 2023c). There is no defined channel. Standing water was observed in a wide (approximately 25 m) area that is densely vegetated by reed canary grass. The channel is diverted under Garner Road through a 0.5 m plastic pipe. Downstream of Garner Road there is a defined channel that connects to a pond. No fish were captured in the channel on May 4, 2021. South (downstream) of Garner Road there is a pond that measures approximately 80 m by 55 m. Downstream of the pond there is a defined channel with cobble and gravel substrate through area with mowed grasses. This feature

provides contributing fish habitat as it provides seasonal flows to downstream locations with potential fish habitat.

Station W08

This feature is mapped as an intermitted watercourse with a coldwater thermal regime south of Garner Road only (MNRF 2023c). No channel is mapped north (upstream) of Garner Road. A stormwater intake structure captures flow from the north side of the road. The channel is diverted under Garner Road through a 1.2 m CSP. A defined natural channel was observed downstream of Garner Road.

The substrate south (downstream) of Garner Road consisted mainly of silt and muck. Morphology of the channel included pool and flat. No fish were visually observed on March 30 or May 4, 2021.

Station W09

This feature is mapped as a permanent watercourse with a warmwater thermal regime north and south of Garner Road (MNRF 2023c). No defined natural channel was observed upstream or downstream of Garner Road during field surveys. There is a 0.75 m diameter CSP culvert under Garner Road which is dented on the south side.

Station W10

This feature is mapped as a permanent watercourse with a warmwater thermal regime north and south of Garner Road (MNRF 2023c). No defined natural channel was observed upstream or downstream of Garner Road during field surveys. There is a 0.75 m diameter CSP culvert under Garner Road which is dented on the south side. There is a mapped non-evaluated wetland south of Garner Road. This watercourse is also mapped a DFO Drain Class D. This feature provides contributing fish habitat as it provides seasonal flows to downstream locations with potential fish habitat.

Station W11

This feature is mapped as a permanent watercourse with an unknown thermal regime north and south of Garner Road (MNRF 2023c). A swale was observed north (upstream) of Garner Road during field surveys in a residential yard. A poorly defined channel was observed south (downstream) of Garner Road in an area with scrubland/thicket vegetated by reed canary grass.

Fish species captured at this station include pumpkinseed and fathead minnow.

4.2.7.2 Headwater Drainage Feature Assessment

Site conditions at the 11 stations are summarized in Table 4.3. Fish habitat characteristics are described above in Sections 4.2.7.1.

Results of the HDF assessment are summarized in Table 4.4.

Table 4.3 Site Conditions at Eleven Stations within Study Area

Station Number	Site Conditions			
	Hydrological	**Riparian**	**Fish and Fish Habitat**	**Terrestrial Habitat**
W01	Watercourse is mapped as an intermitted flow regime. Dry on March 30, May 4, and July 15, 2021. GRCA Regulated Area (north side of Garner Road)	Vegetation consists of mowed lawn upstream (south of Garner Road); and meadow south of Garner Road.	Channel conveys stormwater to a Stormwater management pond (SWP) north of Garner Road. This station does not provide direct or contributing fish habitat.	Swale and roadside ditch.
W02	March 30, 2021 – dry May 4, 2021 – minimal flow (<0.5 L/s) July 15, 2021 – dry GRCA Regulated Area (north side of Garner Road)	Vegetation consists of meadow surrounding the SWP.	Channel conveys stormwater to a SWP north of Garner Road. The channel is not at the surface south of Garner Road. This station does not provide direct or contributing fish habitat.	Conveyance for stormwater.
W03	Dry on March 30, May 4, and July 15, 2021.	This concrete channel and the pond are surrounded by manicured lawn and sparse shrubs.	Channel conveys stormwater to a pond south of Garner Road. The pond may provide direct fish habitat based on its size and depth. Limited contributing fish habitat (i.e., conveyance of water to the pond). Contributing Fish Habitat.	No channel north of Garner Road. Concrete channel south of Garner Road connects to pond.
W04	Dry on March 30, May 4, and July 15, 2021.	Dense phragmites growth north of Garner Road. Roadside ditch south of Garner Road located within mixed meadow and meadow marsh communities.	No direct or contributing fish habitat at this station.	Meadow marsh south of Garner Road.
W05	Substantial flow (>0.5 L/s) on March 30, May 4, and July 15, 2021. GRCA Regulated Area	Maintained lawn and scrub thicket south of Garner Road.	Well-defined channel with permanent flow. Coldwater thermal regime. Fish captured. Direct fish habitat is present at this station.	No terrestrial habitat present.

Station Number	Site Conditions			
	Hydrological	**Riparian**	**Fish and Fish Habitat**	**Terrestrial Habitat**
W06	Substantial flow (>0.5 L/s) on March 30, May 4, and July 15, 2021. GRCA Regulated Area	Maintained lawn and scrub thicket south of Garner Road.	Well defined channel with an intermittent flow regime. No fish captured. Contributing fish habitat.	Meadow marsh south of Garner Road
W07	Minimal flow (<0.5 L/s) on March 30, May 4, and July 15, 2021. GRCA Regulated Area	Wetland north and manicured lawn south of Garner Road.	No fish captured in defined channel with flow downstream (south) of Garner Road. Contributing fish habitat.	Non-evaluated wetland north of Garner Road. Pond south of Garner Road.
W08	March 30, 2021 – standing water May 4, 2021 – minimal flow (<0.5 L/s) July 15, 2021 – minimal flow (<0.5 L/s) GRCA Regulated Area (south side of Garner Road)	Roadside ditch with manicured lawn north of Garner Road. Lawn and scrubland/ thicket south of Garner Road.	No fish captured in defined channel. With flow downstream (south) of Garner Road. Contributing fish habitat.	Pond south of Garner Road.
W09	The area around the concrete steel pipe (CSP) culvert was dry on March 30, May 4, and July 15, 2021. HCA Regulated Area	Roadside ditch, residential lawns north of Garner Road. A meadow with phragmites south of Garner Road.	No defined channel observed and no standing water during any visit. This station does not provide direct or contributing fish habitat.	Meadow marsh south of Garner Road.
W10	Minimal (<0.5 l/s) flow on March 30, May 4, and July 15, 2021. HCA Regulated Area	Feature is piped under residential property north of Garner Road. A meadow with *Phragmites sp.* south of Garner Road.	Contributing fish habitat.	No terrestrial habitat presents north of Garner Road. Non-Evaluated Wetland present south of Garner Road.

Station Number	Site Conditions			
	Hydrological	**Riparian**	**Fish and Fish Habitat**	**Terrestrial Habitat**
W11	March 30, 2021 – minimal flow (<0.5 L/s) May 4, 2021 – standing water July 15, 2021 – dry HCA Regulated Area	Residential yards south of Garner Road. Scrubland thicket north of Garner Road.	Fish captured. Direct fish habitat is present at this station.	No terrestrial habitat present.

A summary of the HDF classifications and management recommendations for locations not currently regulated by the GRCA or HCA is provided below in Table 4.4. The results of the background review and field investigations were used to assign the classifications according to the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (TRCA and CVC 2014) and to determine management recommendations. Based on the HDF classifications, no management is recommended at Station W03 or on the north side of Garner Road at Station W04. A management recommendation of Protection is recommended on the south side of Garner Road. A management recommendation of Mitigation is recommended on the north side of Garner Road at Station 08.

Table 4.4 Headwater Drainage Feature Classifications and Management Recommendations

Station Number	Hydrology Classification	Riparian Classification	Fish Habitat Classification	Terrestrial Classification	Management Recommendation*
W01	Limited	Contributing	No functions	Limited	No management required (GRCA Regulated Area on north side of Garner Road will be mitigated and managed accordingly)
W02	Limited	Limited	No functions	Limited	No management required (GRCA Regulated Area on north side of Garner Road will be mitigated and managed accordingly)
W03	Limited	Limited (north) Important (south)	Contributing	Limited	No management required
W04	Limited	Limited (north) Important (south)	None	Limited (north) Important (south)	No management required (north) Protection (south)
W05	Important	Important	Important	Limited	Not Applicable (GRCA Regulated Area)
W06	Important	Important	Contributing	Limited	Not Applicable

Station Number	Hydrology Classification	Riparian Classification	Fish Habitat Classification	Terrestrial Classification	Management Recommendation*
					(GRCA Regulated Area)
W07	Important	Important (north) Limited (south)	Contributing	Important	Not Applicable (GRCA Regulated Area)
W08	Valued or Contributing	Limited (north) Important (south)	Contributing	Limited	Mitigation (north) GRCA Regulated Area on the south side)
W09	Limited	Limited	None	Limited	Not Applicable (HCA Regulated Area)
W10	Important	Limited (north) Important (south)	Contributing	Limited (north) Important (south)	Not Applicable (HCA Regulated Area)
W11	Valued or Contributing	Limited	Valued	Limited	Not Applicable (HCA Regulated Area)

* Based on Figure 2 of the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines (TRCA and CVC 2014)*

5 Evaluation of Significance

5.1 Wetlands

According to information provided on LIO mapping (MNR 2023b) there are no PSWs identified in the Study Area. There are several unevaluated wetlands identified in the Study Area on LIO mapping, and several wetlands identified during field investigations, some of which overlap with each other (Figure 5, Appendix A). There are also locally significant wetlands identified in the Study Area on Schedule B-4 of the UHOP and RHOP.

5.2 Woodlands

There are significant woodlands identified in the Study Area on Schedule B-2 of the UHOP and RHOP.

5.3 Valleylands

There are no significant valleylands designated by the HCA, GRCA, MNRF or the City of Hamilton in the Study Area.

5.4 Significant Areas of Natural and Scientific Interest

There are no ANSIs designated by the MNRF in the Study Area.

5.5 Species at Risk

One SAR (butternut [END]) was observed in the FOM community east of Shaver Road and south of Garner Road East, during field investigations (Figure 4, Appendix A). The regulated habitat for Butternut includes the area within 30m from the trunk, which overlaps with the Project Location. A Butternut Health Assessment (BHA) is recommended to be completed to determine whether the tree meets the criteria to be retained (i.e., little to no canker, not a hybrid). Consultation with the MECP will be required to determine mitigation and /or permitting requirements for Butternut and its regulated habitat, if the BHA determines the Butternut to be retainable.

Kentucky coffee-tree was also observed; however, it is only considered threatened in the County of Elgin, the County of Essex, the County of Lambton, the County of Middlesex, the County of Norfolk, the County of Oxford and the Municipality of Chatham-Kent.

Forty-one (41) potential bat maternity roost trees were identified in the ROW and may be directly impacted by the Project. These trees and treed habitat beyond the ROW have the potential to support bat SAR. Acoustic monitoring surveys can be completed in the ROW to confirm the species of bats present in the Study Area. There is a high likelihood of identifying the presence of bat SAR based on the recent

designation of 3 additional bat species as provincially endangered. Consultation with the MECP will be required to determine mitigation and /or permitting requirements if bat SAR are present.

Potential habitat was identified within the Study Area during the SAR habitat assessment for nine (9) additional SAR identified during the background review. The SAR habitat assessment and potential presence of each species is discussed in Appendix C.

5.6 Significant Wildlife Habitat

Each of the four categories of SWH are briefly described below in the context of the Study Area. Summary tables of the SWH assessments are provided in Appendix I.

5.6.1 Seasonal Concentration Areas

Seasonal concentration areas are those sites where large numbers of a species gather at one time of the year, or where several species congregate. Examples include snake and bat hibernacula, waterfowl staging and molting areas, raptor roosts, bird nesting colonies, shorebird staging areas, and passerine migration concentrations. Only the best examples of these concentration areas are usually designated as SWH.

The following candidate seasonal concentration areas were identified in the Study Area:

- **Bat Maternity Colonies** - According to the SWH Criteria Schedules for Ecoregion 7E (MNRF 2015), bat maternity colonies are characterized by mature deciduous or mixed forest stands (FOD, FOM, SWD, or SWM) with greater than ten large diameter (>25 cm) trees / hectare (ha). FOM, FOD, FODM2-2, FODM7, FODM7-7, FODM11, and SWDM4-1 communities in the Study Area are considered Candidate SWH for maternity roosts. Buildings may also support maternity roosting bats; however, they are not considered SWH (MNRF 2015).
- **Snake Hibernacula** - Any ecosite in southern Ontario other than very wet ones may provide overwinter habitat for snakes (MNRF 2015). Candidate hibernacula features were not observed in the Project Location during field investigations; however, the Adjacent Lands were not thoroughly assessed and overwintering habitat for snakes may be present.

No other candidate seasonal concentration areas were observed within the Study Area.

5.6.2 Rare or Specialized Habitat

Rare or specialized habitats are two separate components of SWH. Rare habitats are those with vegetation communities that are considered rare in the province. Specialized habitats are microhabitats that are critical to some wildlife species. The SWHTG (MNR 2000) identifies habitats that could be considered specialized habitats, such as habitat for area-sensitive species, forests providing a high diversity of habitats, amphibian woodland breeding ponds, turtle nesting habitat, highly diverse sites, seeps, and springs. High quality habitat features generally occur outside of the influence of edge effects and wildlife mortality that are associated with major roadways.

The following candidate specialized habitats were identified in the Study Area:

- **Amphibian breeding habitat (woodland and wetland)** – Breeding amphibian call surveys documented two or more of the listed frog species (i.e., American toad, gray treefrog, spring peeper, green frog) at multiple stations (AMP03, 05, 08, 09, 14) in the Study Area. All amphibians recorded during the surveys were heard calling outside the Project Location Amphibians heard calling at AMP03 were assumed to be calling in the pond to the south of the Study Area. Amphibians calling at AMP09 and AMP14 are not considered as significant because the features are stormwater management ponds. Although the number of individuals recorded was < 20 for AMP03, AMP05 and AMP08, it is likely that more individuals are present, and these features were identified as candidate SWH for amphibian breeding.

No other candidate rare or specialized features were observed within the Study Area.

5.6.3 Habitat for Species of Conservation Concern

Data collected during the site visits were used to assess the potential for habitat of SOCC to occur within the Study Area. Habitat assessments for these species were completed through a combination of satellite photo interpretation and field investigations to determine whether suitable habitat may be present within the Study Area.

The following candidate habitats for SOCC were identified in the Study Area:

- **Marsh breeding bird habitat** - The MAMM1-12, SWDM4-1, and SWTM3 communities may provide candidate breeding habitat for Green Heron (*Butorides virescens*) within the Study Area.

Two SOCC [i.e., honey locust (S2), monarch (SC)] were observed within the Study Area during field investigations. Both SOCC were observed in the CVI_1; monarch was also observed in the MAMM1-12. Honey locust is introduced to Hamilton and is not considered a natural occurrence (Schwetz 2014).

Potential habitat was identified within the Study Area during the SOCC habitat assessment for 12 additional SOCC identified in the background review. The SOCC habitat assessment and potential presence of each species is discussed in Appendix C.

5.6.4 Animal Movement Corridors

Migration corridors are areas that are traditionally used by wildlife to move from one habitat to another, typically to access different seasonal habitat requirements. Corridors requiring consideration in Ecoregion 7E include Amphibian Movement Corridors and are identified once significant amphibian breeding features are confirmed. Because candidate amphibian breeding habitat (woodland and wetland) was documented as noted above, candidate movement corridors are also present.

5.7 Fish and Fish Habitat

Stations W05 and W11 provide direct fish habitat as defined in subsection 2(1) of the *Fisheries Act* within the Study Area. Two species of fish (i.e., white sucker, creek chub) were captured at Station W05 and two species of fish (i.e., pumpkinseed, fathead minnow) were captured at Station W11 within the Study Area. All four species of fish captured belonged to cool or warm thermal guilds. There are no aquatic SAR present in the Study Area.

Stations W03, W06, W07, W08, and W10 provide contributing fish habitat as they do provide seasonal flows to downstream locations with potential fish habitat.

6 Natural Heritage Features Summary

A summary of natural heritage features that were confirmed or have the potential to be present within the Study Area is provided in Table 6.1.

Table 6.1 Summary of Natural Heritage Features Within the Study Area

Type	Species/Feature	Description
Conservation Authority Designation	Regulated Areas	GRCA and HCA regulation limits are present within the Study Area. Regulated areas include wetlands and watercourses.
Significant Natural Features	Wetlands	Unevaluated wetlands occur within the Study Area. Features designated as “Key Natural Heritage / Hydrologic Feature Wetlands” in the UHOP and RHOP are considered as locally significant wetlands
	Woodlands	Woodlands in the Study Area are identified as “Key Natural Heritage Feature Significant Woodlands” in the UHOP and RHOP.
Breeding and Migratory Birds	Bird nests	Breeding birds and migratory bird species listed on Schedule 1 of the MBCA were confirmed within the Study Area. There were no nests observed in the Project Location during field investigations, but new nests could be established in subsequent years.
Wildlife Habitat	Bat maternity roost trees	Forty-one (41) candidate bat maternity roost trees occur within the RoW. These features do not qualify as SWH but could provide habitat for bat SAR.
	Snake Hibernacula	Candidate hibernacula features were not observed in the Project Location during field investigations; however, the Adjacent Lands were thoroughly assessed and overwintering habitat for snakes may be present
	Amphibian breeding habitat	Wetlands and shallow aquatic communities support breeding amphibians within the Study Area. Candidate SWH for breeding amphibians was identified in wetlands adjacent to AMP05 and AMP08 in the Study Area.
	Marsh breeding bird habitat	The MAMM1-12, SWDM4-1, and SWTM3 communities may provide candidate breeding habitat for Green Heron within the Study Area, but outside the Project Location.
	Turtle nesting areas	Turtle nests may be present within the Study Area. No natural habitat for turtle nesting was observed, but turtles may nest in road shoulders. Road shoulders do not qualify as SWH.
SAR	Butternut	One butternut tree was observed in the FOM community east of Shaver Road on the south side of Garner Road West.

Type	Species/Feature	Description
Suitable habitat for SAR	American chestnut Spotted wintergreen Jefferson salamander Barn Owl American badger Eastern small-footed myotis Little brown myotis Northern myotis Tricolored bat	Wetlands and vernal pools in forest communities on the Adjacent Lands may support breeding Jefferson Salamander; suitable breeding habitat is absent from the Project Location. Humanmade structures (i.e., barns) within the Adjacent Lands may support breeding Barn Owl; suitable structures are absent from the Project Location. Treed communities within the Adjacent Lands may support American chestnut, spotted wintergreen, American Badger and bat SAR. Bat SAR may also use trees in the Project Location.
SOCC	Monarch	Adult Monarch was observed in the Project Location and Adjacent Lands. Larval host plants (*Asclepias* ssp.) were observed in the Project Location and Adjacent Lands.
Suitable habitat for SOCC	Perfoiliate bellwort Virginia bluebells Clymene moth Giant leopard moth Penitent underwing moth Pronghorn clubtail Swamp darner Unicorn clubtail Walnut caterpillar moth Eastern milksnake Midland painted turtle Snapping turtle	Perfoliate bellwort and Virginia bluebells may be found in the treed communities in the Study Area, outside of the Project Location. Insects maybe found in the woodlands, wetland and meadows in the Study Area. The highest quality habitats are present outside of the Project Location on the Adjacent Lands. Potential habitat for turtles is present in the SA and watercourses in the Adjacent Lands. Suitable nesting and thermoregulation habitat is available on road shoulders and watercourses in the Project Location may be used during migration. Potential snake habitat is present in forests, meadows, and agricultural areas within the Adjacent Lands. Suitable thermoregulation habitat is available on road shoulders.
Fish Habitat	Warmwater habitat	Warmwater baitfish habitat is present in mapped watercourses at Station W05 and Station W11. Stations W03, W06, W07, W08, and W10 provide contributing fish habitat as they provide seasonal flows to downstream locations with potential fish habitat.
HDF	Headwater Drainage Feature	Station W04 (south side): Management Recommendation of Protection Station W08 (north side): Management Recommendation of Mitigation

An impact assessment is required to address highway improvements in or adjacent to woodlands, wetlands, wildlife habitat and watercourses, and provide appropriate mitigation and enhancement measures. The project may require authorization under the ESA for butternut, bat SAR and their habitat.

7 Conclusion

The City of Hamilton is undertaking Phases 3 and 4 of the MCEA for proposed work on Garner Road and associated RoW between Wilson Street and the Highway 403 off ramp in Hamilton, Ontario. The purpose of the study is to identify a “complete streets” solution that addresses current and future transportation needs within the Study Area as part of the City’s Complete-Livable-Better policy framework which has been endorsed by the City-wide Transportation Master Plan and provides a strong foundation for all existing and planned infrastructure to adopt. This Natural Environment EC report provides supporting documentation for the Project.

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property. Conclusions made within this report consist of Stantec’s professional opinion as of the time of the writing of this report and are based solely on the scope of work described in the report, the limited data available and the results of the work.

