1665 Scotch Line Road
Township of Woolwich, Region of Waterloo
Scoped Environmental Impact Study

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Glossary of Terms

BBS: Breeding Bird Survey

CC: Coefficient of Conservatism

CW: Coefficient of Wetness

COSSARO: Committee on the Status of Species at Risk Ontario

COSEWIC: Committee on the Status of Endangered Wildlife in Canada

DFO: Department of Fisheries and Oceans Canada

ELC: Ecological Land Classification

END: Endangered Species

ESA: Endangered Species Act

G-Rank: Conservation Status of Species at the Global Level

GRCA: Grand River Conservation Authority

LIO: Land Information Ontario

MECP: Ministry of Environment, Conservation, and Parks

MMP: Marsh Monitoring Protocol

MNRF: Ministry of Natural Resources and Forestry

NHIC: Natural Heritage Information Center

NRVIS: Natural Resources and Values Information System

OBBA: Ontario Breeding Bird Atlas

OMA: Ontario Mammal Atlas

ORAA: Ontario Reptile and Amphibian Atlas

OP: Official Plan

OWES: Ontario Wetland Evaluation System

PPS: Provincial Planning Statement

PIF: Partners in Flight

SAR: Species at Risk

SARA: Species at Risk Act

SC: Special Concern Species

SPA: Special Policy Area

Species of Conservation Concern: All species listed under SARA, COSEWIC, ESA and/or an S1-S3 provincial designation.

S-Rank: Conservation Status of Species at the Provincial Level

SWH: Significant Wildlife Habitat

THR: Threatened Species

VASCAN: Database of Vascular Plants of Canada

1.0 Introduction

Aboud & Associates Inc. (AA) was retained by Mr. Bernie Nimer to complete a scoped Environmental Impact Study (EIS) in support of a proposed industrial development at 1665 Scotch Line Road in the Township of Woolwich, Region of Waterloo. The subject property is located immediately east of Elmira Drain #1, adjacent lands include industrial to the west and agricultural on all other sides.

A scoped EIS is required as a condition of the proposed development per consultation with the Township of Woolwich and Grand River Conservation Authority (GRCA).

1.1 Proposed Development

The proposed industrial subdivision development involves the construction of one u-shaped street (Street A) bisected by a second street (Street B), and parcels identified for multiple uses, including but not limited to, industrial (36.5ha), open space (6.17ha), future development (3.89ha) and stormwater management (1.55ha) (*Figure 1*).

1.1.1 Proposed Sanitary Servicing

Per the Functional Sanitary Servicing Report (Strik Baldinelli Moniz (SBM), 2025), the proposed development will require a sanitary pumping station and forcemain due to the existing topography of the subject property. The pumping station will receive flows from gravity sewers servicing the surrounding lands. The forcemain will extend along South Field Drive from the pumping station to the existing sewer. It is anticipated that the pumping station will be designed to accommodate flows from the subject site, as well as the undeveloped employment lands north of South Field Drive.

1.1.2 Proposed Water Servicing

Per the Functional Water Servicing Report (SBM, 2025), the development is proposed to be serviced via a looped watermain system. Connection points will be located at the existing 300mm watermain in the South Field Drive right-of-way near Union Street, and at the existing 300mm watermain in the Arthur Street South right-of-way south of its intersection with Union Street.

1.1.3 Proposed Stormwater Management

Per the Functional Stormwater Management Report (SBM, 2025), the proposed development will include a new municipal storm sewer, servicing each of the proposed blocks. The proposed development includes a stormwater management wet pond which has three inlets from the proposed municipal storm sewer. Quality controls will be achieved through two methods, forming a treatment train approach. An Oil & Grit Separator (OGS) unit will be installed on each block to treat all flows discharged to the

municipal storm sewer, and the sediment forebay shown as part of the stormwater management block has been sized to meet settling velocity requirements.

1.2 Existing Land Use and Study Area

The subject property is currently used for agriculture, with agricultural buildings and structures present in the centre of the property, surrounded by agricultural land. The property also includes an unevaluated wetland and watercourse on the western edge, and the associated GRCA regulation area.

The study area is comprised of the subject property and up to 120 metres from the property boundaries where permissions to access property are granted. Where access was restricted, information was obtained through existing background research, air photo interpretation, and what can be observed from the edge of the subject property.

1.2.1 A Watershed Plan for the Canagagigue Creek Watershed

Per the GRCA online mapping, the majority of the study area is located within the Canagagigue Creek subwatershed. The Watershed Plan for the Canagagigue Creek Watershed was completed by the GRCA (2002) to assess environmental issues and develop and recommend management practices to improve the environmental health of the subwatershed.

Per the Watershed Plan, the physiography of the subject area consists of spillway and drumlin, with the soils being comprised primarily of loam and sandy loam. Aquatic sampling of the watercourse immediately adjacent the subject property, approximately 1.4km upstream of the subject property limits, was completed as part of the Watershed Plan. Fish species identified through the aquatic sampling included Creek Chub, Blacknose Dace, Northern Redbelly Dace, Brook Stickleback, and Common White Sucker.

1.3 Existing Land Designations and Natural Features

The Region of Waterloo Official Plan does not identify any regionally significant features within the property limits. A significant woodland is present on the adjacent lands, within the 120m study area identified on *Figure 1*, which is considered a Core Environmental Feature. The majority of the property is zoned by the Township of Woolwich Zoning By-law 26-2024 as Agricultural (A), with a portion along the western limit including the Hazard Land- Flood Overlay Zone. GRCA mapping identifies part of an unevaluated wetland feature on the subject property. Regulatory Floodplain associated with a small portion of a regulatory Watercourse is also present within the property limits. A portion

of the property is within the associated GRCA regulated area. The limits of the existing natural features are shown on *Figure 1*.

1.4 Existing Regulations

The *Provincial Planning Statement* (PPS 2024), *Endangered Species Act* (ESA 2007), *Fisheries Act* (FA 1985), *Species at Risk Act* (SARA 2002), policies of the GRCA, Township of Woolwich Official Plan (2022 Consolidation), and Township of Woolwich Zoning By-law 26-2024 are applicable to this proposed development and are outlined in detail in *Appendix 1*. The table includes the policy, sections, applicable details, conformity and any proposed mitigation or permitting requirements as it relates to these policies.

As of January 1, 2025, Bill 23 (More Homes Built Faster) has come into effect, transferring land-use planning responsibilities from the Region to the local municipality. As such, the Township of Woolwich is now responsible for administering the planning approvals pertaining to the proposed Draft Plan of Subdivision (MHBC, February 2025).

1.5 Terms of Reference

Based upon the above Acts, Policies, and Regulations, Terms of Reference (ToR) for the Scoped EIS were developed and submitted to the Region of Waterloo, GRCA, and Township of Woolwich on December 4, 2023. The Region responded on December 12, 2023, asking for clarification pertaining to how the scoped tasks were listed, the GRCA responded on December 7, 2023 with two comments, and the Township responded on February 14, 2024 with a number of comments and a request for a revised ToR. A revised ToR was submitted to all three agencies on February 28, 2024, with the Region and the GRCA confirming its acceptability on the same day, and the Township confirming its acceptability on March 11, 2024. The ToR, revised ToR, and agency correspondence are provided in *Appendix 2.*

2.0 Methods

2.1 Background Review

A background information review was conducted of both biological and physical features within the vicinity of the study area. The following resources were consulted during this review:

- Aerial photography of the subject site,
- MHBC. Draft Plan of Subdivision. February 2025.
- GRCA pre-consultation comments, August 9, 2023

- Official Plan Amendment, Zoning By-law Amendment, and Draft Plan of Subdivision, Applications 1665 Scotch Line Road, October 3, 2023, Region of Waterloo
- GRCA mapping (Accessed August 8, 2024) of natural heritage features (e.g., regulation limit, wetlands, floodplain, ANSIs),
- Region of Waterloo Official Plan (2015),
- Township of Woolwich Official Plan (2022),
- Township of Woolwich Zoning By-law 26-2024 (2024),
- Township of Woolwich, Engineer's Report, Elmira Drain #1 2020, November 2022, GMBluePlan.
- Municipal Aquifer Conceptual Site Model, LANXESS Canada, Elmira, Ontario, undated
- Natural Heritage Information Center, Make-a-map, accessed November 28, 2023,
- Ontario Nature. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. Accessed October 6, 2023,
- Ontario Breeding Bird Atlas, Atlas 2. Bird Studies Canada, 2007. Accessed October 6, 2023,
- Ontario Breeding Bird Atlas, Atlas 3. Bird Studies Canada, 2024. Accessed October 30, 2024,
- Federation of Ontario Naturalists, Atlas of the Mammals of Ontario. Accessed October 6, 2023,
- Ontario Nature. Ontario Butterfly Atlas, Accessed November 28, 2023,
- iNaturalist. Accessed November 28, 2023,
- eBird. Cornell Lab of Ornithology. Accessed November 28, 2023,
- Department of Fisheries and Oceans online mapping. Accessed November 28, 2023,
- LIO Aquatic Resource Area Survey Points and Line Segment online mapping. Accessed November 28, 2023,
- LIO Constructed Drain and Tile Drainage Area online mapping. Accessed December 21, 2023,
- Waterloo Region Significant Species list (1986-2007),
- Region of Waterloo Greenlands Network Implementation Guideline (2016)

As per the accepted ToR, we also requested reports from GHD regarding contamination of the groundwater and watercourse relating to the LANXESS Canada Manufacturing facility. These reports were requested from LANXESS by GHD, but nothing further was heard from either company. GHD also stated that the Township has a repository of all reports regarding the LANXESS Canada Manufacturing facility that have been

submitted to the MECP and the Public. The Township was asked about this repository and the information for the reports requested on March 12 and October 30, 2024. No further information was provided. The communication regarding these documents is included in *Appendix 2.*

2.2 Wetland Boundary Delineation

The subject property contains an unevaluated wetland which forms a long contiguous community directly adjacent to the watercourse and south-west of the proposed development. Shannon Davison, Certified Ontario Wetland Evaluator, performed initial staking of the wetland on May 9, 2024, with verification by the GRCA completed the same day. Boundaries were determined using the vegetation species present and soil probes to depths of up to 60 cm for water and hydric soil detection, per the *Ontario Wetland Evaluation System* (OWES 2013). The wetland boundary was established where vegetation was comprised of 50% wetland and 50% upland species, and where soils displayed hydric conditions (e.g., presence of mottles and/or gleys), per the *Ontario Wetland Evaluation System* (OWES 2013). Detailed survey dates and weather information are provided in *Appendix 3*.

2.2.1 Buffer Recommendations and Setbacks

Recommended buffers and setbacks for wetland boundaries were determined through a variety of resources, including the GRCA's Wetland Policy Appendix – Interim Wetland Buffer Policy (2003) and Region of Waterloo Greenlands Network Implementation Guideline (2016).

2.3 Vegetation

2.3.1 Ecological Land Classification

Ecological Land Classification (ELC) field investigations were completed within the study area, where access was permitted, on May 9, 2024, and confirmed June 25, 2024. Detailed survey dates and weather information are provided in *Appendix 3*. Surveys were completed by qualified Ecologist Shannon Davison, MNRF Certified in Ecological Land Classification. Vegetation communities within the study area were characterized and delineated through field investigation following the Ecological Land Classification system for Southern Ontario 1st approximation; community codes generally follow the 2nd approximation (Lee, et al., 1998, 2008). Boundaries of ELC communities were mapped using aerial imagery and field observations (*Figure 2*). Digitized ELC data sheets are provided in *Appendix 4*.

2.3.2 Botanical Inventory

The study area was inventoried, where access was permitted, to provide a comprehensive two-season Spring and Summer botanical inventory, occurring on May 9 and June 25, 2024. Detailed survey dates and weather information are provided in *Appendix 3*.

Identified vascular plant species were compared to provincial and federal Species at Risk (SAR) lists (COSSARO, SARA), provincial ranks (NHIC 2023), global ranks, and the Waterloo Region Significant Species list (Region of Waterloo 2007) to assess the federal, provincial, regional, and local conservation status of each species. English colloquial names and scientific binomials of plant species generally follow the Database of Vascular Plants of Canada (VASCAN) (VASCAN 2015).

Identification of environmentally sensitive plant species was completed based on the assignment of a coefficient of conservatism value (CC) for each native species (Oldham, et al., 1995). The value of CC, ranging from 0 (low) to 10 (high), is based on a species' tolerance of disturbance and fidelity to specific natural habitat parameters. Species with a CC value of 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters. These species may be more sensitive to environmental changes (Mortarello et al., 2012).

A list of all identified plant species is provided in *Appendix 5*. The list provides botanical names, common names, provincial rarity rank (S-rank), global rarity rank (G-rank), provincial Species at Risk status (SARO), federal Species at Risk status (SARA), local rarity/significance within Waterloo Region Significant Plant list (1987-2007), coefficient of conservatism (CC) and coefficient of wetness (CW). Plant species that could only be identified to genus were not assigned the above information. Photos of communities are shown in *Appendix 4*.

2.3.3 Tree Inventory

A total of 252 trees with a diameter at breast height (DBH) of 10cm or greater and a dripline approaching within 1m of the subject lands were inventoried by James Dennis, ISA Certified Arborist. DBH species, overall conditions and estimated crown reserve were collected for each tree. The Tree Preservation Plan completed by Aboud & Associates Inc. (2024) is provided in *Appendix 15*.

2.4 Wildlife Habitat

2.4.1 Breeding Birds

Breeding Bird surveys, including survey considerations for Grassland birds, were conducted in 2024 by Brynn Varcoe, Ecologist, to determine if significant breeding bird

habitat occurs within, or adjacent to, the study area. Three surveys were conducted, comprised of 10-minute point counts positioned at pre-determined locations with area searches being completed while traversing the property to and from the point count locations. Surveys followed the Ontario Breeding Bird Atlas: Guide for Atlassers (Bird Studies Canada, 2021) for Grassland Breeding Birds. The highest observed level of breeding evidence was used to assign breeding status (i.e., confirmed, possible, probable, or observed) to each species.

Surveys were performed during the peak breeding season for the bulk of the species in southern Ontario (last week of May through early July) and were spaced at least 10 days apart to determine presumed permanent territories through territorial singing males. The three surveys took place on the mornings of May 29, June 17, and July 5, 2024, between 30 minutes after dawn and 09:00 for the grassland sites, and until five hours after dawn for the non-grassland sites. The point count locations are illustrated on *Figure 1*; Survey results and breeding evidence code descriptions are provided in *Appendix 6* for the point counts, and *Appendix 7* for the area search. Detailed survey dates and weather information are provided in *Appendix 3*.

2.4.2 Bat Maternity Habitat Surveys

Bat maternity habitat surveys occurred during leaf off, and were conducted by Brynn Varcoe and Heather Dixon. All trees with a diameter at breast height (DBH) greater than 10cm, and meeting any of the criteria for candidate bat habitat as outlined in the Bats and Treed Habitats Maternity Roost Surveys (MECP, 2022) were recorded.

Candidate trees are those with some or all of the following characteristics (in order of importance):

- Tallest snag/cavity tree
- Exhibits cavities or crevices most often originating as cracks, scars, knot holes or woodpecker cavities
- Has leaf clusters
- Has the largest diameter breast height (>25cm diameter at breast height)
- Is within the highest density of snags/cavity trees (e.g., cluster of snags)
- Has a large amount of loose, peeling bark
- Cavity or crevice is high in snag/cavity tree (>10m)
- Tree species that provide good cavity habitat (e.g., white pine, maple, aspen, ash, oak)
- Canopy is more open (to determine canopy cover, determine percentage of the ground covered by a vertical projection of the outermost perimeter of the natural spread of the foliage of trees); and

- Exhibits early stages of decay (Decay Class 1-3; refer to Watt and Caceres, 1999)

The survey occurred on March 19, 2024. A thorough walk-through of the subject lands was performed. Detailed survey dates and weather information are provided in *Appendix 3*.

2.4.3 Pileated Woodpecker and Red-headed Woodpecker Cavity Identification Surveys

With guidance from the Pileated Woodpecker Cavity Identification Guide (Environment and Climate Change Canada, 2023) & the nest description for Red-headed Woodpecker provided by Cornell Lab of Ornithology (2024), all trees within the right-of-way in the study area were examined for Pileated Woodpecker and Red-headed Woodpecker cavities including those for nesting, roosting and feeding. The survey occurred concurrently with the bat maternity habitat surveys. Detailed survey and weather information are provided in *Appendix 3*.

Pileated Woodpeckers and Red-headed Woodpeckers create cavities for different stages of their life cycle including nesting, roosting and feeding. The following characteristics were examined during surveys to determine the type of cavity observed.

- Number of holes
- Cavity edge texture
- Hole shape
- Hole size
- Hole depth
- Hole appearance
- Suspected Woodpecker species
- Tree Type

While all cavities are recorded, only nesting cavities are protected under the MBCA outside the nesting season.

2.4.4 Incidental Wildlife Observations

Incidental observations of insects, mammals, birds, and herptiles were recorded during all field visits.

2.4.5 Significant Wildlife Habitat

With guidance from the Significant Wildlife Habitat Technical Guide (2000) and the SWH EcoRegion Criterion Schedule 6E (2015), the subject property and immediately

adjacent lands (within 120m) were considered for the presence of candidate Significant Wildlife Habitat (e.g., specialized habitats for wildlife, and habitat for species of conservation concern). An assessment of the study area for all SWH is provided in *Appendix 8.*

2.4.6 Species at Risk Habitat

The subject property and adjacent lands (within 120m) were reviewed for the presence of habitat that may be suitable for Species at Risk (SAR). A review of the property, along with habitat requirements for each species was conducted. A variety of sources, including the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) documents, were used to determine habitat suitability. The site was then evaluated for potential habitat using Ecological Land Classification, guidance from MNDMNRF documents, and on-site knowledge acquired through a field visit. An assessment of the study area for suitable Species at Risk habitat is provided in *Appendix 9*.

2.5 Aquatic Habitat Assessment

Aquatic habitat assessments (AHA) were completed by Heather Dixon, Aquatic Ecologist on May 9, 2024. The assessment was completed in an effort to classify stream features present to help inform decisions and mitigate any potential risks to fish and fish habitat as a result of the potential work. Data were collected at seven stations along the watercourse which runs along the southern edge of the proposed severance. Sites were chosen to represent the different habitats available within the study area. The following criteria were used to characterize features present at each station:

- mean channel width;
- mean wetted width;
- max water depth;
- percent stream shading;
- buffer width;
- substrate;
- flow pattern;
- channel morphology;
- instream cover;
- bank characteristics; and
- presence of specific site features.

Detailed survey and weather information are provided in *Appendix 3*, while the AHA locations are shown on *Figure 1*.

3.0 Existing Conditions

3.1 Background Review

3.1.1 Wildlife Atlases - Species of Conservation Concern

A thorough background search of the subject property and adjacent lands has been completed using the resources noted in Section 2.1. The species of conservation concern, including those listed under the ESA and/or SARA as well as those with S-Ranks of S1-S3, identified in the background search are identified in *Table 1*. *Table 1* includes the identified species, their current statuses under COSSARO, the ESA, COSEWIC, and the SARA, as well as their provincial, national and global ranks.
An assessment of the study area of candidate habitat for Species at Risk is included in *Appendix 9*. A list of all wildlife species found in the background review can be found in *Appendix 10*.

Table 1. Species at Risk Identified in Background Review

Source	Common Name	Scientific Name	COSSARO	SARO	COSEWIC	SARA	S-Rank	G-Rank	N-Rank	Area Sensitive	Area Required (ha)	PIF Species (BCR13)
OBBA, eBird (2023)	Bank Swallow	*Riparia riparia*	THR	THR	THR	THR	S4B	G5	N5B,N5M			✓
OBBA, eBird (2023)	Barn Swallow	*Hirundo rustica*	SC	SC	THR	THR	S4B	G5	N3N4B,N3N4M			
NHIC, OBBA	Bobolink	*Dolichonyx oryzivorus*	THR	THR	THR	THR	S4B	G5	N5B,N4N5M	✓	>10ha	✓
OBBA, eBird (2023)	Chimney Swift	*Chaetura pelagica*	THR	THR	THR	THR	S3B	G4G5	N4BN3M			✓
OBBA	Common Nighthawk	*Chordeiles minor*	SC	SC	SC	THR	S4B	G5	N4B,N3M			
OBBA	Eastern Meadowlark	*Sturnella magna*	THR	THR	THR	THR	S4B,S3N	G5	N4B,NUM	✓	>10ha	✓
NHIC, OBBA, eBird (2023)	Eastern Wood-Pewee	*Contopus virens*	SC	SC	SC	SC	S4B	G5	N5B,N5M			✓
eBird (2023), iNat (2023)	Olive-sided Flycatcher	*Contopus cooperi*	SC	SC	SC	THR	S4B	G4	N4B,N3M			
iNat (2022)	Peregrine Falcon	*Falco peregrinus*	SC	SC	SC	SC	S4	G4	N3N4B,N2N,N3N4M			✓
NHIC	Red-headed Woodpecker	*Melanerpes erythrocephalus*	END	END	END	END	S3	G5	N4B,N3M			✓
eBird (2023), iNat (2023)	Rusty Blackbird	*Euphagus carolinus*	SC	SC	SC	SC	S4B,S3N	G4	N4B,NUN,N4M			
NHIC, OBBA, eBird (2023)	Wood Thrush	*Hylocichla mustelina*	SC	SC	THR	THR	S4B	G4	N4B,NUM			✓
NHIC	Silver Shiner	*Notropis photogenis*	THR	THR	THR	THR	S2S3	G5	N2N3			
OBA (2022), iNat (2023)	Monarch	*Danaus plexippus*	SC	SC	END	SC	S2N,S4B	G5	N3B,NNRM			
NHIC	Gypsy Cuckoo Bumble Bee	*Bombus bohemicus*	END	END	END	END	S1S2	GH	N1			
iNat (2022)	Wavy-rayed Lampmussel	*Lampsilis fasciola*	THR	THR	SC	SC	S2	G5	N2			
ORAA (1971)	Milksnake	*Lampropeltis triangulum*	NAR	NAR	SC	SC	S4	G5T5	N3			
ORAA (1981)	Midland Painted Turtle	*Chrysemys picta marginata*	NAR	NAR	SC	SC	S4	G5T5	N4			
ORAA (2019), iNat (2023)	Snapping Turtle	*Chelydra serpentina*	NL	SC	SC	SC	S4	G5T5	N4			
iNat (2019)	Butternut	*Juglans cinerea*	END	END	END	END	S2?	G4	N3N4			
iNat (2022)	Dense Blazing Star	*Liatris spicata*	THR	THR	THR	THR	S2	G5	N2			

Legend:

COSSARO: Committee on Species at Risk Ontario
COSEWIC: Committee on the Status of Endangered Wildlife in Canada
SARA: Species at Risk Act
ESA: Endangered Species Act
END: Endangered
THR: Threatened
SC: Special Concern
NAR: Not At Risk
NL: Not listed
DD: Data Deficient

N- and S-Rank:

S1: Critically Imperiled—Critically imperiled in the jurisdiction (often 5 or fewer occurrences)
S2: Imperiled—Imperiled in the jurisdiction, very few populations (often 20 or fewer),
S3: Vulnerable—Vulnerable in the jurisdiction, relatively few populations (often 80 or fewer)
S4: Apparently Secure—Uncommon but not rare
S5: Secure—Common, widespread, and abundant in the jurisdiction
SX: Presumed Extirpated
SH: Possibly Extirpated (Historical)
SNR: Unranked
SU: Unrankable—Currently unrankable due to lack of information
SNA: Not Applicable—The species is not a suitable target for conservation activities
S#S#: Range Rank—Indicates a range of uncertainty about the status of the species
S#B- Breeding Status Rank
S#N- Non Breeding Status Rank
?: Indicates uncertainty in the assigned rank

G-Rank:

G1: Extremely rare globally
G1G2: Extremely rare to very rare globally
G2: Very rare globally
G2G3: Very rare to uncommon globally
G3: Rare to uncommon globally
G3G4: Rare to common globally
G4: Common globally
G4G5: Common to very common globally
G5: Very common globally; demonstrably secure
T: Denotes that the rank applies to a subspecies or variety

Source Codes

OBA: Ontario Butterfly Atlas
ORAA: Ontario Reptile and Amphibian Atlas
OMA: Ontario Mammal Atlas
OBBA: Ontario Breeding Bird Atlas
eBird: eBird
ARA: Aquatic Resource Area Survey Points
DFO: Department of Fisheries and Oceans Species at Risk Mapping
iNat: iNaturalist
NHIC: Natural Heritage Information Centre

3.1.2 Agency Communication

A request for information was sent to the Ministry of Natural Resources and Forestry on November 30, 2023. A reply was received on December 1, 2023 with information on the watercourses inside and adjacent to the subject lands, including the temperature regime, fish species present, restricted in-water work timing window and seasonal use of the watercourse by Northern Pike for spawning. The request for information and reply are provided in *Appendix 10.*

A request for information was sent to the Ministry of Environment, Conservation and Parks on November 30, 2023. A reply was received on December 1, 2023, stating that all SAR investigations are proponent led, and offering no further information. The request for information and responses is provided in *Appendix 10*.

3.2 Vegetation

3.3.1 Ecological Land Classification

The community polygons identified during the ELC survey are summarized in *Table 2* below. Field forms and a comprehensive vascular plant list for the entire study area are presented in *Appendices 4 & 5,* respectively. The location and limits of ELC communities are shown on *Figure 2*.

Table 2. Ecological Land Classification

ELC CODE	VEGETATION TYPE	COMMUNITY DESCRIPTION
Deciduous Swamp (SWD)		
SWDM3-1	Red Maple Mineral Deciduous Swamp	Two instances of this communities, occurring on the western edge of the study area on the west side of the railway line, are present in the study area. As there were public trails in these communities, access was available to complete a detailed investigation. The canopies are dominated by Red Maple (*Acer rubrum*), with occasional instances of Silver Maple (*Acer saccharinum*), Green Ash (*Fraxinus pennsylvanica*), and Bur Oak (*Quercus macrocarpa*). The subcanopy consisted of Red Maple, Manitoba Maple (*Acer negundo*), and American Elm (*Ulmus americana*). The understory consists largely of Common Buckthorn (*Rhamnus cathartica*) and Wild Red Raspberry (*Rubus idaeus ssp. strigosus*), with occasional Red Maple and Riverbank Grape (*Vitis riparia*). The ground layer consists mainly of Reed Canary Grass (*Phalaris arundinacea*), Spotted Jewelweed (*Impatiens capensis*), and Garlic Mustard (*Alliaria petiolata*).
SWDM4-1	Willow Mineral Deciduous Swamp	Two instances of this community, within the northwest corner of the study area, are present. The canopy and subcanopy are dominated by Crack Willow (*Salix euxina*), with rare instances of Bur Oak and Common Buckthorn in the subcanopy. The understorey consists largely of Riverbank Grape, Wild Red Raspberry, and Virginia Creeper (*Parthenocissus quinquefolia*). The ground layer consists mainly of Blunt-leaved Bedstraw (*Galium obtusum*), Garlic Mustard, Spotted Jewelweed, and Colt's-foot (*Tussilago farfara*).
Meadow Marsh (MAM)		
MAMM1-2	Cattail Graminoid Mineral Meadow Marsh	Two instances of this community, within the western edge of the study area, are present in the study area. These communities consist almost entirely of Broad-leaved Cattail (*Typha latifolia*) in the understorey alongside occasional Reed Canary Grass, with some Meadow Willow (*Salix petiolaris*) in the subcanopy and Lesser Duckweed (*Lemna minor*) in the ground layer.

Table 2. Ecological Land Classification

ELC CODE	VEGETATION TYPE	COMMUNITY DESCRIPTION
MAMM1-3	Reed Canary Grass Graminoid Mineral Meadow Marsh	Three instances of this community, one within the western edge of the subject lands, and two on the western side of the railway line within the study area, are present. There are rare instances of Red Maple in the canopy, and rare instances of Red Maple, Manitoba Maple (*Acer negundo*), and Meadow Willow (*Salix petiolaris*) in the subcanopy. The understory consists of occasional instances of Red-osier Dogwood (*Cornus sericea*), Wild Black Current (*Ribes americanum*), and Fowl Bluegrass (*Poa palustris*). The ground layer is dominant, and largely consists of Reed Canary Grass, with instances of Common Teasel (*Dipsacus fullonum*), Stinging Nettle (*Urtica dioica*), and Colt's-foot.
Graminoid Meadow (MEG)		
MEGM3-8	Reed Canary Grass Graminoid Meadow Type	This community occurs in the west of the study area on the western edge of the study area. The subcanopy consists of occasional instances of Tamarack (*Larix larcina*), Common Elderberry (*Sambuca canadensis*), and Common Buckthorn, and the understory consists of occasional instances of Red-osier Dogwood, Meadow Willow, and Meadow Brome (*Bromus erectus*). The ground layer (and community) is dominated by Reed Canary Grass, with instances of Common Dandelion (*Taraxacum officinale*), Common Teasel, and Garlic Mustard.
Deciduous Thicket (THD)		
THDM5	Fresh - Moist Deciduous Thicket	This community occurs on the western edge of the study area in between the two Cattail Graminoid Mineral Meadow Marsh communities. The canopy is dominated by Meadow Willow, with the subcanopy containing Meadow Willow, Sandbar Willow (*Salix interior*), and Red Maple. The understorey consists of occasional Wild Mock-cucumber (*Echinocystis lobata*). The ground layer consists largely of Garlic Mustard and Cleavers (*Galium aparine*), with occasional Smooth Bedstraw (*Galium mollugo*), Reed Canary Grass, and Spotted Jewelweed.
Agricultural Infrastructure (IAG)		
IAGM1	Agricultural Buildings	This community consists of the farm buildings in the centre of the subject lands.
Residential (CVR)		
CVR_4	Single Family Residential	This community consists a small community on the northern edge of the study area, as well as the farmhouse in the centre of the subject lands.
Commercial and Institutional (CVC)		
CVC	Commercial and Institutional	This community consists of a small industrial area on the northern edge of the study area.
CVC_2	Light Industry	This community consists of a small industrial area on the northwestern edge of the study area.

Table 2. Ecological Land Classification

ELC CODE	VEGETATION TYPE	COMMUNITY DESCRIPTION
Transportation and Utilities (CVI)		
CVI_1	Transportation	A railway line runs along the western edge of the subject lands. The community around the railway line is dominated by Reed Canary Grass in the ground layer. The canopy consists of rare instances of planted European Larch (*Larix decidua*). The subcanopy consist of rare instances of Manitoba Maple, Common Buckthorn, Red-osier Dogwood, and Common Hackberry (*Celtis occidentalis*). The rest of the ground layer consists of Annual Fleabane, Tufted Vetch, Common Teasel, Canada Thistle, Dame's Rocket, Garlic Mustard, Colt's-foot, Blunt-leaved Bedstraw, New England Aster (*Symphyotrichum novae-angliae*), Kentucky Bluegrass (*Poa pratensis*), Field Mustard (*Brassica rapa*), Common Crown-vetch (*Securigera varia*), Swamp Milkweed (*Asclepias incarnata*), and Creeping Wildrye (*Elymus repens*).
Open Agriculture (OAG)		
OAG	Open Agriculture	This community makes up the majority of the subject lands, as well as the northern, eastern, and southern sides of the study area. This community consists of row crops with some hay and livestock pasture.

3.2.2 Botanical Inventory

A detailed botanical inventory of the study area was completed where access was permitted. Where access was restricted, the inventory was completed from the roadside or property boundary. A total of 87 species were identified, with an additional two identified to genus. All identified plant species are listed in *Appendix 5.*

Of the 87 species identified, 58 (66%) are native and 30 (34%) are exotic or cultivars.

3.2.2.1 Species at Risk, Regional and Local Significance

No vegetation communities listed in *Table 2* are considered rare in the province.

Most of the native species are ranked S5 (Secure in Ontario) or SNA (S-Rank not applicable) with two species (Green Ash and Common Hackberry) ranked S4 (Apparently Secure), two species (Virginia Creeper and Black Walnut) ranked S4?, indicating uncertainty in their ranking, and one species (Blunt-leaved Bedstraw) ranked S4S5 (Apparently Secure to Secure). One species (Meadow Bittercress) is considered significant in the Region of Waterloo, one species (Common Hackberry) is considered significant but possibly common, and two species (Black Walnut and Virginia Creeper) are considered significant only if native status can be demonstrated (Region of Waterloo, 2007). None of the species observed in the study area had a coefficient of conservatism of 9 or 10. This indicates the present of species with moderate to high

tolerance for environmental ranges, which may be less impacted by minor site alteration or environmental disturbance.

No nationally or provincially rare, threatened, or endangered species were found.

3.2.3 Tree Inventory

The tree inventory collected information for 252 trees with driplines approaching 1m of the limit of the subject property. The specific data for each individual tree is provided in *Appendix 10*, including overall condition and recommended actions based on condition and development. The locations and identification numbers of trees impacted are detailed in the Tree Protection Plan (*Appendix 10*). A total of 15 species were identified during the tree inventory, with five additional species only identified to genus. Of those species, Silver Maple was the most abundant (27%), followed by White Spruce (17%), Sugar Maple (12%) and Apple sp. (12%). Per the Tree Preservation Plan, 187 trees are recommended for removal due to the proposed development.

3.3 Wildlife

3.3.1 Breeding Birds

The results of the Breeding Bird Survey (BBS) are presented in *Tables 3 & 4*. During BBS visits, a total of 47 species were detected during point counts. During area search transects a total of 20 species were detected, two of which were not identified during point counts (Canada Goose and Wild Turkey).

In order to ensure that all potential breeding bird species have been considered by this assessment, any species exhibiting possible, probable or confirmed breeding behaviour was considered to be breeding in the study area. Therefore, 41 species were presumed to be breeding within the study area. However, it is important to note that, despite high levels of breeding evidence, a given species may not have been breeding specifically in the area in which it was observed. This is particularly true where species were only detected during one of the Breeding Bird Surveys. These species may have been foraging in these areas, been unsuccessful due to breeding attempts in less than suitable habitat, or, may have been wandering during post-breeding dispersal. The breeding bird results in their entirety can be found in *Appendices 6 and 7.*

Table 3. Point Count Results- Highest Breeding Evidence (HBE)

COMMON NAME	SCIENTIFIC NAME	COSARO	ESA	COSEWIC	SARA	S-RANK	G-RANK	AREA SENSITIVE	AREA REQUIRED (HA)	PIF PRIORITY SPECIES	GRCA (DATE UNK.)	REGION OF WATERLOO (2007)	TOTA L COUNT	FINAL HBE
Mallard	*Anas platyrhynchos*					S5	G5						N/A	FO
Rock Pigeon	*Columba livia*					SNA	G5						30	S
Mourning Dove	*Zenaida macroura*					S5	G5						21	T
Chimney Swift	*Chaetura pelagica*	THR	THR	THR	THR	S3B	G4G5			✓			8	H
Killdeer	*Charadrius vociferus*					S4B	G5						21	T
Ring-billed Gull	*Larus delawarensis*					S5	G5						1	S
Great Blue Heron	*Ardea herodias*					S4	G5					R	N/A	FO
Turkey Vulture	*Cathartes aura*					S5B, S3N	G5				CP	R	N/A	FO
Red-tailed Hawk	*Buteo jamaicensis*					S5	G5						N/A	FO
Belted Kingfisher	*Megaceryle alcyon*					S5B,S4N	G5			✓		R	N/A	FO
Red-bellied Woodpecker	*Melanerpes carolinus*					S5	G5				CP	R	1	S
Northern Flicker	*Colaptes auratus*					S5	G5			✓			1	S
Eastern Kingbird	*Tyrannus tyrannus*					S4B	G5			✓	CP		2	P
Eastern Wood-Pewee	*Contopus virens*	SC	SC	SC	SC	S4B	G5			✓			3	T
Willow Flycatcher	*Empidonax traillii*					S4B	G5			✓		R	7	T
Warbling Vireo	*Vireo gilvus*					S5B	G5					R	1	S
American Crow	*Corvus brachyrhynchos*					S5	G5						N/A	FO
Black-capped Chickadee	*Poecile atricapillus*					S5	G5				CP		1	S
Horned Lark	*Eremophila alpestris*					S4	G5				CP		15	T
Tree Swallow	*Tachycineta bicolor*					S4S5B	G5						23	T
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*					S4B	G5				CP		1	S
Barn Swallow	*Hirundo rustica*	SC	SC	THR	THR	S4B	G5				CP		47	V
Cedar Waxwing	*Bombycilla cedrorum*					S5	G5						2	S
White-breasted Nuthatch	*Sitta carolinensis*					S5	G5	✓	>10ha				1	S
House Wren	*Troglodytes aedon*					S5B	G5						11	T
Carolina Wren	*Thryothorus ludovicianus*					S4	G5				CP	R	1	S

COMMON NAME	SCIENTIFIC NAME	COSARO	ESA	COSEWIC	SARA	S-RANK	G-RANK	AREA SENSITIVE	AREA REQUIRED (HA)	PIF PRIORITY SPECIES	GRCA (DATE UNK.)	REGION OF WATERLOO (2007)	TOTA L COUNT	FINAL HBE
Gray Catbird	*Dumetella carolinensis*					S5B,S3N	G5				CP		3	T
European Starling	*Sturnus vulgaris*					SNA	G5						80	T
Veery	*Catharus fuscescens*					S5B	G5	✓	>10ha		CP		1	S
American Robin	*Turdus migratorius*					S5	G5						40	T
House Sparrow	*Passer domesticus*					SNA	G5						7	P
American Goldfinch	*Carduelis tristis*					S5	G5				CP		18	T
Chipping Sparrow	*Spizella passerina*					S5B,S3N	G5						17	T
Field Sparrow	*Spizella pusilla*					S4B,S3N	G5			✓	CP		1	S
Savannah Sparrow	*Passerculus sandwichensis*					S5B,S3N	G5	✓	>50ha	✓	CP		149	FY
Song Sparrow	*Melospiza melodia*					S5	G5						52	T
Bobolink	*Dolichonyx oryzivorus*	THR	THR	THR	THR	S4B	G5	✓	>10ha	✓	CP		1	S
Baltimore Oriole	*Icterus galbula*					S4B	G5			✓			3	T
Red-winged Blackbird	*Agelaius phoeniceus*					S5	G5						202	CF
Brown-headed Cowbird	*Molothrus ater*					S5	G5						12	T
Common Grackle	*Quiscalus quiscula*					S5	G5						21	T
Common Yellowthroat	*Geothlypis trichas*					S5B,S3N	G5						2	S
American Redstart	*Setophaga ruticilla*					S5B	G5	✓	>100ha		CP	R	1	S
Yellow Warbler	*Dendroica petechia*					S5B	G5						11	T
Northern Cardinal	*Cardinalis cardinalis*					S5	G5						4	T
Rose-breasted Grosbeak	*Pheucticus ludovicianus*					S5B	G5			✓			2	S
Indigo Bunting	*Passerina cyanea*					S5B	G5						1	S

Legend for Tables 3 and 4:
COSARO: Committee on the status of Species at Risk Ontario
COSEWIC: Committee on the status of Endangered Wildlife in Canada
SARA: Species at Risk Act
SC: Special Concern
THR: Threatened

S-Rank:
S4: Apparently Secure—Uncommon but not rare
S5: Secure—Common, widespread, and abundant in the province
S3: Vulnerable—Vulnerable, relatively few populations
G-Rank:
G5: Very common globally; demonstrably secure
B: Breeding—The breeding population of the species.
N: Non-breeding—The non-breeding population of the species.

Breeding Evidence:
Observed
X- Species observed, not in suitable habitat
FO- Flyover
Possible
H-suitable habitat
S-singing male
Probable
T-presumed territory
P- Pair observed in suitable nesting habitat
Confirmed
FY- Recently fledged young
CF- Adult carrying food for young

Table 4. Area Search Transects- Highest Breeding Evidence (HBE)

Common name	Scientific name	COSSARO	COSEWIC	S RANK	G RANK	Area Sensitive (MNRF 2000)	Area Required (Ha)	PIF priority Species (BCR 13)	GRCA (date unk.)	Region of Waterloo (2007)	HBE
Canada Goose	*Branta canadensis*			S5	G5				CP		FO
Wild Turkey	*Meleagris gallopavo*			S5	G5						H
Rock Pigeon	*Columba livia*			SNA	G5						H
Great Blue Heron	*Ardea herodias*			S4	G5					R	FO
Bald Eagle	*Haliaeetus leucocephalus*			S4	G5	✓		✓			H
Red-tailed Hawk	*Buteo jamaicensis*			S5	G5						H
Northern Flicker	*Colaptes auratus*			S5	G5			✓			S
Willow Flycatcher	*Empidonax traillii*			S4B	G5			✓		R	S
Blue Jay	*Cyanocitta cristata*			S5	G5						FO
Tree Swallow	*Tachycineta bicolor*			S4S5B	G5						S
Barn Swallow	*Hirundo rustica*	SC	THR	S4B	G5				CP		S
Cedar Waxwing	*Bombycilla cedrorum*			S5	G5						S
American Robin	*Turdus migratorius*			S5	G5						S
House Sparrow	*Passer domesticus*			SNA	G5						H
American Goldfinch	*Carduelis tristis*			S5	G5				CP		S
Savannah Sparrow	*Passerculus sandwichensis*			S5B,S3N	G5	✓	>50ha	✓	CP		NY
Song Sparrow	*Melospiza melodia*			S5	G5						S
Bobolink	*Dolichonyx oryzivorus*	THR	THR	S4B	G5	✓	>10ha	✓	CP		S
Red-winged Blackbird	*Agelaius phoeniceus*			S5	G5						P
Common Grackle	*Quiscalus quiscula*			S5	G5						S

3.3.1.1 Breeding Bird Species at Risk

Four Species at Risk were observed during Breeding Bird Surveys and are listed as follows, with their status under the ESA and SARA given in parentheses: Barn Swallow (SC, THR), Bobolink (THR, THR), Chimney Swift (THR, THR), and Eastern Wood-pewee (SC, SC). Locations of observations are shown on *Figure 3*. Of the species seen, only Bobolink and Chimney Swift are afforded habitat protection under the ESA, as they are listed as Threatened provincially. Negative impacts to habitat for Barn Swallow and Eastern Wood-pewee are also prohibited per the PPS, as Significant Wildlife Habitat for Rare and Special Concern species.

Barn Swallow occur in farmland, along lake/river shorelines, in wooded clearings, and in urban populated areas. Nesting may occur inside or outside buildings; under bridges

and in road culverts (COSEWIC 2011). Barn Swallow occurred in large numbers across the subject lands and are likely utilising the agricultural infrastructure in the centre of the subject lands for nest sites. No nests were identified on the outside of the buildings, but Barn Swallow were noted flying in and out of the agricultural infrastructure on site. Breeding for Barn Swallow was identified as probable, as adults were observed visiting a probable nest site, a week or more apart, at the same place.

Bobolink are associated with grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. They occur with increased density in grasslands greater than 10 ha (Renfrew et. al. 2015). In the subject lands they were observed in the southeastern portion during the first breeding bird survey, in an area being used to grow hay. However, this area was harvested between the first and second breeding bird surveys, and Bobolink were not present during subsequent surveys. Bobolink were identified as possible breeding, as singing males were heard on one occasion. No females were identified during the breeding bird surveys or incidentally, and only three individuals were seen.

Chimney Swift typically nest in traditional chimneys of older buildings (MNRF 2013). They were observed calling near the agricultural infrastructure in the centre of the subject property, and near buildings on the northeastern edge of the study area. Potential suitable chimneys and buildings were observed in the subject lands (see photo in *Appendix 13*). Identification of critical habitat requires the observation of Chimney Swift entering and leaving chimneys or buildings (MECP, 2024). Chimney Swift were observed flying around the farm buildings in the centre of the subject lands but were not seen entering or leaving chimneys or buildings. Per the General Habitat description for Chimney Swift (MNR, 2013), foraging typically occurs at a distance from nesting sites, as a result, observations are not always indicative of nesting in the immediate area.

Eastern Wood-pewee are associated with mid-aged mixed and deciduous forest stands, often dominated by Maple (*Acer*), Elm (*Ulmus*), or Oak (*Quercus*), and include areas with clear-cuts, openings, or forest edges. Eastern Wood-pewee also prefer forest stands with little to no understorey vegetation (COSEWIC 2012). Eastern Wood-pewee was observed singing within the Red Maple Deciduous Swamp, Fresh-Moist Deciduous Thicket, and adjacent to the Willow Mineral Deciduous Swamp communities in the western portion of the study area, as well as directly adjacent to the wooded community just outside the study area on the northeastern edge. Breeding evidence for Eastern Wood-pewee was identified as probable, as they had a permanent territory presumed through registration of territorial song on at least two days, a week or more apart, within

the Red Maple Deciduous Swamp community in the north-west portion of the study area.

3.3.1.2 Breeding Bird Regional and Local Significance

Most species detected in the study area are ranked as either S5 (Secure) or S4 (Apparently Secure) in Ontario. The rank qualifiers 'B' and 'N' denote the status of breeding and non-migratory species during the breeding season, respectively. Seven species are ranked S3 (Vulnerable): Chimney Swift, Turkey Vulture, Gray Catbird, Chipping Sparrow, Field Sparrow, Savannah Sparrow, and Common Yellowthroat.

Based on the Region of Waterloo's Regionally Significant Breeding Birds List (2007), seven species observed are considered to be significant within the Region and are identified in Tables 3 & 4

Based on the GRCA's list of conservation priority species, 16 species are considered to be conservation priorities and are identified in Tables 3 & 4.

3.3.1.3 Breeding Bird Regional Priority Species

The Ontario Landbird Conservation Plan (OLCP): Lower Great Lakes/St. Lawrence Plain, North American Bird Conservation Region 13 (Partners in Flight, 2008) has identified several species that are considered conservation priorities for the region (Ontario PIF, 2008). Twelve priority species were observed within the study area, and are identified in Tables 3 & 4. The OLCP does not provide legislative protection of species or their habitat but rather identifies species that should be conservation priorities on a regional level, beyond those designated as Species at Risk.

3.3.2 Pileated Woodpecker and Red-headed Woodpecker Cavity Identification Surveys

Investigations were completed to determine if Pileated Woodpecker and Red-headed woodpecker cavities are present within the subject lands. No trees demonstrating evidence of woodpecker use were identified within the subject lands.

3.3.3 Incidental Wildlife Observations

All incidental wildlife observations made during the site visit are presented in *Appendix 12*.

3.3.4 Significant Wildlife Habitat

With guidance from the *Significant Wildlife Habitat Technical Guide* (2000) and the SWH EcoRegion Criterion Schedule 6E (2015), it has been determined that confirmed

SWH in the form of Habitat for Special Concern and Rare Wildlife Species and candidate SWH in the form of Habitat for Special Concern and Rare Wildlife Species, are present within the study area.

3.3.4.1 *Bat Maternity Colony Habitat*

Bat maternity colony habitat can be located in human structures (e.g., barns and attics) abandoned mines, tree hollows and rockfaces (OMNRF, 2014). For several species, mature woodland communities that include dead or dying stems are important, other species roost individually in the foliage of several species of trees and shrubs.

Investigations were completed to identify candidate bat maternity habitat trees within the study area, where access was permitted. No trees that exhibited characteristics of suitable bat maternity habitat for colonial bat species were identified. The Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E states that maternity colonies considered SWH are found in forested Ecosites within the FOD, FOM, SWD and SWM series. Forested communities identified within the study area outside of the property limits may also contain suitable habitat; however, these communities were not investigated. As such, SWH in the form of Bat Maternity Colony Habitat has been assumed present within the forested communities in the study area.

3.3.4.2 *Confirmed Special Concern and Rare Wildlife Habitat*

Confirmed SWH for Special Concern and Rare Wildlife was identified on site for Eastern Wood-pewee. Eastern Wood-pewee were heard calling in suitable habitat in the Red Maple Deciduous Swamp Communities on the western edge of the study area (*Figure 3*). Barn Swallow were identified calling and foraging throughout the subject lands, particularly around the barns in the centre of the site and were observed flying in and out of these buildings (*Figure 3*). It is expected that nesting is occurring within the barn structure. Manmade structures are generally not considered to be SWH.

3.3.4.3 *Candidate Special Concern and Rare Wildlife Habitat*

Candidate SWH is present for Special Concern and Rare Wildlife species. Monarch was observed within the study area and milkweed (*Asclepias sp*.), the plants necessary for Monarch feeding, was also noted in some communities on site (Reed Canary Grass Graminoid Mineral Meadow Marsh, Reed Canary Grass Graminoid Meadow, the Fresh-Moist Deciduous Thicket, and along the Railway Line in the Transportation community), as a result communities with suitable habitat have been assumed for this species.

Eastern Wood-pewee was heard calling within the Red Maple Deciduous Swamp communities, with territory being presumed within the feature in the north-west portion of the study area. Eastern Wood-pewee was also heard within the Deciduous Thicket

community. The Red Maple Deciduous Swamp community has been identified as SWH for Eastern Wood-pewee.

The reach of Elmira Drain #1 within the study area contains suitable habitat for Snapping Turtle. As targeted surveys for overwintering and nesting turtle species were not completed, significant wildlife habitat for Snapping Turtle has been assumed present within the watercourse.

Suitable habitat for Canada Warbler and Wood Thrush was identified in the Deciduous Swamp communities. No individuals were identified during field investigations, including breeding bird surveys. As a result, this habitat is not considered present within the study area.

Suitable habitat for Eastern Ribbonsnake was identified along the watercourse in the Reed Canary Grass Graminoid Meadow habitat and along the railway corridor. As targeted surveys for Eastern Ribbonsnake were not completed, significant wildlife habitat for these species has been assumed present along the watercourse and within the Reed Canary Grass Graminoid Meadow.

Assumed and confirmed SWH for Special Concern & Rare Species is shown on *Figure 3*.

3.3.5 Species at Risk Habitat

3.3.5.1 Bobolink

Suitable habitat for Bobolink was identified within the Open Agriculture community, with three males exhibiting possible breeding evidence during the first breeding bird survey. At the time of the study, the subject lands were being used for hay when the Bobolink were observed, it has been noted through a review of recent aerial photos that the site has a number of different land uses (hay, row crops, livestock pasture), which are rotated around the property in different years and across growing seasons, suggesting a lack of permanent, high-quality habitat for this species. This is also suggested by the low number of Bobolink, a gregarious species, observed on the site, their absence during subsequent surveys, and the lack of females observed. Based on the results of our surveys, bobolink is not considered to be breeding on site.

3.3.5.2 Chimney Swift

Suitable habitat for Chimney Swift was identified in the agricultural infrastructure and residential dwelling at the centre of the subject lands, due to the presence of suitable chimneys. Per the results of the breeding bird surveys, Chimney Swift were observed within proximity to suitable habitat during its breeding season. No Chimney Swift were

seen entering the buildings or chimneys on site. Suitable habitat for Chimney Swift is shown on *Figure 3*.

3.3.5.3 Gypsy Cuckoo Bumble Bee

Gypsy Cuckoo Bumble Bee was identified by the NHIC as being present within an adjacent 1km x 1km square to the study area. No individuals of this species were observed during field investigations, and the species has not been observed within Waterloo Region for over 20 years (Colla, 2017). Only one individual has been found in Southern Ontario in the last 10 years despite extensive searches, and this was in Pinery Provincial Park, over 100 kms from the subject lands (Colla, 2017). While the mixed farmlands within the study area may provide suitable habitat for this species, it is highly unlikely that this species is present due to the historical nature of the last known observations, and lack of observations during the field studies, as a result, no candidate habitat for this species has been identified at the site.

3.3.5.4 Species at Risk Bats

Suitable habitat for Species at Risk Bats in Ontario is present within the study area. Forested communities outside of the subject property and agricultural infrastructure within the subject property may contain suitable habitat. Forested communities with suitable habitat are not expected to be impacted and are located well outside the subject lands and have therefore been assumed habitat for SAR bats. Acoustic surveys to determine the presence of SAR bats within the agricultural infrastructure was not completed. As such, studies to confirm species/presence absence within suitable habitat that may be impacted by the proposal is recommended prior to demolition. Suitable and assumed habitat for Species at Risk Bats is shown on *Figure 3*.

3.4 Aquatic Habitat Assessment

Sampling was conducted at fifteen locations within the study area, seven within the subject lands (1-7) and eight within the study area (8-15). Locations are shown on *Figure 2*. Sites were chosen to be representative of the different aquatic habitats and riparian vegetation within the study area.

Sites within the subject lands showed little evidence of erosion and were highly vegetated with submerged and emergent vegetation (*Table 6*). All sites within the subject lands were identified as potential Northern Pike spawning habitat (*Table 7*), additionally Drain #1 in the vicinity of the study area is also identified as a Northern Pike Spawning Area by MNRF (*Appendix 11*).

Within the subject property, Sites 1-5 are directly connected to Drain 1 which facilitates movement of fish into the subject lands, while sites 6-7 were not directly connected at

the time of the study, but may be connected in non-drought years. Water levels in all sites within the subject property (#1-7) were identified as low. Site #5 was the only site identified with visible flow. The other sites within the subject property (1-4, 6 & 7) were identified as having a flat and still flow pattern.

The meadow community to the west of Drain 1, outside of the subject property, is also potential Northern Pike spawning habitat and may be flooded before the east bank due to the height of the railway embankment. All sites in Drain 1, with the exception of site #13, showed evidence of eroding, unstable banks, and had less in-stream shading compared to the sites in the subject lands. All sites within Drain 1 (#8-15) showed observable flow and, while largely homogenous, did demonstrate areas of pools and riffles.

No barriers to fish movement were observed during the site visit, although it is likely the connection between the watercourse in the subject lands and Drain 1 dries up during the summer, preventing fish movement into the subject lands, Substrate was universally silt and muck, which was very thick in the northern, upstream sites in Drain 1. Major nutrient inputs upstream were present at all the sites, in the form of agricultural land use adjacent to and upstream of the sites, and, as the watercourses are agricultural drains rather than natural watercourses, showed evidence of straightening. Fish were observed at the sampling sites of Drain 1 that exhibited more heterogenous habitat (#9 and 10). Fish habitat was of medium quality in Drain 1, as the habitat was relatively homogenous, with around 50% in-stream cover in the form of low aquatic vegetation at the bottom of the watercourse, and the silt and muck making poor substrates for spawning, and with little stream shading or evidence of groundwater input to cool the water.

Substrates throughout all sampling sites consisted of silt and muck, which was very thick in the northern, upstream sites (#12 & 15). Major nutrient inputs, due to agricultural practices, were present at all sampling sites. All sampling sites exhibited evidence of straightening due to the watercourses being utilized as agricultural drains. No barrier to fish movement were identified in the study area; however, it is likely the connection between the watercourse in the subject property and Drain #1 dries up during the summer, preventing fish movement into the subject property. Photographs of each Aquatic Habitat Assessment sampling site are provided in *Appendix 13*.

Table 5. Aquatic Habitat Assessment Physical Site Characteristics

Site #	Water Temperature (°C)	Channel Width (m)	Wetted Width (m)	Max Channel Depth (m)	Wetted depth (m)	Stream Shading (%)	Buffer Width (Upstream Right; m)	Buffer Width (Upstream Left; m)	Substrate	Flow pattern	Channel Morphology	In-Stream Cover (%)	Bank
1	13	3.29	1.95	0.71	0.20	20	8	10	100 silt/muck	Flat and still	Straightened	95 vegetation	Stable and well-vegetated
2	12	6.23	4.71	0.45	0.35	0	8	35	100 silt/muck	Flat and still	Straightened	95 vegetation	Stable and well-vegetated
3	13	4.25	3.59	0.42	0.25	80	8	25	100 silt/muck	Flat and still	Straightened	30 vegetation debris	Stable and well-vegetated
4	12	4.69	2.80	0.48	0.15	0	150	2	100 silt/muck	Flat and still	Straightened	80 vegetation	Stable and well-vegetated
5	16	2.82	0.89	0.56	0.07	0	200	130	100 silt/muck	Visible flow	Straightened	80 vegetation	Stable and well-vegetated
6	16	3.88	1.36	0.35	0.03	80	7	7	100 silt/muck	Flat and still	Straightened	80 vegetation	Stable and well-vegetated
7	16	8.94	8.94	0.30	0.30	0	4	0	100 silt/muck	Flat and still	Flooded wetland	90 vegetation	Stable and well-vegetated
8	16	7.14	4.75	0.65	0.26	95	210	70	100 silt/muck	Flat with visible flow	Straightened	10 wood, 10 aquatic vegetation	Bare and mucky immediately by watercourse
9	16	4.20	3.62	0.50	0.21	0	180	4	100 silt/muck	Flat with visible flow	Straightened	70 aquatic vegetation	Well-vegetated and undercut/eroded
10	16	5.72	5.05	1.20	0.72	0	180	5	100 silt/muck	Flat pool with visible flow into riffles downstream	Straightened	70 aquatic vegetation	Well-vegetated and undercut/eroded
11	16	4.98	4.32	0.83	0.41	10	160	5	100 silt/muck	Flat with visible flow	Straightened	70 aquatic vegetation	Well-vegetated and undercut/eroded
12	16	4.76	4.21	0.80	0.35	0	0	5	100 silt/muck	Flat and slow	Straightened	50 aquatic vegetation	Well-vegetated and undercut/eroded
13	17	4.98	4.98	0.14	0.14	40	0	2	100 silt/muck	Flat and still	Straightened	100 vegetation	Stable and well-vegetated
14	16	4.95	4.50	0.75	0.42	30	55	5	100 silt/muck	Flat and slow	Straightened	80 duckweed	Well-vegetated and undercut/eroded
15	16	4.83	4.43	0.87	0.38	0	0	5	100 silt/muck	Flat and slow	Straightened	40 aquatic vegetation	Well-vegetated and undercut/eroded

Table 6. Aquatic Habitat Assessment Site Features

Site #	Point and non-point contaminant sources	Major-nutrient sources upstream	Channel hardening and straightening	Adjacent land use that destabilizes banks	Sediment loading	In-stream habitat modification	High fishing pressure	Log jam deflectors	Springs or seeps	Impervious substrate	Other activities that could influence habitat	Barriers to fish passage	Comments
1	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	Potential Northern Pike spawning habitat. Upstream end of site is tile drain end.
2	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	Potential Northern Pike spawning habitat
3	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	Potential Northern Pike spawning habitat
4	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	Potential Northern Pike spawning habitat. Upstream end of site is tile drain end.
5	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	Potential Northern Pike spawning habitat. Downstream end of site is culvert connecting to drain 1.
6	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	Potential Northern Pike spawning habitat. Downstream end of site is culvert under South Field Road.
7	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	Potential Northern Pike spawning habitat
8	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	
9	No evidence	Ongoing and active: agricultural	Ongoing and active:	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	Small fish observed

Site #	Point and non-point contaminant sources	Major-nutrient sources upstream	Channel hardening and straightening	Adjacent land use that destabilizes banks	Sediment loading	In-stream habitat modification	High fishing pressure	Log jam deflectors	Springs or seeps	Impervious substrate	Other activities that could influence habitat	Barriers to fish passage	Comments
			agricultural drain										
10	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	School of small fish observed
11	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	Very thick muck at bottom of watercourse.
12	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	Very thick muck at bottom of watercourse.
13	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	Upstream end of site is culvert under South Field Road.
14	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	Downstream end of site is culvert under South Field Road. Very thick muck at bottom of watercourse.
15	No evidence	Ongoing and active: agricultural	Ongoing and active: agricultural drain	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	No evidence	Upstream end of site is culvert under South Field Road. Very thick muck at bottom of watercourse.

3.5 Geology

The majority of the study area consists of Freeport-Woolwich and Guelph soils, alongside Organic, Grand-Kirkland, and Brant-Waterloo soils (Presant and Wicklund,1971). The Freeport-Woolwich soils are coarse- and medium-textured soils which are 1-3 feet deep and overly medium-textured till deposits (Presant and Wicklund,1971). Drainage varies from poor to good, and topography is level to gently sloping (Presant and Wicklund,1971). The Guelph soils are medium textured soils formed on till deposits, with imperfect to good drainage and very gently to gently sloping topography (Presant and Wicklund,1971). The Freeport-Woolwich and Guelph soils make up the majority of the subject lands, particularly the southern portion. The Organic soils are formed on organic deposits, made up of muck and peat with level topography and very poor drainage (Presant and Wicklund,1971). Organic soils underly the watercourse and the lands to the west of it. The Grand-Kirkland soils are coarse- to medium-textured soils formed over recent alluvial deposits, with level topography and poor to good drainage (Presant and Wicklund,1971). These soils make up a small portion of the study area north of Southfield Drive and east of the railway line. The Brant-Waterloo soils are moderately coarse- and medium-textured soils which are formed on lacustrine deposits (Presant and Wicklund,1971). They have level to gently sloping topography and poor-good drainage (Presant and Wicklund,1971). Brant-Waterloo soils are present in the north of the subject lands and study area.

4.0 Impact Assessment

The proposed Draft Plan of Subdivision will result in impacts to the existing natural features without appropriate mitigation. Potential impacts include site grading and erosion, tree and vegetation removal, sediment and deleterious runoff, potential impacts to species at risk, and wildlife disturbance.

4.1 Development Limit

Per the proposed Draft Plan of Subdivision (MHBC, February 2025), all proposed lots and roadways are located outside the existing natural features. Blocks 10, and 12 are located immediately east of the setback to unevaluated wetland and floodplain to the watercourse. Block 11 contains a small portion of the regulated area associated with Elmira Drain #1. Block 14 is identified as Open Space and contains the unevaluated wetland and floodplain and their associated setbacks.

4.2 Wetland

Unevaluated wetland features are present within the study area, including one along the western limit of the subject property. Per the proposed Draft Plan of Subdivision (MHBC, February 2025), a setback of more than 30m from the verified limit of the unevaluated wetland is being maintained. The Functional Stormwater Management Plan (SBM, March 2025) and the Overall Grading Plan (SBM, March 2025) identify that overland flow as a result of the proposed Draft Plan of Subdivision will be accommodated through various measures including installation of storm sewer infrastructure and a proposed wet pond facility, prior to discharging to the wetland feature at an allowable flow rate. The report notes that controls for the quality of surface runoff will be provided through an oil-grit separator for each development block, as well as a forebay within the wet pond for sediment deposition. These controls will occur prior to any flows entering the wetland feature.

The Functional Stormwater Management Plan (SBM, 2025), identifies that under post-development conditions, approximately 90% of the subject property is anticipated to be impervious, and as a result surface run-off is anticipated to increase by approximately 630%. As such, changes to the water balance of the wetland feature are anticipated due to the increased volume entering the wetland feature; however, impacts will be minimized with the quality of water being controlled and released to the feature at an allowable rate.

4.3 Watercourse

A reach of the Elmira Drain #1 is present within the study area. Per the proposed Draft Plan of Subdivision (MHBC, February 2025), a setback of greater than 30m from the

watercourse is being maintained for the majority of the proposed Blocks. Block 11 contains a portion of the regulated area associated with Elmira Drain #1; however, the regulated area is contained within the 15m setback from the existing railway. As such, no development will occur within the existing regulated area. As identified above, the volume of surface runoff as a result of the proposed impervious surfaces will increase. Per the Functional Stormwater Management Report (SBM, 2025), surface flows will enter the wet pond prior to discharging at an allowable rate into the wetland feature, where they will enter a culvert under the railway to the existing Elmira Drain #1. With the implementation of the quality and quantity controls noted above and within in the Functional Stormwater Management Report (SBM, March 2025), the volumes of surface runoff entering Elmira Drain #1 will increase; impacts will be minimized with the quality of water being controlled and released to the watercourse at an allowable rate.

4.4 Significant Wildlife Habitat

4.4.1 Bat Maternity Colony Habitat

Significant Wildlife Habitat in the form of Bat Maternity Colony Habitat were confirmed and assumed present within the study area, respectively. All forested communities where Bat Maternity Colony Habitat was assumed present are located outside the limits of the subject property. No encroachment into or tree removals are proposed for these features. As such, the assumed Bat Maternity Colony Habitat SWH will not be negatively impacted by the proposed Draft Plan of Subdivision.

4.4.2 Special Concern and Rare Species

SWH in the form of Special Concern and Rare Species was confirmed for the Red Maple Deciduous Swamp communities due to probable breeding evidence of Eastern Wood-pewee. As the Red Maple Deciduous Swamp communities are located outside of the subject property, the proposed Draft Plan of Subdivision will not negatively impact this habitat.

All communities identified as candidate SWH are either outside the subject lands or will be protected by the setbacks afforded to the unevaluated wetland and floodplain. Therefore, impacts to candidate SWH by the proposed development are not anticipated.

4.5 Threatened an Endangered Species at Risk Habitat

4.5.1 Chimney Swift

Suitable habitat for Chimney Swift may be present within the existing Agricultural Buildings and residential dwelling on the subject property. Per the Draft Plan of Subdivision (MHBC, February 2025), the existing structures are proposed for removal to

accommodate Blocks 4-7 as well as Street B.

4.5.2 Species at Risk Bats

Habitat for Species at Risk bats in Ontario has been assumed present within the forested communities study area and suitable habitat may be present within the agricultural infrastructure. No impacts to the forested communities are expected, and therefore, no impacts to assumed SAR bat habitat are expected. Impacts to the Agricultural buildings are expected per the proposed Draft Plan of Subdivision (MHBC, February 2025) through the removal of the existing agricultural infrastructure to accommodate Blocks 6 and 7 and a portion of Street B. An assessment to determine the presence/absence of Species at Risk bats within the Agricultural buildings is recommended prior to demolition, to ensure the project conforms to the ESA and identify any additional requirements under the ESA.

4.6 Water Balance

Section 3 of the Functional Stormwater Management Report (SBM, March 2025) identifies the completion of a water balance analysis for pre- and post-development conditions. The report acknowledges that as an industrial subdivision, runoff may be contaminated, and that only runoff from clean sources may be infiltrated. Therefore, it is not feasible for post-development infiltration volumes to match or exceed the pre-development volumes since such large portions of the site may be at risk of contamination.

Per Table 9 of the Functional Stormwater Management Report (SBM, 2025), evapotranspiration and infiltration are anticipated to result in a decrease of approximately 76% due to the proposed development while the total runoff is anticipated to increase by 630%. Based on the results of the Hydrogeological Assessment, the northeast and northwest corners of the subject property were identified as the only areas where significant infiltration could occur based on the existing subsoils. Per the Functional Stormwater Management Report (SBM, 2025), it is not feasible to match or exceed pre-development infiltration volumes, resulting in impacts to the water balancing occurring. The report recommends that during each block's detailed design process, that attempts are to be made to integrate LID systems and increase infiltration, where opportunities exist

4.7 Stormwater Management

Per the Functional Stormwater Management Report (SBM, 2025), under post-development conditions, the proposed Draft Plan of Subdivision (MHBC, February 2025) will include a new municipal storm sewer system servicing each of the proposed

blocks. Quantity controls include a wet pond, while quality controls are comprised of an OGS separator and sediment forebay within the proposed stormwater management block (Block 12). The sediment forebay has been sized to meet settling velocity requirements and sizing recommendations from the MECP Stormwater Management Planning and Design Manual. Section 2.6 identifies that the proposed stormwater pond will capture all surface flows from the proposed development, prior to releasing them at an allowable flow rate to the existing wetland feature through a culvert under the railway to Elmira Drain #1. As previously noted, impacts to the wetland and watercourse feature may occur as a result of the proposed development; however, they can be minimized through the exploration and integration of appropriate site-specific LID systems during the detailed design process for each block.

4.8 Tree Preservation Plan

Per the Tree Preservation Plan (Aboud & Associates Inc., October 2024), a total of 252 trees are recommended for removal, with 172 recommended for removal to accommodate the proposed Draft Plan of Subdivision (MHBC, February 2025) and 15 recommended for removal due to condition and development. No trees within the wetland feature or its regulated area are proposed for removal. Per the Tree Protection Plan, identified tree protection zones are to be fenced to mitigate any impact to existing trees not proposed for removal. An ISA Certified Arborist is to be present on site during all construction activities that are to occur within minimum tree protection zones to confirm and/or modify mitigation measures for trees to be preserved. Compensation for the trees proposed for removal will be required through compensation plantings at a 3:1 ratio or through cash-in-lieu payment. Further details are provided in the Tree Protection Plan (Aboud & Associates Inc., October 2024) included in *Appendix 15*.

5.0 Legislation and Policy Compliance

5.1 Species at Risk Act (2002)

Suitable habitat for Chimney Swift may occur within the subject property due to the presence of older chimneys on the existing structures. As removal of these buildings is required to accommodate the proposed development, and usage of these structures by Chimney Swift have not been confirmed, follow up studies to confirm nesting Chimney Swift are recommended prior to demolition to ensure compliance under the *Species at Risk Act*.

5.2 Fisheries Act (1985)

The proposed development includes a setback of greater than 30m from the limits of the reach of the Elmira Drain #1 and identifies the implementation of stormwater quality and quantity control measures. Through implementation of the additional mitigation

measures recommended in Section 7.0 and *Appendix 14*, the proposed Draft Plan of Subdivision (MHBC, February 2025) is not expected to result in negative impacts to the fish or fish habitat within the study area. As such, the proposed Draft Plan of Subdivision (MHBC, February 2025) is in compliance with the *Fisheries Act* (1985).

5.3 Migratory Bird Convention Act & Migratory Bird Regulations

Per Section 3.3.2, no active Pileated Woodpecker nests were identified through field investigations. Habitat for migratory bird species was identified through field investigations and vegetation, buildings and trees that may support breeding migratory birds are proposed for removal to accommodate the proposed Draft Plan of Subdivision (MHBC, 2025). Provided the recommendations detailed in Section 7.0 and *Appendix 14* are implemented, including removal of trees and vegetation outside of the generalized Migratory Bird nesting window (April 1- August 30), the proposed Draft Plan of Subdivision (MHBC, February 2025) is in compliance with the MBCA and Migratory Bird Regulations.

5.4 Endangered Species Act (2007)

The existing Agriculture Buildings and residential dwelling on the subject property were identified as potentially suitable habitat for Species at Risk Bats and Chimney Swift. As removal of the buildings is necessary to accommodate the proposed Draft Plan of Subdivision (MHBC, 2025), and usage of these structures by SAR bats and Chimney Swift have not been confirmed, follow up studies to confirm presence/absence of species at Risk Bat Maternity Habitat and nesting Chimney Swift are recommended prior to demolition to ensure compliance under the ESA. Provided that recommendations to ensure compliance under the ESA are completed, the proposed development is expected to comply with the ESA.

5.5 Provincial Planning Statement

5.5.1 Significant Wildlife Habitat

Significant Wildlife Habitat in the forms of Special Concern & Rare Species and Bat Maternity Colony Habitat have been confirmed and assumed present, respectively, within the study area. All confirmed or assumed SWH are located outside the limits of the subject property and will therefore, not be negatively impacted by the proposed Draft Plan of Subdivision (MHBC, February 2025). The proposed development is therefore in compliance with the requirements for SWH under the PPS.

5.5.2 Habitat of Threatened or Endangered Species

Habitat of Threatened or Endangered Species is potentially present within the existing agricultural infrastructure on the subject property. Provided the project conforms to all requirements under the ESA, the proposed Draft Plan of Subdivision (MHBC, February 2025) is in compliance with the PPS.

5.6 Grand River Conservation Authority

The subject property and study area include unevaluated wetland features, regulated watercourse, one-zone floodplain, and their associated regulated area.

Per the proposed Draft Plan of Subdivision (MHBC, February 2025), Block 14 has been designated as Open Space and includes the aforementioned natural heritage features, their proposed buffers, and a 15m setback from the regulation limit, as well as the proposed stormwater management pond. Although the blocks where development is proposed are located outside of the natural features and their associated setbacks, changes to the volume of surface runoff entering the wetland feature and Elmira Drain #1, as well as the water balance of the wetland feature are anticipated. As such, a permit may be necessary to ensure compliance with the GRCA's *Policies for the Administration of the Prohibited Activities, Exemptions and Permits Regulation (Ontario Regulation 41/24)*.

5.7 Township of Woolwich Official Plan (2022)

Core Environmental Features include Habitat of Endangered and Threatened Species. As identified in previous sections, the agricultural infrastructure may provide suitable habitat for Chimney Swift and SAR Bats. Section 13 does not identify whether man-made structures are considered Core Environmental Features. As such, correspondence with the Township of Woolwich is required to determine compliance of the Draft Plan of Subdivision (MHBC, February 2025).

5.8 Township of Woolwich Zoning By-law 26-2024 (2024)

Per the Township of Woolwich Zoning By-law 26-2024, the property is zoned primarily as Agricultural, with lands along the western limit zoned as Agricultural with a Hazard Land- Flood Overlay Zone. Per Section 15.5, no building(s), structure(s) or addition(s) shall be constructed within the Hazard Land- Flood Overlay Zone without GRCA approval. Per the Draft Plan of Subdivision (MHBC, February 2025), no development is proposed within the Block containing the lands identified as Hazard Land- Flood

Overlay Zone. As such, the proposed Draft Plan of Subdivision (MHBC, February 2025) is in compliance with Section 15 of the Township of Woolwich Zoning By-law 26-2024.

6.0 Summary of Constraints, Impacts, and Applicable Legislation

As noted in above sections, the proposed development will require the removal of trees and vegetation, and agricultural buildings that may be habitat for species at risk. Below is a summary of the identified Natural Heritage features and constraints, and associated mitigation and/or protection measures, including additional work recommended to ensure compliance with applicable legislation.

6.1 Biological Constraints

1. Surveys were conducted for Ecological Land Classification and Vegetation Communities (ELC and Vascular Plant List), Breeding Birds, Grassland Breeding Birds, Aquatic Habitat Assessment, Candidate Bat Maternity Habitat, Woodpecker Cavities, Significant Wildlife Habitat and Species at Risk habitat.
2. The study area includes natural features including a reach of Elmira Drain #1, an unevaluated wetland, one-zone floodplain, and their associated regulated areas. A significant woodland feature is also present within the study area, as identified through the Region of Waterloo Official Plan (2015).
3. Suitable habitat for Chimney Swift and Species at Risk bats is present within agricultural buildings in the subject lands. Additional studies are required to ensure compliance with the Endangered Species Act prior to removal of suitable habitat.
4. Confirmed Significant Wildlife Habitat for Special Concern and Rare Wildlife Species for Eastern Wood-pewee was identified within the Red Maple Deciduous Swamp communities.
5. Bat Maternity Colony, Special Concern and Rare Wildlife Species habitat for Eastern Ribbonsnake, Snapping Turtle and Monarch were assumed present within the study area.

6.2 Impact Assessment

1. Generalized impacts due to the proposed Draft Plan of Subdivision (MHBC, February 2025) were assessed to determine their extent and mitigation guidelines have been provided (*Appendix 14*). Provided the recommended

mitigation measures are implemented, anticipated negative impacts to the surrounding natural features will be minor.

2. Potential impacts primarily involve potential removal of species at risk habitat through removal of buildings, changes to the existing water balance of the wetland feature, removal of trees and vegetation, wildlife disturbance, site grading, sediment and deleterious runoff, and erosion.

3. Impacts to suitable SAR habitat must be determined through additional species-specific studies to determine impacts and requirements under the ESA & SARA.

4. There are opportunities in the study area for restoration and enhancement, and compensation planting to mitigate and offset potential impacts.

6.3 Legislation and Policy Compliance

1. The proposed Draft Plan of Subdivision (MHBC, February 2025) can occur in accordance with the *Provincial Planning Statement (2024)* provided compliance with the Endangered Species Act (2007) is demonstrated.
2. The proposed Draft Plan of Subdivision (MHBC, February 2025) is expected to comply with the *Endangered Species Act (2007,)* provided the recommendations to ensure compliance under the ESA are completed as outlined in this report.
3. The proposed Draft Plan of Subdivision (MHBC, February 2025) is expected to comply with the *Species at Risk Act (2002),* provided the recommendations to ensure compliance under the SARA are completed as outlined in this report.
4. The proposed Draft Plan of Subdivision (MHBC, February 2025) can occur in accordance with the *Migratory Bird Convention Act (1994)* & Migratory Bird Regulations (2022) provided that the mitigation measures detailed in Section 7.0 & *Appendix 14* are implemented throughout the appropriate stages of development.
5. The proposed Draft Plan of Subdivision (MHBC, February 2025) will result in an increase in surface volume runoff to the wetland feature and Elmira Drain #1, and will result in changes to the water balance of the wetland feature. As such, a permit may be necessary to ensure compliance with the GRCA's *Policies for the Administration of the Prohibited Activities, Exemptions and Permit Regulation (Ontario Regulation 41/24)*.
6. The proposed Draft Plan of Subdivision (MHBC, February 2025) proposes removal of agricultural infrastructure which may provide suitable habitat for Threatened and Endangered species. Correspondence with the Township of

Woolwich regarding man-made structures are considered Core Environmental Features is required to determine compliance with the Official Plan.

7.0 Mitigation Recommendations

The following mitigation measures are recommended to ensure the protection of natural heritage features and their functions within, and adjacent to, the subject property as a result of the proposed Draft Plan of Subdivision (MHBC, 2025).

1) Prepare and implement an Erosion and Sediment Control (ESC) Plan, per the GGH Erosion and Sediment Control Guide for Urban Construction (TRCA, 2019), as part of detailed design, for protection of the existing natural features.
   a) Implement the erosion and sediment control considerations identified in Section 4 of the Functional Stormwater Management Report (SBM, March 2025).

2) Complete Species-specific studies, as outlined in this report and per any future communication with the MECP, to confirm the use of the agricultural buildings by Bat Species at Risk and Chimney Swift and confirm any additional requirements under the ESA. Per the results of the study, additional mitigation and compensation may be required in order to ensure compliance under the ESA.

3) Complete studies to confirm presence and/or nesting of Chimney Swift and any additional requirements under the SARA.

4) Implement the specifications and compensation identified within the Tree Preservation Plan (AA, 2024) to ensure minimal impact to the retained trees within and immediately adjacent to the subject property. Compensation through the planting of trees at a 3:1 ratio or payment through cash-in-lieu based on $350 per tree is required.

5) ESC measures to be kept in place until construction is completed and disturbed soils have been revegetated.

6) The area of construction disturbance shall be kept to a minimum.

7) Control access and movement of equipment and people through implementation of staging and storage areas.

8) Works and equipment storage are to be located as far as possible from the existing natural features.

9) Accumulated sediment and debris to be removed prior to the removal of the silt fence.

10) All disturbed areas will be re-vegetated or restored with site appropriate indigenous plants wherever opportunities exist.
   a) Native tree, shrub and vegetative species suitable to the existing vegetation community, soil and moisture conditions are to be selected for compensation.
   b) Species selection should also be reflective of surrounding vegetation communities and consist of varying successional stages to complement adjacent habitat functions.
   c) All plantings are to be monitored to ensure proper establishment.
   d) Restrict access and buffer natural areas to discourage human encroachment and improper use.

11) Time activities to avoid wildlife disturbance during critical life stages:
   a) Avoid removal of vegetation during the generalized breeding bird nesting period from April 1 to August 31. If removal of vegetation is to occur during the general nesting period, a nest search is to be completed by a skilled and experienced biologist/ecologist. Any active nests detected during a nest search are to be monitored weekly until inactive.
   b) No clearing of trees on site is to occur during the bat maternity season (April 1-September 30) in compliance with provincial direction.

12) Choose designs and materials that will minimize impacts.

13) Implement low impact development measures, such as bioswales, impermeable surfaces, and infiltration trenches, within suitable locations as identified in the Functional Stormwater Management Report (SBM, March 2025).

14) Prepare, as part of detailed design, lighting plans to reduce nighttime glare and light trespass to minimize impacts to the adjacent natural features and wildlife utilizing them.
15) Prepare, as part of detailed design, and implement a Salt Management Plan to mitigate impacts to the adjacent natural features.

8.0 Conclusion

The above scoped EIS was completed to document the existing natural heritage features within and adjacent the subject property, assess potential impacts to these features in regard to the proposed development, demonstrate compliance with the

appropriate federal, provincial and municipal policies, and provide recommendations and potential requirements for the proposed development under the ESA.

Based on the results of the scoped EIS, it is the opinion of AA that the proposed Draft Plan of Subdivision (MHBC, February 2024) may result in negative impacts to the existing natural features or their ecological functions. Provided the recommended mitigation measures are implemented throughout all phases of development, negative impacts can be minimized or avoided.

Additional studies and actions are required to achieve compliance with the Endangered Species Act, including species at risk bats and chimney swift surveys and based on the results of those studies, the potential for future requirements under the ESA.

Please contact the undersigned should you require additional information.

Prepared by:

ABOUD & ASSOCIATES INC.

Shannon Davison B. Env., Eco. Rest. Cert
Terrestrial & Wetland Ecologist
MNRF Certified Ecological Land Classification
MNRF Certified Wetland Evaluation
CERPIT #0499

Reviewed by:

Cheryl-Anne Ross, B.Sc., F.W.T.
Ecology Lead & Wildlife Ecologist
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MNRF Certified Wetland Evaluation

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Authorities Consulted

Denyes, David. Management Biologist, MNRF. 2023. Email Correspondence.

Dykstra, Stephen. Senior Planner, Township of Woolwich. 2023-2024. Email Correspondence.

Foster- Pengelly, Chris. Resource Planner, GRCA. 2023-2024. Email Correspondence.

Hovingh, Albert. Senior Planner, Region of Waterloo. 2023. Email Correspondence

Messier, Robert. Ecologist, GRCA. 2024. In-person Correspondence.