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Appendices

Appendix A Figures



Stantec

Legend

- Project Location
- Study Area

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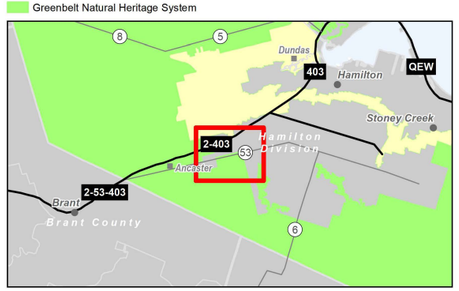
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Niagara Escarpment Plan

Greenbelt Natural Heritage System



Project Location
City of Hamilton

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Prepared by ST on 2025-05-02

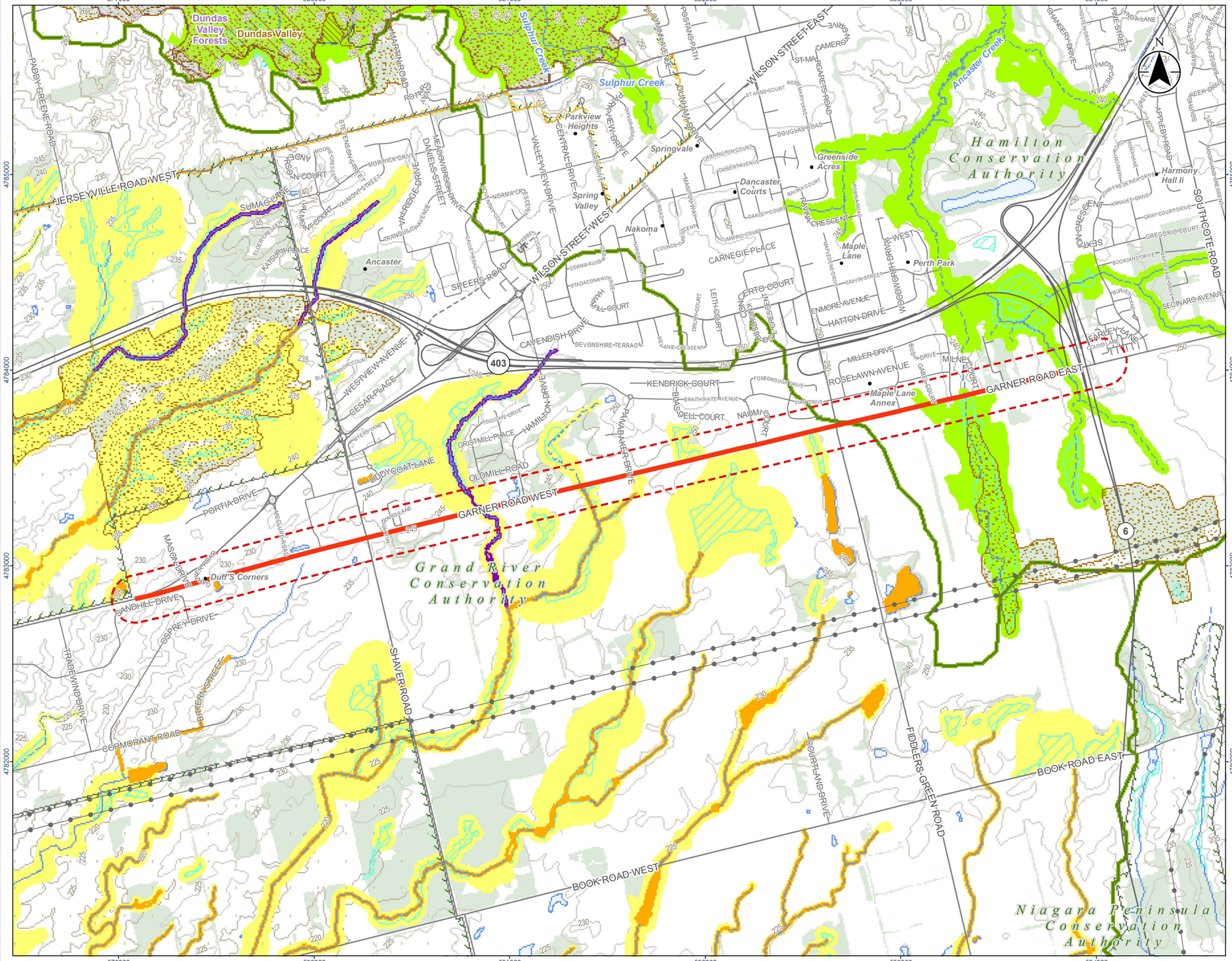
Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
1

Title
Study Area

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Stantec

Legend

- Project Location
- Study Area
- Jighway
- Major Road
- Minor Road
- Hydro Line
- Unknown Transmission Line
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Thermal Regime, Cold
- Thermal Regime, Warm
- Thermal Regime, Cold
- Thermal Regime, Warm
- Waterbody
- Wetland, Unevaluated
- ANSI, Earth Science
- ANSI, Life Science
- Conservation Authority Administrative Boundary
- Overwintering Area
- Wooded Area
- Greenbelt Natural Heritage System
- Niagara Escarpment Plan Boundary
- HRCA Regulation Limit
- GRCA Regulation Limit

0 1 km

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Notes

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3. Contains Information made available under Grand River Conservation Authority's Open Data Licence v2.0 (GRCA Regulation Limit)
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Project Location
City of Hamilton

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Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
2

Title
Ecosystem Background Data

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Stantec

Legend

- Project Location
- Study Area
- Amphibian Call Station
- Breeding Bird Survey Area
- Headwater Drainage and Fisheries Assessment Station
- Flow Direction

0 100 200 Meters

1:5,000 (At original document size of 11x17)

Notes

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Project Location
City of Hamilton

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CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
3-1

Title
Field Survey Location

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Stantec

Legend

- Project Location
- Study Area
- Amphibian Call Station
- Breeding Bird Survey Area
- Headwater Drainage and Fisheries Assessment Station
- Flow Direction

0 100 200 Meters

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Notes

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Project Location
City of Hamilton

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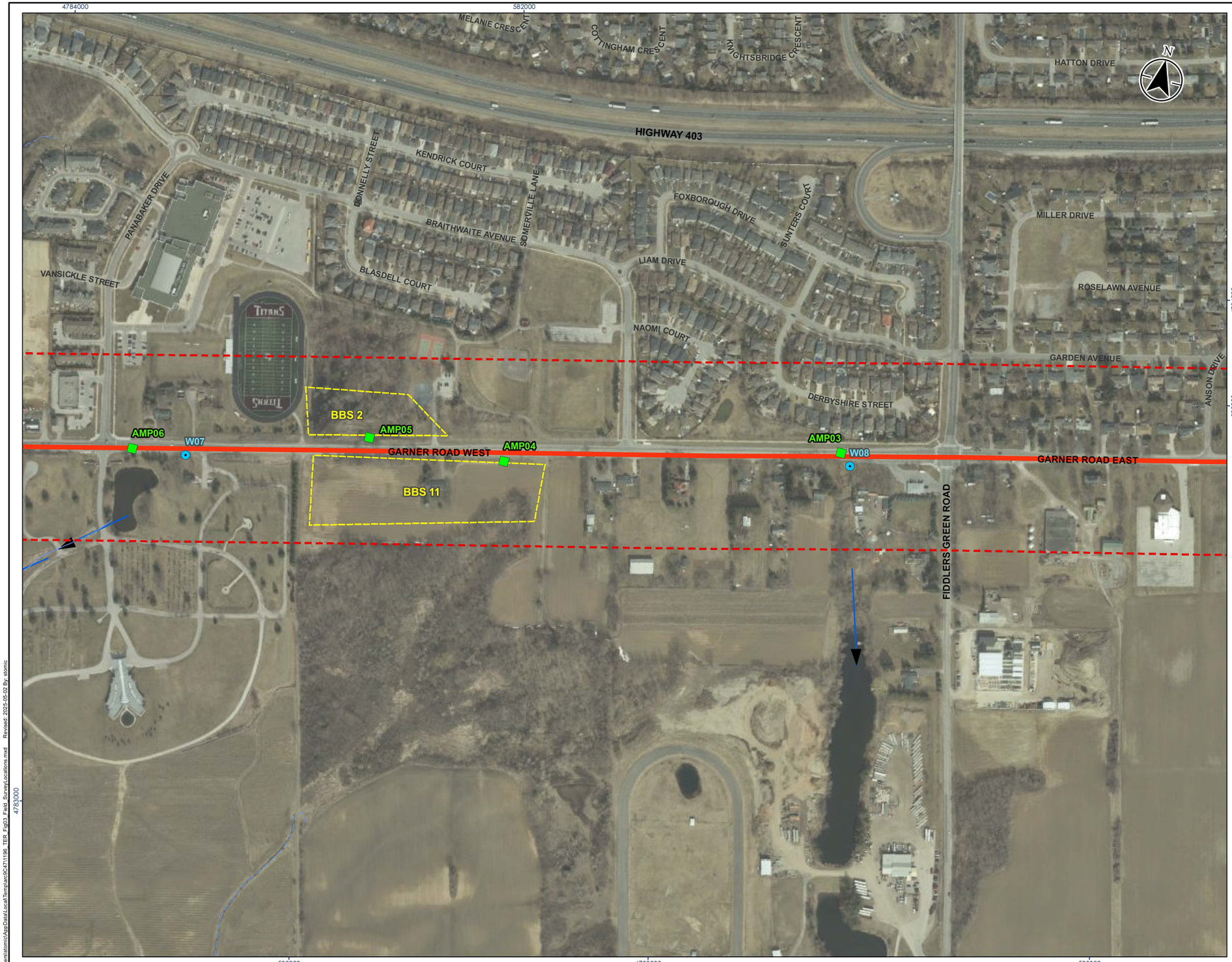
Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
3-2

Title
Field Survey Location

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Stantec

Legend

- Project Location
- Study Area
- Amphibian Call Station
- Breeding Bird Survey Area
- Headwater Drainage and Fisheries Assessment Station
- Flow Direction

0 100 200 Meters

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Notes

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City of Hamilton

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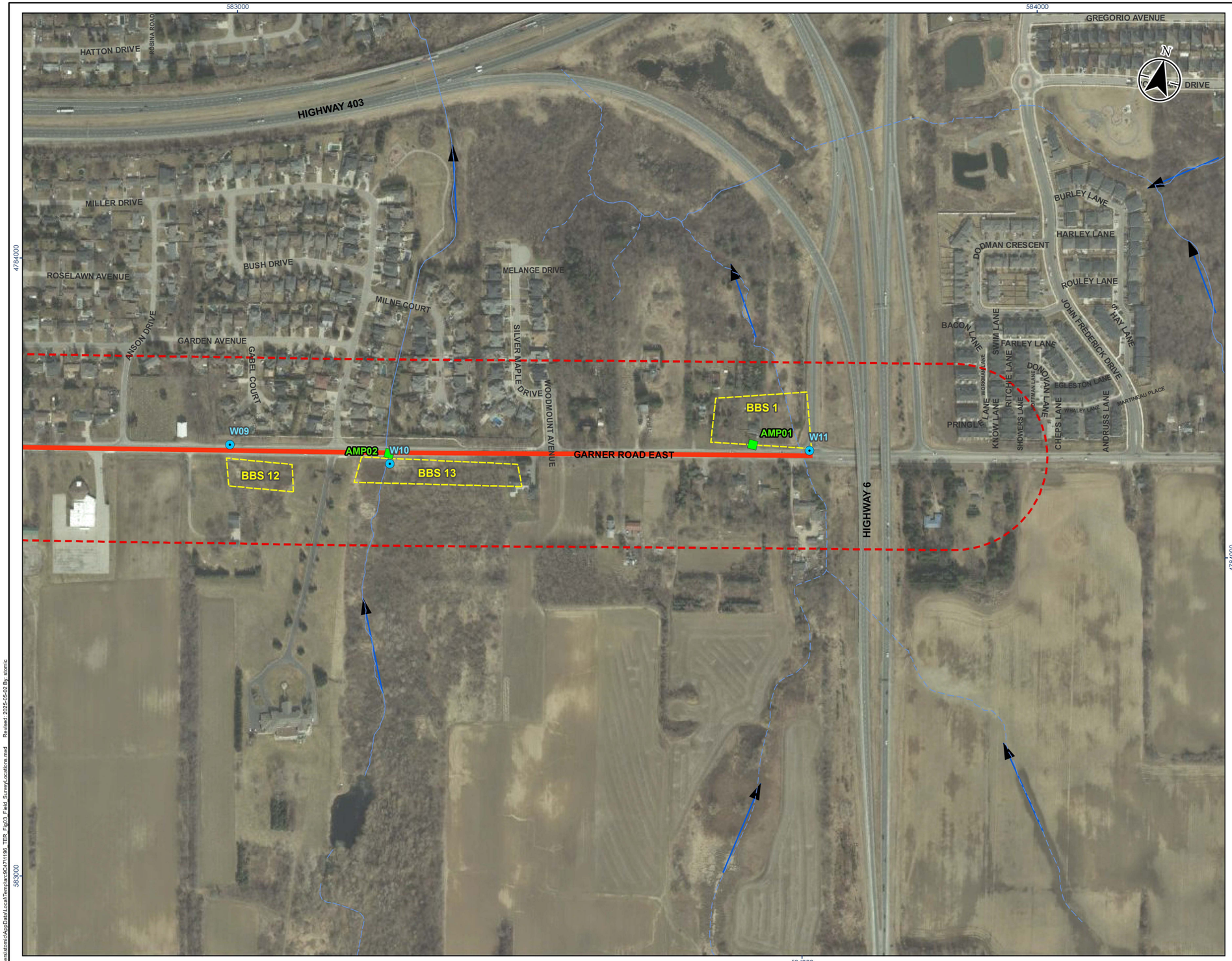
Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
3-3

Title
Field Survey Location

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Legend

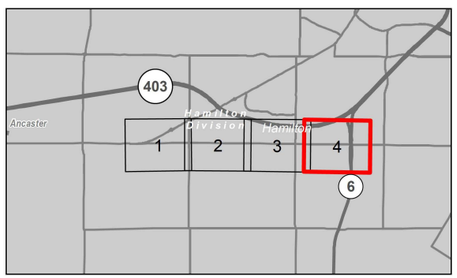
- Project Location
- Study Area
- Amphibian Call Station
- Breeding Bird Survey Area
- Headwater Drainage and Fisheries Assessment Station
- Flow Direction

0 100 200 Meters

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City of Hamilton

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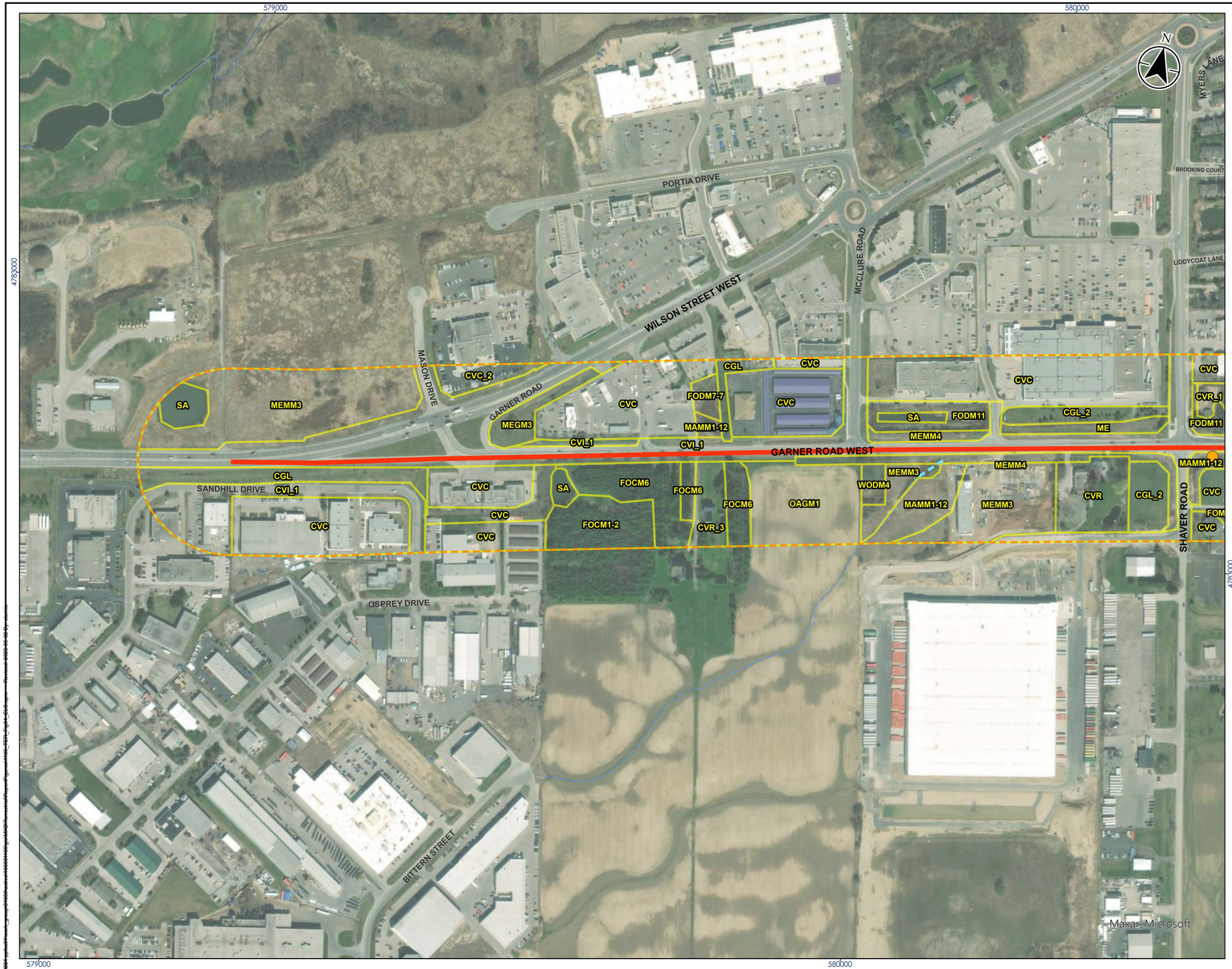
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CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
3-4

Title
Field Survey Location

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Stantec

Legend

- Project Location
- Study Area

Sensitive Species Observations

- Monarch
- Headwater Drainage Feature
- ELC

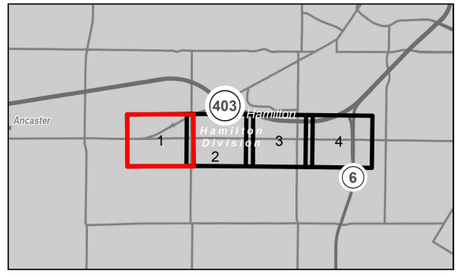
ELC Legend

- CGL (Green Lands)
- CGL_2 (Parkland)
- CVC (Commercial and Institutional)
- CVC_2 (Light Industry)
- CVI_1 (Transportation)
- CVR (Residential)
- CVR_1 (Low Density Residential)
- CVR_3 (Single Family Residential)
- FOCM1-2 (Dry – Fresh White Pine – Red Pine Coniferous Forest Type)
- FOCM6 (Naturalized Coniferous Plantation)
- FODM11 (Naturalized Deciduous Hedge-row Ecosite)
- FODM7-7 (Fresh - Moist Manitoba Maple Lowland Deciduous Forest Type)
- FOM (Mixed Forest)
- MAMM1-12 (Common Reed Graminoid Mineral Meadow Marsh Type)
- ME (Meadow)
- MEGM3 (Dry - Fresh Graminoid Meadow Ecosite)
- MEMM3 (Dry - Fresh Mixed Meadow Ecosite)
- MEMM4 (Fresh - Moist Mixed Meadow Ecosite)
- OAGM1 (Annual Row Crops)
- SA (Shallow Water)
- WODM4 (Dry - Fresh Deciduous Woodland Ecosite)

0 100 200 Meters

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Project Location
City of Hamilton

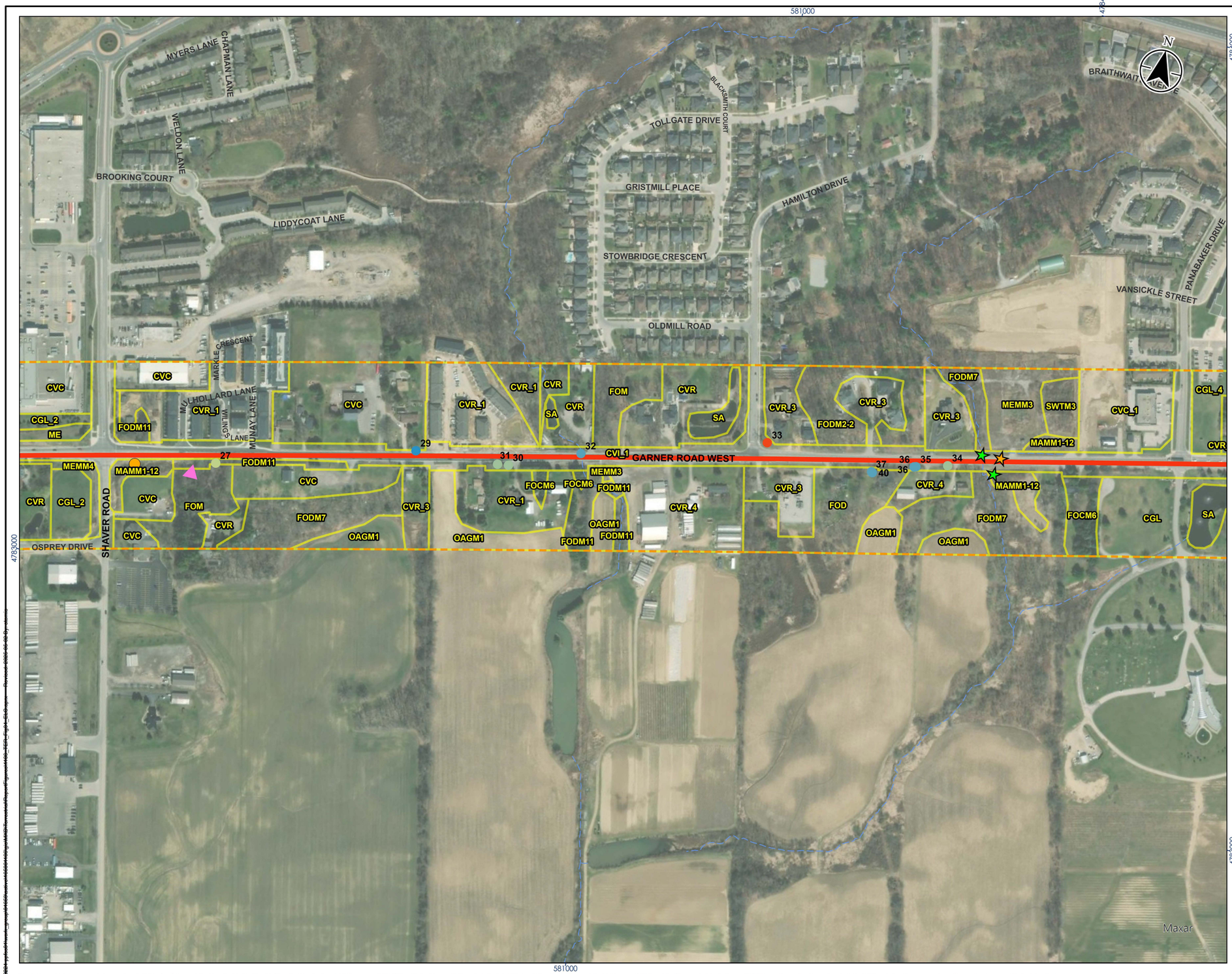
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CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
4-1

Title
Field Survey Results

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Stantec

Legend

- Project Location
- Study Area

Sensitive Species Observations

- Butternut
- Monarch

Potential Bat Maternity Roost Tree

- Unknown
- Acer negundo [Manitoba Maple]
- Acer saccharinum [Silver Maple]
- Acer saccharum [Sugar Maple]
- Quercus rubra [Northern Red Oak]

Incidental Observations

- Giant Hogweed
- Watercress
- ELC

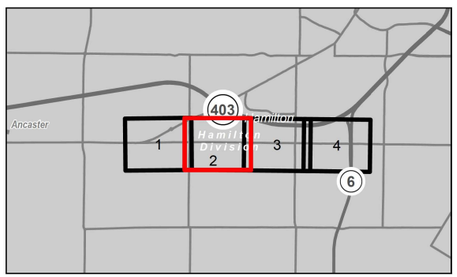
ELC Legend

CGL (Green Lands)
CGL_2 (Parkland)
CGL_4 (Recreational)
CVC (Commercial and Institutional)
CVC_1 (Business Sector)
CVI_1 (Transportation)
CVR (Residential)
CVR_1 (Low Density Residential)
CVR_3 (Single Family Residential)
CVR_4 (Rural Property)
FOCM6 (Naturalized Coniferous Plantation)
FOD (Deciduous Forest)
FODM11 (Naturalized Deciduous Hedge-row Ecosite)
FODM2-2 (Dry – Fresh Oak – Hickory Deciduous Forest Type)
FODM7 (Fresh – Moist Lowland Deciduous Forest Ecosite)
FOM (Mixed Forest)
MAMM1-12 (Common Reed Graminoid Mineral Meadow Marsh Type)
ME (Meadow)
MEMM3 (Dry - Fresh Mixed Meadow Ecosite)
MEMM4 (Fresh - Moist Mixed Meadow Ecosite)
OAGM1 (Annual Row Crops)
SA (Shallow Water)
SWTM3 (Willow Mineral Deciduous Thicket Swamp Ecosite)

0 100 200 Meters

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Project Location
City of Hamilton

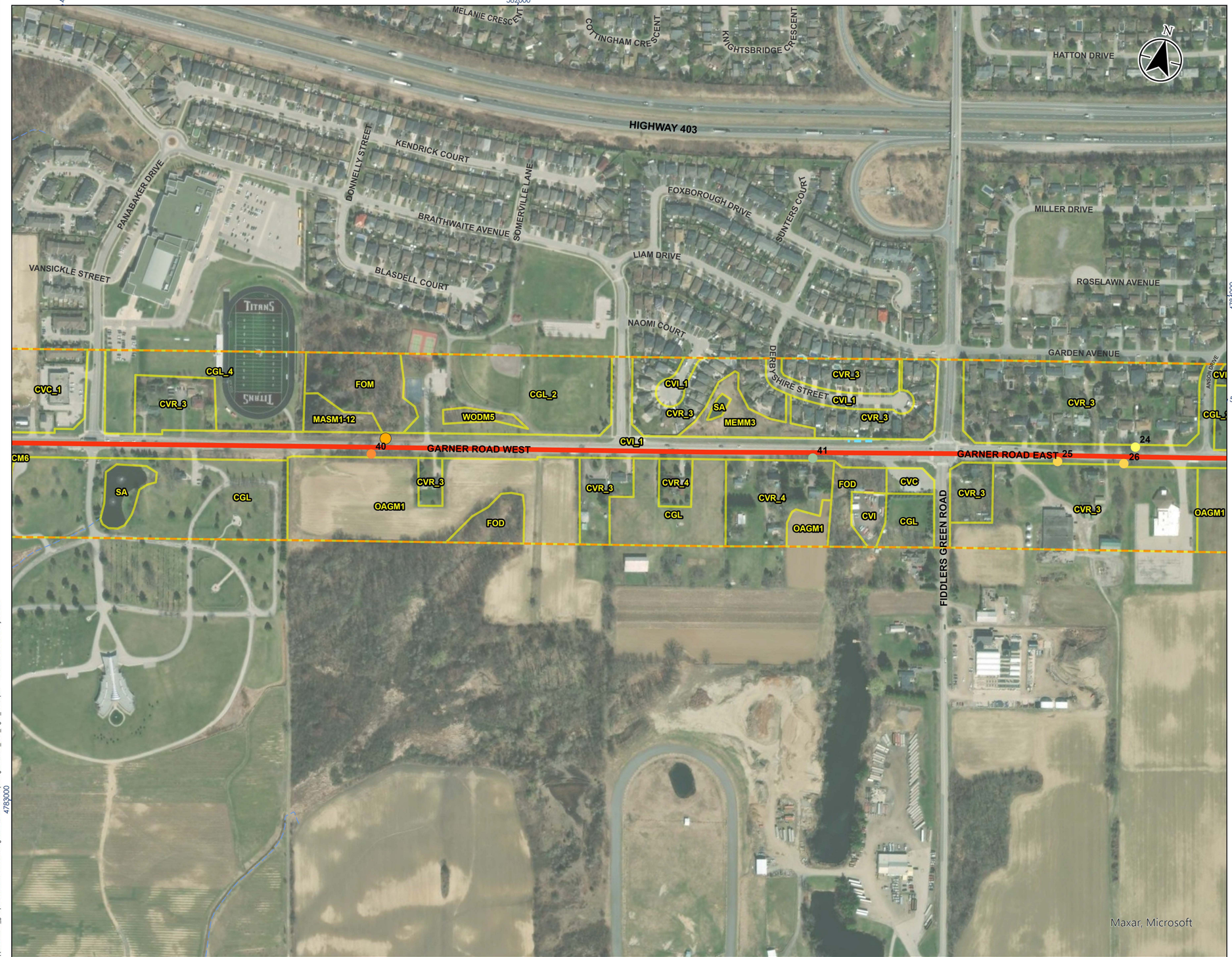
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Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
4-2