FIGURES

LEGEND

- SUBJECT PROPERTY
- STUDY AREA
- WATERCOURSE
- WETLAND
- SIGNIFICANT WOODLAND
- ONE-ZONE FLOODPLAIN
- REGULATION LIMIT

DRAFT PLAN OF SUBDIVISION

- PROPOSED BLOCK
- PROPOSED ROADWAY

Information Sources:

1. Aerial Imagery provided by First Base Solutions, Accessed March 2025.
2. Wetlands, watercourses, floodplain & regulation limit provided by GRCA Accessed March 2025.
3. Draft Plan of Subdivision provided by MHBC, dated Feburary 2025

Title

DRAFT PLAN OF SUBDIVISION & LIMITS OF NATURAL FEATURES

Project:

1665 SCOTCH LINE ROAD
ELMIRA, ON

N

Date: MARCH 2025
Project: AA23-232A
Scale: 1 : 7500

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Figure No:

1

ELC CODE	ELC COMMUNITY
CVC	Commercial and Institutional
CVC2	Light Industry
CVI1	Transportation
CVR4	Rural Property
IAGM1/CVR4	Agricultural Buildings/Rural Property
MAMM1-2	Cattail Graminoid Mineral Meadow Marsh
MAMM1-3	Reed Canary Grass Graminoid Mineral Meadow Marsh
MEGM3-8	Reed Canary Grass Graminoid Meadow
OAGM1	Annual Row Crops
SWDM3-1	Red Maple Deciduous Swamp
SWDM4-1	Willow Mineral Deciduous Swamp
THDM5	Fresh-Moist Deciduous Thicket

LEGEND

- STUDY AREA
- SUBJECT PROPERTY
- ECOLOGICAL LAND CLASSIFICATION
- WATERCOURSE
- AQUATIC HABITAT ASSESSMENT SURVEY POINT
- BREEDING BIRD SURVEY POINT COUNT LOCATION
- BREEDING BIRD SURVEY POINT COUNT RADIUS

Information Sources:

1. Orthophotography provided by First Base Solutions Accessed April 2025
2. Ecological Land Classification provided by Aboud & Associates, 2024

Title:

EXISTING CONDITIONS & SURVEY LOCATIONS

Project:

1665 SCOTCH LINE ROAD
ELMIRA, ON

N

Date: APRIL 2025
Project: AA23-230A
Scale: 1 : 3500

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Figure No: 2

LEGEND

- SUBJECT PROPERTY
- STUDY AREA

ASSUMED SWH
- BAT MATERNITY COLONY
- SC & R- EASTERN RIBBONSNAKE
- SC & R- EASTERN WOOD-PEWEE
- SC & R- SNAPPING TURTLE
- SC & R- MONARCH

SAR HABITAT
- CHIMNEY SWIFT
- SAR BATS

SPECIES AT RISK
- BARN SWALLOW
- BOBOLINK
- CHIMNEY SWIFT
- EASTERN WOOD-PEWEE
- MONARCH

REGIONALLY SIGNIFICANT SPECIES
- AMERICAN REDSTART
- BELTED KINGFISHER
- CAROLINA WREN
- GREAT BLUE HERON
- RED-BELLIED WOODPECKER
- TURKEY VULTURE
- WARBLING VIREO
- WILLOW FLYCATCHER

Information Sources:
1. Orthophotography provided by First Base Solutions, accessed April 2025

Title:
SIGNIFICANT FEATURES

Project:
1665 SCOTCH LINE ROAD
ELMIRA, ON

N

Date: APRIL 2025
Project: AA23-232A
Scale: 1 : 3500

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Figure No:
3

APPENDIX 1

Applicable Policies and Conformity

Policy	Relevant Sections of the Policy	Policy Constraints Within the Study Area	Project Policy Conformity	Proposed Mitigation
Provincial Planning Statement (2024)	Section 4.1 Natural Heritage	Significant Wildlife Habitat & Suitable Habitat of Threatened and Endangered Species is present within the study area.	Removal of agricultural infrastructure which may contain suitable habitat for Chimney Swift and Species at Risk Bats is required to accommodate the proposed Draft Plan of Subdivision Compliance with the Endangered Species Act (2007) is required to demonstrate compliance with the Provincial Planning Statement (2024).	Implementation of all required mitigation measures per requirements under Endangered Species Act (2007). No tree or vegetation removal is to occur between April 1-September 30.
Endangered Species Act (2007)	Subsection 9(1) Clause 10(1)(a) Clause 16(5) Clause 17(1)	Habitat for Species at Risk Bats and Chimney Swift may occur within the Agricultural Infrastructure.	Approvals through and compliance with Section 23.2 of the Endangered Species Act may be required to ensure project conformity.	Additional studies recommended to confirm the need for requirements under the Endangered Species Act (2007).
Fisheries Act (1985)	Section 34.4 (1) Section 35 (1)	Fish and fish bearing water are present within the reach of Elmira Drain #1 in the study area.	No works are proposed within or immediately adjacent to the watercourse. Proposed development is occurring > 30 m away from the watercourse, due to the regulated areas of the unevaluated wetland and one-zone floodplain.	Implementation of all mitigation measures identified in Section 7.0 & *Appendix 14* of the EIS.
Species at Risk Act (2002)	Subsection 32 (1) and (2) Subsection 33	Suitable habitat for Chimney Swift was	Approvals though and compliance with SARA	Additional studies recommended to

Policy	Relevant Sections of the Policy	Policy Constraints Within the Study Area	Project Policy Conformity	Proposed Mitigation
	Subsection 34(1) Subsection 58 (1)	identified within the subject property.	may be required to ensure project conformity.	confirm the need for requirements under the Species at Risk Act (2002).
Grand River Conservation Authority Policies for the Administration of the Prohibited Activities, Exemptions and Permits Regulation, O. Reg. 41/24	Section 7.1 Section 8.1 Section 8.4 Section 8.9	A reach of Elmira Drain #1, unevaluated wetland, one-zone floodplain, and their associated regulated areas are present within the study area.	Per the Draft Plan of Subdivision (MHBC, February 2025), all natural features and their associated regulated areas are within Block 14 (Open Space). No development is proposed within Block 14.	Implementation of all mitigation measures identified in Section 7.0 & *Appendix 14*of the EIS.
Woolwich Township Official Plan (2022)	Section 5.7.3 Section 13.2.4 Section 13.7.5 Section 13.8.3 Section 13.8.4 Section 13.9.3 Section 13.14.2 Section 13.14.5	The study area contains Core Greenlands (Habitat for Threatened and Endangered Species), Fish Habitat, and supporting environmental features (unevaluated wetlands & SWH).	Development within Core Greenlands is not permitted. Correspondence with the Township is required to determine conformity based on compliance with the ESA and SARA.	Mitigation measures to be determined through correspondence with the Township.
Woolwich Township Zoning By-law 26-2024		The subject property is currently zoned as Agricultural (A) and is subject to site specific exemption A93.	A Zoning By-law Amendment will be required for the proposed Draft Plan of Subdivision to comply with the Township Zoning By-law.	No mitigation needed.
Engineer's Report, Elmira Drain #1	Section 10	Drain #1 runs adjacent to the site and has a 10 m setback.	Drain #1 occurs on the other side of the railway line, and will be protected by the 30 m railway setback.	No mitigation needed.

APPENDIX 2

Terms of Reference and Agency Consultation

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NATURALIZATION PLANS
INTERPRETIVE DESIGN
MONITORING
CONTRACT ADMINISTRATION

ENVIRONMENTAL STUDIES
SUBWATERSHED STUDIES
ENVIRONMENTAL IMPACT STATEMENTS
ECOLOGICAL LAND CLASSIFICATION
WETLAND EVALUATION
VEGETATION ASSESSMENT
BOTANICAL INVENTORIES
WILDLIFE SURVEYS
MONITORING

LANDSCAPE ARCHITECTURE
MASTER PLANNING
RESIDENTIAL COMMUNITIES
COMMERCIAL/INDUSTRIAL
HEALTHCARE AND EDUCATION
STREETSCAPES
PARKS AND OPEN SPACES
TRAIL SYSTEMS
GREEN ROOFS
CONTRACT ADMINISTRATION

EXPERT OPINION
OMB TESTIMONY
LEGAL PROCEEDINGS
PEER REVIEW
RESEARCH
EDUCATION

February 28, 2024

Our Project No.: AA23-232A
Sent By Email: cfosterpengelly@grandriver.ca
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&

Albert Hovingh
Planning Department
Region of Waterloo
150 Frederick Street
Kitchener, ON N2G 4J3

Re: 1665 Scotch Line Road, Elmira, ON
Terms of Reference - Scoped Environmental Impact Study

Dear Mr. Foster-Pengelly, Mr. Dykstra, and Mr. Hovingh:

This document outlines the Terms of Reference (ToR) of the scoped Environmental Impact Study (EIS) for a proposed industrial subdivision located at 1665 Scotch Line Road in Elmira, ON. Please review the terms and circulate to Grand River Conservation Authority (GRCA), Township of Woolwich (Township), and Region of Waterloo (Region) staff for discussion and approval.

BACKGROUND

The client requires a scoped EIS, prepared to the satisfaction of the GRCA, Township, and Region to develop the subject property municipally addressed as 1665 Scotch Line Road in Elmira, ON. The proposed works include an Industrial Subdivision and associated Stormwater Management, streets, and an open space block.

The Region of Waterloo Official Plan does not identify any regionally significant features within the property limits, a significant woodland is present on the adjacent lands, within the 120 m study and identified on *Figure 1,* which is considered a Core Environmental Feature. The Region of Waterloo requires the EIS to meet their standards as a study is required for development proposed adjacent to or within Core Environmental Features. If the wetland present is determined to be provincially significant, it would also be considered a Core environmental feature.

The property is zoned by the Township of Woolwich Zoning By-law 55-85 as Agricultural (A). GRCA mapping identifies a portion of a wetland feature on the subject property per GRCA mapping. Regulatory Floodplain associated with a small portion of a regulatory Watercourse is also present within the property limits. A portion of the property is within the associated GRCA regulated area, due to the presence of the wetlands and Elmira Drain #1, a tributary of Canagagigue Creek, running adjacent to the property.

BACKGROUND REVIEW

In preparing the Terms of Reference, the following sources were reviewed for background information:

- Aerial photography of the subject site,
- Draft Concept Plan, January 2024 by MHBC
- GRCA pre-consultation comments, August 9, 2023
- Official Plan Amendment, Zoning By-law Amendment, and Draft Plan of Subdivision Applications 1665 Scotch Line Road, October 3, 2023, Region of Waterloo
- GRCA mapping (Accessed October 3, 2023) of natural heritage features (e.g., regulation limit, Wetlands, Floodplain, ANSIs),
- Region of Waterloo Official Plan (2015),
- Township of Woolwich Official Plan (2022),
- Township of Woolwich Zoning By-law 55-86 (2022),
- Township of Woolwich, Engineer's Report, Elmira Drain #1 2020, November 2022, GM BluePlan.
- Municipal Aquifer Conceptual Site Model, LANXESS Canada, Elmira, Ontario, undated
- Information as it relates to the bypass, to be provided by the Region and MHBC when available,
- Natural Heritage Information Center, Make-a-map, accessed November 28, 2023,
- Ontario Nature. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. Accessed October 6, 2023,
- Ontario Breeding Bird Atlas. Bird Studies Canada, 2007. Accessed October 6, 2023,

- Federation of Ontario Naturalists, Atlas of the Mammals of Ontario. Accessed October 6, 2023,
- Ontario Nature. Ontario Butterfly Atlas, Accessed November 28, 2023,
- iNaturalist. Accessed November 28, 2023,
- eBird. Cornell Lab of Ornithology. Accessed November 28, 2023,
- Department of Fisheries and Oceans online mapping. Accessed November 28, 2023,
- LIO Aquatic Resource Area Survey Points and Line Segment online mapping. Accessed November 28, 2023.
- LIO Constructed Drain and Tile Drainage Area online mapping. Accessed December 21, 2023.

We have also requested reports from GHD regarding contamination of the groundwater and watercourse relating to the LANXESS Canada Manufacturing facility.

STUDY AREA

The study area includes the subject property and up to 120 m beyond the subject property where permission to access property is granted (*Figure 1*).

As needed, the lands adjacent to the study area may require further access to assist with understanding the features and functions of natural heritage features.

Lands outside of the field study area will be reviewed from existing background information (e.g., Region of Waterloo Official Plan).

PLANNING CONTEXT

Provincial Policy Statement (2020)

The Provincial Policy Statement indicates that natural heritage features shall be protected for the long term. Development may be permitted within or adjacent to Natural Heritage Features where an EIS demonstrates that there will be no negative impacts on the natural heritage resource. Consequently, an EIS is required to demonstrate that the proposed development project will not negatively impact the adjacent natural features.

Endangered Species Act, 2007

The Endangered Species Act (ESA) (Subsection 9(1)) states that:

"No person shall,

(a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;

(b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,

(i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species,

(ii) any part of a living or dead member of a species referred to in subclause (i),

(iii) anything derived from a living or dead member of a species referred to in subclause (i); or

(c) sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b) (i), (ii) or (iii).

Clause 10(1)(a) of the ESA also states that:

"No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario list as an endangered or threatened species."

Clause 16(5) of the ESA states that:

"An agreement entered into under this section may require the authorized party under the agreement to pay a species conservation charge to the Agency in accordance with Section 20.3 if an impacted species under the agreement is also a conservation fund species."

Clause 17(1) of the ESA states:

"The Minister may issue a permit to a person that, with respect to a species specified in the permit that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species, authorizes the person to engage in an activity specified in the permit that would otherwise be prohibited by Section 9 or 10. 2007, c. 6, s. 17(1)."

Fisheries Act, 1985

The study area contains fish-bearing waters in the form of Canagagigue Creek. This area and the fish within are protected under the Federal Fisheries Act, 1985. The Fisheries Act provides protection for the sustainability and ongoing productivity of Canada's recreational, commercial, and Aboriginal fisheries.

Section 35 (1) of the Fisheries Act states that:
"No person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat."

The Fisheries Act requires that projects and activities avoid causing serious harm to fish and fish habitat unless authorized to do so by the Department of Fisheries and Oceans Canada (DFO). This applies to work conducted in or near waterbodies that support direct or indirect fish habitat. Within the context of the proposed development, any proposed actions that could impact fish or fish habitat would need to be assessed for compliance with the Fisheries Act. If it

is determined that proposed actions will cause serious harm to fish, which cannot be mitigated for, then a Fisheries Act Authorization would be required.

Species at Risk Act (S.C. 2002, c. 29)

The Species at Risk Act (SARA) includes prohibitions to protect listed wildlife species. Prohibitions of SARA within the Province of Ontario generally apply to species present on federal lands and all aquatic Species at Risk (SAR).

SARA subsection 32 (1) and (2) states that:

No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species.
And,
No person shall possess, collect, buy, sell or trade an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species, or any part or derivative of such an individual.

SARA subsection 33 also states that:

No person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered species or a threatened species, or that is listed as an extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada.

SARA subsection 34(1), identifies where SARA does not apply in the Province:

With respect to individuals of a listed wildlife species that is not an aquatic species or a species of birds that are migratory birds protected by the Migratory Birds Convention Act, 1994, sections 32 and 33 do not apply in lands in a province that are not federal lands unless an order is made under subsection (2) to provide that they apply.

SARA subsection 58 (1) identified the restrictions to the destruction of critical Habitat, and states that:

Subject to this section, no person shall destroy any part of the critical habitat of any listed endangered species or of any listed threatened species — or of any listed extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada — if…b) the listed species is an aquatic species; or….

Where impacts may occur or are expected, agreements or permits may be entered into with the appropriate ministry, as outlined in section 73, which states:

(1) The competent minister may enter into an agreement with a person, or issue a permit to a person, authorizing the person to engage in an activity affecting a listed wildlife species, any part of its critical habitat or the residences of its individuals.

(2) The agreement may be entered into, or the permit issued, only if the competent minister is of the opinion that
(a) the activity is scientific research relating to the conservation of the species and conducted by qualified persons;
(b) the activity benefits the species or is required to enhance its chance of survival in the wild; or
(c) affecting the species is incidental to the carrying out of the activity.

3) The agreement may be entered into, or the permit issued, only if the competent minister is of the opinion that
(a) all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution has been adopted;
(b) all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals; and
(c) the activity will not jeopardize the survival or recovery of the species.

The Species at Risk Act requires that projects and activities avoid causing serious harm to Species at Risk or their habitat unless authorized to do so. This applies to work conducted in or near waterbodies that support species at risk fish, or their critical habitat. Any proposed actions that could impact species at risk or their habitat would need to be assessed for compliance. If it is determined that proposed actions will cause serious harm to species at risk that cannot be mitigated, then a Species at Risk Act Authorization would be required.

Waterloo Regional Official Plan (2015)
Following the Region of Waterloo adopting Regional Official Plan Amendment number 6 (ROPA 6) in April 2023, the subject property is entirely within the Elmira Township Urban Area and Designated Greenfield Area. The subject lands are identified as being within Prime Agricultural Area on the border of the Elmira Built-Up Area. Prime Agricultural Area designation identifies an area where prime agricultural lands predominate. This designation includes areas of prime agricultural lands and associated areas of Canada Land Inventory Class 4 to 7 soils, and additional areas where there is a local concentration of farms that exhibit characteristics of ongoing agriculture. The Greenlands Network is present in the study area (i.e., adjacent to the subject lands) in the form of a Core Environmental Feature (the Significant Woodland in the west of the study area) and Fish Habitat. Other Core Environmental Features (e.g., Significant Habitat of Endangered or Threatened Species) may be identified through field investigations.

Section 7.C.9 states:
"Development or site alteration will not be permitted within Core Environmental Features, except for:

a) forest, fish or wildlife management and conservation;

b) *flood or erosion control projects demonstrated to be in the public interest and for which no other alternative is feasible;*
c) *minor alterations to legal non-conforming land uses within Core Environmental Features;*
d) *infrastructure projects in accordance with Policies 7.C.12 and 7.C.13; or*
e) *mineral aggregate operations in accordance with the policies in Chapter 9;*

Any application for development or site alteration for the above uses will require the submission of an Environmental Impact Statement, to the satisfaction of the Region, to determine the mitigation measures to be implemented, as appropriate, through the development review process."

Section 7.C.10 states:
"Development or site alteration will only be permitted on lands contiguous to a Core Environmental Feature where an Environmental Impact Statement, or similar study, submitted in accordance with the policies in Section 7.G has determined to the satisfaction of the Region, Area Municipalities, the Grand River Conservation Authority and/or the Province, as appropriate, that approval of the proposed development or site alteration would not result in adverse environmental impacts on the features and ecological functions of the Core Environmental Feature. The Region may require conditions of approval to implement such recommendations."

Section 7.C.11 states:
"An Environmental Impact Statement submitted in accordance with Policies 7.C.9 or 7.C.10 will identify appropriate buffers to Core Environmental Features, to the satisfaction of the Region, in consultation with Area Municipalities and the Grand River Conservation Authority. Such buffers will not only serve to protect Core Environmental Features from adverse environmental impacts but will also provide opportunities for net habitat enhancement to enhance or, wherever feasible, restore the ecological functions of the Core Environmental Feature. The location, width, composition and use of buffers will be in accordance with the approved Environmental Impact Statement, with buffers being a minimum of 10 metres as measured from the outside boundary of the Core Environmental Feature and established and maintained as appropriate self-sustaining native vegetation".

Woolwich Township Official Plan (2022 Consolidation)
The majority of the subject property is within the Township Urban Area and is designated as Industrial within the East Industrial Policy Area, as per Schedule A – Elmira Land Use Plan. The northeastern corner of the subject property is outside of the Township Urban Area and is designated as Prime Agricultural Area. Map 5.4 identifies the majority of the site as occurring within the Settlement Areas boundaries, and as Designated Greenfield Area. Along the western edge of the property, Canagagigue Creek and its associated wetlands and floodplain are designated as Environmental Protection and Natural Hazards respectively in Schedule A. Map 13.1 identifies the presence of the Greenlands Network in the study area in the form of Core Environmental Features (the significant woodland), Potential Fish Habitat (Canagagigue Creek), and Supporting Environmental Features (the wetlands and creek). Map 13.2 identified the presence of Floodplain Area-One Zone in the study area.

Section 5.7.3 states that:
"The Township, in collaboration with the Region, will ensure that development occurring in the designated greenfield areas of the Elmira and St. Jacobs Township Urban Areas will be planned and developed to:

a) *Conform to the general development policies set out in Section 5.5;*
b) *Establish a network of continuous sidewalks, community trails and bicycle pathways that provide direct, safe, comfortable, and convenient linkages within the neighbourhood and externally to other neighbourhoods, including linkages to transit stops, employment areas, school sites, food destinations and community facilities;*
c) *Provide a development pattern and road network that supports the integration of transit services, where planned to be available in the future;*
d) *Provide any required easements, land dedications and pedestrian amenities to support walking, cycling and existing or planned transit services for everyday activities;*
e) *Discourage the use of noise attenuation walls and berms, where appropriate, through the use of passive noise attenuation measures; and*
f) *Support development on municipal water and wastewater services."*

Section 13.2.4 states:
"Development applications or site alteration will be prohibited on lands where elements of the Greenlands Network have not been adequately identified and evaluated through a watershed/subwatershed study or any other appropriate natural heritage review, until such time as an Environmental Impact Statement has been prepared by an owner/applicant in accordance with the policies of this Plan and/or the Regional Official Plan, to identify and evaluate any such elements located on the subject lands and, wherever appropriate, contiguous lands."

Section 13.7.5 states:
"Development applications, site alteration or infrastructure projects will only be permitted on lands contiguous to a Core Environmental Feature where an Environmental Impact Statement, or similar study, submitted in accordance with the policies in Section 13.13 has determined to the satisfaction of the Township, the Region, the Grand River Conservation Authority and/or the Province, as appropriate, that approval of the proposed development or site alteration would not result in adverse environmental impacts on the features and ecological functions of the Core Environmental Feature."

Section 13.8.3 states:
"Watershed/subwatershed studies, Environmental Impact Statements and other appropriate studies will be used to determine appropriate means to implement fishery policy and the specification of protective mitigation measures."

Section 13.8.4 states:
"Any requirements imposed through watershed/subwatershed studies, Environmental Impact Statements and other appropriate studies must be implemented by the proponent to the satisfaction of the Federal Ministry of Fisheries and Oceans or its delegate."

Section 13.9.3 states:
"The submission of an Environmental Impact Statement for review by the Township in consultation with the Region and the Grand River Conservation Authority will be required for all development proposed within or adjacent to a Supporting Environmental Feature, not already prohibited through Grand River Conservation Authority Policy. For the purposes of interpretation of this policy, "adjacent" will be defined as lands within 120 metres of the boundary of the Supporting Environmental Feature."

Section 13.14.5 states:
"Within the Natural Hazards designation, development or site alteration will not be permitted within:

a) Hazardous lands which are impacted by flooding hazards and/or erosion hazards"

Section 13.14.14.2 states:
"No new development is permitted within the Flood Plain"

Woolwich Township Zoning By-law 55-85
The subject property is currently zoned as Agricultural (A) and is subject to site specific exemption A93.

Grand River Conservation Authority
A portion of the subject property is within the GRCA Regulation Limit and contains unevaluated wetlands, a watercourse, and a one-zone floodplain.

Section 8.1.1 states:
"Development will not be permitted within the Riverine Flooding Hazard except in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies and Sections 8.1.2-8.1.29 – Policies for One-Zone Policy Areas."

Section 8.4.4 states:
"Development within a naturally occurring wetland may be permitted where the wetland is less than 0.5 hectares (1.24 acres), and it can be demonstrated that the wetland is not:

a) part of a Provincially Significant Wetland,
b) located within a floodplain or riparian community,
c) part of a Provincially or municipally designated natural heritage feature, a significant woodland, or hazard land,
d) a bog, fen,
e) fish habitat,
f) significant wildlife habitat,
g) confirmed habitat for a Provincially or regionally significant species as determined by the Ministry of Natural Resources and Forestry or as determined by the municipality,

h) part of an ecologically functional corridor or linkage between larger wetlands or natural areas,
i) part of a groundwater recharge area, or a groundwater discharge area associated with any of the above."

Section 8.4.9 states:
"Development within an area of interference less than or equal to 30 metres (100 feet) from a wetland may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and where an Environmental Impact Study demonstrates that:

a) there are no negative or adverse hydrological or ecological impacts on the wetland,
b) all development is located outside of the wetland and maintains as much setback as feasible,
c) development is located above the water table, except as specified in Section 8.4.11, and
d) septic systems are located a minimum of 15 metres (50 feet) from the wetland and 0.9 metres (3 feet) above the annual maximum water table."

Section 8.4.10 states:
"Development within an area of interference between 30 metres (100 feet) and 120 metres (394 feet) from a wetland, which in the opinion of the GRCA may result in hydrologic impact,23 may be permitted where an Environmental Impact Study demonstrates that policies in Sections 7.1.2-7.1.3 – General Policies are met."

Engineer's Report, Elmira Drain #1
As part of the recommendations for Elmira Drain #1, a 10 m setback from the top of the nearest bank of the drain was established.

Section 10 states:
"The working area for construction purposes shall be a width of 20m centered on the proposed tile drain, and 20m from top of bank for open drains. The working areas for maintenance purpose shall be a width of 10m centered on the proposed tile drain and 10m from top of bank for open drains. Each landowner on whose property the drainage work is to be constructed shall designate access to and from the working area at the time of construction or upon failure to do so, the Engineer or Drainage Superintendent, as the case may be, shall designate access.

The working area for drain cleanout shall be 20m from top of bank wherever possible but shall take into account the adjacent land use. In sections where there is heavy forest cover, the working area will be reduced to the extent possible."

BACKGROUND REVIEW

Additional background natural heritage information related to the subject lands and adjacent lands identified the following information:

1. Review of the Ontario Reptile and Amphibian Atlas identified 14 species that are known to occur or have historically occurred within the 10 km x 10 km square that contains the study area (17NJ32). This list includes three species which are considered species of conservation concern: Midland Painted Turtle, Snapping Turtle, and Milksnake.

2. The Natural Heritage Information Center identified six SAR within the 1 km x 1 km square that contains the study area and the surrounding squares (17NJ3726, 17NJ3725, 17NJ3724, 17NJ3723, 17NJ3626, 17NJ3526, 17NJ3623, 17NJ3523, 17NJ3624, 17NJ3524, 17NJ3625, 17NJ3525): Bobolink, Eastern Wood-pewee, Red-headed Woodpecker, Wood Thrush, Silver Shiner, and Gypsy Cuckoo Bumble Bee.

3. The Ontario Breeding Bird Atlas identified 82 species that are known to occur or have historically occurred in the 10 km x 10 km square that contains the study area (17NJ32). This list includes seven SAR: Bank Swallow, Barn Swallow, Bobolink, Chimney Swift, Eastern Meadowlark, Eastern Wood-pewee, and Wood Thrush.

4. The Ontario Mammal Atlas indicates 14 mammal species that are known to occur or have historically occurred in the 10 km x 10 km square that contains the study area (17NJ32). No SAR were identified, although it should be noted that SAR bats can be present anywhere in Ontario,

5. Review of the Atlas of the Butterflies of Ontario identified 31 species that are known to occur or have historically occurred in the 10 km x 10 km square that contains the study area (17NJ32), including one SAR: Monarch.

6. iNaturalist observations restricted to research grade within 2 km of the centre of the subject property identified 302 species, eight of which are SAR: Olive-sided Flycatcher, Peregrin Falcon, Rusty Blackbird, Monarch, Wavy-rayed Lampmussel, Snapping Turtle, Dense Blazing Star, and Butternut. It should be noted that some SAR locations are obscured in iNaturalist,and may not actually occur within the vicinity of the study area.

7. eBird records from the nearby Elmira-Lions Ring Trail Hotspot (750 m west from the centre of the site) indicate the recent presence of 123 species, including seven SAR: Bank Swallow, Barn Swallow, Chimney Swift, Eastern Wood-pewee, Olive-sided Flycatcher, Rusty Blackbird, and Wood Thrush.

8. The online Fisheries and Oceans Canada (DFO) mapping system was consulted in the background review. A review for SAR Critical Habitat and species presence was completed in a 1 km radius around the study area. No critical habitat for any species was identified in the search radius, and no SAR were identified as being present or potentially present.

9. The Aquatic Resources Area (ARA) Survey Point and Line Segment mapping indicated the presence of 36 species of fish within 1 km of the study area. None of these species were SAR. Northern Pike spawning was also identified as occurring within the vicinity of the study area.

This information indicates that there is a potential presence of additional natural heritage features and constraints that may require investigation and/or comment.

PROPOSED TERMS OF REFERENCE

Scoped Environmental Impact Study

To fulfill the requirements of this study, we will:

A. Terms of Reference

1. Review background information (e.g., proposed activity, relevant sections of Natural Heritage System components of the Township of Woolwich OP, Region OP, investigation of wildlife atlases and NHIC, Elmira Drain #1 report, LANXESS Canada groundwater/watercourse contamination reports when available).
2. Prepare a Terms of Reference and provide to the Township of Woolwich, Region of Waterloo and GRCA for approval.
3. Complete a MECP Request for Information to acquire any available Species at Risk information. COMPLETE

B. Field Assessment

To fulfill the requirements of the approved Terms of Reference, AA will:

1. Identify the limits of the designated natural heritage features (e.g., woodlands, wetlands) within the property boundaries.
2. Wetland Limit: Confirm the boundary of the GRCA wetland within the study area, where present within the property boundary, and coordinate with the GRCA to field-verify the staked boundary. Wetland limit to be identified by an OWES certified ecologist.
3. Conduct an aquatic assessment and aquatic habitat investigation to characterize the present watercourse and identify any fisheries constraints including a review of substrates and suitability for species at risk, and an assessment of channel morphology for stability and signs of erosion and flow blockages.
4. Complete a leaf-off Bat Habitat Assessment, review trees meeting the MNRF criteria (>10cm DBH) within the proposed development and immediately adjacent area and identify trees that meet the criteria for bat maternity habitat and require consideration under the ESA. Any buildings proposed for removal will also be reviewed for candidate bat habitat.
5. Conduct a breeding bird survey of the study area, following the protocol of the Ontario Breeding Bird Atlas (Bird Studies Canada, 2004) and the MNRF Grassland Bird Protocol, and including both point counts and area searches. The breeding bird survey requires three, focused, early morning site visits during the period between late May and early July.
6. Conduct one site visit to characterize vegetation communities using the ELC system (MNRF) of the Study Area.
7. Complete two site visits to carry out a two-season (Spring & Summer) botanical inventory of the site.
8. Investigate the study area for the presence of significant wildlife habitat.

9. Investigate the study area for presence of species at risk and species at risk habitat.
10. Record observations of incidental wildlife during site visits.

C. Scoped Environmental Impact Study (EIS)

1. Analyze findings and prepare a map that shows:
    a. Identified natural heritage features, and functions and landscape level features (e.g., linkages, wetlands).
    b. Proposed buffers to natural heritage features
    c. The proposed site plan (location of building, amenities, drive, site grading)
    d. ELC vegetation communities
    e. Existing agricultural field tile maps, if data are available
    f. Other noteworthy features as needed
    g. Locations of other natural heritage features from background literature searches (e.g., mammal atlas, herpetofaunal atlas, Township's OP).

2. Conduct an impact assessment by reviewing the proposed development's direct, indirect, and induced (i.e., residual, ongoing) impacts on the natural features. Provide an recommendation about the location of the components of the general concept plan to reduce/avoid impacts to natural heritage features. Show the configuration of the proposed development on the subject property and assess for minimizing impacts to ecological features and functions, including rationale for proposed buffers. This will involve discussions with the proponent and AA.
3. Provide policy rationale for expected impacts to natural heritage features e.g., removal of trees and grading to accommodate the subdivision.
4. Edge Management Guidelines and Compensation: Provide detailed and site-specific recommendations of where and why naturalization treatments may be needed to protect vegetation features (e.g., woodlands, wetlands) adjacent to the development activity.
5. Prepare a report of the EIS that includes background information, methods, existing conditions, proposed development, discussion and interpretation of other relevant studies such as the Stormwater Management Plan for the site and site and feature based water balances for pre and post development conditions, impact assessment and mitigation measures, and appendices of field studies (e.g., ELC, flora list).
6. Submit EIS to client for review followed by distribution to Township, Region and GRCA.

I look forward to your response regarding these proposed terms of reference. If you require clarification, please do not hesitate to email, or call me at 519.781.1581.

Yours truly,

ABOUD & ASSOCIATES INC.

Heather Dixon, PhD
Aquatic Ecologist
heather@aboudtng.com

Figure 1. Study Area

Appendix 1. Candidate Significant Wildlife Habitat
Appendix 2. Candidate Species at Risk Habitat

Cc: Meghan Lippert, MHBC (email)
Cheryl-Anne Ross, Aboud & Associates Inc. (email)

LEGEND

- SUBJECT LANDS
- STUDY AREA
- DRAIN #1
- WETLAND
- SIGNIFICANT WOODLAND
- ENGINEERED FLOODPLAIN
- ESTIMATED FLOODPLAIN
- GRCA REGULATION LIMIT

Information Sources:

1. Waterloo Region Orthophotography, Accessed October 2023.
2. Grand River Information Network, Accessed October 2023.
3. Land information Ontario, Accessed October 2023.

Title:

STUDY AREA

Project:

1665 SCOTCH LINE
ELMIRA, ON

Date: OCTOBER 2023
Project: AA23-232A
Scale: 1 : 7000

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Consulting Arborists • Ecologists • Landscape Architects
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Figure No: 1

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	Candidate SWH present (Field survey type required)
1	Waterfowl stopover and Staging Areas (terrestrial)	Seasonal Concentration Areas	- Fields with Sheet water in spring (incl. agricultural)	- Mixed species aggregations of 100 or more individuals confirms SWH	None, no habitat present.
2	Waterfowl Stopover and Staging (Aquatic)	Seasonal Concentration Areas	- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs - SWTP & SWMP are not SWH	- Aggregations of 100 or more listed species for 7 days (i.e. >700 waterfowl use days) confirms SWH	None, no habitat present.
3	Shorebird Migratory stopover	Seasonal Concentration Areas	- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy, and un-vegetated shoreline habitat	- 3 or more listed species and >1000 shorebird use days, or >100 whimbrel, confirms SWH	None, no habitat present.
4	Raptor Wintering Area	Seasonal Concentration Areas	- Combination of upland field and woodland habitat >20ha total (includes,>15ha upland field) - least disturbed sites, idle, fallow or lightly grazed field/meadow best	- 1 or more Short-eared Owl, or at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH	Candidate habitat present. Need to confirm upland field usage.
5	Bat Hibernacula	Seasonal Concentration Areas	- Caves, mine shafts, underground foundations, karsts. - buildings are not SWH	- All sites with confirmed hibernating bats, confirms SWH	None, no habitat present.
6	Bat Maternity Colony	Seasonal Concentration Areas	- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with >10/ha trees (>25cm DBH) in early stages of decay (class 1-3) - buildings are not SWH	- >10 Big Brown Bats, >20 Little Brown Myotis, >5 adult female Silver-haired Bats confirms SWH	Yes, bat habitat assessment will be completed.
7	Turtle Wintering Area	Seasonal Concentration Areas	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH	None, no habitat present.
8	Reptile Hibernaculum	Seasonal Concentration Areas	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences, and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH. - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	None, no habitat present.

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	Candidate SWH present (Field survey type required)
9	Colonially-nesting Bird Habitat (cliff/bank)	Seasonal Concentration Areas	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	None, no habitat present.
10	Colonially-nesting Bird Habitat (Tree/shrub)	Seasonal Concentration Areas	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	None, no habitat present.
11	Colonially-nesting Bird Habitat (Ground)	Seasonal Concentration Areas	- Rocky islands or peninsulas within a lake or large river (natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	None, no habitat present.
12	Migratory Butterfly Stopover Area	Seasonal Concentration Areas	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	None, no habitat present.
13	Land bird Migratory Stopover Area	Seasonal Concentration Areas	- Woodlots >5ha in size - within 5km of Lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	None, no habitat present.
14	Deer Yarding Areas	Seasonal Concentration Areas	- ELC communities providing Thermal cover (FOM, FOC, SWM, SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	None identified in LIO mapping.
15	Deer Winter Congregation Areas	Seasonal Concentration Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF. - Contact MNRF or LIO for known deer winter areas.	None, identified in LIO mapping.
16	Cliffs & Talus Slopes	Rare Vegetation Communities	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	None, no habitat present.
17	Sand Barren	Rare Vegetation Communities	- Exposed, sparsely vegetated & caused by lack of moisture, fires, and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	None, no habitat present.

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	Candidate SWH present (Field survey type required)
18	Alvar	Rare Vegetation Communities	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	None, no habitat present.
19	Old Growth Forest	Rare Vegetation Communities	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	None, no habitat present.
20	Savannah	Rare Vegetation Communities	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size and must be restored to a natural state. - Confirm one or more savannah indicator species. - Not dominated by exotic or introduced species	None, no habitat present.
21	Tallgrass Prairie	Rare Vegetation Communities	- Ground cover dominated by prairie grasses with <25% tree cover. - Remnant sites such as Railway Right of ways are not SWH	- No minimum size and must be restored to a natural state. - Confirm one or more prairie indicator species. - Not dominated by exotic or introduced species	None, no habitat present.
22	Other Rare Vegetation Communities	Rare Vegetation Communities	- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)	- Field Studies Confirming ELC vegetation type is a rare vegetation community	None, no habitat present.
23	Waterfowl Nesting Areas	Specialized Habitats for Wildlife	- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM) - Extends 120m from a wetland (>0.5ha) and any small wetlands (<0.5ha) within a cluster of at least 3. - Upland area at least 120m wide	- Presence of 3 or more nesting pairs of listed species excluding Mallards - Presence of 10 or more nesting pairs including mallards - Any active Black Duck nesting site	None, no habitat present.
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	Specialized Habitats for Wildlife	- Forest communities, adjacent to riparian areas - Osprey nests usually at top of tree - Bald Eagle nest usually in super canopy tree in a notch within canopy	- Studies confirm one or more active Bald Eagle or Osprey nest. - Alternate nests included in SWH. - Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown	None, no habitat present.

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	Candidate SWH present (Field survey type required)
25	Woodland Raptor Nesting Habitat	Specialized Habitats for Wildlife	- Forested communities, forested swamp communities and cultural Plantations - Natural Forested/conifer plantations >30ha with >10ha interior habitat (200m buffer)	- One or more active nest of listed species	None, no habitat present.
26	Turtle Nesting Areas	Specialized Habitats for Wildlife	- Exposed Mineral soil (sand or gravel) adjacent (<100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities. - Located in open sunny areas, away from roads and less prone to predation - Municipal and provincial road shoulders are not SWH.	- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle	None, no habitat present.
27	Seeps and Springs	Specialized Habitats for Wildlife	- Areas where ground water comes to the surface. - Any forested area within the headwaters of a stream or river system	- Confirm site with 2 or more seeps/springs.	Adjacent woodland to be reviewed where access available during ELC/botanical.
28	Amphibian Breeding Habitat (woodland)	Specialized Habitats for Wildlife	- Breeding pools within woodlands - Wetland, pond, or pool >500m^2 within or adjacent (<120m) to a woodland. - Woodlands with permanent ponds, or those with water until mid-July more likely to be used.	- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3. - Wetland adjacent to woodlands includes travel corridor connecting features as SWH.	None, no habitat present.
29	Amphibian Breeding Habitat (Wetland)	Specialized Habitats for Wildlife	- Swamp, marsh, fen, bog, open aquatic, and shallow aquatic ELC communities. - Typically isolated from woodlands (>120m) but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands. - Wetlands >500m2 - Presence of shrubs & logs - Bullfrogs require permanent water bodies and abundant emergent vegetation.	- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3 - Or any wetland with confirmed breeding Bullfrog.	None, no habitat present.

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	Candidate SWH present (Field survey type required)
30	Area-sensitive Breeding Bird Habitat	Specialized Habitats for Wildlife	- Habitats where interior breeding birds are breeding. - Large mature (>60 years) forest stands or woodlots >30ha. - Forest and swamp ELC communities - Interior habitat at least 200m from edge	- Presence of nesting or breeding pairs of 3 or more of the listed species - Any site with Cerulean Warbler or Canada Warbler is SWH -	None, no habitat present.
31	Marsh Bird Breeding Habitat	Habitats of Species of Conservation Concern	- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen, and bog communities (see SWH Ecoregion guide for specifics) - Nesting occurs in wetlands; all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation - Green heron at edge of water sheltered by shrubs and trees.	- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species - Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail	None, no habitat present.
32	Open Country Bird Breeding Habitat	Habitats of Species of Conservation Concern	- Grassland area >30ha (natural & cultural fields and meadows) - Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing) - Mature hayfields or pasture at least 5 years old	- Nesting or breeding of 2 or more of the listed species. - Field with 1 or more Short-eared Owls	Breeding bird surveys.
33	Shrub/Early Successional Bird Breeding Habitat	Habitats of Species of Conservation Concern	- Cultural thickets, savannah, and woodland habitat - Large field area succeeding to shrub and thicket habitat >10ha in size - Patches of shrub ecosite may be complexed into larger old field ecosites for some species	- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species - Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH	None, no habitat present.

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	Candidate SWH present (Field survey type required)
34	Terrestrial Crayfish	Habitats of Species of Conservation Concern	- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp, and mixed swamp communities - Cultural meadow with inclusions of meadow marsh may be used - Wet edges of marshes and wet meadows should be surveyed for crayfish	- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat	ELC and botanical inventory.
35	Special Concern & Rare Wildlife Species	Habitats of Species of Conservation Concern	- All Special concern and Provincially Rare plant and animal species - Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites	- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable. - Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)	Suitable habitat for special concern and provincially rare species present. ELC, botanical inventory, breeding bird surveys, and aquatic habitat assessment required.
36	Amphibian Movement Corridor	Wildlife Movement Corridors	- Corridors may occur in all ecosites associated with water. - Presence of significant amphibian breeding indicates the requirement for identifying corridors. - Movement corridors between breeding habitat and summer habitat	- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant - At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of <20m - Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat	None, no habitat present.
37	Deer Movement Corridor	Wildlife Movement Corridors	- May occur in all forested ecosites. - Determined when deer wintering habitat is confirmed as SWH	- Corridors at least 200m wide with gaps <20m leading to wintering habitat. - Unbroken by roads and residential areas - Shorter corridors are more significant	None, no habitat present.