Title
Field Survey Results

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Stantec

Legend

- Project Location
- Study Area

Sensitive Species Observations

- Monarch

Potential Bat Maternity Roost Tree

- Acer saccharinum [Silver Maple]
- Gleditsia triacanthos [Honey-locust]
- Juglans nigra [Black Walnut]
- Prunus serotina [Wild Black Cherry]
- Headwater Drainage Feature
- ELC

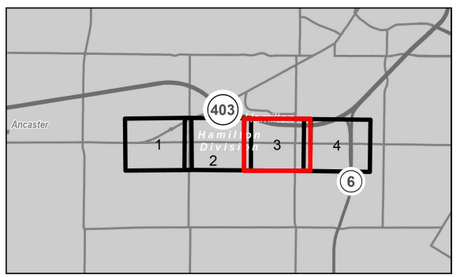
ELC Legend

CGL (Green Lands)
CGL_2 (Parkland)
CGL_4 (Recreational)
CVC (Commercial and Institutional)
CVC_1 (Business Sector)
CVI (Transportation and Utilities)
CVI_1 (Transportation)
CVR_3 (Single Family Residential)
CVR_4 (Rural Property)
FOCM6 (Naturalized Coniferous Plantation)
FOD (Deciduous Forest)
FOM (Mixed Forest)
MASM1-12 (Common Reed Mineral Shallow Marsh Type)
MEMM3 (Dry - Fresh Mixed Meadow Ecosite)
OAGM1 (Annual Row Crops)
SA (Shallow Water)
WODM5 (Fresh - Moist Deciduous Woodland Ecosite)

0 100 200 Meters

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Project Location
City of Hamilton

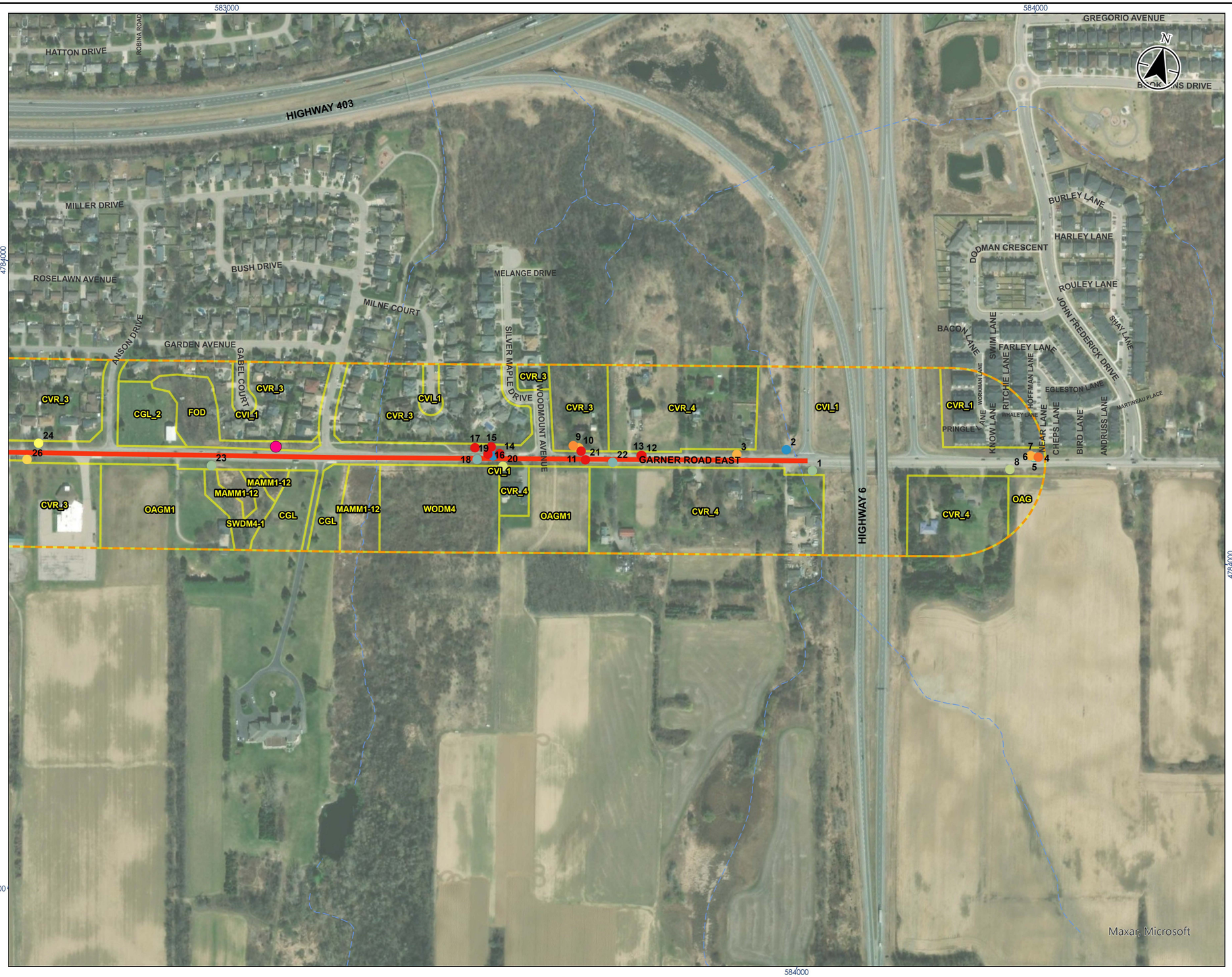
165001196 REV4
Prepared by ST on 2025-05-02

Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
4-3

Title
Field Survey Results

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Stantec

Legend

- Project Location
- Study Area

Sensitive Species Observations

- Kentucky coffeetree

Potential Bat Maternity Roost Tree

- Unknown
- Acer platanoides [Norway Maple]
- Acer saccharinum [Silver Maple]
- Acer saccharum [Sugar Maple]
- Carya ovata [Shagbark Hickory]
- Gleditsia triacanthos [Honey-locust]
- Juglans nigra [Black Walnut]
- Malus pumila [Common Apple]
- Prunus serotina [Wild Black Cherry]
- Quercus macrocarpa [Bur Oak]
- Salix euxina [Crack Willow]
- ELC

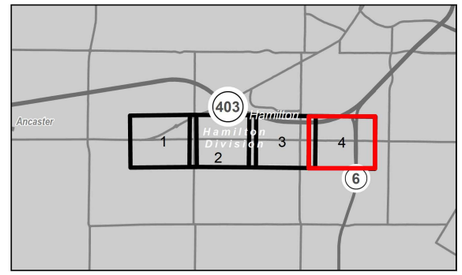
ELC Legend

CGL (Green Lands)
CGL_2 (Parkland)
CVI_1 (Transportation)
CVR_1 (Low Density Residential)
CVR_3 (Single Family Residential)
CVR_4 (Rural Property)
FOD (Deciduous Forest)
MAMM1-12 (Common Reed Graminoid Mineral Meadow Marsh Type)
OAG (Open Agriculture)
OAGM1 (Annual Row Crops)
SWDM4-1 (Willow Mineral Deciduous Swamp Type)
WODM4 (Dry - Fresh Deciduous Woodland Ecosite)

0 100 200 Meters

Notes 1:139,265 (At original document size of 11x17)

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Project Location
City of Hamilton

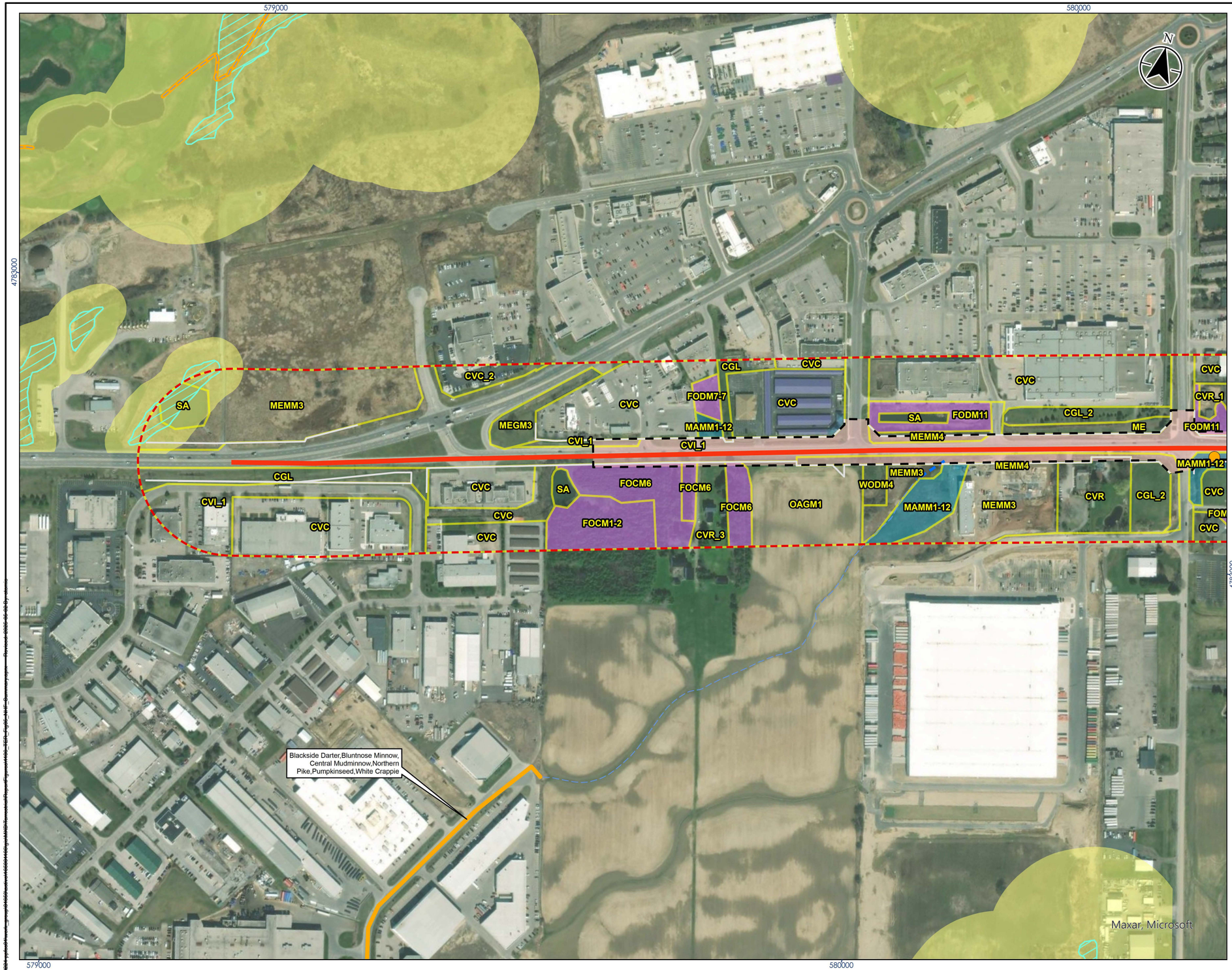
165001196 REV4
Prepared by ST on 2025-05-02

Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
4-4

Title
Field Survey Results

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Stantec

Legend

- Study Area
- Property Line (Proposed Road Allowance)
- Property Line (Existing)
- Proposed Impact

Sensitive Species Observations

- Monarch
- Headwater Drainage Feature
- Wetland Communities
- Woodlands/Candidate SWH for Bat Maternity Colonies
- ELC
- Thermal Regime, Warm
- Watercourse (Intermittent)
- Wetland, Unevaluated
- GRCA Regulation Limit

ELC Legend

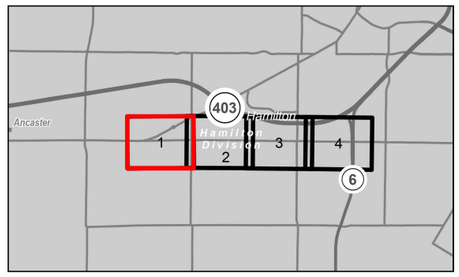
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CVC (Commercial and Institutional)
CVC_2 (Light Industry)
CVI_1 (Transportation)
CVR (Residential)
CVR_1 (Low Density Residential)
CVR_3 (Single Family Residential)
FOCM1-2 (Dry – Fresh White Pine – Red Pine Coniferous Forest Type)
FOCM6 (Naturalized Coniferous Plantation)
FODM11 (Naturalized Deciduous Hedge-row Ecosite)
FODM7-7 (Fresh - Moist Manitoba Maple Lowland Deciduous Forest Type)
FOM (Mixed Forest)
MAMM1-12 (Common Reed Graminoid Mineral Meadow Marsh Type)
ME (Meadow)
MEGM3 (Dry - Fresh Graminoid Meadow Ecosite)
MEMM3 (Dry - Fresh Mixed Meadow Ecosite)
MEMM4 (Fresh - Moist Mixed Meadow Ecosite)
OAGM1 (Annual Row Crops)
SA (Shallow Water)
WODM4 (Dry - Fresh Deciduous Woodland Ecosite)

0 100 200 Meters

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Notes

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Project Location
City of Hamilton

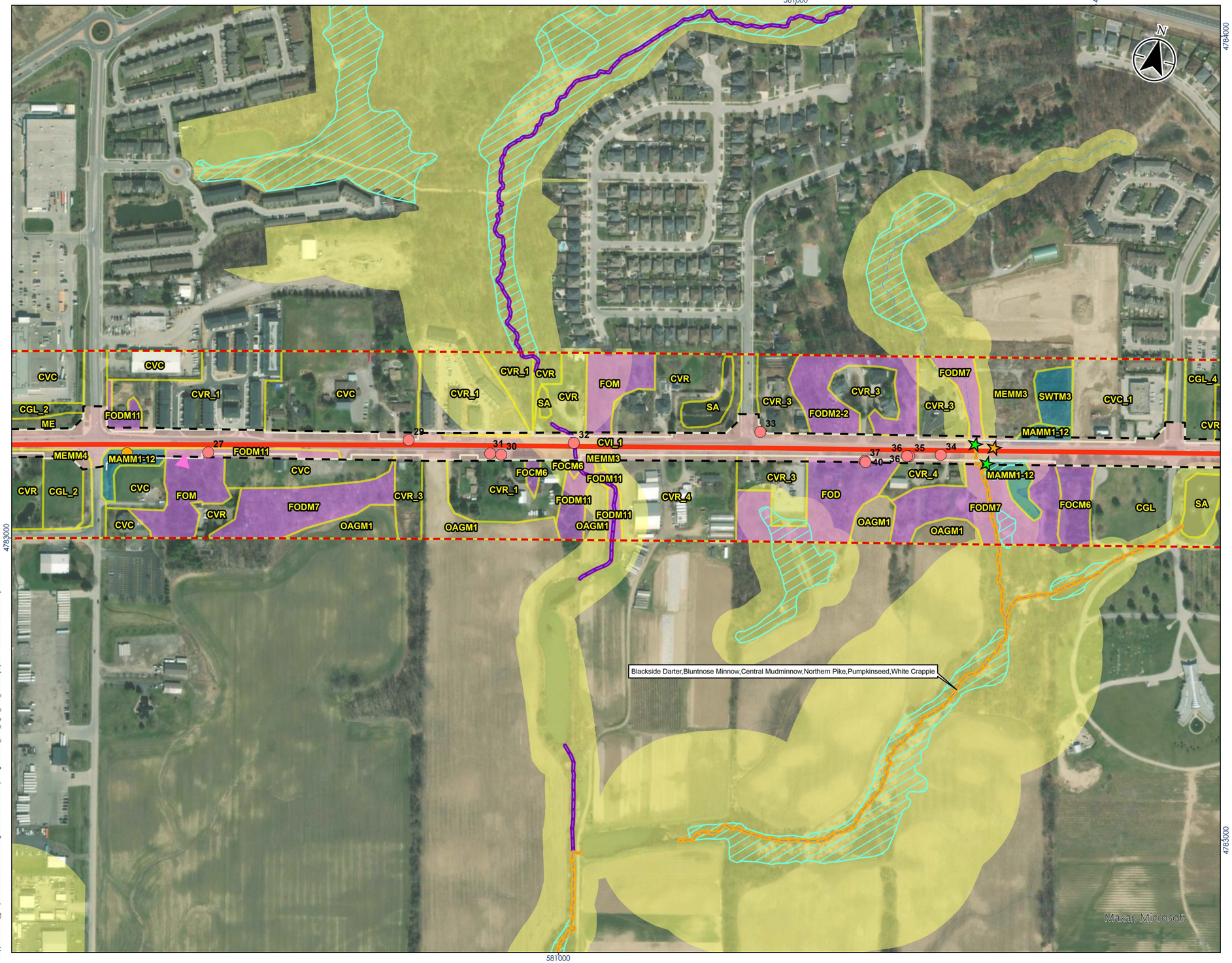
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Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
5-1

Title
Natural Heritage Features and Areas Summary

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Stantec

Legend

- Study Area
- Property Line (Proposed Road Allowance)
- Property Line (Existing)
- Proposed Impact

Sensitive Species Observations

- Butternut
- Monarch
- Potential Bat Maternity Roost Tree

Incidental Observations

- Giant Hogweed
- Watercress
- Wetland Communities
- Woodlands/Candidate SWH for Bat Maternity Colonies
- ELC
- Thermal Regime, Cold
- Thermal Regime, Warm
- Watercourse (Intermittent)
- Wetland, Unevaluated
- GRCA Regulation Limit

ELC Legend

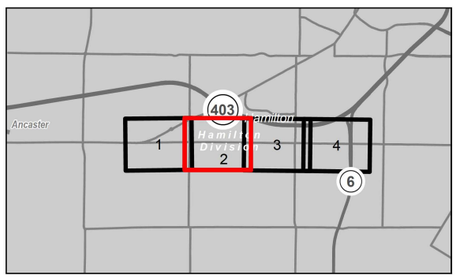
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CGL_2 (Parkland)
CGL_4 (Recreational)
CVC (Commercial and Institutional)
CVC_1 (Business Sector)
CVI_1 (Transportation)
CVR (Residential)
CVR_1 (Low Density Residential)
CVR_3 (Single Family Residential)
CVR_4 (Rural Property)
FOCM6 (Naturalized Coniferous Plantation)
FOD (Deciduous Forest)
FODM11 (Naturalized Deciduous Hedge-row Ecosite)
FODM2-2 (Dry – Fresh Oak – Hickory Deciduous Forest Type)
FODM7 (Fresh – Moist Lowland Deciduous Forest Ecosite)
FOM (Mixed Forest)
MAMM1-12 (Common Reed Graminoid Mineral Meadow Marsh Type)
ME (Meadow)
MEMM3 (Dry - Fresh Mixed Meadow Ecosite)
MEMM4 (Fresh - Moist Mixed Meadow Ecosite)
OAGM1 (Annual Row Crops)
SA (Shallow Water)
SWTM3 (Willow Mineral Deciduous

0 100 200 Meters

1:139,495 (At original document size of 11x17)

Notes

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Project Location
City of Hamilton

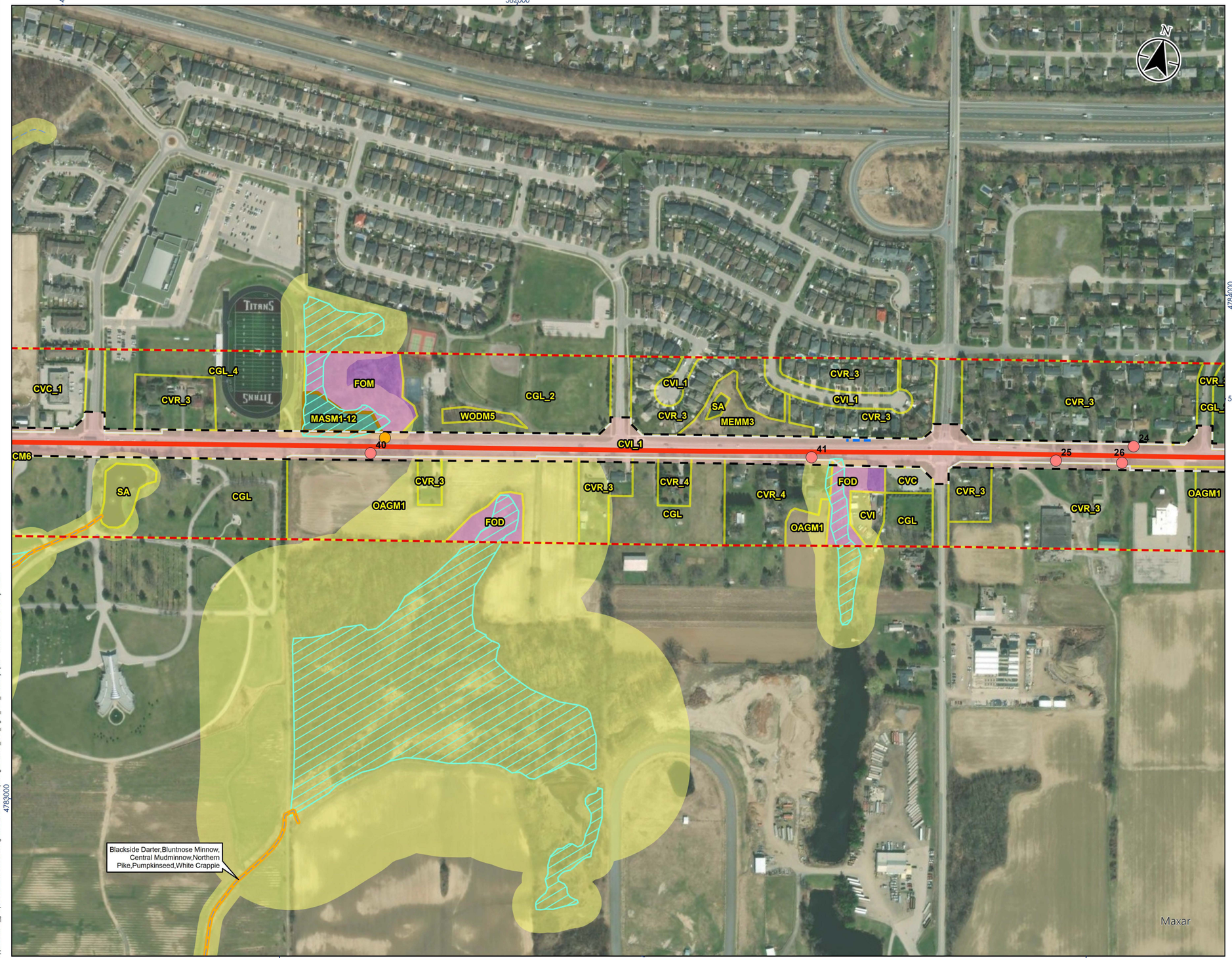
165001196 REV4
Prepared by ST on 2025-05-02

Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
5-2

Title
Natural Heritage Features and Areas Summary

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Stantec

Legend

- Study Area
- Property Line (Proposed Road Allowance)
- Property Line (Existing)
- Proposed Impact

Sensitive Species Observations

- Monarch
- Potential Bat Maternity Roost Tree
- Headwater Drainage Feature
- Candidate SWH for Amphibian Breeding
- Wetland Communities
- Woodlands/Candidate SWH for Bat Maternity Colonies
- ELC
- Thermal Regime, Warm
- Watercourse (Intermittent)
- Wetland, Unevaluated
- GRCA Regulation Limit

ELC Legend

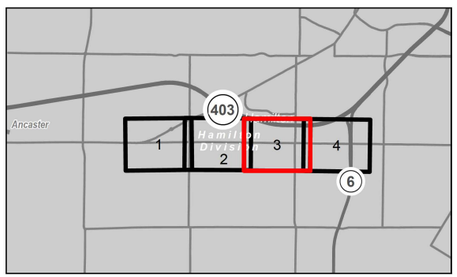
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- CGL_2 (Parkland)
- CGL_4 (Recreational)
- CVC (Commercial and Institutional)
- CVC_1 (Business Sector)
- CVI (Transportation and Utilities)
- CVI_1 (Transportation)
- CVR_3 (Single Family Residential)
- CVR_4 (Rural Property)
- FOCM6 (Naturalized Coniferous Plantation)
- FOD (Deciduous Forest)
- FOM (Mixed Forest)
- MASM1-12 (Common Reed Mineral Shallow Marsh Type)
- MEMM3 (Dry - Fresh Mixed Meadow Ecosite)
- OAGM1 (Annual Row Crops)
- SA (Shallow Water)
- WODM5 (Fresh - Moist Deciduous Woodland Ecosite)

0 100 200 Meters

1:139,495 (At original document size of 11x17)

Notes

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Project Location
City of Hamilton

165001196 REV4
Prepared by ST on 2025-05-02

Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
5-3

Title
Natural Heritage Features and Areas Summary

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Stantec

Legend

- Study Area
- Property Line (Proposed Road Allowance)
- Property Line (Existing)
- Proposed Impact

Sensitive Species Observations

- Kentucky coffeetree
- Potential Bat Maternity Roost Tree
- Wetland Communities
- Woodlands/Candidate SWH for Bat Maternity Colonies
- ELC
- Watercourse (Intermittent)
- Wetland, Unevaluated
- HRCA Regulation Limit

ELC Legend

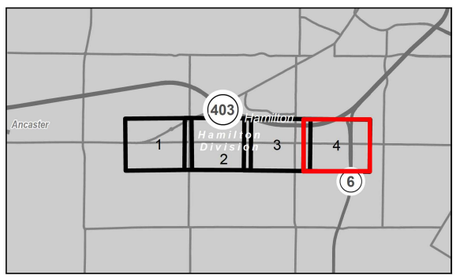
- CGL (Green Lands)
- CGL_2 (Parkland)
- CVI_1 (Transportation)
- CVR_1 (Low Density Residential)
- CVR_3 (Single Family Residential)
- CVR_4 (Rural Property)
- FOD (Deciduous Forest)
- MAMM1-12 (Common Reed Graminoid Mineral Meadow Marsh Type)
- OAG (Open Agriculture)
- OAGM1 (Annual Row Crops)
- SWDM4-1 (Willow Mineral Deciduous Swamp Type)
- WODM4 (Dry - Fresh Deciduous Woodland Ecosite)

0 100 200 Meters

1:139,495 (At original document size of 11x17)

Notes

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Project Location
City of Hamilton

165001196 REV4
Prepared by ST on 2025-05-02

Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
5-4

Title
Natural Heritage Features and Areas Summary

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Appendix B Agency Correspondence

Stantec Consulting Ltd.
1-70 Southgate Drive, Guelph ON N1G 4P5

March 1, 2021
File: 165001196

Attention: Nora Jamieson
Hamilton Conservation Authority (HCA)
838 Mineral Springs Road
Ancaster, ON L9G 4X1
Nora.Jamieson@conservationhamilton.ca

Reference: Terms of Reference and Information Request for a Natural Environment Assessment Report for the Municipal Class Environmental Assessment Phases 3 and 4 for Garner Road in Hamilton, Ontario

INTRODUCTION

Stantec Consulting Ltd. (Stantec) has been retained by the City of Hamilton to complete a Natural Environment Assessment Report for the Municipal Class Environmental Assessment (EA) Phases 3 and 4 for Garner Road in the City of Hamilton, Ontario. The Study Area is shown on Figure 1 (attached). Our work will document the existing ecological (terrestrial and aquatic) features in the Site Investigation Area, assess the potential impacts to the natural environment, and identify appropriate measures to avoid or mitigate impacts where possible.

The purpose of this Terms of Reference (ToR) is to establish the level of effort that is required for the ecological inventory and assessment. The Natural Environment Assessment Report will be prepared following guidance in the *Conservation Authority Baseline Ecological Assessment Requirements for Municipal Class Environmental Assessments* and the *Environmental Impact Statement (EIS) Guidelines (2015)* provided by the City of Hamilton. For this assessment, the Study Area includes all lands within 120 m from the current road alignment as shown on Figure 1 (attached).

REGULATORY AND POLICY FRAMEWORK

The following legislation, policy and planning documents will be considered in preparation of the Natural Heritage Assessment Report:

- Ontario Endangered Species Act, 2007

- Conservation Authorities Act, 1990, and associated Grand River Conservation Authority (GRCA) and Hamilton Conservation Authority (HCA) Policies
- Federal Fisheries Act, 1985
- Species at Risk Act, 2002
- Provincial Policy Statement, 2020
- Growth Plan for the Greater Golden Horseshoe, 2019
- Greenbelt Plan, 2017
- Rural Hamilton Official Plan, 2012
- Urban Hamilton Official Plan, 2013; includes the Airport Employment Growth District (AEGD) Secondary Plan (Chapter B-8) and the Ancaster Secondary Plans for the Shaver and Garner Neighbourhoods (Chapter B-2)
- AEGD Subwatershed Study and Stormwater Master Plan (SWMP) Implementation Document, 2017

BACKGROUND REVIEW

Stantec will complete a review of available background information including:

- Ministry of Natural Resources and Forestry's (MNRF) Land Information Ontario (LIO) database (MNRF 2021a)
- Natural Heritage Information Centre (NHIC) database (MNRF 2021b)
- Ministry of the Environment Conservation and Parks (MECP) Species at Risk in Ontario (SARO) List (MECP 2021)
- Environment and Climate Change Canada (ECCC) Species at Risk Public Registry: Schedule 1 (ECCC 2021)
- Fisheries and Oceans Canada (DFO) Aquatic Species at Risk (SAR) mapping (DFO 2021)
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2019)
- Ontario Breeding Bird Atlas (Cadman et. al. 2007)
- Atlas of the Mammals of Ontario (Dobbyn 1994)
- Rural Hamilton Official Plan (2012)
- Urban Hamilton Official Plan (2013)
- iNaturalist (2021)
- eBird (2021)

Information requests will also be submitted to the MNRF, GRCA and HCA for natural heritage data pertaining to the Study Area, including records of species at risk (SAR) and rare species.

The MECP does not typically provide pre-consultation on threatened and endangered species. Background information on species protected under the Endangered Species

Act (ESA) will be based on the resources listed above in addition to Stantec professional knowledge of the area. Field Investigations will confirm and update background data, and document natural features in the Study Area.

PROPOSED WORK SCHEDULE

The proposed work plan and schedule for the Natural Environmental Assessment Report Study Area is outlined in Table 1 below. The work plan includes details of the background review, proposed site investigations, natural environment evaluation and reporting requirements, and the anticipated completion date for each task.

Table 1: Proposed Work Plan and Schedule

Task No.	Task Description	Completion Date
1. Background Review	**Background review** – complete a review of available background information for the Study Area listed above. Application for a License to Collect Fish for Scientific Purposes.	February 2021
2. All surveys to be conducted from roadside. Amphibian Surveys to be conducted in the evening, all others during the daytime. TPP has been approved.Site Investigations	**Vegetation surveys (3 visits)** – in accordance with the City of Hamilton EIS Guidelines, a three-season flora inventory will be completed in the spring (May to Early June), summer (July to August) and fall (September to October), to document species in the Study Area, with a particular emphasis on identifying and mapping SAR and rare species. Vegetation community mapping will be completed using Ecological Land Classification system (ELC) for Southern Ontario (Lee et al 1998), and 2008 updates where applicable. Wetlands will be delineated using the Ontario Wetland Evaluation System (OWES) (MNRF 2014) as a guide.	Spring, Summer, Fall 2021

Table 1: Proposed Work Plan and Schedule

Task No.	Task Description	Completion Date
	Tree inventory – Stantec's ISA Certified Arborists will conduct a Tree Inventory (GVI) under a separate cover as per the City of Hamilton Tree Protection Guidelines (October 2010). Site visits will be completed to inventory and assess the trees within the existing Garner Road right-of-way. Site observations, including those of other environmental disciplines, will form the basis of the analysis and recommendations provided in the GVI. Locations of individual trees will not be noted on plans except where there is a specific need to address in the analysis. Tree units will be denoted as groupings on plans.	Spring 2021
	Significant wildlife habitat assessment – identification of candidate significant wildlife habitat (SWH) in the Study Area. Candidate SWH will be identified using the MNRF's SWH Technical Guide (MNR 2000) and SWH Ecoregion (7E) Criteria Schedules (MNRF 2015) for the Study Area. This survey will be completed during the ELC surveys, and will include searches for candidate wildlife habitats such as snake hibernacula, raptor nests, seepage areas and vernal pools.	During vegetation surveys

Table 1: Proposed Work Plan and Schedule

Task No.	Task Description	Completion Date
	Species at risk habitat screening – identification of potential SAR habitat will be completed for the Study Area. Targeted species will be based on the SAR identified during the background review as potentially present in the Study Area. For the purpose of this assessment, SAR are species listed as Threatened (THR) or Endangered (END) on the SARO list or aquatic species classified as THR or END on SARA Schedule 1. Habitat screening for potential SAR will be based on the results of the vegetation and wildlife field investigations.	During vegetation surveys

Table 1: Proposed Work Plan and Schedule

Task No.	Task Description	Completion Date
	Breeding bird surveys (3 visits) – two breeding bird surveys will be completed in the Study Area between May 24 and July 10 in accordance with the methods described in the Environment and Climate Change Canada's (ECCC) Breeding Bird Survey (ECCC 2018). In accordance with the City of Hamilton EIS Guidelines, the first survey will be completed between May 24 and June 15, and the second survey will be completed between June 15 and July 10. Surveys will consist of a combination of area searches (recording bird species that are seen or heard within each habitat while traversing the Study Area) and 5-minute stationary point counts in all major habitat types. Fieldwork will be start at, or within, half an hour of sunrise, and will be completed by 10:00 a.m. and under favourable weather conditions. Nest searches will be conducted during the breeding bird surveys for species protected by the *Endangered Species Act, 2007* and the *Migratory Birds Convention Act, 1994* using the Guelph District Barn Swallow Survey Protocol and guides. If suitable habitat for grassland birds is identified in the Study Area, grassland breeding bird surveys will be conducted during the breeding bird surveys following the MNRF *Bobolink Survey Methodology* (2012). A conservative approach to determining breeding status will be taken; all birds seen or heard in appropriate habitat during the breeding season will be assumed to be breeding.	June 2021

Table 1: Proposed Work Plan and Schedule

Task No.	Task Description	Completion Date
	Amphibian call surveys (3 visits) – amphibian call count surveys will be completed in accordance with the guidelines provided by the Marsh Monitoring Program Participant's Handbook (Bird Studies Canada 2009). Survey stations will target potential amphibian breeding habitat in the Study Area. Surveys will take place between 30 minutes after sunset and no later than midnight on nights with light or no winds. Surveys will be at least 15 days apart and will take place on nights with the following nighttime air temperatures. • April > 5^{o}C • May > 10^{o}C • June > 17^{o}C	June 2021
	Bat Survey – a habitat assessment for endangered bats will occur during leaf off conditions (one visit, November - April), focusing on the portions of the alignment alternatives that overlap with potential bat habitat. The bat habitat assessment will generally follow the *MNRF Guelph District Survey Protocol for Species at Risk Bats within Treed Habitats* (MNRF 2017). A search for raptor nests will also be completed during the bat leaf-off surveys.	Spring 2021
	Incidental Wildlife Observations – incidental observations of wildlife species identified by sight, sound or distinctive signs will be recorded during each site visit. This will include the locations of SAR, rare species and species that are indicators of potential significant wildlife habitat.	During other surveys

Table 1: Proposed Work Plan and Schedule

Task No.	Task Description	Completion Date
	Headwater drainage features assessment The headwater drainage features in the Study Area will be classified in accordance to the 2014 Evaluation, Classification and Management of Headwater Drainage Features Guidelines (HDF Guidelines) (TRCA/CVC 2014). Up to three visits will be completed between early spring and summer to survey headwater drainage features in accordance with the HDF Guidelines.	Early Spring to Summer 2021
	Fish habitat assessment – a fish habitat assessment will be completed in late March/early April 2021. Habitat characteristics will be documented using categories and classifications as per the Ontario Stream Assessment Protocol (OSAP) and habitat mapping according to the *Environmental Guide for Fish and Fish Habitat* (MTO 2006)	Spring 2021
	Fish community survey – fish community survey is included in the scope of work to determine fish presence/absence and to compile a species list representative of habitat use in spring. The survey will be completed in accordance to the "Standard Single Pass Survey" method described in the OSAP protocol. A backpack electro-fisher will be used by two qualified and experienced fisheries biologists.	Spring 2021
3. Data analysis	**Evaluation of Significance** – significant natural heritage features will be identified using the Provincial Policy Statement, MNRF natural features mapping, Municipal Official Plans, provincial rankings designated by the NHIC, and	June 30, 2021

Table 1: Proposed Work Plan and Schedule

Task No.	Task Description	Completion Date
	relevant guidance documents, including the Significant Wildlife Habitat Technical Guide (MNR 2000), Eco-Region Criteria (MNRF 2015) the Natural Heritage Reference Manual (MNR 2010), and the Hamilton Natural Areas Inventory (2013) Species Checklists	
4. Reporting	**Natural Environment Assessment Summary** – a summary of the background review and preliminary results of the site investigations will be provided a week prior to the Public Information Centre (PIC), which is anticipated to occur on June 5, 2021. The summary will include a list of significant species and natural heritage features that may be impacted by the proposed development.	June 30, 2021
	Standalone Draft Natural Environment Assessment report – the draft report will be submitted to the City, HCA and GRCA for comment and will include the following: • A description and assessment of the natural heritage features in the Study Area • Identification and assessment of potential negative impacts to the natural heritage features associated with the Project • Mitigation measures to avoid and reduce potential negative impacts to the natural heritage features to the extent possible • Identification of environmental permitting and approval requirements	Following recommended design alternative

Table 1: Proposed Work Plan and Schedule

Task No.	Task Description	Completion Date
	This information will be presented in the context of the current regulatory and policy framework listed above.	

ASSUMPTIONS AND EXCLUSIONS

The need for environmental permits and authorizations will be identified (species at risk, fish, and fish habitat). Applications for permits and approvals are not in the scope of work and based on the low potential for fish habitat, a DFO request for review (Fisheries Act review) is not included in the project scope.

Acoustic survey(s) to determine presence or absence of bat SAR (if suitable habitat is present) and Butternut health assessments (if Butternut is present) are excluded.

INFORMATION REQUEST

We respectfully request confirmation of the above findings and identification of any additional information you may have for the Study Area including rare species, vegetation communities, wetlands, special habitat features, regulated areas, watercourse flow and thermal regimes, fish community data, and other relevant natural heritage data. In addition, we would appreciate confirmation that our proposed scope is appropriate for this assignment.

SUMMARY

This ToR is intended to meet the study and reporting requirements to address regulatory responsibilities. In submitting this for your review, we ask for comments and suggestions that will allow us to finalize this document. We look forward to discussing the scope of the Natural Environment Assessment Report.

Reference: **Terms of Reference and Information Request for a Natural Environment Assessment Report for the Municipal Class Environmental Assessment Phases 3 and 4 for Garner Road in Hamilton, Ontario**

If you require any additional information regarding this project or have any questions, please contact the undersigned.

Regards,

Stantec Consulting Ltd.

Taco Den Haas, M.Sc.
Senior Fisheries Biologist
Phone: 647-205-5739
Taco.DenHaas@stantec.com

Attachment: Figure 1 – Site Location

c. Debbie Giesbrecht – Stantec
Janice Ball – Stantec
Paula Hohner – Stantec
Isaac Bartlett – Stantec
Megan Salvucci – City of Hamilton

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REFERENCES:

Bird Studies Canada (BSC) and Environment Canada. 2008. Marsh Monitoring Program Manual.

Cadman, M. D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier. 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. (eds) Bird Studies Canada, Environment Conada, Ontario Field Ornithologists, Ontario Ministry of natural resources, and Ontario Nature, Toronto, xxii + 318pp

City of Hamilton. 2012. Rural Hamilton Official Plan. March 7, 2012

City of Hamilton. 2012. Urban Hamilton Official Plan. August 16, 2013

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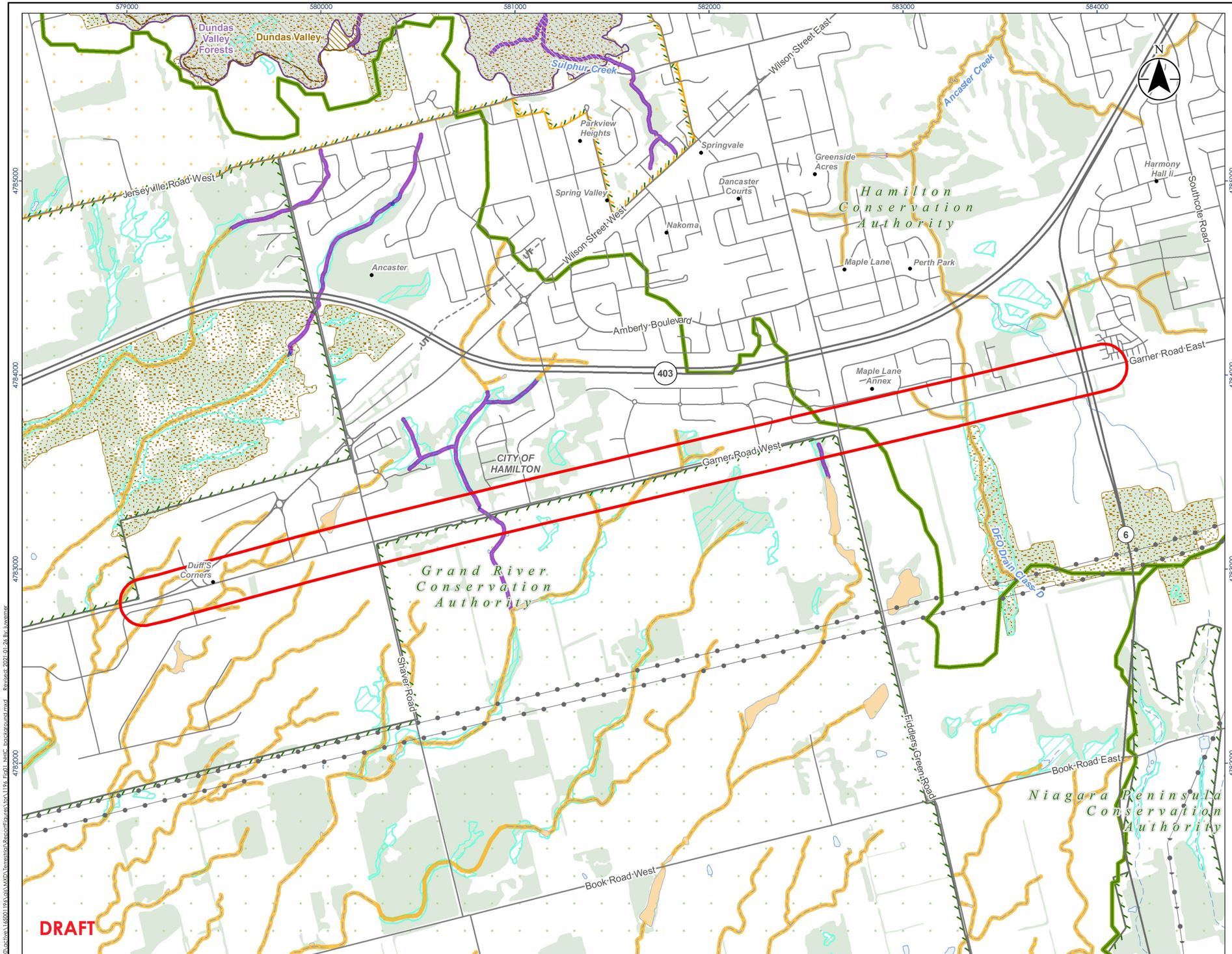
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Stantec

Legend

- Study Area
- Constructed Drain
- Thermal Regime, Cold
- Thermal Regime, Warm
- Hydro Line
- Unknown Transmission Line
- Watercourse (Intermittent)
- Watercourse (Permanent)
- ANSI, Earth Science
- ANSI, Life Science
- Conservation Area Administrative Boundary
- Deer Wintering Area
- Thermal Regime, Cold
- Thermal Regime, Warm
- Waterbody
- Wetland, Not evaluated per OWES
- Wooded Area
- Greenbelt Natural Heritage System
- Niagara Escarpment Plan Boundary
- Municipal Boundary, Lower

0 500 1,000 Meters

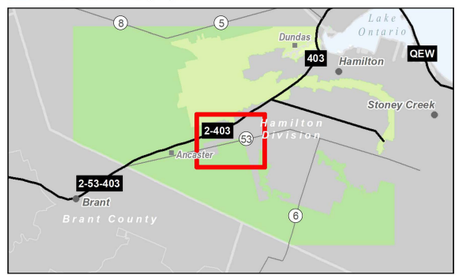
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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.

Niagara Escarpment Plan

Greenbelt Natural Heritage System



Project Location
City of Hamilton

165001196 REV4
Prepared by JW on 2021-01-26

Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
1

DRAFT

Title
Background Data

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

Wenborn, Kimberly

From: Salvucci, Megan <Megan.Salvucci@hamilton.ca>
Sent: Wednesday, March 17, 2021 4:46 PM
To: Hohner, Paula
Cc: Bartlett, Isaac; Den Haas, Taco; Ball, Janice
Subject: RE: Garner Road MCEA - EIS Terms of Reference
Attachments: RE: Garner Rd EA - Natural Heritage TOR

Hi Paula,

Attached are the comments from both Melissa and Cathy on the TOR for your review.

Thanks,
Megan

Megan Salvucci
Project Manager - Capital Infrastructure Planning
Public Works
Engineering Services, City of Hamilton
(905) 546-2424 Ext.2732
Hamilton

From: Salvucci, Megan
Sent: March 3, 2021 4:51 PM
To: Hohner, Paula <Paula.Hohner@stantec.com>
Cc: Bartlett, Isaac <isaac.bartlett@stantec.com>; Den Haas, Taco <Taco.DenHaas@stantec.com>; Ball, Janice <Janice.Ball@stantec.com>
Subject: RE: Garner Road MCEA - EIS Terms of Reference

Hi Paula,

Thank you for the updated TOR. It has been circulated and I will let you know of any additional comments I receive.

Thanks,
Megan

Megan Salvucci
Project Manager - Capital Infrastructure Planning
Public Works
Engineering Services, City of Hamilton
(905) 546-2424 Ext.2732
Hamilton

From: Hohner, Paula [mailto:Paula.Hohner@stantec.com]
Sent: March 2, 2021 1:26 PM
To: Salvucci, Megan <Megan.Salvucci@hamilton.ca>
Cc: Bartlett, Isaac <isaac.bartlett@stantec.com>; Den Haas, Taco <Taco.DenHaas@stantec.com>; Ball, Janice

<Janice.Ball@stantec.com>
Subject: Garner Road MCEA - EIS Terms of Reference

Hi Megan
The revised draft Terms of Reference is attached for your review and submission to Melissa and Cathy.
Thank you,
Paula

Paula Hohner, MScPl, MCIP, RPP
Associate, Senior Environmental Planner
Environmental Team Lead - Transportation
Stantec
600-171 Queens Avenue London ON N6A 5J7
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Please consider the environment before printing this email.