Common name	Scientific name	Group	SARO	Cosewic	S-rank	Background sources	Habitat requirements	Candidate habitat in study area	Field studies recommended
Jefferson Salamander	*Ambystoma jeffersonianum*	Amphibians	END	END	S2	MNRF Species Occurrence Mapping	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat present in study area.	None needed.
Unisexual Ambystoma, Jefferson dependent population	*Ambystoma laterale - (2) jeffersonianum*	Amphibians	END	END	S2	MNRF Species Occurrence Mapping	Unisexual ambystoma share the same habitat requirements as Jefferson salamander, as they rely on Jefferson salamander for sperm donation to breed (COSEWIC 2016).	No habitat present in study area.	None needed.
Western Chorus Frog – Great Lakes / St. Lawrence - Canadian Shield Population	*Pseudacris triseriata pop. 2*	Amphibians	NAR	THR	S4	MNRF Species Occurrence Mapping	Generally found in lowland communities, such as swamps, inhabiting lowland shrubs and grasses in the community, near breeding habitat. Breeding occurs in lowland, ephemeral ponds, devoid of predatory fish species (COSEWIC 2008a).	No habitat present in study area.	None needed.
Gypsy Cuckoo Bumble Bee	*Bombus bohemicus*	Butterflies, bees, damselflies, dragonflies & insects	END	END	S1S2	NHIC	Occurs in diverse habitats, including open meadows, mixed farmlands, urban areas, boreal forest, and montane meadows. Feed on pollen and nectar from a variety of plant genera (COSEWIC 2014).	Habitat potentially present in study area.	ELC and botanical inventory.
Monarch	*Danaus plexippus*	Butterflies, bees, damselflies, dragonflies & insects	SC	SC	S2N, S4B	MNRF Species Occurrence Mapping, OBA (2022), iNat (2023)	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b).	Habitat potentially present in study area.	ELC and botanical inventory.
West Virginia White	*Pieris virginenisis*	Butterflies, bees, damselflies, dragonflies & insects	SC	NAR	S3	MNRF Species Occurrence Mapping	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort (*Cardamine diphylla*) and cut-leaved toothwort (Burke 2013).	No habitat present in study area.	None needed.
Yellow-banded Bumble Bee	*Bombus terricola*	Butterflies, bees, damselflies, dragonflies & insects	SC	SC	S3S5	MNRF Species Occurrence Mapping	Occur in a diverse range of habitat, including mixed woodlands, farmlands, urban areas, montane meadows, prairie grasslands and boreal habitats. Queens overwinter underground and in decomposing organic material such as rotting lots (COSEWIC 2015).	Habitat potentially present in study area.	ELC and botanical inventory.
Acadian Flycatcher	*Empidonax Virenscens*	Birds	END	END	S2S3B	MNRF Species Occurrence Mapping	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No habitat present in study area.	None needed.
Bank Swallow	*Riparia riparia*	Birds	THR	THR	S4B	MNRF Species Occurrence Mapping, OBBA, eBird (2023)	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat present in study area.	None needed.
Barn Swallow	*Hirundo rustica*	Birds	SC	THR	S5B	MNRF Species Occurrence Mapping, OBBA, eBird (2023)	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	Habitat potentially present in study area.	Breeding bird survey.

Common name	Scientific name	Group	SARO	Cosewic	S-rank	Background sources	Habitat requirements	Candidate habitat in study area	Field studies recommended
Barn Owl	*Tyto alba*	Birds	END	END	S1	MNRF Species Occurrence Mapping	Requires open habitat for foraging, such as old fields and pastures, that provide habitat for rodents, and uses a variety of natural and man-made structures for nesting (COSEWIC 2010e)	No habitat present in study area.	None needed.
Bobolink	*Dolichonyx oryzivorus*	Birds	THR	THR	S4B	MNRF Species Occurrence Mapping, NHIC, OBBA	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	Habitat potentially present in study area.	Breeding bird surveys.
Canada Warbler	*Wilsonia canadensis*	Birds	SC	THR	S4B	MNRF Species Occurrence Mapping	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No habitat present in study area.	None needed.
Cerulean Warbler	*Setophaga cerulea*	Birds	THR	END	S3B	MNRF Species Occurrence Mapping	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	No habitat present in study area.	None needed.
Chimney Swift	*Chaetura pelagica*	Birds	THR	THR	S4B, S4N	MNRF Species Occurrence Mapping, OBBA, eBird (2023)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNRF 2013).	No habitat present in study area.	None needed.
Common Nighthawk	*Chordeiles minor*	Birds	SC	THR	S4B	MNRF Species Occurrence Mapping	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat present in study area.	None needed.
Eastern Meadowlark	*Sturnella magna*	Birds	THR	THR	S4B	MNRF Species Occurrence Mapping, OBBA	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	Habitat potentially present in study area.	Breeding bird surveys.
Eastern Wood-Pewee	*Contopus virens*	Birds	SC	SC	S4B	MNRF Species Occurrence Mapping, NHIC, OBBA, eBird (2023)	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple (Acer), Elm (Ulmus) or Oak (Quercus), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	Habitat potentially present in study area.	Breeding bird surveys.
Evening Grosbeak	*Coccothraustes vespertinus*	Birds	SC	SC	S4B	MNRF Species Occurrence Mapping	Breeding habitat includes open, mature mixed wood forests, where fir species and/or White Spruce are dominant, and Spruce Budworm is abundant (COSEWIC 2016)	No habitat present in study area.	None needed.
Golden-winged Warbler	*Vermivora chrysoptera*	Birds	SC	THR	S4B	MNRF Species Occurrence Mapping	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat present in study area.	None needed.
Grasshopper Sparrow	*Ammodramus savannarum*	Birds	SC	SC	S4B	MNRF Species Occurrence Mapping	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	Habitat potentially present in study area.	Breeding bird surveys.
Least Bittern	*Ixobrychus exilis*	Birds	THR	THR	S4B	MNRF Species Occurrence Mapping	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat present in study area.	None needed.
Louisiana Waterthrush	*Seirus motacilla*	Birds	SC	THR	S3B	MNRF Species Occurrence Mapping	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No habitat present in study area.	None needed.

Common name	Scientific name	Group	SARO	Cosewic	S-rank	Background sources	Habitat requirements	Candidate habitat in study area	Field studies recommended
Olive-sided Flycatcher	*Contupus cooperi*	Birds	SC	THR	S4B	MNRF Species Occurrence Mapping, eBird (2023), iNat (2023)	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	Habitat potentially present in study area.	Breeding bird surveys.
Peregrine Falcon	*Falco peregrinus*	Birds	SC	SC	S3B	MNRF Species Occurrence Mapping, iNat (2022)	Nests on cliff-ledges (50-200m preferred) near foraging areas. Also nests on anthropomorphic structures, such as tall building ledges, bridges, quarries, mines and cuts for road beds (COSEWIC, 2007a).	No habitat present in study area.	None needed.
Red-headed Woodpecker	*Melanerpes erythrocephalus*	Birds	END	THR	S4B	MNRF Species Occurrence Mapping, NHIC	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat present in study area.	None needed.
Rusty Blackbird	*Euphagus carolinus*	Birds	SC	SC	S4B	eBird (2023), iNat (2023)	Breeding habitat is characterized by coniferous-dominated forests adjacent to wetlands, such as slow-moving streams, peat bogs, sedge meadows, marshes, swamps and beaver ponds. On migration, the Rusty Blackbird is primarily associated with wooded wetlands (COSSARO 2017).	No habitat present in study area.	None needed.
Short-eared Owl	*Asio flammeus*	Birds	THR	SC	S2N, S4B	MNRF Species Occurrence Mapping	Breeds in open habitats, including grasslands, old pasture marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	Habitat potentially present in study area.	Breeding bird surveys.
Wood Thrush	*Hylocichla mustelina*	Birds	SC	THR	S4B	MNRF Species Occurrence Mapping, NHIC, OBBA, eBird (2023)	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	Habitat potentially present in study area.	Breeding bird surveys.
Yellow-breasted Chat	*Icteria virens*	Birds	END	END	S1B	MNRF Species Occurrence Mapping	Shrub specialist, nesting in early successional, dense, low-shrub habitat, including old fields, hydro-cutovers and forest edges experiencing regeneration (COSEWIC 2011c).	Habitat potentially present in study area.	Aquatic habitat assessment.
Black Redhorse	*Moxostoma duquesnei*	Fish	THR	THR	S2	MNRF Species Occurrence Mapping	Associated with cool, clear streams of moderate size with substrates of rocky, cobble, sand, or silt. Found in the Lake Erie and Grand River Watersheds (COSEWIC, 2005a).	Habitat potentially present in study area.	Aquatic habitat assessment.
Northern Sunfish (Great Lakes-Upper St. Lawrence Population)	*Lepomis peltastes*	Fish	SC	SC	S3	MNRF Species Occurrence Mapping	Prefers shallow, vegetated areas of warm lakes, ponds, and slowly flowing watercourses. Usually occurs in clear waters and is considered intolerant of siltation. Substrate usually consists of sand and gravel, as in the Thames River (COSEWIC 2016)	Habitat potentially present in study area.	Aquatic habitat assessment.
Silver Shiner	*Notropis photogenis*	Fish	THR	THR	S2S3	MNRF Species Occurrence Mapping, NHIC	Associated with large, wide streams (usually >20m) in deep riffles and pools, with substrates of gravel, boulder, rubble, and sand (COSEWIC, 2011d).	Habitat potentially present in study area.	Aquatic habitat assessment.
Rainbow	*Villosa iris*	Molluscs	SC	SC	S2S3	MNRF Species Occurrence Mapping	Most abundant in small to medium-sized rivers but can also be found in inland lakes. Usually found in or near riffles and along the edges of emergent vegetation in moderate to strong current. Occupies substrate mixtures of cobble, gravel, sandy and occasionally mud or boulder (COSEWIC 2015).	Habitat potentially present in study area.	Aquatic habitat assessment.
Wavy-rayed Lampmussel	*Lamsilis fasciola*	Molluscs	THR	SC	S1	MNRF Species Occurrence Mapping, iNat (2022)	Inhabits clear rivers and streams of various sizes with steady flows and stable substrates and is typically found in gravel or sand substrates in and around riffle areas. Most abundant in small to medium-sized stream and occurs at sites that support a great diversity of other mussel species (COSEWIC 2010).	Habitat potentially present in study area.	Aquatic habitat assessment.

Common name	Scientific name	Group	SARO	Cosewic	S-rank	Background sources	Habitat requirements	Candidate habitat in study area	Field studies recommended
Eastern Small-footed Myotis	*Myotis leibii*	Mammals	END	NA	S2S3	MNRF Species Occurrence Mapping	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernate singly or in small clusters in mines and caves (NatureServe, 2015).	Habitat potentially present in study area.	Bat habitat assessment.
Little Brown Myotis	*Myotis lucifugus*	Mammals	END	END	S3	MNRF Species Occurrence Mapping	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	Habitat potentially present in study area.	Bat habitat assessment.
Northern Myotis	*Myotis septentrionalis*	Mammals	END	END	S3	MNRF Species Occurrence Mapping	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	Habitat potentially present in study area.	Bat habitat assessment.
Tri-colored Bat	*Perimyotis subflavus*	Mammals	END	END	S3?	MNRF Species Occurrence Mapping	Hibernate in caves, abandoned mines, wells, and tunnels. Summer roosts include clumps of dead foliage and lichens, typically found in forested habitat close to water sources. May also use anthropogenic structures such as barns for maternity roosts. Foraging habitat includes forested riparian areas over water in relatively open areas (Environment Canada.2015).	Habitat potentially present in study area.	Bat habitat assessment.
Blanding's Turtle	*Emydoidea blandingii*	Reptiles	THR	THR	S3	MNRF Species Occurrence Mapping	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat present in study area.	None needed.
Midland Painted Turtle	*Chrysemys picta marginata*	Reptiles	NL	SC	S4	MNRF Species Occurrence Mapping, ORAA (1981)	Occupy slow moving, relatively shallow and well-vegetated wetlands and water bodies with abundant basking sites and organic substrate. Found in association with submergent aquatic plants, which are used for cover and feeding. Semi -tolerant of human-altered landscapes, occasionally found occupying urban ponds and lands subject to anthropogenic disturbance. Suitable nesting habitat includes open, often south-facing, and sloped areas with sandy-loamy and/or gravel substrate usually within 1200 m of aquatic active season habitats. Overwinter in shallow water with deep sediment (COSEWIC 2018).	Habitat potentially present in study area.	Aquatic habitat assessment.
Northern Map Turtle	*Graptemys geographica*	Reptiles	SC	SC	S3	MNRF Species Occurrence Mapping	Highly aquatic species, found in deep, large waterbodies, including lakes and large rivers, with abundant basking sites. Emerge onto land only during nesting, which occurs in soft sand or soil. Waterbodies with slow currents, soft mud bottoms and abundant aquatic vegetation are preferred (COSEWIC, 2002b).	No habitat present in study area.	None needed.
Snapping Turtle	*Chelydra serpentina*	Reptiles	SC	SC	S4	MNRF Species Occurrence Mapping, ORAA (2019), iNat (2023)	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	Habitat potentially present in study area.	Aquatic habitat assessment.
Wood Turtle	*Glyptemys insculpta*	Reptiles	END	THR	S2	MNRF Species Occurrence Mapping	Generally found in forested landscapes, associated with clear freshwater streams and associated floodplains. Preferential to streams with year-round current, with sandy or gravelly-sandy bottoms. Streams used are typically meandering with frequent oxbows. Overwintering associated with stable, high concentration dissolved oxygen in pools, under mud or under overhanging banks. Nesting occurs in open areas with high sun exposure, typically within 10 to 50m of aquatic habitat. Home ranges are typically linear, following streams (Environment Canada, 2016).	No habitat present in study area.	None needed.
Eastern Ribbonsnake	*Thamnophis sauritus*	Reptiles	SC	SC	S4	MNRF Species Occurrence Mapping	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	Habitat potentially present in study area.	Aquatic habitat assessment, ELC, and botanical inventory.
Milksnake	*Lampropeltis triangulum*	Reptiles	SC	SC	S4	MNRF Species Occurrence Mapping, ORAA (1971)	Habitat generalists, often associated with edge habitat, meadows, prairies, pastures, rocky outcrops and human disturbances such as hydro corridors and railway embankments. Habitat is usually close to a water source. Hibernation occurs in a variety of natural and man-made features, including rotting logs, old foundations, basements, and burrows (COSEWIC 2014).	Habitat potentially present in study area.	ELC and botanical inventory.

Common name	Scientific name	Group	SARO	Cosewic	S-rank	Background sources	Habitat requirements	Candidate habitat in study area	Field studies recommended
Queensnake	*Regina septemvittata*	Reptiles	END	END	S2	MNRF Species Occurrence Mapping	Associated with rocky streams and rivers, but occasionally found in marsh, pond and lake shore habitats. Usually found within 3m of the shoreline and only at sites where there is an abundance of crayfish (COSEWIC 2010).	No habitat present in study area.	None needed.
American Chestnut	*Castanea dentata*	Vascular plants	END	END	S1S2	MNRF Species Occurrence Mapping	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils, Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	No habitat present in study area.	None needed.
American Columbo	*Frasera carolinensis*	Vascular plants	END	END	S2	MNRF Species Occurrence Mapping	Associated with open forested slopes and forest edges. May also occur in thickets and clearings (COSEWIC 2006a).	No habitat present in study area.	None needed.
American Ginseng	*Panax quinquefolius*	Vascular plants	END	END	S2	MNRF Species Occurrence Mapping	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	No habitat present in study area.	None needed.
Butternut	*Juglans cinerea*	Vascular plants	END	END	S2?	MNRF Species Occurrence Mapping, iNat (2019)	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	Habitat potentially present in study area.	ELC and botanical inventory.
Dense Blazing Star	*Liatris spicata*	Vascular plants	THR	THR	S2	MNRF Species Occurrence Mapping, iNat (2022)	Occurs in open tallgrass prairies. It can grow in a range of moisture regimes from dry to very moist (COSEWIC 2010).	Habitat potentially present in study area.	ELC and botanical inventory.
False Hop Sedge	*Carex lupuliformis*	Vascular plants	END	END	S1	MNRF Species Occurrence Mapping	Associated with a variety of relatively open wetland habitats subject to periodic flooding. Known habitats consist mostly of small temporary forest ponds or marshes isolated in swamps (COSEWIC 2011).	Habitat potentially present in study area.	ELC and botanical inventory.
Green Dragon	*Arisaema dracontium*	Vascular plants	SC	SC	S3	MNRF Species Occurrence Mapping	Occurs along creek, river, and clay floodplains in moist to wet deciduous woodlands and thickets. Grows in shaded to partly shaded, seasonally wet areas (Donley et. al. 2013).	No habitat present in study area.	None needed.
Pygmy Pocket Moss	*Fissidens exilis*	Vascular plants	NAR	NAR	S1	MNRF Species Occurrence Mapping	Found largely on bare, moist, at least partly shaded, clay-based soil or loam. Collected on the forested banks of streams and ravines, floodplains, bluffs, beaches, roadsides, trails, and other environments where bare soil is exposed (COSEWIC 2016).	No habitat present in study area.	None needed.
Swamp Rose-mallow	*Hibiscus moscheutos*	Vascular plants	SC	SC	S3	MNRF Species Occurrence Mapping	Restricted to the Carolinian or Deciduous Forest region. All populations are confined to early successional wetlands that are associated with Lakes Erie, Ontario, or St. Clair. Most common in deep-water Typha marshes, along the interface with the open water in the cattail mat; and in meadow marshes (COSEWIC 2004).	No habitat present in study area.	None needed.

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Heather Dixon

From: Heather Dixon
Sent: Tuesday, March 12, 2024 9:30 AM
To: 'Stephen Dykstra'
Cc: Cheryl-Anne Ross; Bryan Bishop
Subject: RE: Draft Terms of Reference for a Scoped EIS 1665 Scotch Line Road

Hi,

Many thanks for the confirmation.

Best,

Heather Dixon, PhD (she/her) . Aquatic Ecologist
ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
519.781.1581 www.aboudtng.com . heather@aboudtng.com

Aboud & Associates Inc. is located within the Between the Lakes Purchase (Treaty 3); the treaty lands and territory of the Mississaugas of the Credit.

From: Stephen Dykstra <sdykstra@woolwich.ca>
Sent: Monday, March 11, 2024 3:47 PM
To: Heather Dixon <Heather@aboudtng.com>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>; Bryan Bishop <BBishop@woolwich.ca>
Subject: Draft Terms of Reference for a Scoped EIS 1665 Scotch Line Road

Caution. Outside Sender

Heather,

The Township is satisfied.

Regards,

Stephen Dykstra MCIP, RPP
Senior Planner
Township of Woolwich

From: Heather Dixon <Heather@aboudtng.com>
Sent: Monday, March 11, 2024 9:33 AM
To: Stephen Dykstra <sdykstra@woolwich.ca>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>
Subject: [EXT] Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1665 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Good morning Stephen,

Can you please confirm whether the updated ToR for the proposed development of an industrial subdivision at 1665 Scotch Line Road, Elmira is acceptable to the Township?

Many thanks,

Heather Dixon, PhD (she/her) . Aquatic Ecologist
ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
519.781.1581 www.aboudtng.com . heather@aboudtng.com

Aboud & Associates Inc. is located within the Between the Lakes Purchase (Treaty 3); the treaty lands and territory of the Mississaugas of the Credit.

From: Heather Dixon
Sent: Wednesday, February 28, 2024 11:26 AM
To: 'cfosterpengelly@grandriver.ca' <cfosterpengelly@grandriver.ca>; 'sdykstra@woolwich.ca' <sdykstra@woolwich.ca>; 'AHovingh@RegionofWaterloo.ca' <AHovingh@RegionofWaterloo.ca>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>; 'mlippert@mhbcplan.com' <mlippert@mhbcplan.com>
Subject: RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1665 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Good morning,

Following comments from the Region, GRCA, and Township, we have produced a revised draft Terms of Reference for a Scoped Environmental Impact Study (EIS) for the proposed development of an industrial subdivision at 1665 Scotch Line Road, Elmira, Region of Waterloo, ON. Please note the correction of the address from 1655 to 1665 Scotch Line Road. We would appreciate your review and comments on the revised Terms of Reference in order to finalize the proposed scope of work required for the Scoped EIS.

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Heather Dixon

From: Albert Hovingh <AHovingh@regionofwaterloo.ca>
Sent: Wednesday, February 28, 2024 1:37 PM
To: Heather Dixon; Chris Foster-Pengelly; sdykstra@woolwich.ca
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Subject: RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1665 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Caution. Outside Sender

Hi Heather,
The revised Terms of Reference is acceptable to the Region.
Albert

Albert Hovingh R.P.F.
Senior Planner, Stewardship Planning
Planning, Development and Legislative Services
Region of Waterloo
150 Frederick St. 8th Floor
Kitchener, ON N2G 4J3

Phone: 519-575-4813
Cell : 519-510-9505
e-mail: AHovingh@RegionofWaterloo.ca

From: Heather Dixon <Heather@aboudtng.com>
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****EXTERNAL ALERT** This email originated from outside the Region of Waterloo.**

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Thanks,
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Chris Foster-Pengelly, M.Sc.
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Toll-free: 1-866-900-4722
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URBAN FORESTRY
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TRAIL SYSTEMS
GREEN ROOFS
CONTRACT ADMINISTRATION

EXPERT OPINION
OMB TESTIMONY
LEGAL PROCEEDINGS
PEER REVIEW
RESEARCH
EDUCATION

December 4, 2023

Our Project No.: AA23-232A
Sent By Email: cfosterpengelly@grandriver.ca
sdykstra@woolwich.ca
environmentalplanning@regionofwaterloo.ca

Chris Foster-Pengelly
Assistant Supervisor of Resource Planning, Engineering and Planning Services
Grand River Conservation Authority
400 Clyde Road
Cambridge, ON N1R 5W6

&

Stephen Dykstra, Senior Planner
Woolwich Township
Box 158, 24 Church St W
Elmira, Ontario, N3B 2Z6

&

Planning Department
Region of Waterloo
150 Frederick Street
Kitchener, ON N2G 4J3

Re: 1655 Scotch Line Road, Elmira, ON
Terms of Reference - Scoped Environmental Impact Study

Dear Mr. Foster-Pengelly, Mr. Dykstra, and the Region of Waterloo Planning Department:

This document outlines the Terms of Reference (ToR) of the scoped Environmental Impact Study (EIS) for a proposed industrial subdivision located at 1655 Scotch Line Road in Elmira, ON. Please review the terms and circulate to Grand River Conservation Authority (GRCA), Township of Woolwich (Township), and Region of Waterloo (Region) staff for discussion and approval.

BACKGROUND

The client requires a scoped EIS, prepared to the satisfaction of the GRCA, Township, and Region to develop the subject property municipally addressed as 1655 Scotch Line Road in Elmira, ON. The proposed works include an Industrial Subdivision and associated Stormwater Management, streets, and an open space block.

The Region of Waterloo Official Plan does not identify any regionally significant features within the property limits, a significant woodland is present on the adjacent lands, within the 120 m study and identified on *Figure 1,* which is considered a Core Environmental Feature. The Region of Waterloo requires the EIS to meet their standards as a study is required for development proposed adjacent to or within Core Environmental Features. If the wetland present is determined to be provincially significant, it would also be considered a Core environmental feature.

The property is zoned by the Township of Woolwich Zoning By-law 55-85 as Agricultural (A). GRCA mapping identifies a portion of a wetland feature on the subject property per GRCA mapping. Regulatory Floodplain associated with a small portion of a regulatory Watercourse is also present within the property limits. A portion of the property is within the associated GRCA regulated area.

BACKGROUND REVIEW

In preparing the Terms of Reference, the following sources were reviewed for background information:

- Aerial photography of the subject site,
- Draft Concept Plan, July 2023 by MHBC
- GRCA pre-consultation comments, August 9, 2023
- Official Plan Amendment, Zoning By-law Amendment, and Draft Plan of Subdivision Applications 1665 Scotch Line Road, October 3, 2023, Region of Waterloo
- GRCA mapping (Accessed October 3, 2023) of natural heritage features (e.g., regulation limit, Wetlands, Floodplain, ANSIs),
- Region of Waterloo Official Plan (2015),
- Township of Woolwich Official Plan (2022),
- Township of Woolwich Zoning By-law 55-86 (2022),
- Natural Heritage Information Center, Make-a-map, accessed November 28, 2023,
- Ontario Nature. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. Accessed October 6, 2023,
- Ontario Breeding Bird Atlas. Bird Studies Canada, 2007. Accessed October 6, 2023,
- Federation of Ontario Naturalists, Atlas of the Mammals of Ontario. Accessed October 6, 2023,
- Ontario Nature. Ontario Butterfly Atlas, Accessed November 28, 2023,
- iNaturalist. Accessed November 28, 2023,
- eBird. Cornell Lab of Ornithology. Accessed November 28, 2023,
- Department of Fisheries and Oceans online mapping. Accessed November 28, 2023,

- Aquatic Resource Area Survey Points online mapping. Accessed November 28, 2023.

STUDY AREA

The study area includes the subject property and up to 120 m beyond the subject property where permission to access property is granted (*Figure 1*).

As needed, the lands adjacent to the study area may require further access to assist with understanding the features and functions of natural heritage features.

Lands outside of the field study area will be reviewed from existing background information (e.g., Region of Waterloo Official Plan).

PLANNING CONTEXT

Provincial Policy Statement (2020)

The Provincial Policy Statement indicates that natural heritage features shall be protected for the long term. Development may be permitted within or adjacent to Natural Heritage Features where an EIS demonstrates that there will be no negative impacts on the natural heritage resource. Consequently, an EIS is required to demonstrate that the proposed development project will not negatively impact the adjacent natural features.

Endangered Species Act, 2007

The Endangered Species Act (ESA) (Subsection 9(1)) states that:

"No person shall,

(a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;

(b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,

(i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species,

(ii) any part of a living or dead member of a species referred to in subclause (i),

(iii) anything derived from a living or dead member of a species referred to in subclause (i); or

(c) sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b) (i), (ii) or (iii).

Clause 10(1)(a) of the ESA also states that:

"No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario list as an endangered or threatened species."

Clause 16(5) of the ESA states that:

"An agreement entered into under this section may require the authorized party under the agreement to pay a species conservation charge to the Agency in accordance with Section 20.3 if an impacted species under the agreement is also a conservation fund species."

Clause 17(1) of the ESA states:

"The Minister may issue a permit to a person that, with respect to a species specified in the permit that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species, authorizes the person to engage in an activity specified in the permit that would otherwise be prohibited by Section 9 or 10. 2007, c. 6, s. 17(1)."

Fisheries Act, 1985

The study area contains fish-bearing waters in the form of Canagagigue Creek. This area and the fish within are protected under the Federal Fisheries Act, 1985. The Fisheries Act provides protection for the sustainability and ongoing productivity of Canada's recreational, commercial, and Aboriginal fisheries.

Section 35 (1) of the Fisheries Act states that:
"No person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat."

The Fisheries Act requires that projects and activities avoid causing serious harm to fish and fish habitat unless authorized to do so by the Department of Fisheries and Oceans Canada (DFO). This applies to work conducted in or near waterbodies that support direct or indirect fish habitat. Within the context of the proposed development, any proposed actions that could impact fish or fish habitat would need to be assessed for compliance with the Fisheries Act. If it is determined that proposed actions will cause serious harm to fish, which cannot be mitigated for, then a Fisheries Act Authorization would be required.

Species at Risk Act (S.C. 2002, c. 29)

The Species at Risk Act (SARA) includes prohibitions to protect listed wildlife species. Prohibitions of SARA within the Province of Ontario generally apply to species present on federal lands and all aquatic Species at Risk (SAR).

SARA subsection 32 (1) and (2) states that:

No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species.
And,
No person shall possess, collect, buy, sell or trade an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species, or any part or derivative of such an individual.

SARA subsection 33 also states that:

No person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered species or a threatened species, or that is listed as an extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada.

SARA subsection 34(1), identifies where SARA does not apply in the Province:

With respect to individuals of a listed wildlife species that is not an aquatic species or a species of birds that are migratory birds protected by the Migratory Birds Convention Act, 1994, sections 32 and 33 do not apply in lands in a province that are not federal lands unless an order is made under subsection (2) to provide that they apply.

SARA subsection 58 (1) identified the restrictions to the destruction of critical Habitat, and states that:

Subject to this section, no person shall destroy any part of the critical habitat of any listed endangered species or of any listed threatened species — or of any listed extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada — if…b) the listed species is an aquatic species; or….

Where impacts may occur or are expected, agreements or permits may be entered into with the appropriate ministry, as outlined in section 73, which states:

(1) The competent minister may enter into an agreement with a person, or issue a permit to a person, authorizing the person to engage in an activity affecting a listed wildlife species, any part of its critical habitat or the residences of its individuals.

(2) The agreement may be entered into, or the permit issued, only if the competent minister is of the opinion that
(a) the activity is scientific research relating to the conservation of the species and conducted by qualified persons;
(b) the activity benefits the species or is required to enhance its chance of survival in the wild; or
(c) affecting the species is incidental to the carrying out of the activity.

3) The agreement may be entered into, or the permit issued, only if the competent minister is of the opinion that

> *(a) all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution has been adopted;*
> *(b) all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals; and*
> *(c) the activity will not jeopardize the survival or recovery of the species.*

The Species at Risk Act requires that projects and activities avoid causing serious harm to Species at Risk or their habitat unless authorized to do so. This applies to work conducted in or near waterbodies that support species at risk fish, or their critical habitat. Any proposed actions that could impact species at risk or their habitat would need to be assessed for compliance. If it is determined that proposed actions will cause serious harm to species at risk that cannot be mitigated, then a Species at Risk Act Authorization would be required.

Waterloo Regional Official Plan (2015)

Following the Region of Waterloo adopting Regional Official Plan Amendment number 6 (ROPA 6) in April 2023, the subject property is entirely within the Elmira Township Urban Area and Designated Greenfield Area. The subject lands are identified as being within Prime Agricultural Area on the border of the Elmira Built-Up Area. Prime Agricultural Area designation identifies an area where prime agricultural lands predominate. This designation includes areas of prime agricultural lands and associated areas of Canada Land Inventory Class 4 to 7 soils, and additional areas where there is a local concentration of farms that exhibit characteristics of ongoing agriculture. The Greenlands Network is present in the study area (i.e., adjacent to the subject lands) in the form of a Core Environmental Feature (the Significant Woodland in the west of the study area) and Fish Habitat. Other Core Environmental Features (e.g., Significant Habitat of Endangered or Threatened Species) may be identified through field investigations.

Section 7.C.9 states:
"Development or site alteration will not be permitted within Core Environmental Features, except for:

a) *forest, fish or wildlife management and conservation;*
b) *flood or erosion control projects demonstrated to be in the public interest and for which no other alternative is feasible;*
c) *minor alterations to legal non-conforming land uses within Core Environmental Features;*
d) *infrastructure projects in accordance with Policies 7.C.12 and 7.C.13; or*
e) *mineral aggregate operations in accordance with the policies in Chapter 9;*

Any application for development or site alteration for the above uses will require the submission of an Environmental Impact Statement, to the satisfaction of the Region, to determine the mitigation measures to be implemented, as appropriate, through the development review process."

Section 7.C.10 states:
"Development or site alteration will only be permitted on lands contiguous to a Core Environmental Feature where an Environmental Impact Statement, or similar study, submitted in accordance with the policies in Section 7.G has determined to the satisfaction of the Region, Area Municipalities, the Grand River Conservation Authority and/or the Province, as appropriate, that approval of the proposed development or site alteration would not result in adverse environmental impacts on the features and ecological functions of the Core Environmental Feature. The Region may require conditions of approval to implement such recommendations."

Section 7.C.11 states:
"An Environmental Impact Statement submitted in accordance with Policies 7.C.9 or 7.C.10 will identify appropriate buffers to Core Environmental Features, to the satisfaction of the Region, in consultation with Area Municipalities and the Grand River Conservation Authority. Such buffers will not only serve to protect Core Environmental Features from adverse environmental impacts but will also provide opportunities for net habitat enhancement to enhance or, wherever feasible, restore the ecological functions of the Core Environmental Feature. The location, width, composition and use of buffers will be in accordance with the approved Environmental Impact Statement, with buffers being a minimum of 10 metres as measured from the outside boundary of the Core Environmental Feature and established and maintained as appropriate self-sustaining native vegetation".

Woolwich Township Official Plan (2022 Consolidation)
The majority of the subject property is within the Township Urban Area and is designated as Industrial within the East Industrial Policy Area, as per Schedule A – Elmira Land Use Plan. The northeastern corner of the subject property is outside of the Township Urban Area and is designated as Prime Agricultural Area. Map 5.4 identifies the majority of the site as occurring within the Settlement Areas boundaries, and as Designated Greenfield Area. Along the western edge of the property, Canagagigue Creek and its associated wetlands and floodplain are designated as Environmental Protection and Natural Hazards respectively in Schedule A. Map 13.1 identifies the presence of the Greenlands Network in the study area in the form of Core Environmental Features (the significant woodland), Potential Fish Habitat (Canagagigue Creek), and Supporting Environmental Features (the wetlands and creek). Map 13.2 identified the presence of Floodplain Area-One Zone in the study area.

Section 5.7.3 states that:
"The Township, in collaboration with the Region, will ensure that development occurring in the designated greenfield areas of the Elmira and St. Jacobs Township Urban Areas will be planned and developed to:

a) *Conform to the general development policies set out in Section 5.5;*
b) *Establish a network of continuous sidewalks, community trails and bicycle pathways that provide direct, safe, comfortable, and convenient linkages within the neighbourhood and externally to other neighbourhoods, including linkages to transit stops, employment areas, school sites, food destinations and community facilities;*
c) *Provide a development pattern and road network that supports the integration of transit services, where planned to be available in the future;*
d) *Provide any required easements, land dedications and pedestrian amenities to support walking, cycling and existing or planned transit services for everyday activities;*
e) *Discourage the use of noise attenuation walls and berms, where appropriate, through the use of passive noise attenuation measures; and*
f) *Support development on municipal water and wastewater services."*

Section 13.2.4 states:

"Development applications or site alteration will be prohibited on lands where elements of the Greenlands Network have not been adequately identified and evaluated through a watershed/subwatershed study or any other appropriate natural heritage review, until such time as an Environmental Impact Statement has been prepared by an owner/applicant in accordance with the policies of this Plan and/or the Regional Official Plan, to identify and evaluate any such elements located on the subject lands and, wherever appropriate, contiguous lands."

Section 13.7.5 states:
"Development applications, site alteration or infrastructure projects will only be permitted on lands contiguous to a Core Environmental Feature where an Environmental Impact Statement, or similar study, submitted in accordance with the policies in Section 13.13 has determined to the satisfaction of the Township, the Region, the Grand River Conservation Authority and/or the Province, as appropriate, that approval of the proposed development or site alteration would not result in adverse environmental impacts on the features and ecological functions of the Core Environmental Feature."

Section 13.8.3 states:
"Watershed/subwatershed studies, Environmental Impact Statements and other appropriate studies will be used to determine appropriate means to implement fishery policy and the specification of protective mitigation measures."

Section 13.8.4 states:
"Any requirements imposed through watershed/subwatershed studies, Environmental Impact Statements and other appropriate studies must be implemented by the proponent to the satisfaction of the Federal Ministry of Fisheries and Oceans or its delegate."

Section 13.9.3 states:
"The submission of an Environmental Impact Statement for review by the Township in consultation with the Region and the Grand River Conservation Authority will be required for all development proposed within or adjacent to a Supporting Environmental Feature, not already prohibited through Grand River Conservation Authority Policy. For the purposes of interpretation of this policy, "adjacent" will be defined as lands within 120 metres of the boundary of the Supporting Environmental Feature."

Section 13.14.5 states:
"Within the Natural Hazards designation, development or site alteration will not be permitted within:

a) Hazardous lands which are impacted by flooding hazards and/or erosion hazards"

Section 13.14.14.2 states:
"No new development is permitted within the Flood Plain"

Woolwich Township Zoning By-law 55-85

The subject property is currently zoned as Agricultural (A) and is subject to site specific exemption A93.

Grand River Conservation Authority

A portion of the subject property is within the GRCA Regulation Limit and contains unevaluated wetlands, a watercourse, and a one-zone floodplain.

Section 8.1.1 states:
"Development will not be permitted within the Riverine Flooding Hazard except in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies and Sections 8.1.2-8.1.29 – Policies for One-Zone Policy Areas."

Section 8.4.4 states:
"Development within a naturally occurring wetland may be permitted where the wetland is less than 0.5 hectares (1.24 acres), and it can be demonstrated that the wetland is not:

a) part of a Provincially Significant Wetland,
b) located within a floodplain or riparian community,
c) part of a Provincially or municipally designated natural heritage feature, a significant woodland, or hazard land,
d) a bog, fen,
e) fish habitat,
f) significant wildlife habitat,
g) confirmed habitat for a Provincially or regionally significant species as determined by the Ministry of Natural Resources and Forestry or as determined by the municipality,
h) part of an ecologically functional corridor or linkage between larger wetlands or natural areas,
i) part of a groundwater recharge area, or a groundwater discharge area associated with any of the above."

Section 8.4.9 states:
"Development within an area of interference less than or equal to 30 metres (100 feet) from a wetland may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and where an Environmental Impact Study demonstrates that:

a) there are no negative or adverse hydrological or ecological impacts on the wetland,
b) all development is located outside of the wetland and maintains as much setback as feasible,
c) development is located above the water table, except as specified in Section 8.4.11, and
d) septic systems are located a minimum of 15 metres (50 feet) from the wetland and 0.9 metres (3 feet) above the annual maximum water table."

Section 8.4.10 states:

"Development within an area of interference between 30 metres (100 feet) and 120 metres (394 feet) from a wetland, which in the opinion of the GRCA may result in hydrologic impact,23 may be permitted where an Environmental Impact Study demonstrates that policies in Sections 7.1.2-7.1.3 – General Policies are met."

BACKGROUND REVIEW

Additional background natural heritage information related to the subject lands and adjacent lands identified the following information:

1. Review of the Ontario Reptile and Amphibian Atlas identified 14 species that are known to occur or have historically occurred within the 10 km x 10 km square that contains the study area (17NJ32). This list includes three species which are considered species of conservation concern: Midland Painted Turtle, Snapping Turtle, and Milksnake.

2. The Natural Heritage Information Center identified six SAR within the 1 km x 1 km square that contains the study area and the surrounding squares (17NJ3726, 17NJ3725, 17NJ3724, 17NJ3723, 17NJ3626, 17NJ3526, 17NJ3623, 17NJ3523, 17NJ3624, 17NJ3524, 17NJ3625, 17NJ3525): Bobolink, Eastern Wood-pewee, Red-headed Woodpecker, Wood Thrush, Silver Shiner, and Gypsy Cuckoo Bumble Bee.

3. The Ontario Breeding Bird Atlas identified 82 species that are known to occur or have historically occurred in the 10 km x 10 km square that contains the study area (17NJ32). This list includes seven SAR: Bank Swallow, Barn Swallow, Bobolink, Chimney Swift, Eastern Meadowlark, Eastern Wood-pewee, and Wood Thrush.

4. The Ontario Mammal Atlas indicates 14 mammal species that are known to occur or have historically occurred in the 10 km x 10 km square that contains the study area (17NJ32). No SAR were identified, although it should be noted that SAR bats can be present anywhere in Ontario,

5. Review of the Atlas of the Butterflies of Ontario identified 31 species that are known to occur or have historically occurred in the 10 km x 10 km square that contains the study area (17NJ32), including one SAR: Monarch.

6. iNaturalist observations restricted to research grade within 2 km of the centre of the subject property identified 302 species, eight of which are SAR: Olive-sided Flycatcher, Peregrin Falcon, Rusty Blackbird, Monarch, Wavy-rayed Lampmussel, Snapping Turtle, Dense Blazing Star, and Butternut. It should be noted that some SAR locations are obscured in iNaturalist,and may not actually occur within the vicinity of the study area.

7. eBird records from the nearby Elmira-Lions Ring Trail Hotspot (750 m west from the centre of the site) indicate the recent presence of 123 species, including seven SAR: Bank Swallow, Barn Swallow, Chimney Swift, Eastern Wood-pewee, Olive-sided Flycatcher, Rusty Blackbird, and Wood Thrush.

8. The online Fisheries and Oceans Canada (DFO) mapping system was consulted in the background review. A review for SAR Critical Habitat and species presence was completed in a 1 km radius around the study area. No critical habitat for any species was identified in the search radius, and no SAR were identified as being present or potentially present.

9. The Aquatic Resources Area (ARA) Survey Point and Line Segment mapping indicated the presence of 36 species of fish within 1 km of the study area. None of these species were SAR. Northern Pike spawning was also identified as occurring within the vicinity of the study area.

This information indicates that there is a potential presence of additional natural heritage features and constraints that may require investigation and/or comment.

PROPOSED TERMS OF REFERENCE

Scoped Environmental Impact Study

To fulfill the requirements of this study, we will:

A. Terms of Reference

1. Review background information (e.g., proposed activity, relevant sections of Natural Heritage System components of the Township of Woolwich OP, Region OP, investigation of wildlife atlases and NHIC).
2. Prepare a Terms of Reference and provide to the Township of Woolwich, Region of Waterloo and GRCA for approval.
3. Complete a MECP Request for Information to acquire any available Species at Risk information.

B. Field Assessment

To fulfill the requirements of the approved Terms of Reference, AA will:

1. Identify the limits of the designated natural heritage features (e.g., woodlands, wetlands) within the property boundaries.
2. Wetland Limit: Confirm the boundary of the GRCA wetland within the study area, where present within the property boundary, and coordinate with the GRCA to field-verify the staked boundary.
3. Conduct an aquatic assessment and aquatic habitat investigation to characterize the present watercourse and identify any fisheries constraints including a review of substrates and suitability for species at risk.
4. Complete a leaf-off Bat Habitat Assessment, review trees meeting the MNRF criteria (>10cm DBH) within the proposed development and immediately adjacent area and identify trees that meet the criteria for bat maternity habitat and require consideration under the ESA. Any buildings proposed for removal will also be reviewed for candidate bat habitat.
5. Conduct a breeding bird survey of the study area, following the protocol of the Ontario Breeding Bird Atlas (Bird Studies Canada, 2004) and the MNRF Grassland Bird Protocol, and including both point counts and area searches. The breeding bird survey requires three, focused, early morning site visits during the period between late May and early July.
6. Conduct one site visit to characterize vegetation communities using the ELC system (MNRF) of the Study Area.
7. Complete two site visits to carry out a two-season (Spring & Summer) botanical inventory of the site.
8. Investigate the study area for the presence of significant wildlife habitat.
9. Investigate the study area for presence of species at risk and species at risk habitat.
10. Record observations of incidental wildlife during site visits.

C. Scoped Environmental Impact Study (EIS)

11. Analyze findings and prepare a map that shows:
    a. Identified natural heritage features, and functions and landscape level features (e.g., linkages, wetlands).
    b. Proposed buffers to natural heritage features
    c. The proposed site plan (location of building, amenities, drive)
    d. ELC vegetation communities
    e. Other noteworthy features as needed
    f. Locations of other natural heritage features from background literature searches (e.g., mammal atlas, herpetofaunal atlas, Township's OP).