Wenborn, Kimberly

From: Plosz, Catherine <Catherine.Plosz@hamilton.ca>
Sent: Wednesday, March 17, 2021 11:25 AM
To: Salvucci, Megan
Cc: Kiddie, Melissa
Subject: RE: Garner Rd EA - Natural Heritage TOR

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Megan
I have reviewed and don't have anything to add to Melissa's comments. I agree with Melissa that a TPP would be best in this case. (no GVI is required). It is likely that a TPP or Tree Management Plan for Forestry Section will need to be done anyway so you might as well just skip the GVI.

Cathy

From: Kiddie, Melissa <Melissa.Kiddie@hamilton.ca>
Sent: Wednesday, March 17, 2021 9:06 AM
To: Salvucci, Megan <Megan.Salvucci@hamilton.ca>; Plosz, Catherine <Catherine.Plosz@hamilton.ca>
Subject: RE: Garner Rd EA - Natural Heritage TOR

Hi Megan,

I have had a chance to review the revised Terms of Reference for the Garner Road Environmental Assessment. Please find my comments below:

1. Background Review:
    - Page 2 (Regulatory and Policy Framework): It has been identified that the Urban Hamilton Official Plan (UHOP) including the Airport Employment Growth District (AEGD) Secondary Plan will be reviewed. It is important to note that the lands to north of Garner Road are also located within Secondary Plans associated with the UHOP. These include Shaver Neighbourhood (Shaver Road to Fiddlers Green) and Garner Neighbourhood (Fiddlers Green to Southcote Road)
    - Page 2 (Background Review): A Subwatershed Study was completed for the AEGD Secondary Plan. While it was completed awhile ago and the field surveys are outdated, it should be included within the Background Review. The information can be found at: https://www.hamilton.ca/city-planning/planning-community/airport-employment-growth-district (Related Studies and Report Tab)

2. Field Inventories
    - Page 3 (General Vegetation Inventory): It is unclear why a General Vegetation Inventory is being undertaken instead of a tree inventory. Since the vegetation is already being characterized through Ecological Land Classification (ELC) it would be more valuable to

understand what trees within the area may be impacted as a result of any proposed road works. This would be completed through a tree inventory.

- Page 5 (Breeding Birds): It has been identified that surveys for Barn Swallow and Bobolink will be undertaken. The timing of these surveys is missing. The Terms of Reference should be updated to include this information.
- Page 7 (Headwater Drainage Assessment): It has been identified that the CVC/TRCA Evaluation, Classification and Management of Headwater Drainage Features Guidelines will be the protocol used to complete this assessment. There is concern that only 2 visits will be completed instead of the 3 outlined within this protocol. This assessment is to include 3 visits: 1) spring freshet-late March to mid-April; 2) late April to May and 3) July to August.
- Page 7 (Fish Community Survey): It has been identified that this survey will determine presence/absence; however, the specific protocol (i.e. OSAP) is missing. Further clarification is required.

Thanks,

Melissa

Melissa Kiddie MES (PI), ERPG
Natural Heritage Planner
Planning and Economic Development
Planning, City of Hamilton
(905) 546-2424 Ext.1290
Hamilton

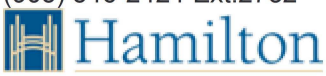
NOTE: As of March 18, all City of Hamilton offices and facilities have been closed to the public with exception of the First Floor, City Hall to help prevent the possible spread of the Covid-19 virus. Planning staff will continue to serve the community over the phone and by email. However, staff are working from home as a precautionary measure to protect both the public and staff and staff will endeavour to reply to your email as soon as possible. Digital submissions and resubmissions are preferred. Alternatively, you may make your submission by courier, mail or drop off at First Floor City Hall. Please be aware that information on the City's response to Covid-19 and the City of Hamilton's Official Plan, Zoning Bylaws and submission requirements can be found on the City's website at www.hamilton.ca. Thank you for your cooperation.

From: Salvucci, Megan <Megan.Salvucci@hamilton.ca>
Sent: March 3, 2021 4:55 PM
To: Plosz, Catherine <Catherine.Plosz@hamilton.ca>; Kiddie, Melissa <Melissa.Kiddie@hamilton.ca>
Subject: Garner Rd EA - Natural Heritage TOR

Hi Cathy and Melissa,

As discussed in our meeting on February 22nd, Stantec has provided an updated Garner Rd EA natural heritage assessment terms of reference. The updated documents can be found here: S:\Public Works\Engineering Services Division\2-Asset Management\EAs\MCEAs\Garner Rd\Natural Heritage. If you could provide any additional comments by March 17th, that would be great.

Thanks,
Megan

Megan Salvucci
Project Manager - Capital Infrastructure Planning
Public Works
Engineering Services, City of Hamilton
(905) 546-2424 Ext.2732


Appendix C SAR/SOCC Records and Assessment Results

Appendix C.1 Records of SAR within the Study Area and Assessment Results

Group	Common Name[1]	Scientific Name[2]	SARO[3]	COSEWIC[4]	SARA[5]	S-RANK[6]	Source(s)	Habitat Description	Assessment Results – Project Location	Assessment Results – 120-m Adjacent Lands
Vascular Plants	American Chestnut	*Castanea dentata*	END	END	END	S1S2	NHIC	Grows in rich mixed and deciduous forests, frequently with oak; most populations have been decimated by chestnut blight (Nixon 1997).	**ABSENT:** American chestnut was not observed within the Project Location.	**POTENTIALLY PRESENT:** Suitable habitat is present in the treed communities in the Adjacent Lands.
Vascular Plants	Butternut	*Juglans cinerea*	END	END	END	S2?	NHIC, iNaturalist	Found in mixed hardwood forests in a variety of locations (e.g., dry, rocky soils of limestone areas). They grow best on well-drained, fertile soils of steady slopes and bottomlands. Butternut are shade intolerant and generally associated with mid-successional forests, forest edges and hedgerows (COSEWIC 2017).	**CONFIRMED:** One butternut tree was observed in the FOM within the Adjacent Lands and habitat may extend into the Project Location.	**CONFIRMED:** One butternut tree was observed in the FOM community east of Shaver Road on the south side of Garner Road West.
Vascular Plants	Spotted Wintergreen	*Chimaphila maculata*	THR	THR	THR	S2	NHIC	Spotted wintergreen typically occurs in dry oak-pine mixed forest and dry woodland habitats. Key habitat attributes include association with dry to fresh oak-pine or oak dominated woodlands; limited competition with other groundcover species; partial shade; slightly acidic surface soil conditions (soil pH 4.2 to 6.0); well-drained soils (especially sandy soils) and sites; nutrient-poor soil conditions; and moderated climate (Ursic et al. 2010).	**ABSENT:** Spotted wintergreen was not observed within the Project Location.	**POTENTIALLY PRESENT:** Suitable habitat is present in the treed communities in the Adjacent Lands.
Molluscs	Round Pigtoe	*Pleurobema sintoxia*	END	END	END	S1	iNaturalist	Habitat generalist found in small, medium-sized and large rivers with moderate flows and mixed substrates of gravel, cobble, boulder, sand and mud. Occurs in Lake Erie and Lake St. Clair in shallow (<1 m) nearshore areas with firm sandy substrates. In large rivers, often found at depths >3 m (COSEWIC 2004).	**ABSENT:** Suitable habitat was not observed in the Project Location.	**ABSENT:** Suitable habitat was not observed in the Study Area.
Amphibians	Jefferson Salamander	*Ambystoma jeffersonianum*	END	END	END	S2	ORAA	This species is terrestrial during its adult stage but requires vernal pools associated with upland deciduous forest for breeding. Within breeding pools, Jefferson salamanders require pools absent of fish with low shrubs, twigs, fallen tree branches, submerged riparian vegetation or emergent vegetation to which to attach egg masses. After breeding is completed, the species moves back to the upland forest where it lives underground in rodent burrows. Terrestrial habitat must contain microhabitat (e.g., rodent burrows, rock fissures, downed woody debris, tree stumps and buttresses, leaf litter, logs) (Jefferson Salamander Recovery Team 2010).	**ABSENT:** Suitable breeding habitat was not observed in the Project Location.	**POTENTIALLY PRESENT:** Wetlands and vernal pools in the FOD and FODM2-2 within the Study Area may provide suitable breeding habitat for Jefferson salamander.
Birds	Acadian Flycatcher	*Empidonax virescens*	END	END	END	S1B	OBBA	Preferred breeding habitat generally consists of large mature forests and deeply wooded ravines (Friesen and Stabb 2001). A minimum of 30 hectares (ha) of suitable habitat are required. Acadian flycatchers generally prefer large tracts of undisturbed forest and in Ontario, the species often breeds in black ash swamps (Whitehead and Taylor 2002). Due to its area sensitive nature, suitable habitat is limited in Ontario as forest cover within its breeding range is low and occurs as small, isolated patches. Other limiting factors include logging practices, invasive species, and encroachment on habitat by agriculture, residential development and utility corridors (COSEWIC 2010b).	**ABSENT:** Forest communities within the Project Location are fragmented and less than 30 ha in size. Suitable habitat for Acadian Flycatcher was not observed within the Study Area.	**ABSENT:** Forest communities within the Study Area are fragmented and less than 30 ha in size. Suitable habitat for Acadian Flycatcher was not observed within the Study Area.

Appendix C.1 Records of SAR within the Study Area and Assessment Results

Group	Common Name[1]	Scientific Name[2]	SARO[3]	COSEWIC[4]	SARA[5]	S-RANK[6]	Source(s)	Habitat Description	Assessment Results – Project Location	Assessment Results – 120-m Adjacent Lands
Birds	Bank Swallow	*Riparia riparia*	THR	THR	THR	S4B	OBBA, eBird	The Bank Swallow breeds on a variety of sites with vertical banks, including riverbanks, bluffs, aggregate pits and stockpiles of sand and soil. Sand-silt substrates are preferred. Nesting sites are often near open habitats used for aerial foraging. Large wetlands are used as communal roosts during post-breeding, migration, and wintering periods (COSEWIC 2013a).	**ABSENT:** No suitable habitat was observed within the Project Location.	**ABSENT:** No suitable habitat was observed within the Study Area.
Birds	Barn Owl	*Tyto alba*	END	END		S1	NHIC, OBBA	Barn Owl favours pastures, hayfields, marshes and other grassy habitats that support mice and vole populations. Nesting habitat includes barns, church steeples, silos, cavities in large trees and artificial nest boxes (Cadman et al., 2007).	**ABSENT:** Suitable human-made structures (i.e., barns, buildings) and cavities in large trees in the Project Location were not observed. Barn Owl was not observed during the field program; however, targeted surveys were not conducted.	**POTENTIALLY PRESENT:** Human-made structures (i.e., barns, buildings) and cavities in large trees within the Adjacent Lands may provide suitable nesting habitat for Barn Owl. Barn Owl was not observed during the field program; however, targeted surveys were not conducted.
Birds	Bobolink	*Dolichonyx oryzivorus*	THR	THR	THR	S4B	OBBA	Bobolink nest primarily in forage crops with a mixture of grasses and broad-leaved forbs, predominantly hayfields and pastures. Preferred ground cover species include grasses such as Timothy and Kentucky bluegrass and forbs such as clover and dandelion. Bobolink is an area-sensitive species, with reported lower reproductive success in small habitat fragments (COSEWIC 2010c).	**ABSENT:** Suitable nesting habitat for Bobolink is absent in the Project Location. Bobolink was not observed during the field program.	**ABSENT:** Suitable nesting habitat for Bobolink is present in the large MEMM3 community at the west edge of the Study Area; however, Bobolink was not observed during the field program.
Birds	Cerulean Warbler	*Setophaga cerulea*	THR	END	END	S2B	OBBA	The Cerulean Warbler breeds mainly in mature deciduous or swamp forest. The species generally prefers tracts over 100 ha in size but it has been found to breed in woodlots as small as 10 ha (Hamel 2000). In Ontario, the species is generally associated with large oak or bitternut hickory trees (Cadman et al. 2007). The most important limiting factor affecting this species is habitat loss and degradation on breeding and wintering grounds due to logging practices; habitat fragmentation and parasitism by the Brown-headed Cowbird are also considered threats (COSEWIC 2010d).	**ABSENT:** No suitable habitat was observed within the Project Location. erulean Warbler was not observed during the field program.	**ABSENT:** No suitable habitat was observed within the Study Area. Cerulean Warbler was not observed during the field program.
Birds	Chimney Swift	*Chaetura pelagica*	THR	THR	THR	S3B	OBBA	Chimney Swift is an aerial insectivorous bird that has adapted to human altered landscapes and preferentially nest on/in anthropogenic structures in sheltered areas with vertical surfaces that it can grip, including chimneys, barns, and wells. Before European settlement, Chimney Swifts used large hollow trees (COSEWIC 2018a).	**ABSENT:** Human-made structures (i.e., barns, buildings) are absent from the Project Location. No Chimney Swift were observed during the field program.	**ABSENT:** Human-made structures (i.e., barns, buildings) within the Adjacent Lands may provide suitable nesting habitat for Chimney Swift; however, Chimney Swift was not observed during the field program.
Birds	Eastern Meadowlark	*Sturnella magna*	THR	THR	THR	S4B,S3N	NHIC, OBBA	Eastern Meadowlark is a grassland obligate species that nest in a variety of open grassland habitats in Ontario including pastures, savannahs, alvar grasslands, and hayfields. They are mostly found in agricultural habitats (i.e., hayfields, pastures, fallow cropfields) in Ontario due to the loss of native grassland habitats. Sites with a higher ratio of grasses to forbs, abundant litter cover, and moderately dense vegetation cover with a low proportion of woody vegetation (e.g., shrubs, trees) are preferred for breeding (COSEWIC 2011b).	**ABSENT:** Suitable nesting habitat for Eastern Meadowlark is absent from the Project Location. Eastern Meadowlark was not observed during the field program.	**ABSENT:** Suitable nesting habitat for Eastern Meadowlark is present in the MEGM3 and MEMM3 in the Adjacent Lands; however, Eastern Meadowlark was not observed during the field program.

Appendix C.1 Records of SAR within the Study Area and Assessment Results

Group	Common Name[1]	Scientific Name[2]	SARO[3]	COSEWIC[4]	SARA[5]	S-RANK[6]	Source(s)	Habitat Description	Assessment Results – Project Location	Assessment Results – 120-m Adjacent Lands
Birds	Golden-winged Warbler	*Vermivora chrysoptera*	SC	THR	THR	S3B	OBBA	Requires large forest landscapes containing a 50-75% forest cover that is composed of at least 50% deciduous (or mixed) forest types and contain less than 30% coniferous forest cover (Bakermans et al. 2011; Roth et al. 2012). Nesting occurs in early successional habitat or habitats exhibiting early-successional habitat characteristics (i.e., a patchy mixture of shrubs, saplings, herbaceous openings, and widely spaced tall trees) (ECCC 2016).	**ABSENT:** Suitable nesting habitat for Golden-winged Warbler is absent from then Project Location. No Golden-winged Warbler were detected during surveys.	**ABSENT:** Suitable nesting habitat for Golden-winged Warbler is present in the FOD, FODM2-2, FODM7, FODM7-7, and FODM11 within the Adjacent Lands; however, Golden-winged Warbler was not observed during surveys.
Birds	Louisiana Waterthrush	*Parkesia motacilla*	THR	THR	THR	S2B	OBBA	Species strongly prefers nesting sites along relatively pristine, headwater streams and ravines with running water that are situated in large tracts of mature forest. Also inhabits heavily wooded swamps. Preferred nest site conditions include steep-sided forested ravines in sand plains, or rocky streams in defined valleys. Louisiana Waterthrush is often considered an area sensitive species because it requires large tracts of contiguous closed canopy forest (COSSARO 2016).	**ABSENT:** No suitable habitat was observed within the Study Area.	**ABSENT:** No suitable habitat was observed within the Study Area.
Birds	Northern Bobwhite	*Colinus virginianus*	END	END	END	S1?	NHIC	The Northern Bobwhite is a non-migrant, edge species that inhibits areas that contain a mosaic of small patches of tallgrass prairie-savanna, early to mid-successional forest and open areas (e.g., agricultural fields, recently burned grasslands). Preferred nesting and foraging habitat features include open grasslands and idle fields (i.e., out of production for 1 to 3 years) with an understory consisting of forbes, tall grasses, and shrubs (Wyshynski 2019).	**ABSENT:** No suitable habitat was observed within the Study Area. Northern Bobwhite is considered extirpated from Hamilton (Schwetz 2014).	**ABSENT:** No suitable habitat was observed within the Study Area. Northern Bobwhite is considered extirpated from Hamilton. Bobwhite is considered extirpated from Hamilton (Schwetz 2014).
Birds	Yellow-breasted Chat	*Icteria virens*	END	END		S1B	NHIC, OBBA	Yellow-breasted Chat nests in dense shrub habitats in early successional areas with dense, low woody vegetation and is considered an open-canopy obligate. They may breed in shrub thickets, woodland edges, hedgerows, regenerating abandoned fields and young coniferous plantations, and in hydro and rail rights-of-way (COSEWIC 2011c).	**ABSENT:** Suitable nesting habitat for Yellow-breasted Chat is absent from the Project Location. No Yellow-breasted Chats were detected during the field program.	**ABSENT:** Suitable nesting habitat for Yellow-breasted Chat is present in the WODM4, WODM5, FOCM6, and FODM11 within the Adjacent Lands; however, it was not detected during surveys.
Mammals	American Badger (Southwestern Ontario population)	*Taxidea taxus jacksoni*	END	END	END	S1	Dobbyn 1994	Requires areas of habitat large enough to sustain sufficiently large prey [e.g., woodchuck (*Marmota monax)*, eastern cottontail (*Sylvilagus floridanus*)] populations. Commonly associated with old fields, pastureland, scrubland, wooded ravines and woodlots with soil conditions suitable for digging/ tunneling and in close proximity to linear corridors (e.g., roads, fencerows, field edges, hedgerows) (Ontario American Badger Recovery Team 2010).	**POTENTIALLY PRESENT** Suitable habitat for American badger is present in the WODM4 and FODM11 within the Study Area. Evidence of American badger (dens) was not observed in the Project Location.	**POTENTIALLY PRESENT:** Suitable habitat for American badger is present in the WODM4 and FODM11 within the Study Area.
Mammals	Eastern Small-footed Myotis	Myotis leibii	END			S2S3	Dobbyn 1994	Buildings and rocky habitats are known to provide summer / maternity roost habitat. Overwintering habitat includes caves and abandoned mines (Humphrey 2017).	**POTENTIALLY PRESENT**: Suitable roost trees were documented in the Project Location.	**POTENTIALLY PRESENT:** Man-made structures (i.e., barns, buildings) and cavities in large trees within the Study Area may provide suitable roosting habitat for this species.
Mammals	Gray Fox	Urocyon cinereoargenteus	THR	THR	THR	S1	Dobbyn 1994	Habitat generalists and are partially tolerant to human disturbances. Distribution is closely associated with deciduous forest. Den sites are usually located in dense brush close to a water source (COSEWIC 2015).	**ABSENT:** Suitable den habitat for gray fox is present in the FODM7 and FODM11 within the Study Area; however, it is not known to occur in Hamilton (Schwetz 2014).	**ABSENT:** Suitable den habitat for gray fox is present in the FODM7 and FODM11 within the Study Area; however, it is not known to occur in Hamilton (Schwetz 2014).

Appendix C.1 Records of SAR within the Study Area and Assessment Results

Group	Common Name[1]	Scientific Name[2]	SARO[3]	COSEWIC[4]	SARA[5]	S-RANK[6]	Source(s)	Habitat Description	Assessment Results – Project Location	Assessment Results – 120-m Adjacent Lands
Mammals	Little Brown Myotis	*Myotis lucifugus*	END	END	END	S3	Dobbyn 1994	Commonly found near waterbodies in buildings, attics, roof crevices, under bridges, and in mature trees with loose bark or cavities (COSEWIC 2013). Trees that were > 10 cm in diameter at breast height (DBH) can provide summer/maternity roosting (COSEWIC 2013; ECCC 2018a; MNRF 2015, 2017a). High potential bat summer/maternity roost trees are those with a DBH ≥ 25 cm, and a large amount of loose, peeling bark, cavities and/or crevices > 10 m high, with an open canopy, and exhibiting the early stages of decay (MNRF 2015). Overwintering habitat includes caves and abandoned mines (COSEWIC 2013).	**POTENTIALLY PRESENT**: Suitable roost trees were documented in the Project Location.	**POTENTIALLY PRESENT:** Man-made structures (i.e., barns, buildings) and cavities in large trees within the Study Area may provide suitable roosting habitat for this species.
Mammals	Northern Myotis	*Myotis septentrionalis*	END	END	END	S3	Dobbyn 1994	Strongly associated with forested habitat, which roost in mature trees with loose bark or cavities. Trees with a DBH ≥ 10 cm can provide summer/maternity roosting (COSEWIC 2013b; ECCC 2018; MNRF 2015, 2017). High potential bat summer/maternity roost trees are those with a DBH ≥ 25 cm, and a large amount of loose, peeling bark, cavities and/or crevices > 10 m high, with an open canopy, and exhibiting the early stages of decay (MNRF 2015). Overwintering habitat includes caves and abandoned mines (COSEWIC 2013b).	**POTENTIALLY PRESENT**: Suitable roost trees were documented in the Project Location.	**POTENTIALLY PRESENT:** Cavities in large trees within the Study Area may provide suitable roosting habitat for this species.
Mammals	Tricolored Bat	*Perimyotis subflavus*	END	END	END	S3?	Dobbyn 1994	Roost in colonies in tree cavities in a wide variety of deciduous and coniferous forest stands. Strongly associated with forest watercourses and streamside vegetation (COSEWIC 2013b). Trees with a DBH ≥ 10 cm can provide summer/maternity roosting (COSEWIC 2013b; ECCC 2018; MNRF 2015, 2017). High potential bat summer/maternity roost trees are those with a DBH ≥ 25 cm, and a large amount of loose, peeling bark, cavities and/or crevices > 10 m high, with an open canopy, and exhibiting the early stages of decay (MNRF 2015). Overwintering habitat includes caves and abandoned mines (COSEWIC 2013b).	**POTENTIALLY PRESENT**: Suitable roost trees were documented in the Project Location.	**POTENTIALLY PRESENT:** Cavities in large trees within the Study Area may provide suitable roosting habitat for this species.
Mammal	Eastern Red Bat	Lasiurus borealis	Not listed	END	S4		Dobbyn 1994	In general, summer habitat for these three species of migratory bats is characterized as foraging, drinking, and roost sites, with roosts being particularly important (Humphrey 1975; Fenton 1997). In Canada, these bats use mostly treed habitats for roosting or foraging, with a particularly strong dependence on trees as roosting sites. Foraging habitats are less well known, but likely include the area above aquatic habitats (Barclay 1989), low-elevation meadows, grasslands, and fields, as well as open-canopied forest, the area above forest canopies, and forest edges. Drinking habitat is not well known and assumed to be the same as aquatic foraging habitats. Winter habitat requirements are not well known for any of these species.	**POTENTIALLY PRESENT**: Suitable roost trees were documented in the Project Location.	**POTENTIALLY PRESENT:** Treed habitat within the Study Area may provide suitable roosting habitat for this species.
Mammal	Hoary Bat	*Lasiurus cinereus*	Not listed	END	S4		Dobbyn 1994		**POTENTIALLY PRESENT**: Suitable roost trees were documented in the Project Location.	**POTENTIALLY PRESENT:** Treed habitat within the Study Area may provide suitable roosting habitat for this species.
Mammal	Silver-haired Bat	*Lasionycteris noctivagans*	Not listed	END	S4		Dobbyn 1994		**POTENTIALLY PRESENT**: Suitable roost trees were documented in the Project Location.	**POTENTIALLY PRESENT:** Treed habitat within the Study Area may provide suitable roosting habitat for this species.

Notes:

[1]Scientific Name: The scientific name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry/Land Information Ontario.

[2]Common Name: The common English name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry/Land Information Ontario.

[3]S Rank: Subnational Rank is the conservation status of a species or plant community within a particular province, territory or state. In this scenario, it is the provincial level ranking system as published by the Natural Heritage Information Centre hosted by the Ministry of Northern Development, Mines, Natural Resources and Forestry/Land Information Ontario.

Appendix C.1 Records of SAR within the Study Area and Assessment Results

[4]SARO Status: Species at Risk in Ontario (Provincial Status as defined by the Endangered Species Act, 2007 as amended).
[5]COSEWIC Status: Status as defined by the Committee on the Status of Endangered Wildlife in Canada.
[6]SARA Status: Federal status as defined by the Species at Risk Act.

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Appendix C.1 Records of SAR within the Study Area and Assessment Results

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Endangered Species Act and Species at Risk Act Acronyms

END: Endangered
THR: Threatened
SC: Special Concern

Subnational Rankings (S RANK)

S#S#: Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species
?: Indicates uncertainty in the assigned rank
S1: Critically Imperiled – Critically imperiled in the province (often 5 or fewer occurrences)
S2: Imperiled – Imperiled in the province, very few populations (often 20 or fewer),
S3: Vulnerable – Vulnerable in the province, relatively few populations (often 80 or fewer)
S4: Apparently Secure – Uncommon but not rare
S5: Secure – Common, widespread, and abundant in the province

Group	Common Name[1]	Scientific Name[2]	SARO[3]	COSEWIC[4]	SARA[5]	S-RANK[6]	Source(s)	Habitat Description	Assessment Results – Project Location	Assessment Results – 120-m Adjacent Lands
Vascular Plants	Perfoliate Bellwort	*Uvularia perfoliata*				S1S2	NHIC	Found in acid to neutral soil in deciduous forests and dry thickets (Utech and Kawano 2002).	**ABSENT:** No perfoliate bellwort were observed within the Project Location.	**POTENTIALLY PRESENT:** Suitable habitat is present in the treed communities in the Adjacent Lands.
Vascular Plants	Virginia Bluebells	*Mertensia virginica*				S3	iNaturalist	Moist deciduous woods and thickets, usually on floodplains (Oldham & Brinker 2009).	**ABSENT:** No Virginia bluebells were observed within the Project Location.	**POTENTIALLY PRESENT:** Suitable habitat is present in the low-lying treed communities in the Adjacent Lands.
Insects	Carolina Sphinx Moth	*Manduca sexta*				S2	OMA	Larvae are foodplant specialists that feed on tobacco, tomato, and potato plants in urban and agricultural habitats (Pacific Northwest Moths n.d.), and other plants in the Solanaceae family such as Solanum spp. weeds	**ABSENT:** *Solanum dulcamara* was observed in the Project Location and is a potential host plant; however, preferred habitat (tomato and tobacco fields) is absent.	**ABSENT:** *Solanum dulcamara* likely occurs in the Adjacent Lands and is a potential host plant; however, preferred habitat (tomato and tobacco fields) is absent.
Insects	Clymene Moth	*Haploa clymene*				S3S4	OMA	Prefers moist areas (e.g., wetlands). Caterpillars feed on willows, Joe pye weed, and flowers in the Aster family (Insect Identification n.d.).	**ABSENT:** Preferred habitat was not observed in the Project Location.	**POTENTIALLY PRESENT:** Suitable habitat is present in the SWDM4-1 and SWTM3 within the Study Area.
Insects	Giant Leopard Moth	*Hypercompe scribonia*				S3S4	OMA	Typically found in woodland edges, fields, meadows, gardens, and orchards/groves (Insect Identification n.d.).	**POTENTIALLY PRESENT:** Suitable habitat is present in the weedy roadsides, meadow (ME) and edge habitats in the Project Location.	**POTENTIALLY PRESENT:** Suitable habitat is present in the ME, MEGM3, MEMM3, WODM4, and WODM5 within the Adjacent Lands.

Group	Common Name[1]	Scientific Name[2]	SARO[3]	COSEWIC[4]	SARA[5]	S-RANK[6]	Source(s)	Habitat Description	Assessment Results – Project Location	Assessment Results – 120-m Adjacent Lands
Insects	Monarch	*Danaus plexippus*	SC	END	SC	S2N,S4B	iNaturalist, OBA	Adult monarchs feed on nectar from wildflowers in a variety of habitats, while larvae are restricted to meadows and open areas with milkweed plants (COSEWIC 2016).	**CONFIRMED:** Adult monarch were observed in the CVI_1 and MAMM1-12 within the Study Area. Suitable habitat for monarch larvae (i.e., swamp milkweed, common milkweed) is present in the MEMM3, MAMM1-12, and CVI_1 within the Study Area.	**CONFIRMED:** Adult monarch were observed in the CVI_1 and MAMM1-12 within the Study Area. Suitable habitat for monarch larvae (i.e., swamp milkweed, common milkweed) is present in the MEMM3, MAMM1-12, and CVI_1 within the Study Area.
Insects	Penitent Underwing Moth	*Catocala piatrix*				S3	OMA	Found in mixed forest. Larvae feed walnut and butternut (*Juglans* spp., *Juglandaceae*), hickory (*Carya* spp.), and ash (*Fraxinus* spp.) (Pacific Northwest Moths n.d.).	**POTENTIALLY PRESENT:** Suitable habitat for penitent underwing moth larvae (i.e., black walnut, butternut, shagbark hickory, red ash) is present in the FOM and CVI_1 within the Study Area.	**POTENTIALLY PRESENT:** Suitable habitat for penitent underwing moth larvae (i.e., black walnut, butternut, shagbark hickory, red ash) is present in the FOM and CVI_1 within the Study Area.
Insects	Pronghorn Clubtail	*Phanogomphus graslinellus*				S3	OOA	Found around streams, ponds and lakes (Catling and Brownell 2000).	**POTENTIALLY PRESENT:** Suitable habitat for pronghorn clubtail is present in the watercourses within the Project Location.	**POTENTIALLY PRESENT:** Suitable habitat for pronghorn clubtail is present in the SA and watercourses within the Adjacent Lands.
Insects	Swamp Darner	*Epiaeschna heros*				S3S4	OOA	Found near forest pools, ponds and ditches (Catling and Brownell 2000).	**POTENTIALLY PRESENT:** The ditches in the CVI_1 may provide suitable habitat for swamp darner within the Project Location.	**POTENTIALLY PRESENT:** The ponds (SA), vernal pools in the FOD and FODM2-2, and ditches in the CVI_1 may provide suitable habitat for swamp darner within the Adjacent Lands.
Insects	Tawny Emperor	*Asterocampa clyton*				S3	OOA	A woodland species that only occurs in southwestern Ontario and regularly at Point Pelee and Pelee Island never straying far from the larval foodplant; hackberry (Layberry 1998).	**ABSENT:** No suitable habitat was observed within the Project Location.	**ABSENT:** No suitable habitat was observed within the Adjacent Lands.

Group	Common Name[1]	Scientific Name[2]	SARO[3]	COSEWIC[4]	SARA[5]	S-RANK[6]	Source(s)	Habitat Description	Assessment Results – Project Location	Assessment Results – 120-m Adjacent Lands
Insects	Unicorn Clubtail	*Arigomphus villosipes*				S3	OOA	Inhabits ponds and sluggish streams with little emergent vegetation and mucky bottoms. This species is found frequently on the ground, typically on areas with exposed soil (Jones et al. 2008).	**POTENTIALLY PRESENT:** Suitable habitat for unicorn clubtail is present in the watercourses within the Project Location.	**POTENTIALLY PRESENT:** Suitable habitat for unicorn clubtail is present in the SA and watercourses within the Adjacent Lands.
Insects	Walnut Caterpillar Moth	*Datana integerrima*				S3S4	OMA	Found in deciduous forests. Larvae feed on hickories, pecan, and walnut (Bug Guide n.d.).	**POTENTIALLY PRESENT:** Suitable habitat for walnut caterpillar moth larvae (i.e., black walnut, shagbark hickory) is present in the CVI_1 within the Project Location.	**POTENTIALLY PRESENT:** Suitable habitat for walnut caterpillar moth larvae (i.e., black walnut, shagbark hickory) is present in the FOM and CVI_1 within the Adjacent Lands.
Reptiles	Eastern Milksnake	*Lampropeltis triangulum*	NAR	SC	SC	S4	NHIC, iNaturalist	Eastern milksnakes are habitat generalists, but prefer open areas (e.g., pastures, meadows, prairies, rock outcrops, rights-of-way, agricultural land) near forest habitat to meet their thermoregulatory needs. They commonly feed around old buildings and barns, where rodent populations are high. Milksnake hibernate in mammal burrows, old building foundations, old wells, hollow logs, and rock crevices (Environment Canada 2015).	**POTENTIALLY PRESENT:** There were no potential snake hibernacula features observed in the Project Location; however, the species may occur as they are naturally attracted to roadways for thermoregulation.	**POTENTIALLY PRESENT:** Building foundations in the Adjacent Lands have potential to provide overwintering habitat for snakes.
Reptiles	Midland Painted Turtle	*Chrysemys picta marginata*		SC	SC	S4	NHIC, ORAA	Inhabit slow moving, relatively shallow and well-vegetated wetlands including swamps, marshes, ponds, fens, bogs, lakes, rivers, and creaks with abundant basking sites and organic substrate. Nesting habitat is usually within 1,200 m of aquatic habitat and in an open, south-facing area with sandy-loamy and/or gravely substrate (COSEWIC 2018).	**POTENTIALLY PRESENT:** May use watercourses within the Project Location as a movement corridor and nest in exposed areas, including gravel highway shoulders, and other disturbed areas.	**POTENTIALLY PRESENT:** May use the ponds and watercourses within the Adjacent Lands as a movement corridor and nest in exposed areas
Reptiles	Northern Map Turtle	*Graptemys geographica*	SC	SC	SC	S3	ORAA	Northern map turtles are largely aquatic and inhabit rivers, lakes, and streams that are well-oxygenated and contain suitable basking sites. Nesting sites are generally within 35 m of water and characterized by	**ABSENT:** Preferred habitat (natural waterbodies and streams that are well oxygenated)	**ABSENT:** Preferred habitat (natural waterbodies and streams that are well

Group	Common Name[1]	Scientific Name[2]	SARO[3]	COSEWIC[4]	SARA[5]	S-RANK[6]	Source(s)	Habitat Description	Assessment Results – Project Location	Assessment Results – 120-m Adjacent Lands
								soft sand or soil in open habitat (COSEWIC 2012a).	are absent from the Project Location.	oxygenated) are absent from the Adjacent Lands.
Reptiles	Snapping Turtle	*Chelydra serpentina*	SC	SC	SC	S4	NHIC, ORAA	Snapping turtles inhabit a wide range of wetland habitats including ponds, sloughs, streams, rivers, and shallow bays that are characterized by slow moving water, soft bottoms, and dense aquatic vegetation. Adults will use streams to move between waterbodies especially during the mating season. Nesting sites are in open habitat with sandy or gravelly substrate and are often found in road shoulders (COSEWIC 2008).	**POTENTIALLY PRESENT:** May use watercourses within the Project Location as a movement corridor and nest in exposed areas, including gravel highway shoulders, and other disturbed areas.	**POTENTIALLY PRESENT:** May use the ponds and watercourses within the Adjacent Lands as a movement corridor and nest in exposed areas.
Birds	Barn Swallow	*Hirundo rustica*	SC	THR	THR	S4B	OBBA, eBird	The Barn Swallow commonly nests on walls or ledges of barns, bridges, culverts or other man-made structures (Cadman et al. 2007). Where suitable nesting structures occur, Barn Swallow often form small colonies, sometimes mixed with other swallow species. The Barn Swallow feeds on aerial insects while foraging over a variety of open habitats such as pastures, lawns, meadows and fields (COSEWIC 2011). It will also frequently forage in woodland clearings, over wetland habitats or open water where insect prey are abundant (Cadman et al. 2007).	**ABSENT:** No Barn Swallows were detected during the surveys.	**ABSENT:** Suitable breeding habitat is present within the Adjacent Lands in the form of rural buildings adjacent to meadow and riparian habitats; however, no Barn Swallow were detected during surveys.
Birds	Caspian Tern	*Hydroprogne caspia*	NAR	NAR		S3B,S5M	eBird	The Caspian Tern generally nests in colonies and prefers sparsely vegetated flat rocky islands, beaches, and sandy shores of James Bay and the Great Lakes in Ontario (Cuthbert and Wires 1999). It usually nests on the more elevated areas of islands and it often found nesting with Ring-billed Gulls (Cadman et al. 2007).	**ABSENT:** No suitable habitat was observed within the Study Area.	**ABSENT:** No suitable habitat was observed within the Study Area.

Group	Common Name[1]	Scientific Name[2]	SARO[3]	COSEWIC[4]	SARA[5]	S-RANK[6]	Source(s)	Habitat Description	Assessment Results – Project Location	Assessment Results – 120-m Adjacent Lands
Birds	Common Nighthawk	*Chordeiles minor*	SC	SC	THR	S4B	eBird	The Common Nighthawk is an aerial insectivore and forages at dawn and dusk. Common Nighthawks nest on the ground in open habitats preferably with rocky or graveled substrate. Nighthawks will even nest on gravel roofs in the city (COSEWIC 2007a).	**ABSENT:** Preferred open/ gravelly or rocky breeding habitat was not observed within the Study Area.	**ABSENT:** Preferred open/ gravelly or rocky breeding habitat was not observed within the Study Area.
Birds	Eastern Wood-pewee	*Contopus virens*	SC	SC	SC	S4B	OBBA, eBird	Eastern Wood-Pewee is found in the mid-canopy layer of deciduous and mixedwood forests with little understory vegetation as well as forest clearings and edges. Eastern Wood-Pewee hunts aerial insects from a perch in the subcanopy (COSEWIC 2012b).	**ABSENT:** Suitable nesting habitat for Eastern Wood-Pewee is present in woodland edge habitat within / adjacent to the Project Location; however, it was not detected during surveys.	**ABSENT:** Suitable nesting habitat for Eastern Wood-Pewee is present in the treed communities within the Adjacent Lands; however, it was not detected during surveys.
Birds	Forster's Tern	*Sterna forsteri*	DD	DD		S3B	eBird	Nests colonially in freshwater marshes, usually within stands of emergent vegetation and adjacent to open water. Typically constructs nests on heaps of washed-up or floating vegetation, or atop muskrat lodges (McNicholl et al. 2001)	**ABSENT:** No suitable habitat was observed within the Study Area.	**ABSENT:** No suitable habitat was observed within the Study Area.
Birds	Grasshopper Sparrow	*Ammodramus savannarum*	SC	SC		S4B	OBBA	The Grasshopper Sparrow inhabits drier more open grasslands than most other sparrows. It prefers short, sparse grass with patches of exposed ground. The Grasshopper sparrow prefers to nest rough or unimproved pastures and in drier, sparsely vegetated grasslands at least 30 ha in size (Cadman et al. 2007).	**ABSENT:** No suitable habitat was observed within the Study Area.	**ABSENT:** No suitable habitat was observed within the Study Area.
Birds	Great Egret	*Ardea alba*				S2B,S3M	eBird	Lives in wetlands and nests in colonies in trees or shrubs. Forages in swamps, marshes and ponds, and along shorelines of streams, rivers and lakes (Cornell University 2023).	**ABSENT:** No suitable habitat was observed within the Study Area.	**ABSENT:** No suitable habitat was observed within the Study Area.
Birds	Horned Grebe	*Podiceps auritus*	SC	SC		S1B,S3N, S4M	eBird	Build nests in shallow wetlands in emergent vegetation within a few metres of open water. Horned Grebes prefer small water bodies (e.g., marshes, ponds) (Kirk 2014).	**ABSENT:** No suitable habitat was observed within the Study Area.	**ABSENT:** No suitable habitat was observed within the Study Area.

Group	Common Name[1]	Scientific Name[2]	SARO[3]	COSEWIC[4]	SARA[5]	S-RANK[6]	Source(s)	Habitat Description	Assessment Results – Project Location	Assessment Results – 120-m Adjacent Lands
Birds	Kentucky Warbler	*Geothlypis formosa*				S1M	OBBA	Nest in deciduous forest habitat with dense understory, usually close to water (e.g., creeks, rivers, swamps) (American Bird Conservancy n.d.); require large tracts for forest habitat (> 400 ha) for breeding (The Cornell Lab n.d.).	**ABSENT:** Suitable nesting habitat for Kentucky is absent from the Project Location, and the species was not detected during surveys.	**ABSENT:** Sufficiently large forests are absent from the Study Area, and the species was not detected during surveys.
Birds	Peregrine Falcon	*Falco peregrinus*	SC	NAR		S4	iNaturalist, eBird	Peregrine Falcons nest on cliff ledges or crevices 50 to 200 m high in natural environments and on tall buildings between 9 and 52 m high, or bridges in urban environments. Nest construction is minimal (i.e., no additional nesting material added) and nests are generally scrapes in the substrate. Birds are the primary food source and are typically caught in flight. Prey availability is a limiting factor and adults will only establish nests in areas with abundant prey (COSEWIC 2007b).	**ABSENT:** No suitable habitat was observed within the Study Area.	**ABSENT:** No suitable habitat was observed within the Study Area.
Birds	Red-necked Grebe	*Podiceps grisegena*	NAR	NAR		S3	eBird	Build nests consisting of a floating mass of plant material anchored to standing plants in shallow water among marsh vegetation (N.A.S. n.d.).	**ABSENT:** No suitable habitat was observed within the Study Area.	**ABSENT:** No suitable habitat was observed within the Study Area.
Birds	Rusty Blackbird	*Euphagus carolinus*	NAR	SC	SC	S4B,S3N	eBird	Rusty Blackbird breeds in boreal riparian habitats including bogs, sedge meadows, marshes, willow thickets, and estuaries and select breeding sites with a combination of shallow water and emergent vegetation with conifers or tall shrubs. Rusty Blackbird uses flooded forests and swamps, the edges of lakes, rivers, and streams, and pastures, agricultural fields as roosting and foraging habitat during migration. Overwintering habitat includes agricultural fields, swamps, pastures, and residential areas to forage for seeds and berries during the winter (COSEWIC 2017).	**ABSENT:** The Study Area is not within the breeding range of Rusty Blackbird.	**ABSENT:** The Study Area is not within the breeding range of Rusty Blackbird.
Birds	Semipalmated Sandpiper	*Calidris pusilla*				S2B,S4M	eBird	Breeds on Arctic tundra near water and winters along shorelines of South America (American Bird Conservancy n.d.).	**ABSENT:** The Study Area is not within the breeding	**ABSENT:** The Study Area is not within the breeding range of Semipalmated Sandpiper.

Group	Common Name[1]	Scientific Name[2]	SARO[3]	COSEWIC[4]	SARA[5]	S-RANK[6]	Source(s)	Habitat Description	Assessment Results – Project Location	Assessment Results – 120-m Adjacent Lands
									range of Semipalmated Sandpiper.	
Birds	Tufted Titmouse	*Baeolophus bicolor*				S3	OBBA	In Ontario, the Tufted Titmouse is restricted to southern Ontario and is essentially a Carolinian species. This species generally prefers deciduous forests but will occupy mixed coniferous-deciduous forests. It can be found in urban or agricultural areas if tall deciduous trees are present (Cadman et al. 1987), typically in areas with a dense canopy and many tree species.	**ABSENT:** Suitable nesting habitat for Tufted Titmouse is present in woodland edge habitat within/ adjacent to the Project Location; however, it was not detected during surveys.	**ABSENT:** Suitable nesting habitat for Tufted Titmouse is present in the forest communities within the Study Area; however, it was not detected during surveys.
Birds	Tundra Swan	*Cygnus columbianus*				S2B,S4N, S3M	eBird	Breed on lakes, ponds and pools situated along river deltas in Alaska and Northern Canada. Migrate from Arctic breeding grounds to estuaries between Vancouver Island and northern California and inland sites between southern Idaho and southern Colorado River. Stopover sites occur in wetlands in boreal forests (Cornell University 2023).	**ABSENT:** No suitable habitat was observed within the Study Area.	**ABSENT:** No suitable habitat was observed within the Study Area.
Birds	Upland Sandpiper	*Bartramia longicauda*				S2B	OBBA	The Upland Sandpiper are considered an obligate grassland species for native prairie requiring low to moderate forb cover, low woody cover, moderate grass cover, moderate to high litter cover, and little bare ground (Houston et al. 2020).	**ABSENT:** No suitable habitat was observed within the Study Area. Species was not detected during surveys.	**ABSENT:** No suitable habitat was observed within the Study Area. Species was not detected during surveys.
Birds	Wood Thrush	*Hylocichla mustelina*	SC	THR	THR	S4B	OBBA	Wood Thrush breed in deciduous or mixed upland forest habitat with a moderate subcanopy and open forest floor. Wood Thrush are sensitive to habitat fragmentation but will nest in forest patches as small as 3 ha. Nests are constructed in young trees or shrubs and adults primarily forage for invertebrates on the ground (COSEWIC 2012c).	**ABSENT:** Suitable nesting habitat for Wood Thrush is absent from the Project Location, and it was not detected during surveys.	**ABSENT:** Suitable nesting habitat for Wood Thrush is present in the forest communities within the Study Area; however, it was not detected during surveys.

Notes:

[1]Scientific Name: The scientific name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[2]Common Name: The common English name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[3]S Rank: Subnational Rank is the conservation status of a species or plant community within a particular province, territory or state. In this scenario, it is the provincial level ranking system as published by the Natural Heritage Information Centre hosted by the Ministry of Northern Development, Mines, Natural Resources and Forestry/Land Information Ontario.

[4]SARO Status: Species at Risk in Ontario (Provincial Status as defined by the Endangered Species Act, 2007 as amended).

[5]COSEWIC Status: Status as defined by the Committee on the Status of Endangered Wildlife in Canada.

[6]SARA Status: Federal status as defined by the Species at Risk Act.

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Endangered Species Act and Species at Risk Act Acronyms

END: Endangered
THR: Threatened
SC: Special Concern
NAR: Not at Risk
DD: Data Deficient

Subnational Rankings (S RANK)

S#S#: Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species
?: Indicates uncertainty in the assigned rank
S1: Critically Imperiled – Critically imperiled in the province (often 5 or fewer occurrences)
S2: Imperiled – Imperiled in the province, very few populations (often 20 or fewer),
S3: Vulnerable – Vulnerable in the province, relatively few populations (often 80 or fewer)
S4: Apparently Secure – Uncommon but not rare
S5: Secure – Common, widespread, and abundant in the province

Appendix D Photographic Records



Photo 1: Site conditions along south Garner Road RoW at W01 looking east.



Photo 2: Site conditions along south Garner Road RoW at W01 looking west.



Photo 3: Site conditions at SWP in SA community in northwest portion the Study Area looking north.



Photo 4: Site conditions at W02 north of Garner Road looking south towards large concrete culvert.



Photo 5: Site conditions at W03 within the RoW between Garner Road and Wilson Street West looking east.

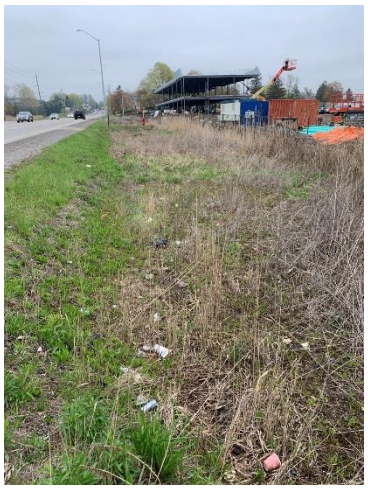


Photo 6: Site conditions at W04 within the RoW south of Garner Road looking east.



Photo 7: Site conditions south of Garner Road within RoW at W05 looking south towards flowing watercourse.



Photo 8: Site conditions at W06 north of Garner Road within the RoW looking north. Note watercress adjacent to culvert.



Photo 9: Site conditions at W06 south of Garner Road within RoW looking south.



Photo 10: Site conditions at W07 north of Garner Road within the RoW looking south.



Photo 11: Site conditions at W08 north of Garner Road within the RoW looking west.



Photo12: Site conditions at W09 south of Garner Road within the RoW looking south.



Photo 13: Site conditions at W09 north of Garner Road within the RoW looking north.