12. Conduct an impact assessment by reviewing the proposed development's direct, indirect, and induced (i.e., residual, ongoing) impacts on the natural features. Provide an opinion about the location of the components of the general concept plan to reduce/avoid impacts to natural heritage features. Show the configuration of the proposed development on the subject property and assess for minimizing impacts to ecological features and functions, including rationale for proposed buffers. This will involve discussions with the proponent and AA.
13. Provide policy rationale for expected impacts to natural heritage features e.g., removal of trees and grading to accommodate the site plan.
14. Edge Management Guidelines and Compensation: Provide general recommendations of where and why naturalization treatments may be needed to protect vegetation features (e.g., woodlands, wetlands) adjacent to the development activity.
15. Prepare a report of the EIS that includes background information, methods, existing conditions, proposed development, discussion and interpretation of other relevant studies such as the Stormwater Management Plan for the site, impact assessment and mitigation measures, and appendices of field studies (e.g., ELC, flora list).
16. Submit EIS to client for review followed by distribution to Township, Region and GRCA.

I look forward to your response regarding these proposed terms of reference. If you require clarification, please do not hesitate to email, or call me at 519.781.1581.

Yours truly,

ABOUD & ASSOCIATES INC.

Heather Dixon, PhD

Aquatic Ecologist
heather@aboudtng.com

Figure 1. Study Area

Appendix 1. Candidate Significant Wildlife Habitat
Appendix 2. Candidate Species at Risk Habitat

Cc: Meghan Lippert, MHBC (email)
Cheryl-Anne Ross, Aboud & Associates Inc. (email)

LEGEND

- SUBJECT LANDS
- STUDY AREA
- CANAGAGIGUE CREEK
- WETLAND
- SIGNIFICANT WOODLAND
- ENGINEERED FLOODPLAIN
- ESTIMATED FLOODPLAIN
- GRCA REGULATION LIMIT

Information Sources:

1. Waterloo Region Orthophotography, Accessed October 2023.
2. Grand River Information Network, Accessed October 2023.
3. Land information Ontario, Accessed October 2023.

Title:

STUDY AREA

Project:

1655 SCOTCH LINE
ELMIRA, ON

Date: OCTOBER 2023

Project: AA23-232A

Scale: 1 : 7000

ABOUD & ASSOCIATES INC.
Consulting Arborists • Ecologists • Landscape Architects
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Figure No: 1

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	Candidate SWH present (Field survey type required)
1	Waterfowl stopover and Staging Areas (terrestrial)	Seasonal Concentration Areas	- Fields with Sheet water in spring (incl. agricultural)	- Mixed species aggregations of 100 or more individuals confirms SWH	None, no habitat present.
2	Waterfowl Stopover and Staging (Aquatic)	Seasonal Concentration Areas	- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs - SWTP & SWMP are not SWH	- Aggregations of 100 or more listed species for 7 days (i.e. >700 waterfowl use days) confirms SWH	None, no habitat present.
3	Shorebird Migratory stopover	Seasonal Concentration Areas	- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy, and un-vegetated shoreline habitat	- 3 or more listed species and >1000 shorebird use days, or >100 whimbrel, confirms SWH	None, no habitat present.
4	Raptor Wintering Area	Seasonal Concentration Areas	- Combination of upland field and woodland habitat >20ha total (includes,>15ha upland field) - least disturbed sites, idle, fallow or lightly grazed field/meadow best	- 1 or more Short-eared Owl, or at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH	Candidate habitat present. Need to confirm upland field usage.
5	Bat Hibernacula	Seasonal Concentration Areas	- Caves, mine shafts, underground foundations, karsts. - buildings are not SWH	- All sites with confirmed hibernating bats, confirms SWH	None, no habitat present.
6	Bat Maternity Colony	Seasonal Concentration Areas	- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with >10/ha trees (>25cm DBH) in early stages of decay (class 1-3) - buildings are not SWH	- >10 Big Brown Bats, >20 Little Brown Myotis, >5 adult female Silver-haired Bats confirms SWH	Yes, bat habitat assessment will be completed.
7	Turtle Wintering Area	Seasonal Concentration Areas	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH	None, no habitat present.
8	Reptile Hibernaculum	Seasonal Concentration Areas	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences, and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH. - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	None, no habitat present.

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	Candidate SWH present (Field survey type required)
9	Colonially-nesting Bird Habitat (cliff/bank)	Seasonal Concentration Areas	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	None, no habitat present.
10	Colonially-nesting Bird Habitat (Tree/shrub)	Seasonal Concentration Areas	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	None, no habitat present.
11	Colonially-nesting Bird Habitat (Ground)	Seasonal Concentration Areas	- Rocky islands or peninsulas within a lake or large river (natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	None, no habitat present.
12	Migratory Butterfly Stopover Area	Seasonal Concentration Areas	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	None, no habitat present.
13	Land bird Migratory Stopover Area	Seasonal Concentration Areas	- Woodlots >5ha in size - within 5km of Lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	None, no habitat present.
14	Deer Yarding Areas	Seasonal Concentration Areas	- ELC communities providing Thermal cover (FOM, FOC, SWM, SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	None identified in LIO mapping.
15	Deer Winter Congregation Areas	Seasonal Concentration Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF. - Contact MNRF or LIO for known deer winter areas.	None, identified in LIO mapping.
16	Cliffs & Talus Slopes	Rare Vegetation Communities	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	None, no habitat present.
17	Sand Barren	Rare Vegetation Communities	- Exposed, sparsely vegetated & caused by lack of moisture, fires, and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	None, no habitat present.

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	Candidate SWH present (Field survey type required)
18	Alvar	Rare Vegetation Communities	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	None, no habitat present.
19	Old Growth Forest	Rare Vegetation Communities	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	None, no habitat present.
20	Savannah	Rare Vegetation Communities	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size and must be restored to a natural state. - Confirm one or more savannah indicator species. - Not dominated by exotic or introduced species	None, no habitat present.
21	Tallgrass Prairie	Rare Vegetation Communities	- Ground cover dominated by prairie grasses with <25% tree cover. - Remnant sites such as Railway Right of ways are not SWH	- No minimum size and must be restored to a natural state. - Confirm one or more prairie indicator species. - Not dominated by exotic or introduced species	None, no habitat present.
22	Other Rare Vegetation Communities	Rare Vegetation Communities	- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)	- Field Studies Confirming ELC vegetation type is a rare vegetation community	None, no habitat present.
23	Waterfowl Nesting Areas	Specialized Habitats for Wildlife	- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM) - Extends 120m from a wetland (>0.5ha) and any small wetlands (<0.5ha) within a cluster of at least 3. - Upland area at least 120m wide	- Presence of 3 or more nesting pairs of listed species excluding Mallards - Presence of 10 or more nesting pairs including mallards - Any active Black Duck nesting site	None, no habitat present.
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	Specialized Habitats for Wildlife	- Forest communities, adjacent to riparian areas - Osprey nests usually at top of tree - Bald Eagle nest usually in super canopy tree in a notch within canopy	- Studies confirm one or more active Bald Eagle or Osprey nest. - Alternate nests included in SWH. - Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown	None, no habitat present.

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	Candidate SWH present (Field survey type required)
25	Woodland Raptor Nesting Habitat	Specialized Habitats for Wildlife	- Forested communities, forested swamp communities and cultural Plantations - Natural Forested/conifer plantations >30ha with >10ha interior habitat (200m buffer)	- One or more active nest of listed species	None, no habitat present.
26	Turtle Nesting Areas	Specialized Habitats for Wildlife	- Exposed Mineral soil (sand or gravel) adjacent (<100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities. - Located in open sunny areas, away from roads and less prone to predation - Municipal and provincial road shoulders are not SWH.	- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle	None, no habitat present.
27	Seeps and Springs	Specialized Habitats for Wildlife	- Areas where ground water comes to the surface. - Any forested area within the headwaters of a stream or river system	- Confirm site with 2 or more seeps/springs.	Adjacent woodland to be reviewed where access available during ELC/botanical.
28	Amphibian Breeding Habitat (woodland)	Specialized Habitats for Wildlife	- Breeding pools within woodlands - Wetland, pond, or pool >500m^2 within or adjacent (<120m) to a woodland. - Woodlands with permanent ponds, or those with water until mid-July more likely to be used.	- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3. - Wetland adjacent to woodlands includes travel corridor connecting features as SWH.	None, no habitat present.
29	Amphibian Breeding Habitat (Wetland)	Specialized Habitats for Wildlife	- Swamp, marsh, fen, bog, open aquatic, and shallow aquatic ELC communities. - Typically isolated from woodlands (>120m) but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands. - Wetlands >500m2 - Presence of shrubs & logs - Bullfrogs require permanent water bodies and abundant emergent vegetation.	- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3 - Or any wetland with confirmed breeding Bullfrog.	None, no habitat present.

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	Candidate SWH present (Field survey type required)
30	Area-sensitive Breeding Bird Habitat	Specialized Habitats for Wildlife	- Habitats where interior breeding birds are breeding. - Large mature (>60 years) forest stands or woodlots >30ha. - Forest and swamp ELC communities - Interior habitat at least 200m from edge	- Presence of nesting or breeding pairs of 3 or more of the listed species - Any site with Cerulean Warbler or Canada Warbler is SWH -	None, no habitat present.
31	Marsh Bird Breeding Habitat	Habitats of Species of Conservation Concern	- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen, and bog communities (see SWH Ecoregion guide for specifics) - Nesting occurs in wetlands; all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation - Green heron at edge of water sheltered by shrubs and trees.	- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species - Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail	None, no habitat present.
32	Open Country Bird Breeding Habitat	Habitats of Species of Conservation Concern	- Grassland area >30ha (natural & cultural fields and meadows) - Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing) - Mature hayfields or pasture at least 5 years old	- Nesting or breeding of 2 or more of the listed species. - Field with 1 or more Short-eared Owls	Breeding bird surveys.
33	Shrub/Early Successional Bird Breeding Habitat	Habitats of Species of Conservation Concern	- Cultural thickets, savannah, and woodland habitat - Large field area succeeding to shrub and thicket habitat >10ha in size - Patches of shrub ecosite may be complexed into larger old field ecosites for some species	- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species - Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH	None, no habitat present.

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	Candidate SWH present (Field survey type required)
34	Terrestrial Crayfish	Habitats of Species of Conservation Concern	- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp, and mixed swamp communities - Cultural meadow with inclusions of meadow marsh may be used - Wet edges of marshes and wet meadows should be surveyed for crayfish	- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat	ELC and botanical inventory.
35	Special Concern & Rare Wildlife Species	Habitats of Species of Conservation Concern	- All Special concern and Provincially Rare plant and animal species - Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites	- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable. - Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)	Suitable habitat for special concern and provincially rare species present. ELC, botanical inventory, breeding bird surveys, and aquatic habitat assessment required.
36	Amphibian Movement Corridor	Wildlife Movement Corridors	- Corridors may occur in all ecosites associated with water. - Presence of significant amphibian breeding indicates the requirement for identifying corridors. - Movement corridors between breeding habitat and summer habitat	- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant - At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of <20m - Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat	None, no habitat present.
37	Deer Movement Corridor	Wildlife Movement Corridors	- May occur in all forested ecosites. - Determined when deer wintering habitat is confirmed as SWH	- Corridors at least 200m wide with gaps <20m leading to wintering habitat. - Unbroken by roads and residential areas - Shorter corridors are more significant	None, no habitat present.

Common name	Scientific name	Group	SARO	Cosewic	S-rank	Background sources	Habitat requirements	Candidate habitat in study area	Field studies recommended
Jefferson Salamander	*Ambystoma jeffersonianum*	Amphibians	END	END	S2	MNRF Species Occurrence Mapping	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat present in study area.	None needed.
Unisexual Ambystoma, Jefferson dependent population	*Ambystoma laterale - (2) jeffersonianum*	Amphibians	END	END	S2	MNRF Species Occurrence Mapping	Unisexual ambystoma share the same habitat requirements as Jefferson salamander, as they rely on Jefferson salamander for sperm donation to breed (COSEWIC 2016).	No habitat present in study area.	None needed.
Western Chorus Frog – Great Lakes / St. Lawrence - Canadian Shield Population	*Pseudacris triseriata pop. 2*	Amphibians	NAR	THR	S4	MNRF Species Occurrence Mapping	Generally found in lowland communities, such as swamps, inhabiting lowland shrubs and grasses in the community, near breeding habitat. Breeding occurs in lowland, ephemeral ponds, devoid of predatory fish species (COSEWIC 2008a).	No habitat present in study area.	None needed.
Gypsy Cuckoo Bumble Bee	*Bombus bohemicus*	Butterflies, bees, damselflies, dragonflies & insects	END	END	S1S2	NHIC	Occurs in diverse habitats, including open meadows, mixed farmlands, urban areas, boreal forest, and montane meadows. Feed on pollen and nectar from a variety of plant genera (COSEWIC 2014).	Habitat potentially present in study area.	ELC and botanical inventory.
Monarch	*Danaus plexippus*	Butterflies, bees, damselflies, dragonflies & insects	SC	SC	S2N, S4B	MNRF Species Occurrence Mapping, OBA (2022), iNat (2023)	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b).	Habitat potentially present in study area.	ELC and botanical inventory.
West Virginia White	*Pieris virginenisis*	Butterflies, bees, damselflies, dragonflies & insects	SC	NAR	S3	MNRF Species Occurrence Mapping	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort (*Cardamine diphylla*) and cut-leaved toothwort (Burke 2013).	No habitat present in study area.	None needed.
Yellow-banded Bumble Bee	*Bombus terricola*	Butterflies, bees, damselflies, dragonflies & insects	SC	SC	S3S5	MNRF Species Occurrence Mapping	Occur in a diverse range of habitat, including mixed woodlands, farmlands, urban areas, montane meadows, prairie grasslands and boreal habitats. Queens overwinter underground and in decomposing organic material such as rotting lots (COSEWIC 2015).	Habitat potentially present in study area.	ELC and botanical inventory.
Acadian Flycatcher	*Empidonax Virenscens*	Birds	END	END	S2S3B	MNRF Species Occurrence Mapping	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No habitat present in study area.	None needed.
Bank Swallow	*Riparia riparia*	Birds	THR	THR	S4B	MNRF Species Occurrence Mapping, OBBA, eBird (2023)	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat present in study area.	None needed.
Barn Swallow	*Hirundo rustica*	Birds	SC	THR	S5B	MNRF Species Occurrence Mapping, OBBA, eBird (2023)	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	Habitat potentially present in study area.	Breeding bird survey.

Common name	Scientific name	Group	SARO	Cosewic	S-rank	Background sources	Habitat requirements	Candidate habitat in study area	Field studies recommended
Barn Owl	*Tyto alba*	Birds	END	END	S1	MNRF Species Occurrence Mapping	Requires open habitat for foraging, such as old fields and pastures, that provide habitat for rodents, and uses a variety of natural and man-made structures for nesting (COSEWIC 2010e)	No habitat present in study area.	None needed.
Bobolink	*Dolichonyx oryzivorus*	Birds	THR	THR	S4B	MNRF Species Occurrence Mapping, NHIC, OBBA	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	Habitat potentially present in study area.	Breeding bird surveys.
Canada Warbler	*Wilsonia canadensis*	Birds	SC	THR	S4B	MNRF Species Occurrence Mapping	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No habitat present in study area.	None needed.
Cerulean Warbler	*Setophaga cerulea*	Birds	THR	END	S3B	MNRF Species Occurrence Mapping	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	No habitat present in study area.	None needed.
Chimney Swift	*Chaetura pelagica*	Birds	THR	THR	S4B, S4N	MNRF Species Occurrence Mapping, OBBA, eBird (2023)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNRF 2013).	No habitat present in study area.	None needed.
Common Nighthawk	*Chordeiles minor*	Birds	SC	THR	S4B	MNRF Species Occurrence Mapping	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat present in study area.	None needed.
Eastern Meadowlark	*Sturnella magna*	Birds	THR	THR	S4B	MNRF Species Occurrence Mapping, OBBA	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	Habitat potentially present in study area.	Breeding bird surveys.
Eastern Wood-Pewee	*Contopus virens*	Birds	SC	SC	S4B	MNRF Species Occurrence Mapping, NHIC, OBBA, eBird (2023)	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple (Acer), Elm (Ulmus) or Oak (Quercus), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	Habitat potentially present in study area.	Breeding bird surveys.
Evening Grosbeak	*Coccothraustes vespertinus*	Birds	SC	SC	S4B	MNRF Species Occurrence Mapping	Breeding habitat includes open, mature mixed wood forests, where fir species and/or White Spruce are dominant, and Spruce Budworm is abundant (COSEWIC 2016)	No habitat present in study area.	None needed.
Golden-winged Warbler	*Vermivora chrysoptera*	Birds	SC	THR	S4B	MNRF Species Occurrence Mapping	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat present in study area.	None needed.
Grasshopper Sparrow	*Ammodramus savannarum*	Birds	SC	SC	S4B	MNRF Species Occurrence Mapping	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	Habitat potentially present in study area.	Breeding bird surveys.
Least Bittern	*Ixobrychus exilis*	Birds	THR	THR	S4B	MNRF Species Occurrence Mapping	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat present in study area.	None needed.
Louisiana Waterthrush	*Seirus motacilla*	Birds	SC	THR	S3B	MNRF Species Occurrence Mapping	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No habitat present in study area.	None needed.

Common name	Scientific name	Group	SARO	Cosewic	S-rank	Background sources	Habitat requirements	Candidate habitat in study area	Field studies recommended
Olive-sided Flycatcher	*Contupus cooperi*	Birds	SC	THR	S4B	MNRF Species Occurrence Mapping, eBird (2023), iNat (2023)	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	Habitat potentially present in study area.	Breeding bird surveys.
Peregrine Falcon	*Falco peregrinus*	Birds	SC	SC	S3B	MNRF Species Occurrence Mapping, iNat (2022)	Nests on cliff-ledges (50-200m preferred) near foraging areas. Also nests on anthropomorphic structures, such as tall building ledges, bridges, quarries, mines and cuts for road beds (COSEWIC, 2007a).	No habitat present in study area.	None needed.
Red-headed Woodpecker	*Melanerpes erythrocephalus*	Birds	END	THR	S4B	MNRF Species Occurrence Mapping, NHIC	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat present in study area.	None needed.
Rusty Blackbird	*Euphagus carolinus*	Birds	SC	SC	S4B	eBird (2023), iNat (2023)	Breeding habitat is characterized by coniferous-dominated forests adjacent to wetlands, such as slow-moving streams, peat bogs, sedge meadows, marshes, swamps and beaver ponds. On migration, the Rusty Blackbird is primarily associated with wooded wetlands (COSSARO 2017).	No habitat present in study area.	None needed.
Short-eared Owl	*Asio flammeus*	Birds	THR	SC	S2N, S4B	MNRF Species Occurrence Mapping	Breeds in open habitats, including grasslands, old pasture marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	Habitat potentially present in study area.	Breeding bird surveys.
Wood Thrush	*Hylocichla mustelina*	Birds	SC	THR	S4B	MNRF Species Occurrence Mapping, NHIC, OBBA, eBird (2023)	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	Habitat potentially present in study area.	Breeding bird surveys.
Yellow-breasted Chat	*Icteria virens*	Birds	END	END	S1B	MNRF Species Occurrence Mapping	Shrub specialist, nesting in early successional, dense, low-shrub habitat, including old fields, hydro-cutovers and forest edges experiencing regeneration (COSEWIC 2011c).	Habitat potentially present in study area.	Aquatic habitat assessment.
Black Redhorse	*Moxostoma duquesnei*	Fish	THR	THR	S2	MNRF Species Occurrence Mapping	Associated with cool, clear streams of moderate size with substrates of rocky, cobble, sand, or silt. Found in the Lake Erie and Grand River Watersheds (COSEWIC, 2005a).	Habitat potentially present in study area.	Aquatic habitat assessment.
Northern Sunfish (Great Lakes-Upper St. Lawrence Population)	*Lepomis peltastes*	Fish	SC	SC	S3	MNRF Species Occurrence Mapping	Prefers shallow, vegetated areas of warm lakes, ponds, and slowly flowing watercourses. Usually occurs in clear waters and is considered intolerant of siltation. Substrate usually consists of sand and gravel, as in the Thames River (COSEWIC 2016)	Habitat potentially present in study area.	Aquatic habitat assessment.
Silver Shiner	*Notropis photogenis*	Fish	THR	THR	S2S3	MNRF Species Occurrence Mapping, NHIC	Associated with large, wide streams (usually >20m) in deep riffles and pools, with substrates of gravel, boulder, rubble, and sand (COSEWIC, 2011d).	Habitat potentially present in study area.	Aquatic habitat assessment.
Rainbow	*Villosa iris*	Molluscs	SC	SC	S2S3	MNRF Species Occurrence Mapping	Most abundant in small to medium-sized rivers but can also be found in inland lakes. Usually found in or near riffles and along the edges of emergent vegetation in moderate to strong current. Occupies substrate mixtures of cobble, gravel, sandy and occasionally mud or boulder (COSEWIC 2015).	Habitat potentially present in study area.	Aquatic habitat assessment.
Wavy-rayed Lampmussel	*Lamsilis fasciola*	Molluscs	THR	SC	S1	MNRF Species Occurrence Mapping, iNat (2022)	Inhabits clear rivers and streams of various sizes with steady flows and stable substrates and is typically found in gravel or sand substrates in and around riffle areas. Most abundant in small to medium-sized stream and occurs at sites that support a great diversity of other mussel species (COSEWIC 2010).	Habitat potentially present in study area.	Aquatic habitat assessment.

Common name	Scientific name	Group	SARO	Cosewic	S-rank	Background sources	Habitat requirements	Candidate habitat in study area	Field studies recommended
Eastern Small-footed Myotis	*Myotis leibii*	Mammals	END	NA	S2S3	MNRF Species Occurrence Mapping	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernate singly or in small clusters in mines and caves (NatureServe, 2015).	Habitat potentially present in study area.	Bat habitat assessment.
Little Brown Myotis	*Myotis lucifugus*	Mammals	END	END	S3	MNRF Species Occurrence Mapping	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	Habitat potentially present in study area.	Bat habitat assessment.
Northern Myotis	*Myotis septentrionalis*	Mammals	END	END	S3	MNRF Species Occurrence Mapping	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	Habitat potentially present in study area.	Bat habitat assessment.
Tri-colored Bat	*Perimyotis subflavus*	Mammals	END	END	S3?	MNRF Species Occurrence Mapping	Hibernate in caves, abandoned mines, wells, and tunnels. Summer roosts include clumps of dead foliage and lichens, typically found in forested habitat close to water sources. May also use anthropogenic structures such as barns for maternity roosts. Foraging habitat includes forested riparian areas over water in relatively open areas (Environment Canada.2015).	Habitat potentially present in study area.	Bat habitat assessment.
Blanding's Turtle	*Emydoidea blandingii*	Reptiles	THR	THR	S3	MNRF Species Occurrence Mapping	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat present in study area.	None needed.
Midland Painted Turtle	*Chrysemys picta marginata*	Reptiles	NL	SC	S4	MNRF Species Occurrence Mapping, ORAA (1981)	Occupy slow moving, relatively shallow and well-vegetated wetlands and water bodies with abundant basking sites and organic substrate. Found in association with submergent aquatic plants, which are used for cover and feeding. Semi -tolerant of human-altered landscapes, occasionally found occupying urban ponds and lands subject to anthropogenic disturbance. Suitable nesting habitat includes open, often south-facing, and sloped areas with sandy-loamy and/or gravel substrate usually within 1200 m of aquatic active season habitats. Overwinter in shallow water with deep sediment (COSEWIC 2018).	Habitat potentially present in study area.	Aquatic habitat assessment.
Northern Map Turtle	*Graptemys geographica*	Reptiles	SC	SC	S3	MNRF Species Occurrence Mapping	Highly aquatic species, found in deep, large waterbodies, including lakes and large rivers, with abundant basking sites. Emerge onto land only during nesting, which occurs in soft sand or soil. Waterbodies with slow currents, soft mud bottoms and abundant aquatic vegetation are preferred (COSEWIC, 2002b).	No habitat present in study area.	None needed.
Snapping Turtle	*Chelydra serpentina*	Reptiles	SC	SC	S4	MNRF Species Occurrence Mapping, ORAA (2019), iNat (2023)	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	Habitat potentially present in study area.	Aquatic habitat assessment.
Wood Turtle	*Glyptemys insculpta*	Reptiles	END	THR	S2	MNRF Species Occurrence Mapping	Generally found in forested landscapes, associated with clear freshwater streams and associated floodplains. Preferential to streams with year-round current, with sandy or gravelly-sandy bottoms. Streams used are typically meandering with frequent oxbows. Overwintering associated with stable, high concentration dissolved oxygen in pools, under mud or under overhanging banks. Nesting occurs in open areas with high sun exposure, typically within 10 to 50m of aquatic habitat. Home ranges are typically linear, following streams (Environment Canada, 2016).	No habitat present in study area.	None needed.
Eastern Ribbonsnake	*Thamnophis sauritus*	Reptiles	SC	SC	S4	MNRF Species Occurrence Mapping	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	Habitat potentially present in study area.	Aquatic habitat assessment, ELC, and botanical inventory.
Milksnake	*Lampropeltis triangulum*	Reptiles	SC	SC	S4	MNRF Species Occurrence Mapping, ORAA (1971)	Habitat generalists, often associated with edge habitat, meadows, prairies, pastures, rocky outcrops and human disturbances such as hydro corridors and railway embankments. Habitat is usually close to a water source. Hibernation occurs in a variety of natural and man-made features, including rotting logs, old foundations, basements, and burrows (COSEWIC 2014).	Habitat potentially present in study area.	ELC and botanical inventory.

Common name	Scientific name	Group	SARO	Cosewic	S-rank	Background sources	Habitat requirements	Candidate habitat in study area	Field studies recommended
Queensnake	*Regina septemvittata*	Reptiles	END	END	S2	MNRF Species Occurrence Mapping	Associated with rocky streams and rivers, but occasionally found in marsh, pond and lake shore habitats. Usually found within 3m of the shoreline and only at sites where there is an abundance of crayfish (COSEWIC 2010).	No habitat present in study area.	None needed.
American Chestnut	*Castanea dentata*	Vascular plants	END	END	S1S2	MNRF Species Occurrence Mapping	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils, Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	No habitat present in study area.	None needed.
American Columbo	*Frasera carolinensis*	Vascular plants	END	END	S2	MNRF Species Occurrence Mapping	Associated with open forested slopes and forest edges. May also occur in thickets and clearings (COSEWIC 2006a).	No habitat present in study area.	None needed.
American Ginseng	*Panax quinquefolius*	Vascular plants	END	END	S2	MNRF Species Occurrence Mapping	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	No habitat present in study area.	None needed.
Butternut	*Juglans cinerea*	Vascular plants	END	END	S2?	MNRF Species Occurrence Mapping, iNat (2019)	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	Habitat potentially present in study area.	ELC and botanical inventory.
Dense Blazing Star	*Liatris spicata*	Vascular plants	THR	THR	S2	MNRF Species Occurrence Mapping, iNat (2022)	Occurs in open tallgrass prairies. It can grow in a range of moisture regimes from dry to very moist (COSEWIC 2010).	Habitat potentially present in study area.	ELC and botanical inventory.
False Hop Sedge	*Carex lupuliformis*	Vascular plants	END	END	S1	MNRF Species Occurrence Mapping	Associated with a variety of relatively open wetland habitats subject to periodic flooding. Known habitats consist mostly of small temporary forest ponds or marshes isolated in swamps (COSEWIC 2011).	Habitat potentially present in study area.	ELC and botanical inventory.
Green Dragon	*Arisaema dracontium*	Vascular plants	SC	SC	S3	MNRF Species Occurrence Mapping	Occurs along creek, river, and clay floodplains in moist to wet deciduous woodlands and thickets. Grows in shaded to partly shaded, seasonally wet areas (Donley et. al. 2013).	No habitat present in study area.	None needed.
Pygmy Pocket Moss	*Fissidens exilis*	Vascular plants	NAR	NAR	S1	MNRF Species Occurrence Mapping	Found largely on bare, moist, at least partly shaded, clay-based soil or loam. Collected on the forested banks of streams and ravines, floodplains, bluffs, beaches, roadsides, trails, and other environments where bare soil is exposed (COSEWIC 2016).	No habitat present in study area.	None needed.
Swamp Rose-mallow	*Hibiscus moscheutos*	Vascular plants	SC	SC	S3	MNRF Species Occurrence Mapping	Restricted to the Carolinian or Deciduous Forest region. All populations are confined to early successional wetlands that are associated with Lakes Erie, Ontario, or St. Clair. Most common in deep-water Typha marshes, along the interface with the open water in the cattail mat; and in meadow marshes (COSEWIC 2004).	No habitat present in study area.	None needed.

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Dobbyn, J. 1994. Atlas of the Mammals of Ontario. Federation of Ontario Naturalists, Altona Manitoba, Canada. (Available online here: http://www.ontarionature.org/discover/resources/publications.php)

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Heather Dixon

From: Stephen Dykstra <sdykstra@woolwich.ca>
Sent: Wednesday, February 14, 2024 1:56 PM
To: Heather Dixon
Cc: Cheryl-Anne Ross; Alex Pasley; Bryan Bishop
Subject: RE: [EXT] RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1665 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Follow Up Flag: Follow up
Flag Status: Flagged

Caution. Outside Sender

Heather,

We would like to see the revised ToR, just to verify it has been updated.

With regards to the Lanxess documents it would be best to reach out to GHD. Below is the PM contact

Luis Almeida Luis.Almeida@ghd.com

Stephen Dykstra MCIP, RPP
Senior Planner
Township of Woolwich

From: Heather Dixon <Heather@aboudtng.com>
Sent: Wednesday, February 14, 2024 10:29 AM
To: Stephen Dykstra <sdykstra@woolwich.ca>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>; Alex Pasley <apasley@ksmart.ca>; Bryan Bishop <BBishop@woolwich.ca>
Subject: RE: [EXT] RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1665 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Hi Stephen,

Thank you for the comments. Would the township like to see a revised ToR with these comments included, or are you happy to work on the understanding that they will be included in the drafting of the EIS? I was able to track down the Elmira Drain Report no problem, but I am not sure I found the correct document regarding the ground water/watercourse contaminants. I have attached what I was able to find. If these are not the right documents, would you please be able to provide us with the correct ones?

Many thanks,

Heather Dixon, PhD (she/her) . Aquatic Ecologist
ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
519.781.1581 www.aboudtng.com . heather@aboudtng.com

Aboud & Associates Inc. is located within the Between the Lakes Purchase (Treaty 3); the treaty lands and territory of the Mississaugas of the Credit.

From: Stephen Dykstra <sdykstra@woolwich.ca>
Sent: Wednesday, February 14, 2024 9:45 AM
To: Heather Dixon <Heather@aboudtng.com>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>; Alex Pasley <apasley@ksmart.ca>; Bryan Bishop <BBishop@woolwich.ca>
Subject: RE: [EXT] RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1665 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Caution. Outside Sender

Heather,

Please see the attached PDF which includes comments from our engineering group, and also the comments below.

We may want to mention the following section from the Elmira Drain report, which establishes a 10m setback from the top of the nearest bank of the drain:

10. WORKING AREA
The working area for construction purposes shall be a width of 20m centered on the proposed tile drain, and 20m from top of bank for open drains. The working areas for maintenance purpose shall be a width of 10m centered on the proposed tile drain and 10m from top of bank for open drains. Each landowner on whose property the drainage work is to be constructed shall designate access to and from the working area at the time of construction or upon failure to do so, the Engineer or Drainage Superintendent, as the case may be, shall designate access.

The working area for drain cleanout shall be 20m from top of bank wherever possible but shall take into account the adjacent land use. In sections where there is heavy forest cover, the working area will be reduced to the extent possible.

Regards,

Stephen Dykstra MCIP, RPP
Senior Planner
Township of Woolwich

From: Heather Dixon <Heather@aboudtng.com>
Sent: Friday, February 9, 2024 12:30 PM
To: Stephen Dykstra <sdykstra@woolwich.ca>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>
Subject: [EXT] RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1665 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Good morning,

I submitted the attached draft Terms of Reference (ToR) for the proposed development of an industrial subdivision at 1665 Scotch Line Road, Elmira (erroneously listed as 1655 Scotch Line Road in the original email) for comments at the beginning of December, and sent a follow-up email at the beginning of January. We have received comments from the

GRCA and the Region, but have yet to hear from the Township. Could you please let me know if Township staff have any comments on the attached ToR?

Many thanks,

Heather Dixon, PhD (she/her) . Aquatic Ecologist
ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
519.781.1581 www.aboudtng.com . heather@aboudtng.com

Aboud & Associates Inc. is located within the Between the Lakes Purchase (Treaty 3); the treaty lands and territory of the Mississaugas of the Credit.

From: Heather Dixon
Sent: Wednesday, January 3, 2024 11:49 AM
To: sdykstra@woolwich.ca
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>
Subject: RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1665 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Good morning,

I submitted the attached draft Terms of Reference (ToR) for the proposed development of an industrial subdivision at 1665 Scotch Line Road, Elmira (erroneously listed as 1655 Scotch Line Road in the previous email) for comments at the beginning of December. We have received comments from the GRCA and the Region, but have yet to hear from the Township. Could you please let me know if Township staff have any comments on the attached ToR?

Many thanks,

Heather Dixon, PhD (she/her) . Aquatic Ecologist
ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
519.781.1581 www.aboudtng.com . heather@aboudtng.com

Aboud & Associates Inc. is located within the Between the Lakes Purchase (Treaty 3); the treaty lands and territory of the Mississaugas of the Credit.

From: Heather Dixon
Sent: Monday, December 4, 2023 12:21 PM
To: 'cfosterpengelly@grandriver.ca' <cfosterpengelly@grandriver.ca>; 'sdykstra@woolwich.ca' <sdykstra@woolwich.ca>; 'environmentalplanning@regionofwaterloo.ca' <environmentalplanning@regionofwaterloo.ca>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>; 'mlippert@mhbcplan.com' <mlippert@mhbcplan.com>
Subject: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1655 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Dear Mr. Foster-Pengelly, Mr. Dykstra, and the Region of Waterloo Planning Department,

Please see the attached draft Terms of Reference for a Scoped Environmental Impact Study (EIS) for the proposed development of an industrial subdivision at 1655 Scotch Line Road, Elmira, Region of Waterloo, ON. The draft Terms of Reference have been developed based on information received from the proponent, and a review of the applicable municipal, provincial, and federal guidelines that apply to this project. We would appreciate your review and comments on the Terms of Reference in order to finalize the proposed scope of work required for the Scoped EIS.

Many thanks,

Heather Dixon, PhD (she/her) . Aquatic Ecologist
ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
519.781.1581 www.aboudtng.com . heather@aboudtng.com

Heather Dixon

From: Chris Foster-Pengelly <cfosterpengelly@grandriver.ca>
Sent: Thursday, December 21, 2023 2:55 PM
To: Heather Dixon; sdykstra@woolwich.ca; environmentalplanning@regionofwaterloo.ca
Cc: Cheryl-Anne Ross; mlippert@mhbcplan.com
Subject: RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1655 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Caution. Outside Sender

Hi Heather,

Thank you for reaching out for clarification. We agree that the water balance does not need to be shown on the maps, but the site and feature based water balances (for pre to post development) should be included and specifically mentioned in the discussion of the impacts and mitigations.

With regards to the tile drain data, I would recommend the OMAFRA website: Tile Drainage Area | Tile Drainage Area | Ontario GeoHub (gov.on.ca)

You could also reach out to the Drainage Superintendent who might be able to provide you with maps. I would recommend reaching out to the Township for their contact information, if needed.

Thank you,
Chris

Chris Foster-Pengelly, M.Sc.
Office: 519-621-2763 ext. 2319
Toll-free: 1-866-900-4722
www.grandriver.ca | Connect with us on social media

From: Heather Dixon <Heather@aboudtng.com>
Sent: Thursday, December 7, 2023 10:00 AM
To: Chris Foster-Pengelly <cfosterpengelly@grandriver.ca>; sdykstra@woolwich.ca; environmentalplanning@regionofwaterloo.ca
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>; mlippert@mhbcplan.com
Subject: RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1655 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Hi Chris,

Thank you for the comments. I was hoping for clarification for comment 2. Scoped EIS #11 refers to the preparation of maps showing noteworthy and natural heritage features. Are these all features that the GRCA wants included on these maps? We normally include site grading, but water balance is normally included in the discussion of the impacts and mitigations and not on the map. Additionally, do you know where we can find tile drain data, and is that something GRCA also wants to see included in the mapping?

Many thanks,

From: Chris Foster-Pengelly <cfosterpengelly@grandriver.ca>
Sent: Thursday, December 7, 2023 9:06 AM
To: Heather Dixon <Heather@aboudtng.com>; sdykstra@woolwich.ca; environmentalplanning@regionofwaterloo.ca
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>; mlippert@mhbcplan.com
Subject: RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1655 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Caution. Outside Sender

Hi Heather,

The GRCA has reviewed the draft terms of reference. We offer the following comments:

1. B. Field Assessment #3, the proposed aquatic assessment should also review the channel morphology for stability and signs of erosion and flow blockages.
2. C. Scoped EIS #11, should include a site grading plan, existing agricultural field tile, and complete a site water balance for pre and post development conditions that will match contributions to the watercourse and wetland.

Thank you,
Chris

Chris Foster-Pengelly, M.Sc.
Office: 519-621-2763 ext. 2319
Toll-free: 1-866-900-4722
www.grandriver.ca | Connect with us on social media

From: Heather Dixon <Heather@aboudtng.com>
Sent: Monday, December 4, 2023 12:21 PM
To: Chris Foster-Pengelly <cfosterpengelly@grandriver.ca>; sdykstra@woolwich.ca; environmentalplanning@regionofwaterloo.ca
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>; mlippert@mhbcplan.com
Subject: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1655 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Dear Mr. Foster-Pengelly, Mr. Dykstra, and the Region of Waterloo Planning Department,

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Many thanks,

Heather Dixon

From: Heather Dixon
Sent: Wednesday, December 13, 2023 1:55 PM
To: 'Environmental Planning'
Cc: Cheryl-Anne Ross
Subject: RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1655 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Hi Albert,

Thanks for getting back to us, we greatly appreciate your comments.

For the terms of reference we include everything we will be doing as part of the scoped environmental impact study, which includes the steps taken to produce the terms of reference, what field work we will be doing, and the content of the scoped EIS itself. That way municipalities and conservation authorities can provide input on anything we may undertake as part of the process.

The numbering continuing for section C was a mistake I did not catch when formatting that section. It is it's own section and should have its own numbering.

Many thanks,

Heather Dixon, PhD (she/her) . Aquatic Ecologist
ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
519.781.1581 www.aboudtng.com . heather@aboudtng.com

Aboud & Associates Inc. is located within the Between the Lakes Purchase (Treaty 3); the treaty lands and territory of the Mississaugas of the Credit.

From: Environmental Planning <EnvironmentalPlanning@regionofwaterloo.ca>
Sent: Tuesday, December 12, 2023 12:21 PM
To: Environmental Planning <EnvironmentalPlanning@regionofwaterloo.ca>; Heather Dixon <Heather@aboudtng.com>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>
Subject: RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1655 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Caution. Outside Sender

Hi Heather,
I found the structure of the material on pages 12&13 a bit confusing. I'm not sure that the line "To fulfill the requirements of this study, we will:.." at the top of page 12 should be there at all seeing as how you are giving proposed terms of reference and then you also make reference to preparing a Terms of Reference in A.2.
I'm also not clear how "C. Scoped Environmental Impact Study (EIS)" at the bottom of page 12 fits in given that the numbering continues on through the heading (from 10 – 11).
Overall, I think I see that you've included the relevant bits of a scoped EIS, but it's not organized very clearly. If you could provide clarification on the material on these 2 pages would be helpful.
Thanks,
Albert

Albert Hovingh R.P.F.

Senior Planner, Stewardship Planning
Planning, Development and Legislative Services
Region of Waterloo
150 Frederick St. 8th Floor
Kitchener, ON N2G 4J3

Phone: 519-575-4813
Cell : 519-510-9505
e-mail: AHovingh@RegionofWaterloo.ca

From: Environmental Planning <EnvironmentalPlanning@regionofwaterloo.ca>
Sent: December 7, 2023 11:27 AM
To: 'Heather Dixon' <Heather@aboudtng.com>; Environmental Planning <EnvironmentalPlanning@regionofwaterloo.ca>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>
Subject: RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1655 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Thanks Heather. I will finish reviewing the scoped EIS and send comments in the next day or so
Albert

From: Heather Dixon <Heather@aboudtng.com>
Sent: December 6, 2023 11:04 AM
To: Environmental Planning <EnvironmentalPlanning@regionofwaterloo.ca>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>
Subject: RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1655 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

****EXTERNAL ALERT** This email originated from outside the Region of Waterloo.**

Hi Albert,

Apologies, there was a mix up in discussions with the planner. It should indeed be 1665 Scotch Line Road.

Many thanks,

Heather Dixon, PhD (she/her) . Aquatic Ecologist
ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
519.781.1581 www.aboudtng.com . heather@aboudtng.com

Aboud & Associates Inc. is located within the Between the Lakes Purchase (Treaty 3); the treaty lands and territory of the Mississaugas of the Credit.