Photo 14: Site conditions at W10 north of Garner Road within the RoW looking north.



Photo 15: Site conditions at W10 south of Garner Road within the RoW looking south.



Photo 16: Site conditions at W11 north of Garner Road within the RoW looking north.



Photo 17: Site conditions at W11 south of Garner Road within the RoW looking south.



Photo18: Site conditions in WODM4 within RoW.



Photo 19: Site conditions in MASM1-12 within RoW.



Photo 20: Example of low quality candidate bat maternity roost tree. Showing Tree #7.



Photo 21: Example of medium quality candidate bat maternity roost tree. Showing Tree #4.



Photo 22: Example of high quality candidate bat maternity roost tree. Showing Tree #9.

Appendix E Vascular Plant Species List

Appendix E Vascular Plant Species List

Family[1]	Scientific Name[1]	Common Name[1]	S-Rank[2]	SARO Status[3]	COSEWIC Status[4]	Hamilton NAI Status[5]	Coefficient of Conservatism[6]	Coefficient of Wetness[7]
Aceraceae	*Acer negundo*	Manitoba Maple	S5				0	0
Aceraceae	*Acer platanoides*	Norway Maple	SNA					5
Aceraceae	*Acer saccharinum*	Silver Maple	S5				5	-3
Aceraceae	*Acer saccharum*	Sugar Maple	S5				4	3
Aceraceae	*Acer tataricum ssp. ginnala*	Amur Maple	SNA					5
Aceraceae	*Acer x freemanii*	(*Acer rubrum* X *Acer saccharinum*)	SNA				6	-5
Anacardiaceae	*Rhus typhina*	Staghorn Sumac	S5				1	3
Apiaceae	*Daucus carota*	Wild Carrot	SNA					5
Apiaceae	*Heracleum mantegazzianum*	Giant Hogweed	SNA					0
Apiaceae	*Osmorhiza claytonii*	Hairy Sweet Cicely	S5				5	0
Apocynaceae	*Apocynum cannabinum*	Hemp Dogbane	S5				3	0
Araceae	*Symplocarpus foetidus*	Skunk Cabbage	S5				7	-5
Asclepiadaceae	*Asclepias incarnata*	Swamp Milkweed	S5				6	-5
Asclepiadaceae	*Asclepias syriaca*	Common Milkweed	S5				0	5
Asteraceae	*Achillea millefolium*	Common Yarrow	SNA					3
Asteraceae	*Ambrosia artemisiifolia*	Common Ragweed	S5				0	3
Asteraceae	*Ambrosia trifida*	Great Ragweed	S5				0	0
Asteraceae	*Arctium minus*	Common Burdock	SNA					3
Asteraceae	*Artemisia campestris*	Field Wormwood	S5				8	5
Asteraceae	*Artemisia vulgaris*	Common Wormwood	SNA					5
Asteraceae	*Carduus nutans*	Nodding Thistle	SNA					3
Asteraceae	*Cichorium intybus*	Chicory	SNA					5
Asteraceae	*Cirsium arvense*	Canada Thistle	SNA					3
Asteraceae	*Cirsium vulgare*	Bull Thistle	SNA					3
Asteraceae	*Erigeron annuus*	Annual Fleabane	S5				0	3

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Family[1]	Scientific Name[1]	Common Name[1]	S-Rank[2]	SARO Status[3]	COSEWIC Status[4]	Hamilton NAI Status[5]	Coefficient of Conservatism[6]	Coefficient of Wetness[7]
Asteraceae	*Euthamia graminifolia*	Grass-leaved Goldenrod	S5				2	0
Asteraceae	*Eutrochium maculatum*	Spotted Joe Pye Weed	S5				3	-5
Asteraceae	*Inula helenium*	Elecampane	SNA					3
Asteraceae	*Lactuca serriola*	Prickly Lettuce	SNA					3
Asteraceae	*Lapsana communis*	Common Nipplewort	SNA					3
Asteraceae	*Leucanthemum vulgare*	Oxeye Daisy	SNA					5
Asteraceae	*Matricaria discoidea*	Pineappleweed	SNA					3
Asteraceae	*Rudbeckia hirta*	Black-eyed Susan	S5				0	3
Asteraceae	*Solidago canadensis*	Canada Goldenrod	S5				1	3
Asteraceae	*Sonchus arvensis*	Field Sow-thistle	SNA					3
Asteraceae	*Symphyotrichum ericoides*	White Heath Aster	S5				4	3
Asteraceae	*Symphyotrichum lanceolatum*	Panicled Aster	S5				3	-3
Asteraceae	*Symphyotrichum novae-angliae*	New England Aster	S5				2	-3
Asteraceae	*Tanacetum vulgare*	Common Tansy	SNA					5
Asteraceae	*Taraxacum officinale*	Common Dandelion	SNA					3
Asteraceae	*Tussilago farfara*	Colt's-foot	SNA					3
Balsaminaceae	*Impatiens capensis*	Spotted Jewelweed	S5				4	-3
Berberidaceae	*Berberis thunbergii*	Japanese Barberry	SNA					3
Betulaceae	*Alnus glutinosa*	European Black Alder	SNA					-3
Brassicaceae	*Alliaria petiolata*	Garlic Mustard	SNA					0
Brassicaceae	*Nasturtium officinale*	Watercress	SNA					-5
Brassicaceae	*Rorippa palustris*	Marsh Yellowcress	S5				3	-5
Brassicaceae	*Rorippa sinuata*	Spreading Yellowcress	SNA					-5
Campanulaceae	*Campanula rapunculoides*	Creeping Bellflower	SNA					5
Caprifoliaceae	*Lonicera tatarica*	Tartarian Honeysuckle	SNA					3

Appendix E Vascular Plant Species List

Family[1]	Scientific Name[1]	Common Name[1]	S-Rank[2]	SARO Status[3]	COSEWIC Status[4]	Hamilton NAI Status[5]	Coefficient of Conservatism[6]	Coefficient of Wetness[7]
Caprifoliaceae	*Sambucus canadensis*	Common Elderberry	S5				5	-3
Caprifoliaceae	*Viburnum lentago*	Nannyberry	S5				4	0
Caryophyllaceae	*Cerastium fontanum*	Common Mouse-ear Chickweed	SNA					3
Caryophyllaceae	*Dianthus armeria*	Deptford Pink	SNA					5
Caryophyllaceae	*Saponaria officinalis*	Bouncing-bet	SNA					3
Celastraceae	*Euonymus alatus*	Winged Euonymus	SNA					5
Chenopodiaceae	*Chenopodium album*	White Goosefoot	SNA					3
Clusiaceae	*Hypericum majus*	Larger Canadian St. John's-wort	S5				5	-3
Clusiaceae	*Hypericum perforatum*	Common St. John's-wort	SNA					5
Convolvulaceae	*Convolvulus arvensis*	Field Bindweed	SNA					5
Cornaceae	*Cornus racemosa*	Gray Dogwood	S5				2	0
Cornaceae	*Cornus sericea*	Red-osier Dogwood	S5				2	-3
Cupressaceae	*Thuja occidentalis*	Eastern White Cedar	S5				4	-3
Cyperaceae	*Schoenoplectus tabernaemontani*	Soft-stemmed Bulrush	S5				5	-5
Dipsacaceae	*Dipsacus fullonum*	Common Teasel	SNA					3
Elaeagnaceae	*Elaeagnus angustifolia*	Russian Olive	SNA					3
Elaeagnaceae	*Elaeagnus umbellata*	Autumn Olive	SNA					3
Equisetaceae	*Equisetum arvense*	Field Horsetail	S5				0	0
Fabaceae	*Gleditsia triacanthos*	Honey-locust	S2?				8	0
Fabaceae	*Gymnocladus dioicus*	Kentucky Coffee-tree	S2	THR	THR		6	3
Fabaceae	*Lotus corniculatus*	Garden Bird's-foot Trefoil	SNA					3
Fabaceae	*Medicago lupulina*	Black Medic	SNA					3
Fabaceae	*Medicago sativa*	Alfalfa	SNA					5
Fabaceae	*Melilotus albus*	White Sweet-clover	SNA					3
Fabaceae	*Robinia pseudoacacia*	Black Locust	SNA					3

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Family[1]	Scientific Name[1]	Common Name[1]	S-Rank[2]	SARO Status[3]	COSEWIC Status[4]	Hamilton NAI Status[5]	Coefficient of Conservatism[6]	Coefficient of Wetness[7]
Fabaceae	*Securigera varia*	Common Crown-vetch	SNA					5
Fabaceae	*Trifolium hybridum*	Alsike Clover	SNA					3
Fabaceae	*Trifolium pratense*	Red Clover	SNA					3
Fabaceae	*Vicia cracca*	Tufted Vetch	SNA					5
Fagaceae	*Quercus macrocarpa*	Bur Oak	S5				5	3
Fagaceae	*Quercus rubra*	Northern Red Oak	S5				6	3
Fagaceae	*Quercus velutina*	Black Oak	S4				8	5
Geraniaceae	*Geranium robertianum*	Herb-Robert	S5				2	3
Hydrocharitaceae	*Elodea canadensis*	Canada Waterweed	S5				4	-5
Iridaceae	*Iris versicolor*	Harlequin Blue Flag	S5				5	-5
Juglandaceae	*Carya ovata*	Shagbark Hickory	S5				6	3
Juglandaceae	*Juglans cinerea*	Butternut	S2?	END	END		6	3
Juglandaceae	*Juglans nigra*	Black Walnut	S4?				5	3
Lamiaceae	*Glechoma hederacea*	Ground Ivy	SNA					3
Lamiaceae	*Leonurus cardiaca*	Common Motherwort	SNA					5
Lamiaceae	*Lycopus americanus*	American Water-horehound	S5				4	-5
Lamiaceae	*Lycopus asper*	Rough Water-horehound	S4					-5
Lamiaceae	*Monarda fistulosa*	Wild Bergamot	S5				6	3
Lamiaceae	*Prunella vulgaris*	Self-heal	S5				0	0
Liliaceae	*Allium sativum*	Cultivated Garlic	SNA					5
Liliaceae	*Asparagus officinalis*	Garden Asparagus	SNA					3
Liliaceae	*Hemerocallis lilioasphodelus*	Yellow Daylily	SNA					5
Malvaceae	*Malva neglecta*	Dwarf Cheeseweed	SNA					5
Moraceae	*Maclura pomifera*	Osage-orange	SNA					3
Moraceae	*Morus alba*	White Mulberry	SNA					0
Oleaceae	*Fraxinus pennsylvanica*	Green Ash	S4				3	-3

Appendix E Vascular Plant Species List

Family[1]	Scientific Name[1]	Common Name[1]	S-Rank[2]	SARO Status[3]	COSEWIC Status[4]	Hamilton NAI Status[5]	Coefficient of Conservatism[6]	Coefficient of Wetness[7]
Oleaceae	*Syringa vulgaris*	Common Lilac	SNA					5
Onagraceae	*Circaea canadensis*	Broad-leaved Enchanter's Nightshade	S5				2	3
Onagraceae	*Epilobium ciliatum*	Northern Willowherb	S5				3	-3
Onagraceae	*Epilobium palustre*	Marsh Willowherb	S5				10	-5
Onagraceae	*Oenothera biennis*	Common Evening Primrose	S5				0	3
Onagraceae	*Oenothera serrulata*	Yellow Evening Primrose	SNA					5
Oxalidaceae	*Oxalis stricta*	Upright Yellow Wood-sorrel	S5				0	3
Papaveraceae	*Chelidonium majus*	Greater Celandine	SNA					5
Papaveraceae	*Sanguinaria canadensis*	Bloodroot	S5				5	3
Pinaceae	*Picea abies*	Norway Spruce	SNA					5
Pinaceae	*Picea pungens*	Blue Spruce	SNA					3
Pinaceae	*Pinus sylvestris*	Scots Pine	SNA					3
Plantaginaceae	*Plantago lanceolata*	English Plantain	SNA					3
Plantaginaceae	*Plantago major*	Common Plantain	SNA					3
Poaceae	*Bromus inermis*	Smooth Brome	SNA					5
Poaceae	*Dactylis glomerata*	Orchard Grass	SNA					3
Poaceae	*Echinochloa crus-galli*	Large Barnyard Grass	SNA					-3
Poaceae	*Lolium arundinaceum*	Tall Fescue	SNA					3
Poaceae	*Panicum flexile*	Wiry Panicgrass	S4				8	-3
Poaceae	*Phalaris arundinacea*	Reed Canary Grass	S5				0	-3
Poaceae	*Phleum pratense*	Common Timothy	SNA					3
Poaceae	*Phragmites australis*	Common Reed	S4?				0	-3
Poaceae	*Poa pratensis*	Kentucky Bluegrass	S5				0	3
Poaceae	*Setaria faberi*	Giant Foxtail	SNA					3

Appendix E Vascular Plant Species List

Family[1]	Scientific Name[1]	Common Name[1]	S-Rank[2]	SARO Status[3]	COSEWIC Status[4]	Hamilton NAI Status[5]	Coefficient of Conservatism[6]	Coefficient of Wetness[7]
Poaceae	*Setaria pumila*	Yellow Foxtail	SNA					0
Polygonaceae	*Persicaria lapathifolia*	Pale Smartweed	S5				2	-3
Polygonaceae	*Persicaria virginiana*	Virginia Smartweed	S4				6	0
Polygonaceae	*Polygonum aviculare*	Prostrate Knotweed	S4?				0	3
Polygonaceae	*Reynoutria japonica*	Japanese Knotweed	SNA					3
Polygonaceae	*Reynoutria japonica var. japonica*	Japanese Knotweed	SNA					3
Polygonaceae	*Rumex crispus*	Curly Dock	SNA					0
Potamogetonaceae	*Potamogeton crispus*	Curly-leaved Pondweed	SNA					-5
Ranunculaceae	*Ficaria verna*	Fig-root Buttercup	SNA					-3
Ranunculaceae	*Ranunculus acris*	Tall Buttercup	SNA					0
Rhamnaceae	*Frangula alnus*	Glossy Buckthorn	SNA					0
Rhamnaceae	*Rhamnus cathartica*	Common Buckthorn	SNA					0
Rosaceae	*Crataegus mollis*	Downy Hawthorn	S4S5				4	0
Rosaceae	*Geum aleppicum*	Yellow Avens	S5				2	0
Rosaceae	*Geum canadense*	White Avens	S5				3	0
Rosaceae	*Malus coronaria*	Sweet Crabapple	S4				5	5
Rosaceae	*Malus pumila*	Common Apple	SNA					5
Rosaceae	*Potentilla recta*	Sulphur Cinquefoil	SNA					5
Rosaceae	*Prunus serotina*	Black Cherry	S5				3	3
Rosaceae	*Prunus virginiana*	Choke Cherry	S5				2	3
Rosaceae	*Rosa multiflora*	Multiflora Rose	SNA					3
Rosaceae	*Rubus idaeus*	Common Red Raspberry	S5				2	3
Rosaceae	*Rubus occidentalis*	Black Raspberry	S5				2	5
Salicaceae	*Populus tremuloides*	Trembling Aspen	S5				2	0
Salicaceae	*Salix euxina*	Crack Willow	SNA					0
Salicaceae	*Salix interior*	Sandbar Willow	S5				1	-3

Appendix E Vascular Plant Species List

Family[1]	Scientific Name[1]	Common Name[1]	S-Rank[2]	SARO Status[3]	COSEWIC Status[4]	Hamilton NAI Status[5]	Coefficient of Conservatism[6]	Coefficient of Wetness[7]
Scrophulariaceae	*Linaria vulgaris*	Butter-and-eggs	SNA					5
Scrophulariaceae	*Verbascum blattaria*	Moth Mullein	SNA					3
Scrophulariaceae	*Verbascum thapsus*	Common Mullein	SNA					5
Scrophulariaceae	*Veronica catenata*	Water Speedwell	SU					-5
Solanaceae	*Solanum dulcamara*	Bittersweet Nightshade	SNA					0
Sparganiaceae	*Sparganium acaule*	Short-stemmed Green-fruited Burreed	SU				6	-5
Sparganiaceae	*Sparganium americanum*	American Burreed	S5				6	-5
Typhaceae	*Typha angustifolia*	Narrow-leaved Cattail	SNA					-5
Ulmaceae	*Ulmus americana*	American Elm	S5				3	-3
Ulmaceae	*Ulmus pumila*	Siberian Elm	SNA					3
Urticaceae	*Urtica dioica*	Stinging Nettle	S5				2	0
Verbenaceae	*Verbena hastata*	Blue Vervain	S5				4	-3
Verbenaceae	*Verbena urticifolia*	White Vervain	S5				4	0
Vitaceae	*Parthenocissus quinquefolia*	Virginia Creeper	S4?				6	3
Vitaceae	*Vitis riparia*	Riverbank Grape	S5				0	0

Notes:

[1]Family Name: The scientific name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[1]Scientific Name: The scientific name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[1]Common Name: The common English name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[2]S-Rank: Subnational Rank is the conservation status of a species within a particular province, territory or state. In this scenario, it is the provincial level ranking system as published by the Natural Heritage Information Centre hosted by hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[3]SARO Status: Species at Risk in Ontario (Provincial Status as defined by the Endangered Species Act, 2007 as amended).

[4]COSEWIC Status: Status as defined by the Committee on the Status of Endangered Wildlife in Canada.

[5]Hamilton NAI Status: These values were derived from HCA's 2014 Hamilton Natural Areas Inventory 3rd Edition Species Checklist Document.

[6]Coefficient of Conservatism: as published by the Natural Heritage Information (Oldham, M.J., Bakowsky, W.d., Surtherland, D.A. 1995. Floristic Quality Assessment System for Southern Ontario. Natural Heritage Information Centre, Ontario Ministry of Natural Resources, Peterborough, Ontario. 69 pp.)

Appendix E Vascular Plant Species List

[7]Coefficient of Wetness: Coefficient of Wetness reflects a species' affinity for wet soil conditions as published by the Natural Heritage Information hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

Endangered Species Act and Species at Risk Act Acronyms

THR: Threatened

Subnational Rankings (S RANK)

SU: Unrankable – Currently unrankable due to lack of information

SNA: Not applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities

S#S#: Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species

?: Indicates uncertainty in the assigned rank

S1: Critically Imperiled – Critically imperiled in the province (often 5 or fewer occurrences)

S2: Imperiled – Imperiled in the province, very few populations (often 20 or fewer),

S3: Vulnerable – Vulnerable in the province, relatively few populations (often 80 or fewer)

S4: Apparently Secure – Uncommon but not rare

S5: Secure – Common, widespread, and abundant in the province

Appendix F Wildlife Species List

Taxon Group[1]	Family[1]	Scientific Name[1]	Common Name[1]	S-Rank[2]	SARO Status[3]	COSEWIC Status[4]	SARA Status[5]	Hamilton NAI Status[6]
Insects	Geometridae	*Hesperumia sulphuraria*	Sulphur Moth	S4S5				
Fishes	Catostomidae	*Catostomus commersonii*	White Sucker	S5				
Fishes	Centrarchidae	*Lepomis gibbosus*	Pumpkinseed	S5				
Fishes	Cyprinidae	*Pimephales promelas*	Fathead Minnow	S5				
Fishes	Cyprinidae	*Semotilus atromaculatus*	Creek Chub	S5				
Amphibians	Bufonidae	*Anaxyrus americanus*	American Toad	S5				
Amphibians	Hylidae	*Dryophytes versicolor*	Gray Treefrog	S5				
Amphibians	Hylidae	*Pseudacris crucifer*	Spring Peeper	S5				
Amphibians	Ranidae	*Lithobates clamitans*	Green Frog	S5				
Birds	Anatidae	*Anas platyrhynchos*	Mallard	S5				
Birds	Cardinalidae	*Cardinalis cardinalis*	Northern Cardinal	S5				
Birds	Charadriidae	*Charadrius vociferus*	Killdeer	S4B				
Birds	Columbidae	*Zenaida macroura*	Mourning Dove	S5				
Birds	Corvidae	*Cyanocitta cristata*	Blue Jay	S5				
Birds	Corvidae	*Corvus brachyrhynchos*	American Crow	S5				
Birds	Fringillidae	*Spinus tristis*	American Goldfinch	S5				
Birds	Icteridae	*Icterus galbula*	Baltimore Oriole	S4B				
Birds	Icteridae	*Agelaius phoeniceus*	Red-winged Blackbird	S5				
Birds	Icteridae	*Quiscalus quiscula*	Common Grackle	S5				
Birds	Laridae	*Larus delawarensis*	Ring-billed Gull	S5				
Birds	Paridae	*Poecile atricapillus*	Black-capped Chickadee	S5				
Birds	Parulidae	*Geothlypis trichas*	Common Yellowthroat	S5B,S3N				
Birds	Parulidae	*Setophaga petechia*	Yellow Warbler	S5B				
Birds	Passerellidae	*Spizella passerina*	Chipping Sparrow	S5B,S3N				
Birds	Passerellidae	*Pooecetes gramineus*	Vesper Sparrow	S4B				
Birds	Passerellidae	*Melospiza melodia*	Song Sparrow	S5				
Birds	Passeridae	*Passer domesticus*	House Sparrow	SNA				

Taxon Group[1]	Family[1]	Scientific Name[1]	Common Name[1]	S-Rank[2]	SARO Status[3]	COSEWIC Status[4]	SARA Status[5]	Hamilton NAI Status[6]
Birds	Scolopacidae	*Scolopax minor*	American Woodcock	S4B				
Birds	Sturnidae	*Sturnus vulgaris*	European Starling	SNA				
Birds	Turdidae	*Turdus migratorius*	American Robin	S5				
Birds	Tyrannidae	*Empidonax traillii*	Willow Flycatcher	S4B				
Birds	Vireonidae	*Vireo olivaceus*	Red-eyed Vireo	S5B				
Mammals	Leporidae	*Sylvilagus floridanus*	Eastern Cottontail	S5				
Mammals	Mephitidae	*Mephitis mephitis*	Striped Skunk	S5				

Notes:

[1]**Taxon Group**: The taxon group of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[1]**Family**: The family name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[1]**Scientific Name**: The scientific name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[1]**Common Name**: The common English name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[2]**S-Rank:** Subnational Rank (S-Rank) is the conservation status of a species or plant community within a particular province, territory or state. In this scenario, it is the provincial level ranking system as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[3]**SARO Status:** Species at Risk in Ontario (Provincial Status as defined by the Endangered Species Act, 2007 as amended).

[4]**COSEWIC Status**: Status as defined by the Committee on the Status of Endangered Wildlife in Canada.

[5]**SARA Status:** Federal status as defined by the Species at Risk Act.

[6]**Hamilton NAI Status:** These values were derived from HCA's 2014 Hamilton Natural Areas Inventory 3rd Edition Species Checklist Document.