From: Environmental Planning <EnvironmentalPlanning@regionofwaterloo.ca>
Sent: Wednesday, December 6, 2023 11:02 AM
To: Heather Dixon <Heather@aboudtng.com>
Subject: RE: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1655 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

Caution. Outside Sender

Hi Heather,

Can you confirm the address - according to the GIS parcel layer, it looks like it should be 1665 Scotch Line Road.
Thanks,
Albert

Albert Hovingh R.P.F.
Senior Planner, Stewardship Planning
Planning, Development and Legislative Services
Region of Waterloo
150 Frederick St. 8th Floor
Kitchener, ON N2G 4J3

Phone: 519-575-4813
Cell : 519-510-9505
e-mail: AHovingh@RegionofWaterloo.ca

From: Heather Dixon <Heather@aboudtng.com>
Sent: December 4, 2023 12:21 PM
To: cfosterpengelly@grandriver.ca; sdykstra@woolwich.ca; Environmental Planning <EnvironmentalPlanning@regionofwaterloo.ca>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>; mlippert@mhbcplan.com
Subject: Draft Terms of Reference for a Scoped EIS for the proposed development of an industrial subdivision at 1655 Scotch Line Road, Elmira, Region of Waterloo, ON (AA23-232A)

****EXTERNAL ALERT** This email originated from outside the Region of Waterloo.**

Dear Mr. Foster-Pengelly, Mr. Dykstra, and the Region of Waterloo Planning Department,

Please see the attached draft Terms of Reference for a Scoped Environmental Impact Study (EIS) for the proposed development of an industrial subdivision at 1655 Scotch Line Road, Elmira, Region of Waterloo, ON. The draft Terms of Reference have been developed based on information received from the proponent, and a review of the applicable municipal, provincial, and federal guidelines that apply to this project. We would appreciate your review and comments on the Terms of Reference in order to finalize the proposed scope of work required for the Scoped EIS.

Many thanks,

Heather Dixon, PhD (she/her) . Aquatic Ecologist
ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
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APPENDIX 3

Field Investigation Details

SURVEY	TIME	DATE	STAFF	TEMP.	WIND (beaufort)	CLOUD COVER (%)	PRECIP.	PAST PRECIP. (24 HOURS)
Woodpecker cavity search, bat habitat assessment, SAR assessment, and SWH assessment	09:25-11:15	19-Mar-24	H. Dixon and B. Varcoe	-5	3	100	Light snow	Light snow
Wetland delineation, spring botanical, ELC, aquatic habitat assessment, SAR assessment, and SWH assessment	09:22-13:30	09-May-24	H. Dixon and S. Davison	9	2	10	None	None
Grassland breeding bird survey 1	05:44-11:00	29-May-24	B. Varcoe	9	1	50	None	None
Grassland breeding bird survey 2	05:59-10:13	17-Jun-24	B. Varcoe	17	1	10	None	None
Summer botanical, SAR assessment, and SWH assessment	08:47-10:47	25-Jun-24	S. Davison	21	2	100	None	None
Grassland breeding bird survey 3	06:06-10:10	05-Jul-24	B. Varcoe	17	0	0	None	None

APPENDIX 4

Ecological Land Classification Forms

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: 1665 Scotch Line Road		POLYGON: A
	SURVEYOR(S): Shannon Davison	DATE: May 10 & June 25, 2024	PHOTO #:
	START: 09:22	END: 13:18	ZONE & UTM:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRERIAL	☐ ORGANIC	☐ LACUSTRINE	■ NATURAL	☐ PLANKTON	☐ LAKE
☑ WETLAND	■ MINERAL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		■ GRAMINOID	☐ STREAM
SITE	☐ ACIDIC BEDRK.	☐ VALLEYSLOPE	COVER	☐ FORB	■ MARSH
☐ OPEN WATER		■ TABLELAND	■ OPEN	☐ LICHEN	☐ SWAMP
☑ SHALLOW WATER	☐ BASIC BEDRK.	☐ ROLL. UPLAND	☐ SHRUB	☐ BRYOPHYTE	☐ FEN
☐ SURFICIAL DEP.		☐ CLIFF	☐ TREED	☐ DECIDUOUS	☐ BOG
☐ BEDROCK	☐ CARB BEDRK.	☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			Acer rubrum
2	SUBCANOPY			Acer negundo
3	UNDERSTOREY			Cornus sericea=Ribes americanum>Salix interior>Sambucus canadensis
4	GRD. LAYER			Phalaris arundinacea>>Impatiens capensis>Urtica dioica=Dipsacus fullonum=Tussilago farfara>Galium mollugo=Carex stricta=Carex lac

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	R	<10	R	10-24	R	25-50	R	>50
STANDING SNAGS:	O	<10	R	10-24	R	25-50	N	>50
DEADFALL/LOGS:	O	<10	R	10-24	N	25-50	N	>50
COMM. AGE.								

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES/GLEY	M=	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK		(cm)

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: Marsh	CODE: MA
COMMUNITY SERIES: Meadow Marsh	CODE: MAM
ECOSITE: Graminoid Mineral Meadow Marsh	CODE: MAMM1
VEGETATION TYPE: Reed-canary Grass Graminoid Mineral Meadow Marsh	CODE: MAMM1-3
INCLUSION	CODE:
COMPLEX	CODE:

NOTES:

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
9	2	0	None	None

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER			
	C	SC	U	GL
Acer rubrum	O-R	O-R		
Acer negundo		R		
Salix petiolaris		O		
Rhamnus cathartica			R	
Poa palustris			O	
Bromus erectus			R	
Echinocystis lobata			R	
Sambucus canadensis			R	
Salix interior			O-R	
Cornus sericea			O	
Ribes americanum			O	

SPECIES	LAYER			
	C	SC	U	GL
Phalaris arundinacea				D
Dipsacus fullonum				O
Asclepias syriaca				O-R
Urtica dioica				O
Cirsium arvense				O-R
Impatiens capensis				A-O
Galium aparine				O-R
Taraxacum officinale				R
Galium mollugo				O-R
Carex stricta				O-R
Equisetum arvense				O-R
Carex lacustris				O-R
Tussilago farfara				O
Alliaria petiolata				R
Galium obtusum				R
Vicia cracca				R
Dactylis glomerata				R
Hesperis matronalis				R
Parthenocissus quinquefolia				O-R
Rubus idaeus ssp. strigosus				O-R
Rubus occidentalis				R

NOTES:

ABOUD & ASSOCIATES INC.

Representative Photographs of Vegetation Community:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: 1665 Scotch Line Road		POLYGON: B
	SURVEYOR(S): Shannon Davison	DATE: May 10 & June 25, 2024	PHOTO #:
	START: 09:22	END: 13:18	ZONE & UTM:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRERIAL	☐ ORGANIC	☐ LACUSTRINE	■ NATURAL	☐ PLANKTON	☐ LAKE
☑ WETLAND	■ MINERAL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
		☐ VALLEYSLOPE		☐ FORB	☐ MARSH
		■ TABLELAND		☐ LICHEN	■ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
	☐ ACIDIC BEDRK.	☐ CLIFF		■ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
SITE		☐ CREVICE/CAVE	COVER	☐ MIXED	☐ MEADOW
☐ OPEN WATER	☐ BASIC BEDRK.	☐ ALVAR	☐ OPEN		☐ PRAIRIE
☐ SHALLOW WATER		☐ ROCKLAND	☐ SHRUB		☐ THICKET
☑ SURFICIAL DEP.		☐ BEACH/BAR	■ TREED		☐ SAVANNAH
☐ BEDROCK	☐ CARB BEDRK.	☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			Acer rubrum
2	SUBCANOPY			Acer rubrum
3	UNDERSTOREY			Rhamnus cathartica>Acer rubrum>Thuja occidentalis=Ribes americanum>Larix laricina
4	GRD. LAYER			Alliaria petiolata>Phalaris arundinacea>Rhamnus cathartica=Impatiens capensis>Urtica dioica=Geranium robertianum>Cirsium arvense=

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	R	<10	R	10-24	A	25-50	O	>50
STANDING SNAGS:	N	<10	N	10-24	N	25-50	N	>50
DEADFALL/LOGS:	O	<10	R	10-24	N	25-50	N	>50
COMM. AGE.	Mature							

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS:

TEXTURE: Silt loam	DEPTH TO MOTTLES/GLEY	M=20	G= 30
MOISTURE: Moist	DEPTH OF ORGANICS:	3	(cm)
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK	>100	(cm)

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: Swamp	CODE: SW
COMMUNITY SERIES: Deciduous Swamp	CODE: SWD
ECOSITE: Maple Mineral Deciduous Swamp Ecosite	CODE: SWDM3
VEGETATION TYPE: Red Maple Mineral Deciduous Swamp Type	CODE: SWDM3-1
INCLUSION	CODE:
COMPLEX	CODE:

NOTES:

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
9	2	0	None	None

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER			
	C	SC	U	GL
Acer rubrum	D	O	O	
Thuja occidentalis			O-R	
Larix laricina			R	
Acer negundo				R
Quercus macrocarpa	R			
Viburnum lentago			R	
Ribes americanum			O-R	
Rhamnus cathartica			A-O	O

SPECIES	LAYER			
	C	SC	U	GL
Phalaris arundinacea				A-O
Cirsium arvense				R
Taraxacum officinale				R
Urtica dioica				O-R
Impatiens capensis				O
Geranium robertianum				O-R
Alliaria petiolata				A
Chelidonium majus				R
Dipsacus fullonum				R
Cirsium vulgare				R
Caltha palustris				R
Glyceria striata				O
Vitis riparia				R
Solanum dulcamara				R
Bidens frondosa				R
Carex arctata				R

NOTES:

ABOUD & ASSOCIATES INC.

Representative Photographs of Vegetation Community:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: 1665 Scotch Line Road		POLYGON: C
	SURVEYOR(S): Shannon Davison	DATE: May 10 & June 25, 2024	PHOTO #:
	START: 09:22	END: 13:18	ZONE & UTM:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☑ TERRERIAL	☐ ORGANIC	☐ LACUSTRINE	■ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	■ MINERAL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		■ GRAMINOID	☐ STREAM
		☐ VALLEYSLOPE		☐ FORB	☐ MARSH
		■ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
	☐ ACIDIC BEDRK.	☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
SITE		☐ CREVICE/CAVE	COVER	☐ MIXED	■ MEADOW
☐ OPEN WATER	☐ BASIC BEDRK.	☐ ALVAR	■ OPEN		☐ PRAIRIE
☐ SHALLOW WATER		☐ ROCKLAND	☐ SHRUB		☐ THICKET
☑ SURFICIAL DEP.		☐ BEACH/BAR	☐ TREED		☐ SAVANNAH
☐ BEDROCK	☐ CARB BEDRK.	☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUBCANOPY			Larix laricina
3	UNDERSTOREY			Cornus sericea
4	GRD. LAYER			Phalaris arundinacea>>Taraxacum officinale>Alliaria petiolata=Dipsacus fullonum>Asclepias syriaca=Solidago sp.=Galium aparine=Cirsi

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:		<10		10-24		25-50		>50
STANDING SNAGS:		<10		10-24		25-50		>50
DEADFALL/LOGS:		<10		10-24		25-50		>50
COMM. AGE.								

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES/GLEY	M=	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK		(cm)

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: Meadow		CODE: ME
COMMUNITY SERIES: Graminoid Mineral Meadow Marsh		CODE: MEG
ECOSITE: Dry - Fresh Graminoid Meadow Ecosite		CODE: MEGM3
VEGETATION TYPE: Reed Canary Grass Graminoid Meadow Type		CODE: MEGM3-8
INCLUSION		CODE:
COMPLEX		CODE:

NOTES:

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
9	2	0	None	None

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER			
	C	SC	U	GL
Larix laricina		R		
Sambucus canadensis		R		
Rhamnus cathartica		O-R		
Salix petiolaris			O	
Bromus erectus			O-R	
Cornus sericea			O-R	

SPECIES	LAYER			
	C	SC	U	GL
Phalaris arundinacea				D
Asclepias syriaca				O-R
Dipsacus fullonum				O
Solidago sp.				O-R
Taraxacum officinale				A-O
Galium aparine				O-R
Myosotis sylvatica				R
Alliaria petiolata				O
Cirsium arvense				O-R
Galium mollugo				R
Cardamine pratensis				R
Pastinaca sativa				R
Impatiens capensis				R
Vicia cracca				O-R
Arctium minus				O-R
Urtica dioica				O-R
Verbena hastata				O-R
Hesperis matronalis				O-R
Daucus carota				R
Medicago lupulina				R
Erigeron annuus				R
Trifolium pratense				R
Trifolium repens				R
Lotus corniculatus				R
Carex spicata				R
Juncus tenuis				R

NOTES:

ABOUD & ASSOCIATES INC.

Representative Photographs of Vegetation Community:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: 1665 Scotch Line Road		POLYGON: E
	SURVEYOR(S): Shannon Davison	DATE: May 10 & June 25, 2024	PHOTO #:
	START: 09:22	END: 13:18	ZONE & UTM:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRERIAL	☐ ORGANIC	☐ LACUSTRINE	■ NATURAL	☐ PLANKTON	☐ LAKE
☑ WETLAND	■ MINERAL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		■ GRAMINOID	☐ STREAM
SITE	☐ ACIDIC BEDRK.	☐ VALLEYSLOPE	COVER	☐ FORB	■ MARSH
☐ OPEN WATER		■ TABLELAND	■ OPEN	☐ LICHEN	☐ SWAMP
☑ SHALLOW WATER	☐ BASIC BEDRK.	☐ ROLL. UPLAND	☐ SHRUB	☐ BRYOPHYTE	☐ FEN
☐ SURFICIAL DEP.		☐ CLIFF	☐ TREED	☐ DECIDUOUS	☐ BOG
☐ BEDROCK	☐ CARB BEDRK.	☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUBCANOPY			
3	UNDERSTOREY			Typha latifolia
4	GRD. LAYER			Lemna minor

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION								BA:
SIZE CLASS ANALYSIS:		<10		10-24		25-50		>50
STANDING SNAGS:		<10		10-24		25-50		>50
DEADFALL/LOGS:		<10		10-24		25-50		>50
COMM. AGE.								

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES/GLEY	M=	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK		(cm)

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: Marsh		CODE: MA
COMMUNITY SERIES: Meadow Marsh		CODE: MAM
ECOSITE: Graminoid Mineral Meadow Marsh Ecosite		CODE: MAMM1
VEGETATION TYPE: Cattail Graminoid Mineral Meadow Marsh Type		CODE: MAMM1-3
INCLUSION		CODE:
COMPLEX		CODE:

NOTES:

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
9	2	0	None	None

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER			
	C	SC	U	GL
Salix interior		R		
Phalaris arundinacea			O-R	
Typha latifolia			D	

SPECIES	LAYER			
	C	SC	U	GL
Lemna minor				O

NOTES:

ABOUD & ASSOCIATES INC.
Consulting Arborists • Ecologists • Landscape Architects

Representative Photographs of Vegetation Community:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: 1665 Scotch Line Road		POLYGON: F
	SURVEYOR(S): Shannon Davison	DATE: May 10 & June 25, 2024	PHOTO #:
	START: 09:22	END: 13:18	ZONE & UTM:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☑ TERRERIAL	☐ ORGANIC	☐ LACUSTRINE	■ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	■ MINERAL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
		☐ VALLEYSLOPE		☐ FORB	☐ MARSH
		■ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
	☐ ACIDIC BEDRK.	☐ CLIFF		■ DECIDUOUS	☐ BOG
SITE		☐ TALUS	COVER	☐ CONIFEROUS	☐ BARREN
☐ OPEN WATER		☐ CREVICE/CAVE	☐ OPEN	☐ MIXED	☐ MEADOW
☐ SHALLOW WATER	☐ BASIC BEDRK.	☐ ALVAR	■ SHRUB		☐ PRAIRIE
☑ SURFICIAL DEP.		☐ ROCKLAND	☐ TREED		■ THICKET
☐ BEDROCK		☐ BEACH/BAR			☐ SAVANNAH
	☐ CARB BEDRK.	☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			Salix petiolaris
2	SUBCANOPY			Salix petiolaris>Acer rubrum
3	UNDERSTOREY			
4	GRD. LAYER			Alliaria petiolata>Galium mollugo=Phalaris arundinacea>Solidago sp.>Urtica dioica

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:		<10		10-24		25-50		>50
STANDING SNAGS:		<10		10-24		25-50		>50
DEADFALL/LOGS:		<10		10-24		25-50		>50
COMM. AGE.								

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS:

TEXTURE: Silt Loam	DEPTH TO MOTTLES/GLEY	M= >40	G= >40
MOISTURE: Dry, Fresh	DEPTH OF ORGANICS:	100	(cm)
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK	>100	(cm)

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: Thicket		CODE: TH
COMMUNITY SERIES: Deciduous Thicket		CODE: THD
ECOSITE: Fresh - Moist Deciduous Thicket Ecosite		CODE: THDM5
VEGETATION TYPE:		CODE:
INCLUSION		CODE:
COMPLEX		CODE:

NOTES:

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
9	2	0	None	None

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER			
	C	SC	U	GL
Acer rubrum		O		
Salix petiolaris	D	A-O		
Salix interior		R		
Echinocystis lobata			O-R	

SPECIES	LAYER			
	C	SC	U	GL
Alliaria petiolata				A
Galium mollugo				O
Phalaris arundinacea				O
Solidago sp.				O-R
Urtica dioica				R
Impatiens capensis				O
Asclepias syriaca				O-R
Galium aparine				A-O
Erigeron annuus				R

NOTES:

ABOUD & ASSOCIATES INC.

Representative Photographs of Vegetation Community:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: 1665 Scotch Line Road		POLYGON: G
	SURVEYOR(S): Shannon Davison	DATE: May 10 & June 25, 2024	PHOTO #:
	START: 09:22	END: 13:18	ZONE & UTM:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRERIAL	☐ ORGANIC	☐ LACUSTRINE	■ NATURAL	☐ PLANKTON	☐ LAKE
☑ WETLAND	■ MINERAL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
		☐ VALLEYSLOPE		☐ FORB	☐ MARSH
		■ TABLELAND		☐ LICHEN	■ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
	☐ ACIDIC BEDRK.	☐ CLIFF		■ DECIDUOUS	☐ BOG
SITE		☐ TALUS	COVER	☐ CONIFEROUS	☐ BARREN
☐ OPEN WATER	☐ BASIC BEDRK.	☐ CREVICE/CAVE	☐ OPEN	☐ MIXED	☐ MEADOW
☐ SHALLOW WATER		☐ ALVAR	☐ SHRUB		☐ PRAIRIE
☑ SURFICIAL DEP.		☐ ROCKLAND	■ TREED		☐ THICKET
☐ BEDROCK	☐ CARB BEDRK.	☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			Acer rubrum>>Acer saccharinum>Fraxinus pennsylvanica
2	SUBCANOPY			Acer rubrum>Acer negundo=Ulmus americana
3	UNDERSTOREY			Rubus idaeus ssp. strigosus>Cornus sericea=Cornus alternifolia>Rhamnus cathartica=Prunus virginiana=Ribes hirtellum
4	GRD. LAYER			Impatiens capensis>Alliaria petiolata>Matteuccia struthiopteris>Galium asprellum=Geranium maculatum>Urtica dioica>Chelidonium maj

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	O	<10	O	10-24	A	25-50	O	>50
STANDING SNAGS:	N	<10	R	10-24	N	25-50	N	>50
DEADFALL/LOGS:	R	<10	O	10-24	R	25-50	R	>50
COMM. AGE.	Mature							

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS:

TEXTURE: N/A	DEPTH TO MOTTLES/GLEY	M= N/A	G= N/A
MOISTURE: N/A	DEPTH OF ORGANICS:	N/A	(cm)
HOMOGENOUS/VARIABLE N/A	DEPTH TO BEDROCK	N/A	(cm)

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: Swamp	CODE: SW
COMMUNITY SERIES: Deciduous Swamp	CODE: SWD
ECOSITE: Maple Mineral Deciduous Swamp Ecosite	CODE: SWDM3
VEGETATION TYPE: Red Maple Mineral Deciduous Swamp Type	CODE: SWDM3-1
INCLUSION	CODE:
COMPLEX	CODE:

NOTES:

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
9	2	0	None	None

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER			
	C	SC	U	GL
Acer rubrum	A	A-O		
Acer negundo		O-R		
Ulmus americana		O-R		
Fraxinus pennsylvanica	R			
Acer saccharinum	O			
Juglans nigra			R	
Sambucus canadensis			O-R	
Vitis riparia			O	
Rhamnus cathartica			R	
Prunus virginiana			R	
Cornus alternifolia			O-R	R
Ribes hirtellum			R	
Cornus sericea			O-R	
Rubus idaeus ssp. strigosus			A-O	

SPECIES	LAYER			
	C	SC	U	GL
Galium asprellum				O-R
Impatiens capensis				D-A
Alliaria petiolata				A-O
Urtica dioica				R
Chelidonium majus				R
Phalaris arundinacea				R
Taraxacum officinale				R
Geranium maculatum				O-R
Arisaema triphyllum				R
Viola sororia				R
Thalictrum pubescens				R
Tussilago farfara				R
Matteuccia struthiopteris				O
Rubus occidentalis				O-R
Geum canadense				O-R
Oxalis stricta				R
Geranium robertianum				O
Parthenocissus quinquefolia				O
Hesperis matronalis				R

NOTES:

ABOUD & ASSOCIATES INC.

Representative Photographs of Vegetation Community:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: 1665 Scotch Line Road		POLYGON: M
	SURVEYOR(S): Shannon Davison	DATE: May 10 & June 25, 2024	PHOTO #:
	START: 09:22	END: 13:18	ZONE & UTM:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRERIAL	☐ ORGANIC	☐ LACUSTRINE	■ NATURAL	☐ PLANKTON	☐ LAKE
☑ WETLAND	■ MINERAL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ ACIDIC BEDRK.	☐ VALLEYSLOPE		☐ FORB	☐ MARSH
SITE		■ TABLELAND	COVER	☐ LICHEN	■ SWAMP
☐ OPEN WATER	☐ BASIC BEDRK.	☐ ROLL. UPLAND	☐ OPEN	☐ BRYOPHYTE	☐ FEN
☐ SHALLOW WATER		☐ CLIFF	☐ SHRUB	■ DECIDUOUS	☐ BOG
☑ SURFICIAL DEP.	☐ CARB BEDRK.	☐ TALUS	■ TREED	☐ CONIFEROUS	☐ BARREN
☐ BEDROCK		☐ CREVICE/CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	Salix euxina
2	SUBCANOPY	3	3	Salix euxina >> Quercus macrocarpa
3	UNDERSTOREY	4	3	Rubus idaeus = Parthenocissus quinquefolia = Vitis riparia > Cornus sericea
4	GRD. LAYER	6	4	Galium aparine > Alliaria petiolata = Tussilago farfara = Impatiens capensis

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	R	<10	R	10-24	A	25-50	A	>50
STANDING SNAGS:	N	<10	N	10-24	N	25-50	N	>50
DEADFALL/LOGS:	R	<10	R	10-24	O	25-50	R	>50
COMM. AGE.	mid-aged							

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES/GLEY	M=	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK		(cm)

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: Swamp	CODE: SW
COMMUNITY SERIES: Deciduous Swamp	CODE: SWD
ECOSITE: Mineral Deciduous Swamp	CODE: SWDM4
VEGETATION TYPE: Willow Mineral Deciduous Swamp	CODE: SWDM4-1
INCLUSION	CODE:
COMPLEX	CODE:

NOTES:

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
9	2	0	None	None

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER			
	C	SC	U	GL
Salix euxina	A	A		
Acer negundo			O-R	
Quercus macrocarpa		R		
Rubus idaeus ssp. strigosus			A-O	
Rubus occidentalis			O-R	
Rhamnus cathartica		O-R		
Parthenocissus quinquefolia			A-O	
Lonicera sp.			R	
Sambucus canadensis			O-R	
Cornus sericea			O	
Vitis riparia			A-O	

SPECIES	LAYER			
	C	SC	U	GL
Dipsacus fullonum			O-R	
Galium obtusum				A-O
Alliaria petiolata				O
Tussilago farfara				O
Impatiens capensis				O
Geum aleppicum				R
Phalaris arundiacea				O-R

NOTES:

ABOUD & ASSOCIATES INC.

Representative Photographs of Vegetation Community:

APPENDIX 5
Vascular Plant List

Season		Plant Type [1]	Scientific Name	Common Name	CC [2]	CW [3]	SARO [4] Status	SARA [5] Status	Global [6] Rank	Prov. [7] Rank	Region of [8] Waterloo
Spring	Summer										
✓	✓	TR	*Acer negundo*	Manitoba Maple	0	0			G5	SU	
✓	✓	TR	*Acer rubrum*	Red Maple	4	0			G5	S5	
✓	✓	TR	*Acer saccharinum*	Silver Maple	5	-3			G5	S5	
✓	✓	FO	*Alliaria petiolata*	Garlic Mustard	*	0			GNR	SNA	
	✓	FO	*Arctium minus*	Common Burdock	*	3			GNR	SNA	
✓		FO	*Arisaema triphyllum*	Jack-in-the-pulpit	5	-3			G5	S5	
✓	✓	FO	*Asclepias syriaca*	Common Milkweed	0	5			G5	S5	
	✓	FO	*Asclepias incarnata*	Swamp Milkweed	6	-5			G6	S6	
	✓	FO	*Bidens frondosa*	Devil's Beggarticks	3	-3			G5	S5	
	✓	FO	*Brassica rapa*	Field Mustard	*	5			GNR	SNA	
	✓	GR	*Bromus erectus*	Meadow Brome	*	5			GNR	SNA	
✓		FO	*Caltha palustris*	Yellow Marsh Marigold	5	-5			G5	S5	
✓		FO	*Cardamine pratensis*	Meadow Bittercress		-3			GU	SNA	S
	✓	SE	*Carex arctata*	Woodland Drooping Sedge	5	5			G5	S5	
✓	✓	SE	*Carex lacustris*	Lake Sedge	5	-5			G5	S5	
	✓	SE	*Carex spicata*	Spiked Sedge	*	5			GNR	SNA	
✓	✓	SE	*Carex stricta*	Tussock Sedge	4	-5			G5	S5	
	✓	TR	*Celtis occidentalis*	Common Hackberry	8	0			G5	S4	T
✓	✓	FO	*Chelidonium majus*	Greater Celadine		5			GNR	SNA	
✓	✓	FO	*Cirsium arvense*	Canada Thistle	*	3			G5	SNA	
✓		FO	*Cirsium vulgare*	Bull Thistle	*	3			GNR	SNA	
✓	✓	SH	*Cornus alternifolia*	Alternate-leaved Dogwood	6	3			G5	S5	
✓	✓	SH	*Cornus sericea*	Red-osier Dogwood	2	-3			G5	S5	
	✓	GR	*Dactylis glomerata*	Orchard Grass	*	3			GNR	SNA	
	✓	FO	*Daucus carota*	Wild Carrot	*	5			GNR	SNA	
✓	✓	FO	*Dipsacus fullonum*	Common Teasel		3			GNR	SNA	
	✓	VI	*Echinocystis lobata*	Wild Mock-Cucumber	3	-3			G5	S5	
	✓	GR	*Elymus repens*	Creeping Wildrye	*	3			GNR	SNA	
✓	✓	FE	*Equisetum arvense*	Field Horsetail	0	0			G5	S5	
	✓	FO	*Erigeron annuus*	Annual Fleabane	0	3			G5	S5	

Season		Plant Type [1]	Scientific Name	Common Name	CC [2]	CW [3]	SARO [4] Status	SARA [5] Status	Global [6] Rank	Prov. [7] Rank	Region of [8] Waterloo
Spring	Summer										
✓	✓	TR	*Fraxinus pennsylvanica*	Green Ash	3	-3			G5	S4	
✓	✓	FO	*Galium aparine*	Cleavers	4	3			G5	S5	
✓		FO	*Galium asprellum*	Rough Bedstraw	6	-5			G5	S5	
✓	✓	FO	*Galium mollugo*	Smooth Bedstraw	*	5			GNR	SNA	
	✓	FO	*Galium obtusum*	Blunt-leaved Bedstraw	6	-3			G5	S4S5	
✓		FO	*Geranium maculatum*	Spotted Geranium	6	3			G5	S5	
✓	✓	FO	*Geranium robertianum*	Herb-Robert	2	3			G5	S5	
	✓	FO	*Geum aleppicum*	Yellow Avens	2	0			G5	S5	
	✓	FO	*Geum canadense*	White Avens	3	0			G5	S5	
	✓	GR	*Glyceria striata*	Fowl Mannagrass	3	-5			G5T5	S5	
	✓	FO	*Hesperis matronalis*	Dame's Rocket	*	3			G4G5	SNA	
✓	✓	FO	*Impatiens capensis*	Spotted Jewelweed	4	-3			G5	S5	
	✓	TR	*Juglans nigra*	Black Walnut	5	3			G5	S4?	N
	✓	FO	*Juncus tenuis*	Path Rush	0	0			G5	S5	
	✓	TR	*Larix decidua*	European Larch	*	5			G5	SNA	
✓	✓	TR	*Larix laricina*	Tamarack	7	-3			G5	S5	
✓	✓	FO	*Lemna minor*	Lesser Duckweed	5	-5			G5	S5	
	✓	SH	*Lonicera sp.*	Honeysuckle species							
	✓	FO	*Lotus corniculatus*	Bird's-foot Trefoil	*	3			GNR	SNA	
✓		FE	*Matteuccia struthiopteris*	Ostrich Fern	5	0			G5T5	S5	
	✓	FO	*Medicago lupulina*	Black Medic	*	3			GNR	SNA	
✓		FO	*Myosotis sylvatica*	Woodland Forget-me-not	*	5			G5	SNA	
	✓	FO	*Oxalis stricta*	Upright Yellow Wood-sorrel	0	3			G5	SNA	
	✓	VW	*Parthenocissus quinquefolia*	Virginia Creeper	6	3			G5	S4?	N
✓		FO	*Pastinaca sativa*	Wild Parsnip	*	5			GNR	SNA	
✓	✓	GR	*Phalaris arundinacea*	Reed Canary Grass	0	-3			G5	S5	
	✓	GR	*Poa palustris*	Fowl Bluegrass	5	-3			G5	S5	
	✓	GR	*Poa pratensis*	Kentucky Bluegrass	0	3			G5T5	SNA	
✓		SH	*Prunus virginiana*	Choke Cherry	2	3			G5	S5	
	✓	TR	*Quercus macrocarpa*	Bur Oak	5	3			G5	S5	

Season		Plant Type [1]	Scientific Name	Common Name	CC [2]	CW [3]	SARO [4] Status	SARA [5] Status	Global [6] Rank	Prov. [7] Rank	Region of [8] Waterloo
Spring	Summer										
✓	✓	SH	*Rhamnus cathartica*	Common Buckthorn	*	0			GNR	SNA	
✓		SH	*Ribes americanum*	Wild Black Currant	4	-3			G5	S5	
✓		SH	*Ribes hirtellum*	Smooth Gooseberry	6	-3			G5	S5	
✓	✓	SH	*Rubus idaeus ssp. strigosus*	Wild Red Raspberry	2	3			G5T5	S5	
	✓	SH	*Rubus occidentalis*	Black Raspberry	2	5			G5	S5	
✓	✓	TR	*Salix euxina*	Crack Willow		0			GNR	SNA	
✓	✓	SH	*Salix interior*	Sandbar Willow	1	-3			GNR	S5	
✓	✓	SH	*Salix petiolaris*	Meadow Willow	3	-3			G5	S5	
✓	✓	SH	*Sambucus canadensis*	Common Elderberry	5	-3			G5	S5	
	✓	FO	*Securigera varia*	Common Crown-vetch		5			GNR	SNA	
	✓	VI	*Solanum dulcamara*	Bittersweet Nightshade	*	0			GNR	SNA	
✓	✓	FO	*Solidago sp.*	Goldenrod species							
	✓	FO	*Sonchus arvensis*	Field Sow-thistle		3			GNRTNR	SNA	
	✓	FO	*Symphyotrichum novae-angliae*	New England Aster	2	-3			G5	S5	
✓	✓	FO	*Taraxacum officinale*	Common Dandelion	*	3			G5	SNA	
✓		FO	*Thalictrum pubescens*	Tall Meadow-rue	5	-3			G5	S5	
✓	✓	TR	*Thuja occidentalis*	Eastern White Cedar	4	-3			G5	S5	
	✓	FO	*Trifolium pratense*	Red Clover	*	3			GNR	SNA	
	✓	FO	*Trifolium repens*	White Clover	*	3			GNR	SNA	
✓	✓	FO	*Tussilago farfara*	Colt's-foot	*	3			GNR	SNA	
	✓	FO	*Typha angustifolia*	Narrow-leaved Cattail		-5			G5	SNA	
✓	✓	FO	*Typha latifolia*	Broad-leaved Cattail	1	-5			G5	S5	
✓	✓	TR	*Ulmus americana*	American Elm	3	-3			G5	S5	
✓	✓	FO	*Urtica dioica ssp. dioica*	European Stinging Nettle	*	0			G5T5?	SNA	
	✓	FO	*Verbena hastata*	Blue Vervain	4	-3			G5	S5	
	✓	SH	*Viburnum lentago*	Nannyberry	4	0			G5	S5	
	✓	FO	*Vicia cracca*	Tufted Vetch	*	5			GNR	SNA	
✓		FO	*Viola sororia*	Woolly Blue Violet	4	0			G5	S5	
	✓	VW	*Vitis riparia*	Riverbank Grape	0	0			G5	S5	

1. Plant Types: AL = Algae; FE = Fern; FO = Forb; GR = Grass; LC = Lichen; LV = Liverwort; MO = Moss; RU = Rush; SE = Sedge; SH = Shrub; TR = Tree; VI = Herbaceous vine; VW = Woody Vine
2. CC: Coefficient of Conservatism reflects a species' fidelity to a specific habitat. Range from 0 to 10; 10 = very conservative, not likely in disturbed habitats, 1 = least conservative, likely found in a broad range of habitat. * = value not assigned because they are non-native
3. CW: Coefficient of Wetness reflects a species' affinity for wet soil conditions. Range from -5 to 5; -5 = obligate wetland species, 5 = obligate upland species.
4. SARO: Status under the Provincial Endangered Species Act, listed on the Species at Risk in Ontario (SARO) list. In order of severity, statuses include: EXP = Extirpated; END = Endangered; THR = Threatened; SC = Special Concern
5. SARA: Status under the National Species at Risk Act (SARA), assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). In order of severity, statuses include: EXP = Extirpated; END = Endangered; THR = Threatened; SC = Special Concern
6. Global rarity rank. Range from G1 to G5; G1 = Extremely rare, G5 = Very Common. NR = Unranked; U = Unrankable.
7. Provincial rarity rank. Range from S1 to S5; S1 = Extremely rare, S5 = Very Common. NR = Unranked; U = Unrankable.
8. Waterloo Region Significant Species (2007): S = Significant; T = Significant, but possibly common?; N = Significant only if native status can be demonstrated

APPENDIX 6
Breeding Bird Survey Point Count Results & Evidence Codes

COMMON NAME	SCIENTIFIC NAME	COSSARO	ESA	COSEWIC	SARA	S-RANK	G-RANK	AREA SENSITIVE	AREA REQUIRED	PIF SPECIES	GRCA (date unk.)	REGION OF WATERLOO (1986-2007)	PC 1	Habitat: SWDM3-1-Deciduous Swamp																		PC 2	Habitat: MAMM1-2															
													R1	date: May 29, 2024						R2	date: June 17, 2024						R3	date: July 5, 2024						Max Sum		R1	date: May 29, 2024						R2	date: June 17, 2024						R3	date: July 5, 2024						Max Sum	
													>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE
Mallard	*Anas platyrhynchos*					S5	G5										0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Rock Pigeon	*Columba livia*					SNA	G5										0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Mourning Dove	*Zenaida macroura*					S5	G5										0	NA				1	0	X					0	NA	0	X					0	NA					0	NA					0	NA	0	NA
Chimney Swift	*Chaetura pelagica*	THR	THR	THR	THR	S3B	G4G5			✓							0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Killdeer	*Charadrius vociferus*					S4B	G5									1	0	X					0	NA					0	NA	0	X					0	NA					0	NA					0	NA	0	NA
Ring-billed Gull	*Larus delawarensis*					S5	G5										0	NA					0	NA					0	NA	0	NA					0	NA					0	NA		1			1	X	1	X
Great Blue Heron	*Ardea herodias*					S4	G5					R					0	NA				1	0	X					0	NA	0	X					0	NA					0	NA					0	NA	0	NA
Turkey Vulture	*Cathartes aura*					S5B, S3N	G5				CP	R					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Bald Eagle	*Haliaeetus leucocephalus*	NL	NL	NAR	NL	S4	G5	✓		✓							0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Red-tailed Hawk	*Buteo jamaicensis*		NAR	NAR		S5	G5										0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Belted Kingfisher	*Megaceryle alcyon*					S5B,S4N	G5			✓		R				1	0	X					0	NA					0	NA	0	X					0	NA					0	NA					0	NA	0	NA
Red-bellied Woodpecker	*Melanerpes carolinus*					S5	G5				CP	R					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Northern Flicker	*Colaptes auratus*					S5	G5			✓				1			1	S					0	NA					0	NA	1	S					0	NA					0	NA					0	NA	0	NA
Eastern Kingbird	*Tyrannus tyrannus*					S4B	G5			✓	CP						0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Eastern Wood-Pewee	*Contopus virens*	SC	SC	SC	SC	S4B	G5			✓			1				1	S					0	NA	1				1	T	2	T					0	NA					0	NA		1	1		1	S	1	S
Willow Flycatcher	*Empidonax traillii*					S4B	G5			✓		R	1	1			2	S		1			1	T					0	NA	3	T		1			1	S		1			1	S					0	NA	2	S
Warbling Vireo	*Vireo gilvus*					S5B	G5					R		1			1	S					0	NA					0	NA	1	S					0	NA					0	NA					0	NA	0	NA
Blue Jay	*Cyanocitta cristata*					S5	G5										0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
American Crow	*Corvus brachyrhynchos*					S5	G5										0	NA					0	NA					0	NA	0	NA			2		0	NA					0	NA					0	NA	0	NA
Common Raven	*Corvus corax*					S5	G5										0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Black-capped Chickadee	*Poecile atricapillus*					S5	G5				CP						0	NA		1			1	S					0	NA	1	S					0	NA					0	NA					0	NA	0	NA
Horned Lark	*Eremophila alpestris*					S4	G5				CP						0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Tree Swallow	*Tachycineta bicolor*					S4S5B	G5										0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*					S4B	G5				CP						0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Barn Swallow	*Hirundo rustica*	SC	SC	THR	THR	S4B	G5				CP						0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Cedar Waxwing	*Bombycilla cedrorum*					S5	G5										0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
White-breasted Nuthatch	*Sitta carolinensis*					S5	G5	✓	>10ha					1			1	S					0	NA					0	NA	1	S					0	NA					0	NA					0	NA	0	NA
House Wren	*Troglodytes aedon*					S5B	G5							1			1	S		2			2	T					0	NA	3	T		2			2	S		1			1	T	2				2	T	5	T
Carolina Wren	*Thryothorus ludovicianus*					S4	G5				CP	R					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	1	S	1	S
Gray Catbird	*Dumetella carolinensis*					S5B,S3N	G5				CP			1			1	S					0	NA					0	NA	1	S	1				1	S		1			1	T					0	NA	2	T
European Starling	*Sturnus vulgaris*					SNA	G5										0	NA		4			4	S					0	NA	4	S					0	NA					0	NA					0	NA	0	NA
Veery	*Catharus fuscescens*					S5B	G5	✓	>10ha		CP			1			1	S					0	NA					0	NA	1	S					0	NA					0	NA					0	NA	0	NA
American Robin	*Turdus migratorius*					S5	G5										0	NA					0	NA	1				1	S	1	S	2	2			4	S	2	1			3	T	1				1	T	8	T
House Sparrow	*Passer domesticus*					SNA	G5										0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
American Goldfinch	*Carduelis tristis*					S5	G5				CP						0	NA				1	0	X		1			1	S	1	S		1			1	S	1	1			2	T		5			5	T	8	T
Chipping Sparrow	*Spizella passerina*					S5B,S3N	G5										0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Field Sparrow	*Spizella pusilla*					S4B,S3N	G5			✓	CP						0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Savannah Sparrow	*Passerculus sandwichensis*					S5B,S3N	G5	✓	>50ha	✓	CP						0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Song Sparrow	*Melospiza melodia*					S5	G5						1	2			3	S		1			1	T	1	1			2	T	6	T	1	2			3	S		1			1	T	2	2			4	T	8	T
Bobolink	*Dolichonyx oryzivorus*	THR	THR	THR	THR	S4B	G5	✓	>10ha	✓	CP						0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA

COMMON NAME	SCIENTIFIC NAME	COSSARO	ESA	COSEWIC	SARA	S-RANK	G-RANK	AREA SENSITIVE	AREA REQUIRED	PIF SPECIES	GRCA (date unk.)	REGION OF WATERLOO (1986-2007)	PC 1	Habitat: SWDM3-1-Deciduous Swamp																		PC 2	Habitat: MAMM1-2															
													R1	date: May 29, 2024						R2	date: June 17, 2024						R3	date: July 5, 2024						Max Sum		R1	date: May 29, 2024						R2	date: June 17, 2024						R3	date: July 5, 2024						Max Sum	
													>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE
Baltimore Oriole	*Icterus galbula*					S4B	G5			✓			1				1	S					0	NA	1				1	T	2	T					0	NA					0	NA	0	NA
Red-winged Blackbird	*Agelaius phoeniceus*					S5	G5							2			2	S		2	1		2	T		1			1	T	5	T	1	2			3	S	1	2			3	T	3	1			4	S	10	T
Brown-headed Cowbird	*Molothrus ater*					S5	G5							3			3	P					0	NA					0	NA	3	P					0	NA	1				1	S	1				1	T	2	T
Common Grackle	*Quiscalus quiscula*					S5	G5						1	2			3	S					0	NA					0	NA	3	S					0	NA				3	0	X					0	NA	0	X
Common Yellowthroat	*Geothlypis trichas*					S5B,S3N	G5										0	NA					0	NA					0	NA	0	NA					0	NA	1	1			2	S					0	NA	2	S
American Redstart	*Setophaga ruticilla*					S5B	G5	✓	>100ha		CP	R					0	NA					0	NA					0	NA	0	NA		1			1	S					0	NA					0	NA	1	S
Yellow Warbler	*Dendroica petechia*					S5B	G5							2			2	S	1	1			2	S					0	NA	4	S	2				2	S	2				2	T		1			1	T	5	T
Northern Cardinal	*Cardinalis cardinalis*					S5	G5							1			1	S		1			1	S					0	NA	2	S		1			1	S					0	NA		1			1	T	2	T
Rose-breasted Grosbeak	*Pheucticus ludovicianus*					S5B	G5			✓							0	NA		1			1	S					0	NA	1	S					0	NA	1				1	S					0	NA	1	S
Indigo Bunting	*Passerina cyanea*					S5B	G5										0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA

Breeding Evidence:

Observed
FO-flyover
X- species observed in breeding season

Possible
H-suitable habitat
S-singing male

Probable
M-multiple singing individuals
P-pair observed in suitable habitat
T-presumed territory based on presence of singing bird at least one week ap
D-courtship or display
V-visiting probabale nest site
A-agitated behaviour
B-brood patch or cloacal protuberance
N-nest building by wrens or woodpeckers

Confirmed
NB-nest building
AE-adult entering, occupying or leaving nest site
NU-empty nest used in the same season
FY-recently fledged young
DD-distraction display
FS-adult carrying fecal sac
CF-adult carrying food
NE-nest with eggs
NY-nest with young

		PC 3	Habitat:																	PC 4	Habitat: OAGM1																	PC 5	Habitat: OAGM1									
		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum		R1	date: May 29, 2024					R2	date: June 17, 2024				
COMMON NAME	SCIENTIFIC NAME	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE
Mallard	*Anas platyrhynchos*				1	0	X					0	NA					0	NA	0	X					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Rock Pigeon	*Columba livia*					0	NA					0	NA					0	NA	0	NA					0	NA		2			2	S				2	0	X	2	S					0	NA					0	NA
Mourning Dove	*Zenaida macroura*		1			1	S		4			4	T		1			1	T	6	T					0	NA					0	NA					0	NA	0	NA				1	0	NA					0	NA
Chimney Swift	*Chaetura pelagica*					0	NA		1			1	H					0	NA	1	H					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Killdeer	*Charadrius vociferus*		1			1	S					0	NA					0	NA	1	S	1	1			2	S				1	0	X			2		0	NA	2	S					0	NA				4	0	X
Ring-billed Gull	*Larus delawarensis*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Great Blue Heron	*Ardea herodias*					0	NA				1	0	X					0	NA	0	X					0	NA					0	NA					0	NA	0	NA					0	NA				1	0	X
Turkey Vulture	*Cathartes aura*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Bald Eagle	*Haliaeetus leucocephalus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA				1	0	NA					0	NA
Red-tailed Hawk	*Buteo jamaicensis*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA			1		0	NA				1	0	X
Belted Kingfisher	*Megaceryle alcyon*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Red-bellied Woodpecker	*Melanerpes carolinus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Northern Flicker	*Colaptes auratus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Eastern Kingbird	*Tyrannus tyrannus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Eastern Wood-Pewee	*Contopus virens*			1		0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Willow Flycatcher	*Empidonax traillii*		1			1	S					0	NA					0	NA	1	S					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Warbling Vireo	*Vireo gilvus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Blue Jay	*Cyanocitta cristata*					0	NA					0	NA					0	NA	0	NA					0	NA			1		0	NA					0	NA	0	NA					0	NA					0	NA
American Crow	*Corvus brachyrhynchos*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Common Raven	*Corvus corax*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Black-capped Chickadee	*Poecile atricapillus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Horned Lark	*Eremophila alpestris*					0	NA					0	NA					0	NA	0	NA		2			2	S		1			1	T					0	NA	3	T					0	NA					0	NA
Tree Swallow	*Tachycineta bicolor*		1			1	S	2				2	T					0	NA	3	T					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*					0	NA		1			1	S					0	NA	1	S					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Barn Swallow	*Hirundo rustica*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Cedar Waxwing	*Bombycilla cedrorum*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
White-breasted Nuthatch	*Sitta carolinensis*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
House Wren	*Troglodytes aedon*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Carolina Wren	*Thryothorus ludovicianus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Gray Catbird	*Dumetella carolinensis*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
European Starling	*Sturnus vulgaris*				4	0	X					0	NA		25			25	S	25	S					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Veery	*Catharus fuscescens*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
American Robin	*Turdus migratorius*		1	1		1	S					0	NA	1	1			2	T	3	T			1		0	NA		1			1	S		1			1	T	2	T			1		0	NA			2		0	NA
House Sparrow	*Passer domesticus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
American Goldfinch	*Carduelis tristis*					0	NA					0	NA					0	NA	0	NA					0	NA				1	0	X					0	NA	0	X		1	1		1	S				1	0	X
Chipping Sparrow	*Spizella passerina*		2			2	S		1			1	T		1			1	T	4	T				1	0	X			1		0	X		1			1	S	1	S					0	NA					0	NA
Field Sparrow	*Spizella pusilla*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Savannah Sparrow	*Passerculus sandwichensis*		4			4	S		2			2	T					0	NA	6	T		1	3		1	S	2	7			9	P	1	7			8	T	18	T	1	3			4	S	2	3			5	P
Song Sparrow	*Melospiza melodia*		1			1	S		1			1	T		1			1	T	3	T					0	NA	1				1	S					0	NA	1	S	1	1	1		2	S	2	1			3	T
Bobolink	*Dolichonyx oryzivorus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA

		PC 3	Habitat:																		PC 4	Habitat: OAGM1																		PC 5	Habitat: OAGM1											
		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum		R1	date: May 29, 2024					R2	date: June 17, 2024				
COMMON NAME	SCIENTIFIC NAME	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE
Baltimore Oriole	*Icterus galbula*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Red-winged Blackbird	*Agelaius phoeniceus*	5	2			7	P	3	4			7	S	3	5			8	T	22	T	6	2			8	P	1	7			8	S					0	NA	16	P					0	NA		3			3	CF
Brown-headed Cowbird	*Molothrus ater*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Common Grackle	*Quiscalus quiscula*					0	NA					0	NA					0	NA	0	NA		2			2	S					0	NA					0	NA	2	S					0	NA					0	NA
Common Yellowthroat	*Geothlypis trichas*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
American Redstart	*Setophaga ruticilla*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Yellow Warbler	*Dendroica petechia*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Northern Cardinal	*Cardinalis cardinalis*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA			1		0	NA
Rose-breasted Grosbeak	*Pheucticus ludovicianus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Indigo Bunting	*Passerina cyanea*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA		1			1	S			1		0	NA

		R3	date: July 5, 2024					Max Sum	
COMMON NAME	SCIENTIFIC NAME	>50	50-100	>100	FO	total	HBE	TOTAL	HBE
Mallard	*Anas platyrhynchos*					0	NA	0	NA
Rock Pigeon	*Columba livia*					0	NA	0	NA
Mourning Dove	*Zenaida macroura*					0	NA	0	NA
Chimney Swift	*Chaetura pelagica*					0	NA	0	NA
Killdeer	*Charadrius vociferus*					0	NA	0	X
Ring-billed Gull	*Larus delawarensis*					0	NA	0	NA
Great Blue Heron	*Ardea herodias*					0	NA	0	X
Turkey Vulture	*Cathartes aura*					0	NA	0	NA
Bald Eagle	*Haliaeetus leucocephalus*					0	NA	0	NA
Red-tailed Hawk	*Buteo jamaicensis*					0	NA	0	X
Belted Kingfisher	*Megaceryle alcyon*					0	NA	0	NA
Red-bellied Woodpecker	*Melanerpes carolinus*					0	NA	0	NA
Northern Flicker	*Colaptes auratus*					0	NA	0	NA
Eastern Kingbird	*Tyrannus tyrannus*					0	NA	0	NA
Eastern Wood-Pewee	*Contopus virens*			1		0	NA	0	NA
Willow Flycatcher	*Empidonax traillii*					0	NA	0	NA
Warbling Vireo	*Vireo gilvus*					0	NA	0	NA
Blue Jay	*Cyanocitta cristata*					0	NA	0	NA
American Crow	*Corvus brachyrhynchos*					0	NA	0	NA
Common Raven	*Corvus corax*					0	NA	0	NA
Black-capped Chickadee	*Poecile atricapillus*					0	NA	0	NA
Horned Lark	*Eremophila alpestris*					0	NA	0	NA
Tree Swallow	*Tachycineta bicolor*					0	NA	0	NA
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*					0	NA	0	NA
Barn Swallow	*Hirundo rustica*					0	NA	0	NA
Cedar Waxwing	*Bombycilla cedrorum*					0	NA	0	NA
White-breasted Nuthatch	*Sitta carolinensis*					0	NA	0	NA
House Wren	*Troglodytes aedon*					0	NA	0	NA
Carolina Wren	*Thryothorus ludovicianus*					0	NA	0	NA
Gray Catbird	*Dumetella carolinensis*					0	NA	0	NA
European Starling	*Sturnus vulgaris*					0	NA	0	NA
Veery	*Catharus fuscescens*					0	NA	0	NA
American Robin	*Turdus migratorius*					0	NA	0	NA
House Sparrow	*Passer domesticus*					0	NA	0	NA
American Goldfinch	*Carduelis tristis*					0	NA	1	S
Chipping Sparrow	*Spizella passerina*					0	NA	0	NA
Field Sparrow	*Spizella pusilla*					0	NA	0	NA
Savannah Sparrow	*Passerculus sandwichensis*	3	5			8	T	17	T
Song Sparrow	*Melospiza melodia*	1				1	T	6	T
Bobolink	*Dolichonyx oryzivorus*					0	NA	0	NA

		PC 6	Habitat: OAGM1																		
		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum	
COMMON NAME	SCIENTIFIC NAME	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE
Mallard	*Anas platyrhynchos*					0	NA					0	NA					0	NA	0	NA
Rock Pigeon	*Columba livia*					0	NA					0	NA					0	NA	0	NA
Mourning Dove	*Zenaida macroura*					0	NA					0	NA					0	NA	0	NA
Chimney Swift	*Chaetura pelagica*					0	NA					0	NA					0	NA	0	NA
Killdeer	*Charadrius vociferus*					0	NA				2	0	X				1	0	X	0	X
Ring-billed Gull	*Larus delawarensis*					0	NA					0	NA					0	NA	0	NA
Great Blue Heron	*Ardea herodias*					0	NA				1	0	X					0	NA	0	X
Turkey Vulture	*Cathartes aura*					0	NA					0	NA					0	NA	0	NA
Bald Eagle	*Haliaeetus leucocephalus*					0	NA					0	NA					0	NA	0	NA
Red-tailed Hawk	*Buteo jamaicensis*			1		0	NA					0	NA					0	NA	0	NA
Belted Kingfisher	*Megaceryle alcyon*					0	NA					0	NA					0	NA	0	NA
Red-bellied Woodpecker	*Melanerpes carolinus*					0	NA					0	NA					0	NA	0	NA
Northern Flicker	*Colaptes auratus*					0	NA					0	NA					0	NA	0	NA
Eastern Kingbird	*Tyrannus tyrannus*					0	NA					0	NA					0	NA	0	NA
Eastern Wood-Pewee	*Contopus virens*					0	NA					0	NA					0	NA	0	NA
Willow Flycatcher	*Empidonax traillii*					0	NA					0	NA					0	NA	0	NA
Warbling Vireo	*Vireo gilvus*					0	NA					0	NA					0	NA	0	NA
Blue Jay	*Cyanocitta cristata*					0	NA					0	NA					0	NA	0	NA
American Crow	*Corvus brachyrhynchos*					0	NA					0	NA					0	NA	0	NA
Common Raven	*Corvus corax*			1		0	NA					0	NA					0	NA	0	NA
Black-capped Chickadee	*Poecile atricapillus*					0	NA					0	NA					0	NA	0	NA
Horned Lark	*Eremophila alpestris*					0	NA					0	NA					0	NA	0	NA
Tree Swallow	*Tachycineta bicolor*					0	NA					0	NA					0	NA	0	NA
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*					0	NA					0	NA					0	NA	0	NA
Barn Swallow	*Hirundo rustica*		3			3	H			2		0	H		2			2	H	3	H
Cedar Waxwing	*Bombycilla cedrorum*					0	NA					0	NA					0	NA	0	NA
White-breasted Nuthatch	*Sitta carolinensis*					0	NA					0	NA					0	NA	0	NA
House Wren	*Troglodytes aedon*					0	NA					0	NA					0	NA	0	NA
Carolina Wren	*Thryothorus ludovicianus*					0	NA					0	NA					0	NA	0	NA
Gray Catbird	*Dumetella carolinensis*					0	NA					0	NA					0	NA	0	NA
European Starling	*Sturnus vulgaris*					0	NA					0	NA		1			1	S	1	S
Veery	*Catharus fuscescens*					0	NA					0	NA					0	NA	0	NA
American Robin	*Turdus migratorius*					0	NA		1	1		1	S		2			2	T	2	T
House Sparrow	*Passer domesticus*					0	NA					0	NA					0	NA	0	NA
American Goldfinch	*Carduelis tristis*					0	NA		2		2	2	P					0	NA	2	P
Chipping Sparrow	*Spizella passerina*					0	NA					0	NA					0	NA	0	NA
Field Sparrow	*Spizella pusilla*		1			1	S					0	NA					0	NA	1	S
Savannah Sparrow	*Passerculus sandwichensis*		3			3	S	2	3			5	T	7	3			10	FY	10	FY
Song Sparrow	*Melospiza melodia*		2			2	S	2				2	P		1			1	T	2	T
Bobolink	*Dolichonyx oryzivorus*					0	NA					0	NA					0	NA	0	NA

		PC 7	Habitat: OAGM1																		
		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum	
COMMON NAME	SCIENTIFIC NAME	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE
Mallard	*Anas platyrhynchos*					0	NA					0	NA					0	NA	0	NA
Rock Pigeon	*Columba livia*					0	NA				15	0	X					0	NA	0	X
Mourning Dove	*Zenaida macroura*					0	NA					0	NA					0	NA	0	NA
Chimney Swift	*Chaetura pelagica*					0	NA					0	NA					0	NA	0	NA
Killdeer	*Charadrius vociferus*		1			1	S				4	0	X		4			4	T	5	T
Ring-billed Gull	*Larus delawarensis*				1	0	X					0	NA					0	NA	0	X
Great Blue Heron	*Ardea herodias*					0	NA				2	0	X					0	NA	0	X
Turkey Vulture	*Cathartes aura*					0	NA					0	NA					0	NA	0	NA
Bald Eagle	*Haliaeetus leucocephalus*					0	NA					0	NA					0	NA	0	NA
Red-tailed Hawk	*Buteo jamaicensis*					0	NA				1	0	X					0	NA	0	X
Belted Kingfisher	*Megaceryle alcyon*					0	NA					0	NA					0	NA	0	NA
Red-bellied Woodpecker	*Melanerpes carolinus*					0	NA					0	NA					0	NA	0	NA
Northern Flicker	*Colaptes auratus*					0	NA					0	NA					0	NA	0	NA
Eastern Kingbird	*Tyrannus tyrannus*					0	NA					0	NA					0	NA	0	NA
Eastern Wood-Pewee	*Contopus virens*					0	NA					0	NA					0	NA	0	NA
Willow Flycatcher	*Empidonax traillii*					0	NA					0	NA					0	NA	0	NA
Warbling Vireo	*Vireo gilvus*					0	NA					0	NA					0	NA	0	NA
Blue Jay	*Cyanocitta cristata*					0	NA					0	NA					0	NA	0	NA
American Crow	*Corvus brachyrhynchos*					0	NA					0	NA					0	NA	0	NA
Common Raven	*Corvus corax*					0	NA					0	NA					0	NA	0	NA
Black-capped Chickadee	*Poecile atricapillus*					0	NA					0	NA					0	NA	0	NA
Horned Lark	*Eremophila alpestris*		4			4	S					0	NA		1			1	T	5	T
Tree Swallow	*Tachycineta bicolor*					0	NA		1			1	S					0	NA	1	S
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*					0	NA					0	NA					0	NA	0	NA
Barn Swallow	*Hirundo rustica*		1			1	H		1			1	H	1				1	H	3	H
Cedar Waxwing	*Bombycilla cedrorum*					0	NA					0	NA					0	NA	0	NA
White-breasted Nuthatch	*Sitta carolinensis*					0	NA					0	NA					0	NA	0	NA
House Wren	*Troglodytes aedon*					0	NA					0	NA					0	NA	0	NA
Carolina Wren	*Thryothorus ludovicianus*					0	NA					0	NA					0	NA	0	NA
Gray Catbird	*Dumetella carolinensis*					0	NA					0	NA					0	NA	0	NA
European Starling	*Sturnus vulgaris*		1			1	S					0	NA					0	NA	1	S
Veery	*Catharus fuscescens*					0	NA					0	NA					0	NA	0	NA
American Robin	*Turdus migratorius*			1		0	NA	1	1			2	S					0	NA	2	S
House Sparrow	*Passer domesticus*					0	NA					0	NA					0	NA	0	NA
American Goldfinch	*Carduelis tristis*				1	0	X					0	NA					0	NA	0	X
Chipping Sparrow	*Spizella passerina*					0	NA					0	NA					0	NA	0	NA
Field Sparrow	*Spizella pusilla*					0	NA					0	NA					0	NA	0	NA
Savannah Sparrow	*Passerculus sandwichensis*	2				2	S	1	2			3	T	4	2			6	T	11	T
Song Sparrow	*Melospiza melodia*	2				2	S		1			1	T	2				2	T	5	T
Bobolink	*Dolichonyx oryzivorus*					0	NA					0	NA					0	NA	0	NA

COMMON NAME	SCIENTIFIC NAME	R3 date: July 5, 2024 >50	50-100	>100	FO	total	HBE	Max Sum TOTAL	HBE
Baltimore Oriole	*Icterus galbula*					0	NA	0	NA
Red-winged Blackbird	*Agelaius phoeniceus*					0	NA	3	CF
Brown-headed Cowbird	*Molothrus ater*					0	NA	0	NA
Common Grackle	*Quiscalus quiscula*					0	NA	0	NA
Common Yellowthroat	*Geothlypis trichas*					0	NA	0	NA
American Redstart	*Setophaga ruticilla*					0	NA	0	NA
Yellow Warbler	*Dendroica petechia*					0	NA	0	NA
Northern Cardinal	*Cardinalis cardinalis*					0	NA	0	NA
Rose-breasted Grosbeak	*Pheucticus ludovicianus*					0	NA	0	NA
Indigo Bunting	*Passerina cyanea*					0	NA	1	S

PC 6 Habitat: OAGM1

COMMON NAME	SCIENTIFIC NAME	R1 date: May 29, 2024 >50	50-100	>100	FO	total	HBE	R2 date: June 17, 2024 >50	50-100	>100	FO	total	HBE	R3 date: July 5, 2024 >50	50-100	>100	FO	total	HBE	Max Sum TOTAL	HBE
Baltimore Oriole	*Icterus galbula*					0	NA					0	NA					0	NA	0	NA
Red-winged Blackbird	*Agelaius phoeniceus*		1			1	S	1	2	1		3	T	4	1	2		5	T	5	T
Brown-headed Cowbird	*Molothrus ater*					0	NA		1			1	S					0	NA	1	S
Common Grackle	*Quiscalus quiscula*					0	NA					0	NA					0	NA	0	NA
Common Yellowthroat	*Geothlypis trichas*					0	NA					0	NA					0	NA	0	NA
American Redstart	*Setophaga ruticilla*					0	NA					0	NA					0	NA	0	NA
Yellow Warbler	*Dendroica petechia*					0	NA					0	NA					0	NA	0	NA
Northern Cardinal	*Cardinalis cardinalis*			1		0	NA					0	NA			1		0	NA	0	NA
Rose-breasted Grosbeak	*Pheucticus ludovicianus*					0	NA					0	NA					0	NA	0	NA
Indigo Bunting	*Passerina cyanea*					0	NA					0	NA					0	NA	0	NA

PC 7 Habitat: OAGM1

COMMON NAME	SCIENTIFIC NAME	R1 date: May 29, 2024 >50	50-100	>100	FO	total	HBE	R2 date: June 17, 2024 >50	50-100	>100	FO	total	HBE	R3 date: July 5, 2024 >50	50-100	>100	FO	total	HBE	Max Sum TOTAL	HBE
Baltimore Oriole	*Icterus galbula*					0	NA					0	NA					0	NA	0	NA
Red-winged Blackbird	*Agelaius phoeniceus*	4				4	P	4	6	10		10	S	3	4			7	T	21	T
Brown-headed Cowbird	*Molothrus ater*					0	NA					0	NA					0	NA	0	NA
Common Grackle	*Quiscalus quiscula*					0	NA					0	NA					0	NA	0	NA
Common Yellowthroat	*Geothlypis trichas*					0	NA					0	NA					0	NA	0	NA
American Redstart	*Setophaga ruticilla*					0	NA					0	NA					0	NA	0	NA
Yellow Warbler	*Dendroica petechia*					0	NA					0	NA					0	NA	0	NA
Northern Cardinal	*Cardinalis cardinalis*					0	NA					0	NA					0	NA	0	NA
Rose-breasted Grosbeak	*Pheucticus ludovicianus*					0	NA					0	NA					0	NA	0	NA
Indigo Bunting	*Passerina cyanea*					0	NA					0	NA					0	NA	0	NA

		PC 8	Habitat: OAGM1																		PC 9	Habitat: OAGM1																		PC 10	Habitat: OAGM1											
		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum		R1	date: May 29, 2024					R2	date: June 17, 2024				
COMMON NAME	SCIENTIFIC NAME	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE
Mallard	*Anas platyrhynchos*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA				1	0	X					0	NA
Rock Pigeon	*Columba livia*					0	NA					0	NA					0	NA	0	NA					0	NA		20			20	H					0	NA	20	H					0	NA					0	NA
Mourning Dove	*Zenaida macroura*					0	NA				1	0	X					0	NA	0	X				1	0	X					0	NA		1	1		1	S	1	S					0	NA					0	NA
Chimney Swift	*Chaetura pelagica*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Killdeer	*Charadrius vociferus*					0	NA				1	0	X	1	2			3	S	3	S			1	1	0	X					0	NA		1			1	S	1	S			1	1	0	H					0	NA
Ring-billed Gull	*Larus delawarensis*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Great Blue Heron	*Ardea herodias*					0	NA				3	0	X					0	NA	0	X					0	NA				2	0	X					0	NA	0	X				2	0	X					0	NA
Turkey Vulture	*Cathartes aura*				1	0	X					0	NA					0	NA	0	X					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Bald Eagle	*Haliaeetus leucocephalus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Red-tailed Hawk	*Buteo jamaicensis*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Belted Kingfisher	*Megaceryle alcyon*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Red-bellied Woodpecker	*Melanerpes carolinus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Northern Flicker	*Colaptes auratus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Eastern Kingbird	*Tyrannus tyrannus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Eastern Wood-Pewee	*Contopus virens*					0	NA					0	NA					0	NA	0	NA			1		0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Willow Flycatcher	*Empidonax traillii*					0	NA					0	NA					0	NA	0	NA					0	NA		1			1	S					0	NA	1	S					0	NA					0	NA
Warbling Vireo	*Vireo gilvus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Blue Jay	*Cyanocitta cristata*			2		0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
American Crow	*Corvus brachyrhynchos*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA				6	0	NA					0	NA
Common Raven	*Corvus corax*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Black-capped Chickadee	*Poecile atricapillus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Horned Lark	*Eremophila alpestris*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Tree Swallow	*Tachycineta bicolor*					0	NA		1			1	S					0	NA	1	S					0	NA	3				3	S					0	NA	3	S		4			4	S		7			7	T
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Barn Swallow	*Hirundo rustica*					0	NA					0	NA		1			1	H	1	H					0	NA	1				1	H	3				3	T	4	T	10				10	S	1	2			3	H
Cedar Waxwing	*Bombycilla cedrorum*					0	NA					0	NA					0	NA	0	NA				3	0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
White-breasted Nuthatch	*Sitta carolinensis*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
House Wren	*Troglodytes aedon*					0	NA					0	NA			1		0	NA	0	NA		1			1	S		1			1	T		1			1	T	3	T					0	NA					0	NA
Carolina Wren	*Thryothorus ludovicianus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Gray Catbird	*Dumetella carolinensis*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
European Starling	*Sturnus vulgaris*					0	NA					0	NA			20		0	NA	0	NA				7	0	NA		6			6	H					0	NA	6	H		10			10	S					0	NA
Veery	*Catharus fuscescens*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
American Robin	*Turdus migratorius*			1		0	NA					0	NA					0	NA	0	NA		1			1	S		1			1	T					0	NA	2	T					0	NA		1			1	S
House Sparrow	*Passer domesticus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
American Goldfinch	*Carduelis tristis*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA		1			1	S	1	S			1		0	NA				3	0	X
Chipping Sparrow	*Spizella passerina*					0	NA		1			1	S					0	NA	1	S					0	NA					0	NA					0	NA	0	NA			1		0	NA					0	NA
Field Sparrow	*Spizella pusilla*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Savannah Sparrow	*Passerculus sandwichensis*	2	3			5	S	3	2			5	T	1	2			3	T	13	T	1	2			3	S		1			1	T	2	4			6	T	10	T	2	4			6	A	5	1			6	A
Song Sparrow	*Melospiza melodia*		1			1	S	1				1	T	1				1	T	3	T		1			1	S	1	1			2	T	2				2	T	5	T					0	NA			1		0	NA
Bobolink	*Dolichonyx oryzivorus*			1		0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA

		PC 8	Habitat: OAGM1																		PC 9	Habitat: OAGM1																		PC 10	Habitat: OAGM1											
		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum		R1	date: May 29, 2024					R2	date: June 17, 2024				
COMMON NAME	SCIENTIFIC NAME	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE
Baltimore Oriole	*Icterus galbula*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Red-winged Blackbird	*Agelaius phoeniceus*	5	5			10	CF	4	7			11	S	1	4	1		5	CF	26	CF	3	8	2		11	P	3	9			12	T	2	12			14	T	37	T	2	3			5	P		2		1	2	S
Brown-headed Cowbird	*Molothrus ater*		1			1	S					0	NA					0	NA	1	S					0	NA					0	NA	2				2	P	2	P					0	NA					0	NA
Common Grackle	*Quiscalus quiscula*					0	NA					0	NA					0	NA	0	NA				1	0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Common Yellowthroat	*Geothlypis trichas*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
American Redstart	*Setophaga ruticilla*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Yellow Warbler	*Dendroica petechia*					0	NA					0	NA					0	NA	0	NA		2			2	S					0	NA					0	NA	2	S					0	NA			1		0	NA
Northern Cardinal	*Cardinalis cardinalis*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA
Rose-breasted Grosbeak	*Pheucticus ludovicianus*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA			1		0	NA
Indigo Bunting	*Passerina cyanea*					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA

										PC 11 Habitat: OAGM1																		PC 12 Habitat: OAGM1															
		R3	date: July 5, 2024					Max Sum		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum	
COMMON NAME	SCIENTIFIC NAME	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE
Mallard	*Anas platyrhynchos*					0	NA	0	X					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Rock Pigeon	*Columba livia*				3	0	X	0	X					0	NA					0	NA		1			1	S	1	S		2		10	2	S		5			5	H				20	0	X	7	S
Mourning Dove	*Zenaida macroura*		1			1	S	1	S	1	1			2	S	3				3	T		3			3	T	8	T					0	NA		1			1	S	1	2			3	T	4	T
Chimney Swift	*Chaetura pelagica*					0	NA	0	NA					0	NA		4			4	H					0	NA	4	H					0	NA		2			2	H	1				1	NA	3	H
Killdeer	*Charadrius vociferus*				1	0	X	0	H					0	NA					0	NA		4			4	S	4	S					0	NA		1			1	S					0	NA	1	S
Ring-billed Gull	*Larus delawarensis*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Great Blue Heron	*Ardea herodias*					0	NA	0	X					0	NA				1	0	X					0	NA	0	X					0	NA					0	NA					0	NA	0	NA
Turkey Vulture	*Cathartes aura*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Bald Eagle	*Haliaeetus leucocephalus*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Red-tailed Hawk	*Buteo jamaicensis*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Belted Kingfisher	*Megaceryle alcyon*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Red-bellied Woodpecker	*Melanerpes carolinus*					0	NA	0	NA					0	NA					0	NA	1				1	S	1	S					0	NA					0	NA					0	NA	0	NA
Northern Flicker	*Colaptes auratus*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Eastern Kingbird	*Tyrannus tyrannus*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA		2			2	P					0	NA	2	P
Eastern Wood-Pewee	*Contopus virens*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Willow Flycatcher	*Empidonax traillii*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Warbling Vireo	*Vireo gilvus*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Blue Jay	*Cyanocitta cristata*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
American Crow	*Corvus brachyrhynchos*					0	NA	0	NA			1	1	0	X					0	NA					0	NA	0	X					0	NA					0	NA					0	NA	0	NA
Common Raven	*Corvus corax*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Black-capped Chickadee	*Poecile atricapillus*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Horned Lark	*Eremophila alpestris*					0	NA	0	NA	2				2	S		1			1	T					0	NA	3	T					0	NA					0	NA					0	NA	0	NA
Tree Swallow	*Tachycineta bicolor*					0	NA	11	T	2				2	S					0	NA					0	NA	2	S		2			2	S					0	NA					0	NA	2	S
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Barn Swallow	*Hirundo rustica*	3				3	H	16	H					0	NA	3				3	V	2				2	V	5	V	5	5			10	V	3				3	V	2				2	V	15	V
Cedar Waxwing	*Bombycilla cedrorum*					0	NA	0	NA					0	NA	2				2	S					0	NA	2	S					0	NA					0	NA					0	NA	0	NA
White-breasted Nuthatch	*Sitta carolinensis*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
House Wren	*Troglodytes aedon*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Carolina Wren	*Thryothorus ludovicianus*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Gray Catbird	*Dumetella carolinensis*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
European Starling	*Sturnus vulgaris*				20	0	X	10	S	25				25	S		5			5	T					0	NA	30	T		2			2	S					0	NA					0	NA	2	S
Veery	*Catharus fuscescens*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
American Robin	*Turdus migratorius*		1			1	S	2	S	2	2			4	S	4				4	T	3				3	T	11	T	1				1	S		1			1	T	1	2			3	T	5	T
House Sparrow	*Passer domesticus*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA		2			2	P		5			5	S	7	P
American Goldfinch	*Carduelis tristis*					0	NA	0	X					0	NA				2	0	X		1			1	S	1	S		1	2		1	S					0	NA					0	NA	1	S
Chipping Sparrow	*Spizella passerina*		1			1	S	1	S	1				1	S	1	1			2	T	4				4	T	7	T					0	NA		1			1	S		2			2	T	3	T
Field Sparrow	*Spizella pusilla*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Savannah Sparrow	*Passerculus sandwichensis*	5	1			6	S	18	A		2			2	S		6			6	P	2	2			4	T	12	T	2	5			7	P	3	1			4	T	1	3			4	T	15	T
Song Sparrow	*Melospiza melodia*		2			2	S	2	S	1	1			2	S	1				1	T	2				2	T	5	T		1			1	S	1				1	T		1			1	T	3	T
Bobolink	*Dolichonyx oryzivorus*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA

										PC 11 Habitat: OAGM1																			PC 12 Habitat: OAGM1																	
		R3	date: July 5, 2024					Max Sum		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum	
COMMON NAME	SCIENTIFIC NAME	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE
Baltimore Oriole	*Icterus galbula*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA		1			1	S					0	NA	1	S
Red-winged Blackbird	*Agelaius phoeniceus*	1	3			4	T	11	T	6	2			8	S		6			6	P	1				1	T	15	T		4			4	S		5			5	P	1	4			5	T	14	T
Brown-headed Cowbird	*Molothrus ater*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA	1	2			3	P					0	NA	3	P
Common Grackle	*Quiscalus quiscula*					0	NA	0	NA	3				3	S	4				4	T	4				4	T	11	T	1	1			2	S		1			1	T		2			2	T	5	T
Common Yellowthroat	*Geothlypis trichas*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
American Redstart	*Setophaga ruticilla*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Yellow Warbler	*Dendroica petechia*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Northern Cardinal	*Cardinalis cardinalis*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Rose-breasted Grosbeak	*Pheucticus ludovicianus*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA
Indigo Bunting	*Passerina cyanea*					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA					0	NA					0	NA					0	NA	0	NA

		PC 13 Habitat: OAGM1																					
		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum		SITE SUMMARY	
COMMON NAME	SCIENTIFIC NAME	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	TOTAL	HBE
Mallard	*Anas platyrhynchos*					0	NA					0	NA					0	NA	0	NA	0	FO
Rock Pigeon	*Columba livia*					0	NA					0	NA					0	NA	0	NA	30	S
Mourning Dove	*Zenaida macroura*					0	NA				2	0	X		1			1	S	1	S	21	T
Chimney Swift	*Chaetura pelagica*					0	NA					0	NA					0	NA	0	NA	8	H
Killdeer	*Charadrius vociferus*					0	NA					0	NA		4			4	S	4	S	21	T
Ring-billed Gull	*Larus delawarensis*					0	NA					0	NA					0	NA	0	NA	1	X
Great Blue Heron	*Ardea herodias*					0	NA					0	NA					0	NA	0	NA	0	FO
Turkey Vulture	*Cathartes aura*					0	NA					0	NA					0	NA	0	NA	0	FO
Bald Eagle	*Haliaeetus leucocephalus*					0	NA					0	NA					0	NA	0	NA	0	NA
Red-tailed Hawk	*Buteo jamaicensis*					0	NA					0	NA					0	NA	0	NA	0	FO
Belted Kingfisher	*Megaceryle alcyon*					0	NA					0	NA					0	NA	0	NA	0	FO
Red-bellied Woodpecker	*Melanerpes carolinus*					0	NA					0	NA					0	NA	0	NA	1	S
Northern Flicker	*Colaptes auratus*					0	NA					0	NA					0	NA	0	NA	1	S
Eastern Kingbird	*Tyrannus tyrannus*					0	NA					0	NA					0	NA	0	NA	2	P
Eastern Wood-Pewee	*Contopus virens*					0	NA					0	NA					0	NA	0	NA	3	T
Willow Flycatcher	*Empidonax traillii*					0	NA					0	NA					0	NA	0	NA	7	T
Warbling Vireo	*Vireo gilvus*					0	NA					0	NA					0	NA	0	NA	1	S
Blue Jay	*Cyanocitta cristata*					0	NA					0	NA					0	NA	0	NA	0	NA
American Crow	*Corvus brachyrhynchos*					0	NA					0	NA					0	NA	0	NA	0	FO
Common Raven	*Corvus corax*					0	NA					0	NA					0	NA	0	NA	0	NA
Black-capped Chickadee	*Poecile atricapillus*					0	NA					0	NA					0	NA	0	NA	1	S
Horned Lark	*Eremophila alpestris*					0	NA					0	NA		4			4	S	4	S	15	T
Tree Swallow	*Tachycineta bicolor*					0	NA					0	NA					0	NA	0	NA	23	T
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*					0	NA					0	NA					0	NA	0	NA	1	S
Barn Swallow	*Hirundo rustica*					0	NA					0	NA					0	NA	0	NA	47	V
Cedar Waxwing	*Bombycilla cedrorum*					0	NA					0	NA					0	NA	0	NA	2	S
White-breasted Nuthatch	*Sitta carolinensis*					0	NA					0	NA					0	NA	0	NA	1	S
House Wren	*Troglodytes aedon*					0	NA					0	NA					0	NA	0	NA	11	T
Carolina Wren	*Thryothorus ludovicianus*					0	NA					0	NA					0	NA	0	NA	1	S
Gray Catbird	*Dumetella carolinensis*					0	NA					0	NA					0	NA	0	NA	3	T
European Starling	*Sturnus vulgaris*		1			1	S					0	NA					0	NA	1	S	80	T
Veery	*Catharus fuscescens*					0	NA					0	NA					0	NA	0	NA	1	S
American Robin	*Turdus migratorius*		1			1	S		1			1	T					0	NA	2	T	40	T
House Sparrow	*Passer domesticus*					0	NA					0	NA					0	NA	0	NA	7	P
American Goldfinch	*Carduelis tristis*		2		4	2	S	1				1	T					0	NA	3	T	18	T
Chipping Sparrow	*Spizella passerina*					0	NA					0	NA					0	NA	0	NA	17	T
Field Sparrow	*Spizella pusilla*					0	NA					0	NA					0	NA	0	NA	1	S
Savannah Sparrow	*Passerculus sandwichensis*	3	4			7	P	5	4			9	P	1	2			3	S	19	P	149	FY
Song Sparrow	*Melospiza melodia*					0	NA	1	2			3	S					0	NA	3	S	52	T
Bobolink	*Dolichonyx oryzivorus*		1			1	S					0	NA					0	NA	1	S	1	S

		PC 13 Habitat: OAGM1																					
		R1	date: May 29, 2024					R2	date: June 17, 2024					R3	date: July 5, 2024					Max Sum		SITE SUMMARY	
COMMON NAME	SCIENTIFIC NAME	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	TOTAL	HBE
Baltimore Oriole	*Icterus galbula*					0	NA					0	NA					0	NA	0	NA	3	T
Red-winged Blackbird	*Agelaius phoeniceus*	3	3			6	P	2	9			11	CF			1		0	NA	17	CF	202	CF
Brown-headed Cowbird	*Molothrus ater*					0	NA					0	NA					0	NA	0	NA	12	T
Common Grackle	*Quiscalus quiscula*					0	NA					0	NA					0	NA	0	NA	21	T
Common Yellowthroat	*Geothlypis trichas*					0	NA					0	NA					0	NA	0	NA	2	S
American Redstart	*Setophaga ruticilla*					0	NA					0	NA					0	NA	0	NA	1	S
Yellow Warbler	*Dendroica petechia*					0	NA					0	NA					0	NA	0	NA	11	T
Northern Cardinal	*Cardinalis cardinalis*					0	NA					0	NA					0	NA	0	NA	4	T
Rose-breasted Grosbeak	*Pheucticus ludovicianus*					0	NA					0	NA					0	NA	0	NA	2	S
Indigo Bunting	*Passerina cyanea*					0	NA					0	NA					0	NA	0	NA	1	S

APPENDIX 7
Breeding Bird Survey Area Search Results & Evidence Codes

COMMON NAME	SCIENTIFIC NAME	CODES	COSSARO	SARO	COSEWIC	SARA	SCHEDULE	S-RANK	G-RANK	AREA SENSITIVE	AREA REQUIRED	PIF SPECIES (BCR 13)	GRCA (date unk.)	REGION OF WATERLOO (1986-2007)	Polygon: A		Habitat: OAGM1						Polygon: B		Habitat: SWDM3-1						Polygon: C		Habitat: I
															Date: May 29, 20		Date: June 17, 2		Date: July 5, 202		Totals		Date: May 29, 20		Date: June 17, 2		Date: July 5, 202		Totals		Date: May 29, 20		Date: June
															COUNT	HBE	COUNT	HBE	COUNT	HBE	MAX	HBE	COUNT	HBE	COUNT	HBE	COUNT	HBE	MAX	HBE	COUNT	HBE	COUNT
Canada Goose	*Branta canadensis*	CANG						S5	G5				CP		10+	FO		NA		NA	10+	FO		NA		NA		NA		NA		NA	
Wild Turkey	*Meleagris gallopavo*	WITU						S5	G5						1	H		NA		NA	1	H		NA		NA		NA		NA		NA	
Rock Pigeon	*Columba livia*	ROPI						SNA	G5						10+	H		NA		NA	10+	H		NA		NA		NA		NA		NA	
Great Blue Heron	*Ardea herodias*	GBHE						S4	G5					R	1	FO	1	FO		NA	1	FO		NA		NA		NA		NA		NA	1
Bald Eagle	*Haliaeetus leucocephalus*	BAEA					No Schedule	S4	G5	✓		✓			1	H		NA		NA	1	H		NA		NA		NA		NA		NA	
Red-tailed Hawk	*Buteo jamaicensis*	RTHA						S5	G5						1	H		NA		NA	1	H		NA		NA		NA		NA		NA	
Northern Flicker	*Colaptes auratus*	NOFL						S5	G5			✓				NA	1	S		NA	1	S		NA		NA		NA		NA		NA	
Willow Flycatcher	*Empidonax traillii*	WIFL						S4B	G5			✓		R		NA		NA		NA	0	NA	1	S		NA		NA	1	S		NA	
Blue Jay	*Cyanocitta cristata*	BLJA						S5	G5						1	FO		NA		NA	1	FO		NA		NA		NA		NA		NA	
Tree Swallow	*Tachycineta bicolor*	TRES						S4S5B	G5						12	S	5	S		NA	12	S		NA		NA		NA		NA		NA	
Barn Swallow	*Hirundo rustica*	BARS	SC	SC	THR	THR	No Schedule	S4B	G5				CP		30	S	4	S		NA	30	S	2	S		NA		NA	2	S		NA	
Cedar Waxwing	*Bombycilla cedrorum*	CEDW						S5	G5							NA		NA		NA	0	NA		NA	2	S		NA	2	S		S	
American Robin	*Turdus migratorius*	AMRO						S5	G5						1	S		NA		NA	1	S	3	S		NA		NA	3	S		NA	
House Sparrow	*Passer domesticus*	HOSP						SNA	G5							NA	10+	H		NA	10+	H		NA		NA		NA		NA		NA	
American Goldfinch	*Carduelis tristis*	AMGO						S5	G5				CP		1	S		NA		NA	1	S		NA		NA		NA		NA		NA	
Savannah Sparrow	*Passerculus sandwichensis*	SAVS						S5B,S3N	G5	✓	>50ha	✓	CP		26+	S	13	NY	10+	FY	26+	NY		NA		NA		NA		NA		NA	
Song Sparrow	*Melospiza melodia*	SOSP						S5	G5						2	S		NA		NA	2	S		NA		NA		NA		NA		NA	
Bobolink	*Dolichonyx oryzivorus*	BOBO	THR	THR	THR	THR	No Schedule	S4B	G5	✓	>10ha	✓	CP		1	S		NA		NA	1	S		NA		NA		NA		NA		NA	
Red-winged Blackbird	*Agelaius phoeniceus*	RWBL						S5	G5						30+	P	8	P		NA	30+	P	3	S		NA		NA	3	S		NA	
Common Grackle	*Quiscalus quiscula*	COGR						S5	G5						1	S		NA		NA	1	S		NA		NA		NA		NA		NA	