Subnational Rankings (S-Rank)

SNA: Not applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities

S#S#: Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species

S3: Vulnerable – Vulnerable in the province, relatively few populations (often 80 or fewer)

S4: Apparently Secure – Uncommon but not rare

S5: Secure – Common, widespread, and abundant in the province

Hamilton NAI Status Rankings:

Appendix G Potential Bat Maternity Roost Trees

Tree #	Scientific Name[1]	Common Name[1]	Approx. DBH (cm)	Estimated Tree Height (m)	Estimated Cavity Height (m)	Exhibits Cavities/ Crevices/ Scars/ Woodpecker Holes	Cavity or Crevice is High Up in Tree (>10m)	Within Highest Density or Cluster of Cavity Trees	Large Amount of Loose, Peeling Bark	Open Canopy	Early Stages of Decay (Class 1-3)	Largest DBH in Community	One of Tallest Trees in Community	Number of Suitability Criteria Met
1	Acer saccharinum	Silver Maple	50	24	12	x	x			x		x	x	5
2	Juglans nigra (DEAD)	Black Walnut (DEAD)	20	0	4				x	x				2
3	Malus pumila	Common Apple	30	0	2	x				x	x			3
4	Quercus macrocarpa	Bur Oak	115	0	9	x				x		x	x	4
5		Dead Tree	44	0	13	x	x			x				3
6	Acer saccharum	Sugar Maple	31	0	6	x				x				2
7	Malus pumila	Common Apple	34	0	3	x								1
8	Acer saccharum	Sugar Maple	75	0	22	x	x			x		x	x	5
9	**Prunus serotina**	**Black Cherry**	**75**	**0**	**15**	**x**	**x**			**x**	**x**	**x**	**x**	**6**
10	Malus pumila	Common Apple	30	0	4	x				x	x			3
11	**Salix euxina**	**Crack Willow**	**70**	**0**	**14**	**x**	**x**			**x**	**x**	**x**	**x**	**6**
12	Salix euxina	Crack Willow	65	0	6	x				x	x	x	x	5
13	**Salix euxina**	**Crack Willow**	**50**	**0**	**14**	**x**	**x**			**x**	**x**	**x**	**x**	**6**
14	Salix euxina	Crack Willow	45	0	9	x					x		x	3
15	Salix euxina	Crack Willow	54	0	16	x	x				x		x	4
16	Salix euxina	Crack Willow	55	0	5	x				x	x			3
17	Salix euxina	Crack Willow	50	0	18	x	x				x	x	x	5
18	Acer platanoides	Norway Maple	60	0	7	x				x		x		3
19		Dead Tree	35	0	17	x	x							2
20	Carya ovata	Shagbark Hickory	55	0	11	x	x			x		x	x	5
21	Salix euxina	Crack Willow	60	0	5	x				x		x	x	4
22	Acer platanoides	Norway Maple	75	0	7	x				x		x	x	4
23	Acer saccharinum	Silver Maple	45	0	10	x	x			x			x	4
24	Gleditsia triacanthos	Honey Locust	50	0	2	x				x				2

Tree #	Scientific Name[1]	Common Name[1]	Approx. DBH (cm)	Estimated Tree Height (m)	Estimated Cavity Height (m)	Exhibits Cavities/ Crevices/ Scars/ Woodpecker Holes	Cavity or Crevice is High Up in Tree (>10m)	Within Highest Density or Cluster of Cavity Trees	Large Amount of Loose, Peeling Bark	Open Canopy	Early Stages of Decay (Class 1-3)	Largest DBH in Community	One of Tallest Trees in Community	Number of Suitability Criteria Met
25	Juglans nigra	Black Walnut	90	0	10	x	x			x		x	x	5
26	**Juglans nigra**	**Black Walnut**	**90**	**0**	**22**	**x**	**x**			**x**	**x**	**x**	**x**	**6**
27	Acer saccharum	Sugar Maple	90	0	17	x	x			x	x	x		5
29		Dead Tree	50	0	6	x				x				2
30	Acer saccharinum	Silver Maple	70	0	9	x				x	x	x	x	5
31	**Acer saccharinum**	**Silver Maple**	**70**	**0**	**16**	**x**	**x**			**x**	**x**	**x**	**x**	**6**
32	Acer negundo	Manitoba Maple	30	0	6	x				x				2
33	**Quercus rubra**	**Northern Red Oak**	**90**	**0**	**6**	**x**			**x**	**x**	**x**	**x**	**x**	**6**
34	Acer saccharinum	Silver Maple	55	0	4	x				x		x		3
35	Acer negundo	Manitoba Maple	50	12	5	x					x			2
36	Acer negundo	Manitoba Maple	0	0	6	x					x			2
36	Acer negundo	Manitoba Maple	0	0	6	x					x			2
37	Acer negundo	Manitoba Maple	60	0	8	x				x				2
40	Acer negundo	Manitoba Maple	60	0	5	x				x	x			3
40	Prunus serotina	Black Cherry	45	0	8	x				x				2
41	Acer saccharinum	Silver Maple	55	0	7	x				x		x	x	4

Notes:

[1]Scientific Name: The scientific name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry/Land Information Ontario.

[1]Common Name: The common English name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry/Land Information Ontario.

Appendix H Water Quality Measurements

Station*	Date**	Time (24hrs)	Air Temp. (°C)	Water Temp. (°C)	pH	Dissolved Oxygen (mg/l)	Conductivity (µS/cm)	Estimated Flow (l/s)
W05	March 30, 2021	1330	12	3.4	6.0	9.8	391	>0.5
W05	May 4, 2021	1100	16	9.1	7.5	11.3	1548	>0.5
W06	March 30, 2021	1330	12	5.1	6.0	9.8	391	>0.5
W06	May 4, 2021	1140	14	9.0	7.5	10.9	1241	>0.5
W07	March 30, 2021	1130	10	5.6	6.5	4.3	381	<0.5
W07	May 4, 2021	1200	14	9.2	7.8	9.4	1430	<0.5
W08	May 4, 2021	1200	14	10.1	7.8	7.4	1244	<0.5

* Remaining stations were dry on March 30 and May 4, 2021

** Not collected on July 15, 2021

Appendix I Significant Wildlife Habitat Assessment

Candidate Wildlife Habitat	Criteria	Methods	Confirmed or Candidate Habitat Present in the Study Area?
Seasonal Concentration Areas			
Waterfowl Stopover and Staging Area (Terrestrial)	Fields with sheet water during spring (mid-March to May), or annual spring meltwater flooding found in any of the following Community Types: Meadow (CUM1), Thicket (CUT1). Agricultural fields with waste grains are commonly used by waterfowl, and these are not considered SWH unless they have sheet water available.	ELC surveys were used to assess features within the Study Area that may support waterfowl stopover and staging areas (terrestrial).	Habitat not observed. Meadow habitat is limited within the Study Area.
Waterfowl Stopover and Staging Area (Aquatic)	The following Community Types: Meadow Marsh (MAM), Shallow Marsh (MAS), Shallow Aquatic (SA), Deciduous Swamp (SWD). Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. The combined area of the ELC ecosites and a 100 m radius area is the SWH. Sewage treatment ponds and stormwater ponds do not qualify as a SWH; however, a reservoir managed as a large wetland or pond/lake does qualify.	ELC surveys were used to assess features within the Study Area that may support waterfowl stopover and staging areas (aquatic).	Habitat not observed within the Study Area.
Shorebird Migratory Stopover Area	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of amour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a significant wildlife habitat. The following community types: Meadow Marsh (MAM), shoreline (BB), or Sand Dune (SD).	ELC surveys and wildlife habitat assessments were used to assess features within the Study Area that may support migratory shorebirds.	Habitat not observed within the Study Area.
Raptor Wintering Area	At least one of the following Forest Community Types: Deciduous Forest (FOD), Mixed Forest (FOM) or Coniferous Forest (FOC), in combination with one of the following Upland Community Types: Meadow (CUM1), Thicket (CUT1), Savannah (CUS1), Woodland (CUW1) (<60% cover) that are >20 ha and provide roosting, foraging and resting habitats for wintering raptors. Upland habitat (CUM1, CUT1, CUS1, CUW1), must represent at least 15 ha of the 20 ha minimum size.	ELC surveys and GIS analysis were used to assess features within the Study Area that may support wintering raptors.	Habitat not observed within the Study Area. The combination of large woodland and suitable open foraging habitat is absent.
Bat Hibernacula	Hibernacula may be found in caves, mine shafts, underground foundations and karsts. May be found in these Community Types: Crevice (CCR), Cave (CCA).	ELC surveys were used to assess features within the Study Area that may support bat hibernacula.	Habitat not observed with the Study Area.
Bat Maternity Colonies	Maternity colonies considered significant wildlife habitat are found in mature forested ecosites with >10 large diameter wildlife trees (> 25 cm dbh) / ha. Either of the following Community Types: Deciduous Forest (FOD), Mixed Forest (FOM), Deciduous Swamp (SWD), Mixed Swamp (SWM). Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred.	ELC surveys and bat acoustic surveys were used to assess features within the Study Area that may support bat maternity colonies.	**CANDIDATE HABITAT PRESENT:** Deciduous and mixed treed habitats in the Study Area (FOM, FOD, and SWD) are considered Candidate SWH.

Candidate Wildlife Habitat	Criteria	Methods	Confirmed or Candidate Habitat Present in the Study Area?
Turtle Wintering Areas	Snapping and Midland Painted turtles utilize ELC community classes: Swamp (SW), Marsh (MA) and Open Water (OA). Shallow water (SA), Open Fen (FEO) and Open Bog (BOO). Northern Map turtle- open water areas such as deeper rivers or streams and lakes can also be used as over-wintering habitat. Water has to be deep enough not to freeze and have soft mud substrate. Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen. Stormwater ponds are not considered SWH.	ELC surveys and wildlife habitat assessments were used to assess features within the Study Area that may support areas of permanent standing water but not deep enough to freeze.	Aquatic features within the Study Area are not deep enough to not freeze. The stormwater management pond is not considered SWH. Habitat not observed within the Study Area.
Snake Hibernacula	Hibernation occurs in sites located below frost lines in burrows, rock crevices, broken and fissured rock and other natural features. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Any ecosite in southern Ontario other than very wet ones may provide habitat. The following Community Types may be directly related to snake hibernacula: Talus (TA), Rock Barren (RB), Crevice (CCR), Cave (CCA), and Alvar (RBOA1, RBSA1, RBTA1).	ELC surveys, wildlife surveys and wildlife habitat assessments were used to assess features within the Study Area that may support snake hibernacula.	**CANDIDATE HABITAT PRESENT:** Habitat not observed within the Study Area; however, the Adjacent Lands were not thoroughly assessed and overwintering habitat for snakes may be present.
Colonial-Nesting Bird Breeding Habitat (Bank and Cliff)	Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, or barns found in any of the following Community Types: Meadow (ME), Thicket (TH), Bluff (BL), Cliff (CL). Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. Does not include a licensed/permitted Mineral Aggregate Operation.	ELC surveys and wildlife habitat assessments were used to assess features within the Study Area that may support colonial bird breeding habitat.	Habitat not observed within the Study Area.
Colonial-Nesting Bird Breeding Habitat (Tree/Shrubs)	Identification of stick nests in any of the following Community Types: Mixed Swamp (SWM), Deciduous Swamp (SWD), Treed Fen (FET). The edge of the colony and a minimum 300 m area of habitat or extent of the Forest Ecosite containing the colony or any island <15.0 ha with a colony is the SWH. Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used.	ELC surveys and wildlife habitat assessments were used to assess features within the Study Area that may support colonial bird breeding habitat (Trees/Shrubs).	Habitat not observed within the Study Area. No stick nests were observed with the Study Area during the field program.
Colonial-Nesting Bird Breeding Habitat (Ground)	Any rocky island or peninsula within a lake or large river. For Brewer's Blackbird close proximity to watercourses in open fields or pastures with scattered trees or shrubs found in any of the following Community Types: Meadow Marsh (MAM1-6), Shallow Marsh (MAS1-3), Meadow (CUM1), Thicket (CUT1), Savannah (CUS1).	ELC surveys, breeding bird surveeys and wildlife habitat assessments were used to assess features within the Study Area that may support colonial bird breeding habitat (Ground).	Habitat not observed within the Study Area.
Migratory Butterfly Stopover Areas	Located within 5 km of Lake Ontario. A combination of ELC communities, one from each land class is required: Field (ME, TH) and Forest (FOC, FOM, FOD). Minimum of 10 ha in size with a combination of field and forest habitat present.	ELC surveys and GIS analysis were used to assess features within the Study Area that may support migratory butterfly stopover areas.	The Study Area is greater than 5 km of Lake Ontario. Habitat not observed within the Study Area.
Landbird Migratory Stopover Areas	The following community types: Forest (FOD, FOM, FOC) or Swamp (SWC, SWM, SWD). Woodlots must be >10 ha in size and within 5 km of Lake Ontario – woodlands within 2 km of Lake Ontario are more significant.	ELC surveys and GIS analysis were used to assess features within the Study Area that may support landbird migratory stopover areas.	The Study Area is greater than 5 km of Lake Ontario. Habitat not observed within the Study Area.
Deer Winter Congregation Areas	Woodlots typically >100 ha in size unless determined by the MNR as significant. (If large woodlots are rare in a planning area >50 ha).	No studies required as the MNRF delineates this habitat.	Absent.

Candidate Wildlife Habitat	Criteria	Methods	Confirmed or Candidate Habitat Present in the Study Area?
	All forested ecosites within Community Series: FOC, FOM, FOD, SWC, SWM, SWD. Conifer plantations much smaller than 50 ha may also be used.		
Rare Vegetation Communities			
Cliffs and Talus Slopes	A Cliff is vertical to near vertical bedrock >3 m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris. Any ELC Ecosite within Community Series: TAO, TAS, TAT, CLO, CLS, CLT. Most cliff and talus slopes occur along the Niagara Escarpment.	ELC surveys were used to assess features within the Study Area that would be considered cliffs or talus slopes.	Absent.
Sand Barrens	Sand barrens typically are exposed sand, generally sparsely vegetated and cause by lack of moisture, periodic fires and erosion. Vegetation can vary from patchy and barren to tree covered but less than 60%. Any of the following Community Types: SBO1 (Open Sand Barren Ecosite), SBS1 (Shrub Sand Barren Ecosite), SBT1 (Treed Sand Barren Ecosite).	ELC surveys were used to assess features within the Study Area that would be considered to be sand barrens.	Absent.
Alvars	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover. Any of the following Community Types: ALO1(Open Alvar Rock Barren Ecosite), ALS1 (Alvar Shrub Rock Barren Ecosite), ALT1 (Treed Alvar Rock Barren Ecosite), FOC1 (Dry-Fresh Pine Coniferous Forest), FOC2 (Dry-Fresh Cedar Coniferous Forest), CUM2 (Bedrock Cultural Meadow), CUS2 (Bedrock Cultural Savannah), CUT2-1 (Common Juniper Cultural Alvar Thicket), or CUW2 (Bedrock Cultural Woodland). An Alvar site >0.5 ha in size.	ELC surveys were used to assess features within the Study Area that would be considered to be alvar communities.	Absent.
Old-growth Forest	Old-growth forests tend to be relatively undisturbed, structurally complex, and contain a wide variety of trees and shrubs in various age classes. These habitats usually support a high diversity of wildlife species. No minimum size criteria t in any of the following Community Types: FOD (Deciduous Forest), FOM (Mixed Forest), FOC (Coniferous Forest). Forests greater than 120 years old and with no historical forestry management was the main criteria when surveying for old-growth forests.	ELC surveys were used to assess features within the Study Area that would be considered to be old-growth forest communities.	Habitat not observed within the Study Area (structural complexity and species / age class diversity is limited within the woodlots).
Savannahs	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. Any of the following Community Types: TPS1 (Dry-Fresh Tallgrass Mixed Savannah Ecosite), TPS2 (Fresh-Moist Tallgrass Deciduous Savannah Ecosite), TPW1 (Dry-Fresh Black Oak Tallgrass Deciduous Woodland Ecosite), TPW2 (Fresh-Moist Tallgrass Deciduous Woodland Ecosite), CUS2 (Bedrock Cultural Savannah Ecosite).	ELC surveys were used to assess features within the Study Area that would be considered to be savannah communities.	Absent.

Candidate Wildlife Habitat	Criteria	Methods	Confirmed or Candidate Habitat Present in the Study Area?
Tall-grass Prairies	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has <25% tree cover. Any of the following Community Types: TPO1 (Dry Tallgrass Prairie Ecosite), TPO2 (Fresh-Moist Tallgrass Prairie Ecosite).	ELC surveys were used to assess features within the Study Area that would be considered to be tall-grass communities.	Absent.
Other Rare Vegetation Communities	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG.	ELC surveys were used to assess features within the Study Area that would be considered to be other rare vegetation communities.	Absent (the communities associated with the Study Area are ranked as S5).
Specialized Habitat for Wildlife			
Waterfowl Nesting Area	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SWT1, SWT2, SWD1, SWD2, SWD3, SWD4. Note: includes adjacency to Provincially Significant Wetlands.	ELC surveys were used to assess features within the Study Area that may support nesting waterfowl. Habitats adjacent to wetlands without standing water were not considered candidate SWH.	Habitat not observed within the Study Area.
Bald Eagle and Osprey nesting, Foraging, and Perching Habitat	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. Nests located on man-made objects are not to be included as SWH (e.g., telephone poles and constructed nesting platforms). ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands.	ELC surveys, breeding bird surveys, and wildlife habitat assessments were used to assess features within the Study Area that may support nesting, foraging and perching habitat for large raptors.	Habitat not observed within the Study Area. No bald eagle or osprey nests were observed with the Study Area during the field program.
Woodland Raptor Nesting Habitat	All natural or conifer plantation woodland/forest stands combined >30 ha and with >4 ha of interior habitat. Interior habitat determined with a 200 m buffer. Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small offshore islands. May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3.	ELC surveys, wildlife habitat assessments and GIS analysis were used to assess features within the Study Area that may support nesting habitat for woodland raptors.	Habitat not observed within the Study Area. No raptors or raptor nest structures were observed with the Study Area during the field program.
Turtle Nesting Areas	Exposed mineral soil (sand or gravel) areas adjacent (<100 m) or within the following ELC Ecosites: MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SAS1, SAM1, SAF1, BOO1, FEO1. Best nesting habitat for turtles is close to water, away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.	ELC surveys, wildlife habitat assessments and GIS analysis were used to assess features within the Study Area that may support turtle nesting areas.	Habitat not observed within the Study Area. Road shoulders do not qualify as SWH.
Seeps and Springs	Seeps/Springs are areas where ground water comes to the surface. Often, they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs. Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system.	ELC surveys were used to assess features within the Study Area that may support seeps/springs.	The presence of watercress suggests seepage areas associated with headwater streams in the CVI_1, however these are not considered SWH since they do not occur in a forested area. Habitat not observed within the Study Area.
Amphibian Breeding Habitat (Woodland)	All Ecosites associated with these ELC Community Series; FOC, FOM, FOD, SWC, SWM, SWD.	ELC surveys and amphibian call surveys were used to assess features within the Study Area that may support woodland breeding amphibians.	**CANDIDATE HABITAT PRESENT:** Studies confirmed two or more of the listed frog species (i.e., gray treefrog and spring peeper) at multiple stations (**AMP03, 05, 09**). Although the number of individuals recorded was < 20, it is likely that more individuals are present.

Candidate Wildlife Habitat	Criteria	Methods	Confirmed or Candidate Habitat Present in the Study Area?
	Presence of a wetland, lake, or pond within or adjacent (within 120 m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat.		
Amphibian Breeding Habitat (Wetland)	ELC Community Classes SW, MA, FE, BO, OA and SA. Wetland areas >120 m from woodland habitats. Wetlands and pools (including vernal pools) >500 m^2 (about 25 m diameter) supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats. Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. Bullfrogs require permanent water bodies with abundant emergent vegetation.	ELC surveys and amphibian call surveys were used to assess features within the Study Area that may support breeding amphibians.	**CANDIDATE HABITAT PRESENT:** Studies confirmed two or more of the listed frog species (i.e., American toad, gray treefrog and green frog) at multiple stations (**AMP03, 08, 09, 14**). Although the number of individuals recorded was < 20, it is likely that more individuals are present.
Woodland Area-Sensitive Bird Breeding Habitat	Large mature forest stands, woodlots >30ha with interior forest habitat (i.e. at least 200m from edge). All Ecosites associated with these ELC Community Series; FOC, FOM, FOD, SWC, SWM, SWD.	ELC surveys and GIS analysis were used to determine whether woodlots that occurred within the Study Area that were >30 ha with interior habitat present (>200 m from edge). Breeding bird surveys were used to document species.	Habitat not present within the Study Area.
Species of Conservation Concern			
Marsh Bird Breeding Habitat	All wetland habitats with shallow water and emergent aquatic vegetation. May include any of the following Community Types: Meadow Marsh (MAM), Shallow Aquatic (SA), Open Bog (BOO), Open Fen (FEO), or for Green Heron: Swamp (SW), Marsh (MA) and Meadow (CUM) Community Types.	ELC surveys and breeding bird surveys were used to identify marshes with shallow water and emergent vegetation that may support marsh breeding birds. Breeding bird surveys were used to document species.	**CANDIDATE HABITAT PRESENT:** The MAMM1-12, SWDM4-1, and SWTM3 communities may provide candidate breeding habitat for Green Heron within the Study Area; however, Green Heron was not observed during field surveys.
Open Country Bird Breeding Habitat	Grassland areas > 30 ha, not Class 1 or Class 2 agricultural lands, with no row-cropping or hay or livestock pasturing in the last 5 years, in the following Community Type: Meadow (CUM).	ELC surveys and GIS analysis were used to identify grassland communities within the Study Area that may support area-sensitive breeding birds. Breeding bird surveys were used to document species.	Absent. There are no meadows in the Study Area > 30 ha in size.
Shrub/Early Successional Bird Breeding Habitat	Old field areas succeeding to shrub and thicket habitats >10 ha, not Class 1 or Class 2 agricultural lands, with no row-cropping or intensive hay or livestock pasturing in the last 5 years, in the following Community Types: Thickets (CUT), Savannahs or Woodlands (CUW).	ELC surveys and GIS analysis were used to identify large communities that may support shrub/early successional breeding birds. Breeding bird surveys were used to document species.	Habitat not present within the Study Area.
Terrestrial Crayfish	Meadow marshes and edges of shallow marshes (no minimum size). Vegetation communities include MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, MAS1, MAS2, MAS3, SWD, SWT, SWM. Terrestrial Crayfish construct burrows in marshes, mudflats, meadows. Can be found far from water.	ELC surveys and wildlife habitat assessments were used to identify shallow marsh and meadow marsh communities that may support Terrestrial Crayfish within the Study Area. Crayfish chimneys were recorded during field investigations if encountered.	**CANDIDATE HABITAT PRESENT:** Habitat not observed within the Study Area; however, Adjacent Lands were not assessed and habitat for terrestrial crayfish may be present near MAMM1-12, SWDM4-1, and SWTM3.

Candidate Wildlife Habitat	Criteria	Methods	Confirmed or Candidate Habitat Present in the Study Area?
Special Concern and Rare Wildlife Species	All special concern and provincially rare (S1-S3, SH) plant and animal species (SOCC) with potential to occur in the Study Area.	ELC surveys, flora and wildlife surveys were used to identify suitable habitat for each potential SOCC listed in Appendix C.	The results of field surveys and SOCC Screening Assessment confirmed the presence of honey locust (S2), short-stemmed iris (S1), and monarch (SC) within the Study Area. Suitable habitat for the following SOCC was identified within the Study Area: • Clymene moth (S3) • Giant leopard moth (S3S4) • Penitent underwing moth (S3) • Pronghorn clubtail (S3) • Swamp darner (S3) • Unicorn clubtail (S3) • Walnut caterpillar moth (S3S4) • Eastern milksnake (SARA: SC) • Midland painted turtle (SARA:SC) • Northern map turtle (SC) • Snapping turtle (SC) • Barn Swallow (SC) • Eastern Wood-pewee (SC) • Kentucky Warbler (S1M) • Rusty Blackbird (SARA:SC) • Tufted Titmouse (S3) • Wood Thrush (SC)
Special Concern and Rare Wildlife Species	All special concern and provincially rare (S1-S3, SH) plant and animal species (SOCC) with potential to occur in the Study Area.	ELC surveys, flora and wildlife surveys were used to identify suitable habitat for each potential SOCC listed in **Appendix C**.	The results of field surveys and SOCC Screening Assessment confirmed the presence of honey locust (S2), short-stemmed iris (S1), and monarch (SC) within the Study Area. Suitable habitat for the following SOCC was identified within the Study Area: • Clymene moth (S3) • Giant leopard moth (S3S4) • Penitent underwing moth (S3) • Pronghorn clubtail (S3) • Swamp darner (S3) • Unicorn clubtail (S3) • Walnut caterpillar moth (S3S4) • Eastern milksnake (SARA: SC) • Midland painted turtle (SARA:SC) • Northern map turtle (SC) • Snapping turtle (SC) • Barn Swallow (SC) • Eastern Wood-pewee (SC) • Kentucky Warbler (S1M) • Rusty Blackbird (SARA:SC) • Tufted Titmouse (S3) • Wood Thrush (SC)
Animal Movement Corridors			
Amphibian Movement Corridor	Corridors may be found in all ecosites associated with water. Determined based on identifying significant amphibian breeding habitat (wetland).	Identified after Amphibian Breeding Habitat is confirmed. Movement corridors should be considered when amphibian breeding habitat is confirmed as SWH from Amphibian Breeding Habitat.	**CANDIDATE HABITAT PRESENT:** Studies confirmed two or more of the listed wetland frog species (i.e., American toad, gray treefrog and green frog) at multiple stations (AMP03, 08, 09, 14).