Breeding Evidence:

Observed
FO-flyover
X- species observed in breeding season

Possible
H-suitable habitat
S-singing male

Probable
M-multiple singing individuals
P-pair observed in suitable habitat
T-presumed territory based on presence of singing bird at least one week apart
D-courtship or display
V-visiting probabale nest site
A-agitated behaviour
B-brood patch or cloacal protuberance
N-nest building by wrens or woodpeckers

Confirmed
NB-nest building
AE-adult entering, occupying or leaving nest site
NU-empty nest used in the same season
FY-recently fledged young
DD-distraction display
FS-adult carrying fecal sac
CF-adult carrying food
NE-nest with eggs
NY-nest with young

		AGM1/CVR4					SITE SUMMARY	
		e 17, 2	Date: July 5, 202		Totals			
COMMON NAME	SCIENTIFIC NAME	HBE	COUNT	HBE	MAX	HBE	TOTAL	HBE
Canada Goose	*Branta canadensis*	NA		NA			10+	FO
Wild Turkey	*Meleagris gallopavo*	NA		NA			1	H
Rock Pigeon	*Columba livia*	NA		NA			10+	H
Great Blue Heron	*Ardea herodias*	FO		NA	1	FO	2	FO
Bald Eagle	*Haliaeetus leucocephalus*	NA		NA			1	H
Red-tailed Hawk	*Buteo jamaicensis*	NA		NA			1	H
Northern Flicker	*Colaptes auratus*	NA		NA			1	S
Willow Flycatcher	*Empidonax traillii*	NA		NA			1	S
Blue Jay	*Cyanocitta cristata*	NA		NA			1	FO
Tree Swallow	*Tachycineta bicolor*	NA		NA			17	S
Barn Swallow	*Hirundo rustica*	NA		NA			36	S
Cedar Waxwing	*Bombycilla cedrorum*	NA		NA	2	S	4	S
American Robin	*Turdus migratorius*	NA		NA			4	S
House Sparrow	*Passer domesticus*	NA		NA			10+	H
American Goldfinch	*Carduelis tristis*	NA		NA			1	S
Savannah Sparrow	*Passerculus sandwichensis*	NA		NA			59+	NY
Song Sparrow	*Melospiza melodia*	NA		NA			2	S
Bobolink	*Dolichonyx oryzivorus*	NA		NA			1	S
Red-winged Blackbird	*Agelaius phoeniceus*	NA		NA			41+	P
Common Grackle	*Quiscalus quiscula*	NA		NA			1	S

APPENDIX 8

Significant Wildlife Habitat Assessment

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
1	Waterfowl Stopover and Staging Areas (Terrestrial)	Seasonal concentration areas of animals	- Fields with Sheet water in spring (incl. agricultural)	- Mixed species aggregations of 100 or more individuals confirms SWH	Flooded field ecosite and 100-300m radius is the SWH	No habitat matching criteria identified in study area	No	None required	No
2	Waterfowl Stopover and Staging (Aquatic)	Seasonal concentration areas of animals	- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs - SWTP & SWMP are not SWH	- Aggregations of 100 or more listed species for 7 days (i.e., >700 waterfowl use days) confirms SWH	Aquatic ecosite and 100m radius is the SWH	No habitat matching criteria identified in study area	No	None required	No
3	Shorebird Migratory Stopover	Seasonal concentration areas of animals	- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy, and un-vegetated shoreline habitat	- 3 or more listed species and >1000 shorebird use days, or >100 whimbrel, confirms SWH	Shoreline ecosite and 100m radius is the SWH	No habitat matching criteria identified in study area, >5km from any Lake Ontario	No	None required	No
4	Raptor Wintering Area	Seasonal concentration areas of animals	- Combination of upland field and woodland habitat >20ha total (includes,>15ha upland field) - Least disturbed sites, idle, fallow or lightly grazed field/meadow best	- 1 or more Short-eared Owl, or at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH	Ecosite communities (field and woodland) is the SWH	No habitat matching criteria identified in study area	No	None required	No
5	Bat Hibernacula	Seasonal concentration areas of animals	- Caves, mine shafts, underground foundations, karsts. - Buildings are not SWH	- All sites with confirmed hibernating bats, confirms SWH	Ecosite and 200m radius is the SWH	No habitat matching criteria identified in study area	No	None required	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
6	Bat Maternity Colony	Seasonal concentration areas of animals	- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with >10/ha trees (>25cm DBH) in early stages of decay (class 1-3) - Buildings are not SWH	- >10 Big Brown Bats, >5 adult female Silver-haired Bats confirms SWH	Entire woodland or forest stand ELC ecosite containing colony is the SWH	Forested ecosites present in Study area with trees >25cm DBH.	Yes	Bat habitat assessment for trees on the subject lands.	No
7	Turtle Wintering Area	Seasonal concentration areas of animals	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH	Mapped ELC ecosite, or deep pool element where turtles overwinter is the SWH	Watercourse with deep water and deep sediment present in study area.	Yes	No turtles identified incidentally or observed in community during spring and summer surveys. No anticipated affects-outside study area	No
8	Reptile Hibernaculum	Seasonal concentration areas of animals	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences, and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH. - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	Feature hibernacula is in, and 30m radius is the SWH	No habitat matching criteria identified in study area	No	None required	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
9	Colonially-nesting Bird Habitat (Cliff/bank)	Seasonal concentration areas of animals	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	Colony and 50m radius around peripheral nest are the SWH	No habitat matching criteria identified in study area	No	None required	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	Seasonal concentration areas of animals	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	Edge of the colony plus minimum 300m radius, or extent of the forest ecosite, or entire island <15ha is the SWH	No habitat matching criteria identified in study area	No	None required	No
11	Colonially-nesting Bird Habitat (Ground)	Seasonal concentration areas of animals	- Rocky islands or peninsulas within a lake or large river (natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	Edge of colony plus min 150m radius or extent of ELC ecosite, or island <3ha is the SWH	No habitat matching criteria identified in study area	No	None required	No
12	Migratory Butterfly Stopover Area	Seasonal concentration areas of animals	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	Field/meadow and forest/woodland is the SWH	No habitat matching criteria identified in study area, >5km from Lake Ontario	No	None required	No
13	Land bird Migratory Stopover Area	Seasonal concentration areas of animals	- Woodlots >5ha in size - Within 5km of Lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	Woodlot is the SWH	No habitat matching criteria identified in study area, >5km from Lake Ontario	No	None required	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
14	Deer Yarding Areas	Seasonal concentration areas of animals	- ELC communities providing Thermal cover (FOM, FOC, SWM, SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	LIO mapping	No Deer yarding areas identified on LIO Mapping	No	None required.	No
15	Deer Winter Congregation Areas	Seasonal concentration areas of animals	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF. - Contact MNRF or LIO for known deer winter areas.	LIO mapping	No Deer Winter Congregation areas identified on LIO Mapping	No	None required.	No
16	Cliffs & Talus Slopes	Rare vegetation communities	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	Area of ELC sites: TAO, TAS, TAT, CLO, CLS, CLT	No habitat matching criteria identified in study area	No	None required	No
17	Sand Barren	Rare vegetation communities	- Exposed, sparsely vegetated & caused by lack of moisture, fires, and erosion.	- Area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in study area	No	None required	No
18	Alvar	Rare vegetation communities	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- Area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in study area	No	None required	No
19	Old Growth Forest	Rare vegetation communities	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	Area of ELC ecosite is the SWH	No habitat matching criteria identified in study area	No	None required	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
20	Savannah	Rare vegetation communities	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size and must be restored to a natural state. - Confirm one or more savannah indicator species. - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in study area	No	None required	No
21	Tallgrass Prairie	Rare vegetation communities	- Ground cover dominated by prairie grasses with <25% tree cover. - Remnant sites such as Railway Right of ways are not SWH	- No minimum size and must be restored to a natural state. - Confirm one or more prairie indicator species. - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in study area	No	None required	No
22	Other Rare Vegetation Communities	Rare vegetation communities	- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)	- Field Studies Confirming ELC vegetation type is a rare vegetation community	Area of ELC ecosite is the SWH	No communities identified on site are S1-S3 communities	No	None required	No
23	Waterfowl Nesting Areas	Specialized habitat for wildlife	- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM) - Extends 120m from a wetland (>0.5ha) and any small wetlands (<0.5ha) within a cluster of at least 3. - Upland area at least 120m wide	- Presence of 3 or more nesting pairs of listed species excluding Mallards - Presence of 10 or more nesting pairs including mallards - Any active Black Duck nesting site	SWH may be greater than or less than 120m from the wetland edge and must provide enough habitat for waterfowl to successfully nest	No habitat matching criteria identified in study area	No	None required	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	Specialized habitat for wildlife	- Forest communities, adjacent to riparian areas - Osprey nests usually at top of tree - Bald Eagle nest usually in super canopy tree in a notch within canopy	- Studies confirm one or more active Bald Eagle or Osprey nest. - Alternate nests included in SWH. - Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown	- Active nest plus 300m for OSPR - Active nest plus 400-800m for BAEA	No habitat matching criteria identified in study area	No	None required	No
25	Woodland Raptor Nesting Habitat	Specialized habitat for wildlife	- Forested communities, forested swamp communities and cultural Plantations - Natural Forested/conifer plantations >30ha with >10ha interior habitat (200m buffer)	- One or more active nest of listed species	Nest protection radius: - RSHA, NOGA 400m - BAOW 200m. - Broad-winged Hawk, COHA 100m - SSHA 50	No habitat matching criteria identified in study area	No	None required	No
26	Turtle Nesting Areas	Specialized habitat for wildlife	- Exposed Mineral soil (sand or gravel) adjacent (<100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities. - Located in open sunny areas, away from roads and less prone to predation. - Municipal and provincial road shoulders are not SWH.	- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle	Area or sites with exposed mineral soils, plus a radius of 30-100m around the nesting area is the SWH.	No habitat matching criteria identified in study area	No	None required	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
27	Seeps and Springs	Specialized habitat for wildlife	- Areas where ground water comes to the surface. - Any forested area within the headwaters of a stream or river system	- Confirm site with 2 or more seeps/springs.	Area of ELC forest ecosite containing seep/spring is the SWH	No habitat matching criteria identified in study area	No	None required	No
28	Amphibian Breeding Habitat (Woodland)	Specialized habitat for wildlife	- Breeding pools within woodlands - Wetland, pond, or pool >500m^2 within or adjacent (<120m) to a woodland. - Woodlands with permanent ponds, or those with water until mid-July more likely to be used.	- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3. - Wetland adjacent to woodlands includes travel corridor connecting features as SWH.	Wetland area, plus 230m radius of woodland is the SWH.	No habitat matching criteria identified in study area	No	None required	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
29	Amphibian Breeding Habitat (Wetland)	Specialized habitat for wildlife	- Swamp, marsh, fen, bog, open aquatic, and shallow aquatic ELC communities. - Typically isolated from woodlands (>120m) but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands. - Wetlands >500m2 - Presence of shrubs & logs - Bullfrogs require permanent water bodies and abundant emergent vegetation.	- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3 - Or any wetland with confirmed breeding Bullfrog.	- ELC ecosite and shoreline is the SWH. - Movement corridors (SWH) must be considered if this habitat is significant	No habitat matching criteria identified in study area	No	None required	No
30	Area-sensitive Breeding Bird Habitat	Specialized habitat for wildlife	- Habitats where interior breeding birds are breeding. - Large mature (>60 years) forest stands or woodlots >30ha. - Forest and swamp ELC communities - Interior habitat at least 200m from edge	- Presence of nesting or breeding pairs of 3 or more of the listed species - Any site with Cerulean Warbler or Canada Warbler is SWH	ELC ecosite is the SWH	No habitat matching criteria identified in study area	No	None required	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
31	Marsh Bird Breeding Habitat	Habitats of species of conservation concern considered SWH	- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen, and bog communities (see SWH Ecoregion guide for specifics) - Nesting occurs in wetlands, all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation - Green heron at edge of water sheltered by shrubs and trees.	- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species - Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail	ELC ecosite is the SWH	No habitat matching criteria identified in study area	No	None required	No
32	Open Country Bird Breeding Habitat	Habitats of species of conservation concern considered SWH	- Grassland area >30ha (natural & cultural fields and meadows) - Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing) - Mature hayfields or pasture at least 5 years old	- Nesting or breeding of 2 or more of the listed species - Field with 1 or more Short-eared Owls	Contiguous ELC ecosite is the SWH	Grassland Habitat >30ha identified in study area.	Yes	Grassland Breeding Bird Surveys complete	No-only one listed species identified (Savannah Sparrow). Grasslands are actively being used for row crops, hay, and livestock pasture.

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
33	Shrub/Early Successional Bird Breeding Habitat	Habitats of species of conservation concern considered SWH	- Cultural thickets, savannah, and woodland habitat - Large field area succeeding to shrub and thicket habitat >10ha in size - Patches of shrub ecosite may be complexed into larger old field ecosites for some species	- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species - Habitat with Yellow-breasted Chat or Golden-winged Warbler is SWH	SWH is contiguous ELC ecosite field/thicket area	No habitat matching criteria identified in study area	No	None required	No
34	Terrestrial Crayfish	Habitats of species of conservation concern considered SWH	- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp, and mixed swamp communities - Cultural meadow with inclusions of meadow marsh may be used - Wet edges of marshes and wet meadows should be surveyed for crayfish	- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat	Area of ELC ecosite or Eco element area of meadow marsh or swamp within the larger ecosite area is the SWH	Candidate habitat identified in study area.	Yes	Candidate habitat reviewed for evidence during ELC	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
35	Special Concern & Rare Wildlife Species	Habitats of species of conservation concern considered SWH	- All Special concern and Provincially Rare plant and animal species - Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites	- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable - Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)	SWH is the finest ELC scale that protects the form and function of the habitat	Background Atlas review identified 10 Special concern species within 10km of the Study Area - Barn Swallow (OBBA, eBird) - Eastern Wood-pewee (NHIC, OBBA, eBird) - Olive-sided Flycatcher (eBird, iNat) - Peregrine Falcon (iNat) - Rusty Blackbird (eBird, iNat) - Wood Thrush (NHIC, OBBA, eBird) - Monarch (OBA, iNat) - Milksnake (ORAA) - Midland Painted Turtle (ORAA) - Snapping Turtle (ORAA, iNat)	Yes-Woodlands on site and within 120m may provide habitat for Eastern-Wood-pewee, Wood Thrush and Canada Warbler. Watercourse may provide habitat for Snapping Turtle. Areas along watercourse may provide habitat for Eastern Ribbonsnake	Two season Botanical Survey, Grassland Breeding Bird Survey, Aquatic Habitat Assessment, incidental wildlife.	Yes, Eastern Wood-pewee and Barn Swallow identified during breeding bird surveys and incidentally near suitable nesting habitat. Monarch was identified incidentally within subject lands. Habitat for Snapping Turtle assumed present within Elmira Drain #1. Habitat for Eastern Ribbonsnake assumed present along Elmira Drain #1 and meadow marsh community.

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
36	Amphibian Movement Corridor	Animal movement corridors	- Corridors may occur in all ecosites associated with water. - Presence of significant amphibian breeding indicates the requirement for identifying corridors - Movement corridors between breeding habitat and summer habitat	- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant - At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of <20m - Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat	Corridor is the SWH	No Habitat matching Criteria identified in Study Area	No	None required	No
37	Deer Movement Corridor	Animal movement corridors	- May occur in all forested ecosites. - Determined when deer wintering habitat is confirmed as SWH	- Corridors at least 200m wide with gaps <20m leading to wintering habitat - Unbroken by roads and residential areas - Shorter corridors are more significant	Corridor is the SWH	No Habitat matching Criteria identified in Study Area	No	None required	No

APPENDIX 9

Species at Risk Habitat Assessment

Common name	Scientific name	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Jefferson Salamander	*Ambystoma jeffersonianum*	END	END	S2	Recovery Strategy (Jefferson Salamander Recovery Team, 2010)	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Jefferson Salamander (*Ambystoma jeffersonianum*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 38 pp.
Unisexual Ambystoma, Jefferson dependent population	*Ambystoma laterale - (2) jeffersonianum*	END	END	S2	Recovery Strategy (Jefferson Salamander Recovery Team, 2010)	Unisexual ambystoma share the same habitat requirements as Jefferson salamander, as they rely on Jefferson salamander for sperm donation to breed (COSEWIC 2016).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2016. COSEWIC assessment and status report on the unisexual Ambystoma, (*Ambystoma laterale*), Small-mouthed Salamander–dependent population, Jefferson Salamander–dependent population and the Blue-spotted Salamander– dependent population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxii + 61 pp.
Western Chorus Frog – Great Lakes / St. Lawrence - Canadian Shield Population	*Pseudacris triseriata pop. 2*	NAR	THR	S4	Recovery Strategy (Environment Canada, 2015)	Generally found in lowland communities, such as swamps, inhabiting lowland shrubs and grasses in the community, near breeding habitat. Breeding occurs in lowland, ephemeral ponds, devoid of predatory fish species (COSEWIC 2008a).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Western Chorus Frog (*Pseudacris triseriata*) Carolinian population and Great Lakes/St. Lawrence – Canadian Shield population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.
Gypsy Cuckoo Bumble Bee	*Bombus bohemicus*	END	END	S1S2	NHIC	Occurs in diverse habitats, including open meadows, mixed farmlands, urban areas, boreal forest, and montane meadows. Feed on pollen and nectar from a variety of plant genera (COSEWIC 2014). Only observation over the past 10 years was in Pinery Provincial Park (Colla, 2017).	Mixed farmlands present in study area. However, no observations of the species have been made outside of Pinery Provincial Park in the past 10 years.	The study area was investigated for habitat during ELC, Spring and Summer botanical inventories.	None observed.	COSEWIC. 2014. COSEWIC assessment and status report on the Gypsy Cuckoo Bumble (*Bombus bohemicus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 56 pp.
Monarch	*Danaus plexippus*	SC	SC	S2N, S4B	OBA (2022), iNat (2023)	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b)	Milkweed is present within the study area, open meadow areas present.	The study area was investigated for habitat during ELC, Spring and Summer botanical inventories.	Observed during breeding bird surveys.	COSEWIC. 2010. COSEWIC assessment and status report on the Monarch (*Danaus plexippus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
West Virginia White	*Pieris virginenisis*	SC	NAR	S3	Management Plan (Burke, 2013)	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort (*Cardamine diphylla*) and Cut-Leaved Toothwort (Burke 2013).	No habitat matching criteria identified in study area.	None required.	None observed.	Peter S. Burke. 2013. Management Plan for the West Virginia White (*Pieris virginiensis*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
Bank Swallow	*Riparia riparia*	THR	THR	S4B	OBBA, eBird (2023)	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow (*Riparia riparia*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.
Barn Swallow	*Hirundo rustica*	SC	THR	S5B	OBBA, eBird (2023)	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011).	Farm buildings potentially provide suitable nesting habitat for this species.	The study area was investigated for habitat & presence during breeding bird surveys.	Multiple individuals observed around existing agricultural infrastructure.	COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow (*Hirundo rustica)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.

Common name	Scientific name	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Bobolink	*Dolichonyx oryzivorus*	THR	THR	S4B	NHIC, OBBA	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	Hayfields are present in study area.	The study area was investigated for habitat & presence during breeding bird surveys.	Three males identified singing within the Open Agriculture community during the first Breeding Bird survey.	Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin and T.A. Gavin. 2015. Bobolink (*Dolichonyx oryzivorus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Birds of North America Online: http://bna.birds.cornell.edu/bna/species/176
Canada Warbler	*Wilsonia canadensis*	SC	THR	S4B	Recovery Strategy (Environment Canada, 2016)	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	Deciduous swamps present in the study area.	The study area was investigated for habitat & presence during breeding bird surveys.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler (*Wilsonia Canadensis*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
Cerulean Warbler	*Setophaga cerulea*	THR	END	S3B	Recovery Strategy (MECP, 2022)	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Cerulean Warbler (*Dendroica cerulea*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.
Chimney Swift	*Chaetura pelagica*	THR	THR	S4B, S4N	OBBA, eBird (2023)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNRF 2013).	Traditional chimneys on older buildings present.	The study area was investigated for habitat & presence during breeding bird surveys.	Observed during breeding bird surveys.	MNRF, 2013. General Habitat Description for the Chimney Swift *(Chaeture pelagica)*. Ontario Ministry of Natural Resources and Forestry. July 2, 2013.
Common Nighthawk	*Chordeiles minor*	SC	THR	S4B	Recovery Strategy (Environment Canada, 2016)	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC 2007. COSEWIC assessment and status report on the Common Nighthawk (*Chordeiles minor)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp.
Eastern Meadowlark	*Sturnella magna*	THR	THR	S4B	OBBA	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	Hayfields present.	The study area was investigated for habitat & presence during breeding bird surveys.	None observed.	Jaster, Levi A., William E. Jensen and Wesley E. Lanyon. (2012). Eastern Meadowlark (*Sturnella magna*), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: https://birdsna.org/Species-Account/bna/species/easmea
Eastern Wood-Pewee	*Contopus virens*	SC	SC	S4B	NHIC, OBBA, eBird (2023)	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple (Acer), Elm (Ulmus) or Oak (Quercus), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	Deciduous wooded communities present in study area.	The study area was investigated for habitat & presence during breeding bird surveys.	Observed during breeding bird surveys.	COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-Pewee (*Contopus virens*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp.
Evening Grosbeak	*Coccothraustes vespertinus*	SC	SC	S4B	Management Plan (Environment and Climate Change Canada, 2022)	Breeding habitat includes open, mature mixed wood forests, where fir species and/or White Spruce are dominant, and Spruce Budworm is abundant (COSEWIC 2016)	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2016. COSEWIC assessment and status report on the Evening Grosbeak (*Coccothraustes vespertinus)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 64 pp.

Common name	Scientific name	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Golden-winged Warbler	*Vermivora chrysoptera*	SC	THR	S4B	Recovery Strategy (Environment and Climate Change Canada, 2016)	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC 2006. COSEWIC assessment and status report on the Golden-winged Warbler (*Vermivora chrysoptera*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.
Grasshopper Sparrow	*Ammodramus savannarum*	SC	SC	S4B	Evaluation Report (COSSARO, 2014)	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	No habitat matching criteria identified in study area.	None required.	None observed.	Vickery, Peter D. 1996. Grasshopper Sparrow (*Ammodramus savannarum*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/239\
Least Bittern	*Ixobrychus exilis*	THR	THR	S4B	Recovery Strategy (OMNRF, 2016)	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2009. COSEWIC assessment and update status report on the Least Bittern (*Ixobrychus exilis*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
Olive-sided Flycatcher	*Contupus cooperi*	SC	THR	S4B	eBird (2023), iNat (2023)	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher (*Contopus cooperi*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
Peregrine Falcon	*Falco peregrinus*	SC	SC	S3B	iNat (2022)	Nests on cliff-ledges (50-200m preferred) near foraging areas. Also nests on anthropomorphic structures, such as tall building ledges, bridges, quarries, mines and cuts for road beds (COSEWIC, 2007a).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Peregrine Falcon (*Falco peregrinus*) (*pealei* subspecies - *Falco peregrinus* and *pealei anatum/tundrius* - *Falco peregrinus anatum/tundrius*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 45 pp.
Red-headed Woodpecker	*Melanerpes erythrocephalus*	END	THR	S4B	NHIC	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Red-headed Woodpecker (*Melanerpes erythrocephalus)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
Rusty Blackbird	*Euphagus carolinus*	SC	SC	S4B	eBird (2023), iNat (2023)	Breeding habitat is characterized by coniferous-dominated forests adjacent to wetlands, such as slow-moving streams, peat bogs, sedge meadows, marshes, swamps and beaver ponds. On migration, the Rusty Blackbird is primarily associated with wooded wetlands (COSSARO 2017).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2017. COSEWIC assessment and status report on the Rusty Blackbird (*Euphagus carolinus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 64 pp.
Short-eared Owl	*Asio flammeus*	THR	SC	S2N, S4B	Evaluation Report (COSSARO, 2021)	Breeds in open habitats, including grasslands, old pasture marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Short-eared Owl (*Asio flammeus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.

Common name	Scientific name	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Wood Thrush	*Hylocichla mustelina*	SC	THR	S4B	NHIC, OBBA, eBird (2023)	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	Deciduous swamps present in the study area.	The study area was investigated for habitat & presence during breeding bird surveys.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Wood Thrush (*Hylocichla mustelina*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
Black Redhorse	*Moxostoma duquesnei*	THR	THR	S2	Recovery Strategy (DFO, 2022)	Associated with cool, clear streams of moderate size with substrates of rocky, cobble, sand, or silt. Found in the Lake Erie and Grand River Watersheds (COSEWIC, 2005a).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Black Redhorse (*Moxostoma duquesnei*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 21 pp.
Northern Sunfish (Great Lakes-Upper St. Lawrence Population)	*Lepomis peltastes*	SC	SC	S3	Evaluation Report (COSSARO, 2016)	Prefers shallow, vegetated areas of warm lakes, ponds, and slowly flowing watercourses. Usually occurs in clear waters and is considered intolerant of siltation. Substrate usually consists of sand and gravel, as in the Thames River (COSEWIC 2016)	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2016. COSEWIC assessment and status report on the Northern Sunfish (*Lepomis peltastes*) Saskatchewan- Nelson River populations and the Great Lakes- Upper St. Lawrence populations, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xv + 51 pp.
Silver Shiner	*Notropis photogenis*	THR	THR	S2S3	NHIC	Associated with large, wide streams (usually >20m) in deep riffles and pools, with substrates of gravel, boulder, rubble, and sand (COSEWIC, 2011d).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC 2011. COSEWIC assessment and status report on the Silver Shiner (*Notropis photogenis*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 45 pp.
Rainbow	*Villosa iris*	SC	SC	S2S3	Recovery Strategy (Fisheries and Oceans Canada, 2016)	Most abundant in small to medium-sized rivers but can also be found in inland lakes. Usually found in or near riffles and along the edges of emergent vegetation in moderate to strong current. Occupies substrate mixtures of cobble, gravel, sandy and occasionally mud or boulder (COSEWIC 2015)	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2015. COSEWIC assessment and status report on the Rainbow (*Villosa iris)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 82 pp.
Wavy-rayed Lampmussel	*Lamsilis fasciola*	THR	SC	S1	iNat (2022)	Inhabits clear rivers and streams of various sizes with steady flows and stable substrates and is typically found in gravel or sand substrates in and around riffle areas. Most abundant in small to medium-sized stream and occurs at sites that support a great diversity of other mussel species (COSEWIC 2010)	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Wavy-rayed Lampmussel (*Lampsilis fasciola)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 60 pp.
Eastern Red Bat	*Lasiurus borealis*	NL	END	S4	Evaluation Report (COSSARO, 2024)	Typically roosts among the foliage of trees and occasionally shrubs. They use both deciduous and coniferous forests of any age class, but in some parts of their range will avoid conifer species when suitable deciduous species are present. Trees used as maternity roosts tend to be large diameter and tall, reaching or exceeding the height of the surrounding canopy. They forage in both forested and non-forested habitats, in both open and semi-cluttered habitats, both above and below forest canopies, and in both early and later stage forests (COSEWIC 2023).	Suitable treed communities present in the study area.	The study area was investigated for habitat during ELC, Spring and Summer botanical inventories & bat maternity habitat surveys.	None observed.	COSEWIC. 2023. COSEWIC assessment and status report on the Hoary Bat *Lasiurus cinereus*, Eastern Red Bat *Lasiurus borealis* and Silver-haired Bat, *Lasionycteris noctivagans*, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxi + 100 pp. (https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html).

Common name	Scientific name	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Eastern Small-footed Myotis	*Myotis leibii*	END	NA	S2S3	Recovery Strategy (Humphrey, 2017)	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernate singly or in small clusters in mines and caves (NatureServe, 2015).	Suitable treed communities present in the study area.	The study area was investigated for habitat during ELC, Spring and Summer botanical inventories & bat maternity habitat surveys.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-colored Bat (*Perimyotis subflavus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp.
Hoary Bat	*Lasiurus cinereus*	NL	END	S4	Evaluation Report (COSSARO, 2024)	Roosts solitarily in trees, with preferences including maple, oak, ash, elder, hemlock, and redwood trees. Typically roosts among the foliage of trees and occasionally shrubs, and use both deciduous and coniferous forests, of any age class. Trees used as maternity roosts tend to be large diameter and tall, reaching or exceeding the height of the surrounding canopy. Forages in the open, and suitable habitats may include wetlands, grasslands and open fields with patchily distributed trees (COSEWIC 2023).	Suitable treed communities present in the study area.	The study area was investigated for habitat during ELC, Spring and Summer botanical inventories & bat maternity habitat surveys.	None observed.	COSEWIC. 2023. COSEWIC assessment and status report on the Hoary Bat *Lasiurus cinereus*, Eastern Red Bat *Lasiurus borealis* and Silver-haired Bat, *Lasionycteris noctivagans*, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxi + 100 pp. (https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html).
Little Brown Myotis	*Myotis lucifugus*	END	END	S3	Recovery Strategy (Humphrey & Fotherby, 2019)	Hibernate in caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	Suitable treed communities present in the study area. Agricultural buildings on subject property may provide suitable roosting or maternity habitat.	The study area was investigated for habitat during ELC, Spring and Summer botanical inventories & bat maternity habitat surveys.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-colored Bat (*Perimyotis subflavus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp.
Northern Myotis	*Myotis septentrionalis*	END	END	S3	Recovery Strategy (Humphrey & Fotherby, 2019)	Hibernate in caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	Suitable treed communities present in the study area.	The study area was investigated for habitat during ELC, Spring and Summer botanical inventories & bat maternity habitat surveys.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-colored Bat (*Perimyotis subflavus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp.

Common name	Scientific name	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Silver-haired Bat	*Lasionycteris noctivagans*	NL	END	S4	Evaluation Report (COSSARO, 2023)	Roosting occurs primarily under bark and in the cavities of trees, making them reliant on habitats where large, decaying trees are available. Roosts in a variety of large diameter coniferous and deciduous trees. When taken as a whole, the data indicate that the species does select specific attributes of trees to roost in. However, these attributes are not specific to particular tree species or type (deciduous or coniferous specifically) across the species range. Roost-tree species and type differ depending on the region but tree size, height, roost aspect, and cavity temperature are important characteristics. Deciduous species (especially *Populus* spp.) often have decay characteristics that make them ideal as roost sites, particularly in older forests where these features are more likely to occur. Heart-rot infections at the site of limb breakages often result in large well-protected inner chambers and large sheets of exfoliating bark are ideal for roosting. In other parts of their range, coniferous species are used. Several studies report the frequent use of old woodpecker cavities (COSEWIC 2023).	Suitable treed communities present in the study area.	The study area was investigated for habitat during ELC, Spring and Summer botanical inventories & bat maternity habitat surveys.	None observed.	COSEWIC. 2023. COSEWIC assessment and status report on the Hoary Bat *Lasiurus cinereus*, Eastern Red Bat *Lasiurus borealis* and Silver-haired Bat, *Lasionycteris noctivagans*, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxi + 100 pp. (https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html).
Tri-colored Bat	*Perimyotis subflavus*	END	END	S3?	Recovery Strategy (Humphrey & Fotherby, 2019)	Hibernate in caves, abandoned mines, wells, and tunnels. Summer roosts include clumps of dead foliage and lichens, typically found in forested habitat close to water sources. May also use anthropogenic structures such as barns for maternity roosts. Foraging habitat includes forested riparian areas over water in relatively open areas (Environment Canada 2015).	Suitable treed communities present in the study area.	The study area was investigated for habitat during ELC, Spring and Summer botanical inventories & bat maternity habitat surveys.	None observed.	Environment Canada. 2015. Recovery Strategy for Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. ix + 110 pp
Blanding's Turtle	*Emydoidea blandingii*	THR	THR	S3	Recovery Strategy (MECP, 2019)	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle (*Emydoidea blandingii*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp.

Common name	Scientific name	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Midland Painted Turtle	*Chrysemys picta marginata*	NL	SC	S4	ORAA (1981)	Occupy slow moving, relatively shallow and well-vegetated wetlands and water bodies with abundant basking sites and organic substrate. Found in association with submergent aquatic plants, which are used for cover and feeding. Semi-tolerant of human-altered landscapes, occasionally found occupying urban ponds and lands subject to anthropogenic disturbance. Suitable nesting habitat includes open, often south-facing, and sloped areas with sandy-loamy and/or gravel substrate usually within 1200 m of aquatic active season habitats. Overwinter in shallow water with deep sediment (COSEWIC 2018).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2018. COSEWIC assessment and status report on the Midland Painted Turtle (*Chrysemys picta marginata*) and the Eastern Painted Turtle (*Chrysemys picta picta*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 107 pp.
Northern Map Turtle	*Graptemys geographica*	SC	SC	S3	Management Plan (Environment Canada, 2016)	Highly aquatic species, found in deep, large waterbodies, including lakes and large rivers, with abundant basking sites. Emerge onto land only during nesting, which occurs in soft sand or soil. Waterbodies with slow currents, soft mud bottoms and abundant aquatic vegetation are preferred (COSEWIC, 2002b).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the Northern Map Turtle (*Graptemys geographica*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.
Snapping Turtle	*Chelydra serpentina*	SC	SC	S4	ORAA (2019), iNat (2023)	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	Slow moving waters with soft muck bottoms present within the water course.	The study area was investigated for habitat during ELC, Spring and Summer botanical inventories, and aquatic habitat assessment.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle (*Chelydra serpentina*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.
Eastern Ribbonsnake	*Thamnophis sauritus*	SC	SC	S4	Evaluation Report (COSSARO, 2013)	A semi-aquatic species that inhabits dense, low-vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	Streams and marshes present in study area.	The study area was investigated for habitat during ELC, Spring and Summer botanical inventories, and aquatic habitat assessment.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the Eastern Ribbonsnake (*Thamnophis sauritus*). Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Milksnake	*Lampropeltis triangulum*	NL	SC	S4	ORAA (1971)	Habitat generalists often associated with edge habitat, meadows, prairies, pastures, rocky outcrops and human disturbances such as hydro corridors and railway embankments. Habitat is usually close to a water source. Hibernation occurs in a variety of natural and man-made features, including rotting logs, old foundations, basements and burrows (COSEWIC 2014).	Railway embankment by a watercourse present.	The study area was investigated for habitat during ELC, Spring and Summer botanical inventories.	None observed.	COSEWIC. 2014. COSEWIC assessment and status report on the Eastern Milksnake (*Lampropeltis Triangulum*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 61 pp.
Queensnake	*Regina septemvittata*	END	END	S2	Recovery Strategy (Gillingwater, 2011)	Associated with rocky streams and rivers, but occasionally found in marsh, pond and lake shore habitats. Usually found within 3m of the shoreline and only at sites where there is an abundance of crayfish (COSEWIC 2010)	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Queensnake (*Regina septemvittata)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 34 pp.
American Chestnut	*Castanea dentata*	END	END	S1S2	Recovery Strategy (Boland et al., 2012)	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils, Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC 2004. COSEWIC assessment and status report on the American Chestnut (*Castanea dentata*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp.

Common name	Scientific name	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Black Ash	*Fraxinus nigra*	END	THR	S4	Recovery Strategy (Catling et al., 2022)	Predominantly a wetland species of swamps, floodplains and fens. Has an intermediate light requirement and a tendency toward greater abundance in more alkaline sites. Most sites in which it is dominant are flood prone, where its high tolerance of seasonal flooding appears to offer a competitive advantage. Also occurs widely in moist upland forests, but generally at lower densities than in wet areas (COSEWIC, 2018).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2018. COSEWIC assessment and status report on the Black Ash Fraxinus nigra in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 95 pp. (http://www.registrelep-sararegistry.gc.ca/default.asp?lang=en&n=24F7211B-1).
Butternut	*Juglans cinerea*	END	END	S2?	iNat (2019)	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC 2003. COSEWIC assessment and status report on the butternut (*Juglans cinerea*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp.
Dense Blazing Star	*Liatris spicata*	THR	THR	S2	iNat (2022)	Occurs in open tallgrass prairies. It can grow in a range of moisture regimes from dry to very moist (COSEWIC 2010)	No habitat matching criteria identified in study area.	None required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Dense Blazing Star (*Liatris spicata)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 23 pp.
Green Dragon	*Arisaema dracontium*	SC	SC	S3	Management Plan (Donley et al., 2013)	Occurs along creek, river, and clay floodplains in moist to wet deciduous woodlands and thickets. Grows in shaded to partly shaded, seasonally wet areas (Donley et. al. 2013).	No habitat matching criteria identified in study area.	None required.	None observed.	Donley, R., J.V. Jalava and J. van Overbeeke. 2013. Management Plan for the Green Dragon (*Arisaema dracontium*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 43 pp.

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APPENDIX 10

Background Wildlife List

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	SCHEDULE	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	GRCA (date unk.)[10]	WATERLOO REGION (BUTTERFLIES & MOTHS) (LINTON, 2012)[11]	REGION OF WATERLOO (1986-2007)[12]
	INSECTS															
iNat (2022)	Asian Lady Beetle	*Harmonia axyridis*						SNA		NNA						
iNat (2021)	Common Drone Fly	*Eristalis tenax*						SNA		NNA						
iNat (2021)	Common Red Soldier Beetle	*Rhagonycha fulva*						SNA		NNA						
iNat (2023)	Eastern Yellowjacket	*Vespula maculifrons*						S4		N5						
iNat (2021)	European Mantis	*Mantis religiosa*						SNA		NNA						
iNat (2021)	Eye-Spotted Lady Beetle	Anatis mali						S4S5		N5						
iNat (2023)	German Yellowjacket	*Vespula germanica*						SNA		NNA						
iNat (2019)	Goldenrod Leaf Beetle	*Trirhabda canadensis*						S4S5		N5						
iNat (2023)	Margined Calligrapher	*Toxomerus marginatus*						S5		N5						
iNat (2019)	Red Milkweed Beetle	*Tetraopes tetrophthalmus*						S5		N5						
iNat (2023)	Red-legged Grasshopper	*Melanoplus femurrubrum*						S5	G5	N5						
iNat (2020)	Rough Hermit Beetle	*Osmoderma scabra*						S4S5		N5						
iNat (2020)	Six-spotted Tiger Beetle	*Cicindela sexguttata*						S5		N5						
iNat (2021)	Spotted Lady Beetle	*Coleomegilla maculata*						S4S5		N5						
iNat (2021)	Western Conifer Seed Bug	*Leptoglossus occidentalis*														
iNat (2023)	Eastern Hornet Fly	*Spilomyia longicornis*						S4	G5	N4						
iNat (2020)	Mottled Tortoise Beetle	*Deloyala guttata*						S4S5	G5	N5						
iNat (2022)	Short-winged Meadow Katydid	*Conocephalus brevipennis*						S4	G5	N4N5						
	BEES															
iNat (2019)	Hairy-banded Mining Bee	*Andrena hirticincta*						S3S4	GNR	N5						
iNat (2020)	Western Honey Bee	*Apis mellifera*						SNA		NNA						
iNat (2021)	Two-spotted Bumble Bee	*Bombus bimaculatus*						S5		N5						
NHIC	Gypsy Cuckoo Bumble Bee	*Bombus bohemicus*	END	END	END	END	Schedule 1	S1S2	GH	N1						
iNat (2018)	Common Eastern Bumble Bee	*Bombus impatiens*						S5		N5						
iNat (2023)	Red-belted Bumble Bee	*Bombus rufocinctus*						S5		NNR						
iNat (2022)	Virginia Carpenter Bee	*Xylocopa virginica*						S4S5		N4N5						
	BUTTERFLIES & MOTHS															

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	SCHEDULE	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	GRCA (date unk.)[10]	WATERLOO REGION (BUTTERFLIES & MOTHS) (LINTON, 2012)[11]	REGION OF WATERLOO (1986-2007)[12]
OBA (2021)	Delaware Skipper	*Anatrytone logan*						S4	G5	N4N5					C	C
OBA (2019)	Hobomok Skipper	*Poanes hobomok*						S5	G5	N5					C	C
OBA (2017)	European Skipper	*Thymelicus lineola*						SNA	G5	NNA					VC	VC
OBA (1970)	Northern Broken-Dash	*Wallengrenia egeremet*						S5	G5	N5					C	C
OBA (1970)	Summer Azure	*Celastrina neglecta*						S5	G5	N5					VC	VC
iNat (2023)	Silvery Blue	*Glaucopsyche lygdamus*						S5	G5	N5						
OBA (1967)	Meadow Fritillary	*Boloria bellona*						S5	G5	N5					VC	VC
OBA (1967)	Silver-bordered Fritillary	*Boloria selene*						S5	G5	N5					R	R
OBA (2017)	Common Wood-Nymph	*Cercyonis pegala*						S5	G5	N5					VC	VC
OBA (2022)	Common Ringlet	*Coenonympha tullia*						S5	G5	N5					C	C
OBA (2022), iNat (2023)	Monarch	*Danaus plexippus*	SC	SC	END	SC	Schedule 1	S2N,S4B	G5	N3B,NNRM					VC	VC
OBA (2020)	Northern Pearly-Eye	*Enodia anthedon*						S5	G5	N5					C	C
OBA (2022)	Viceroy	*Limenitis archippus*						S5	G5	N5					VC	VC
OBA (1970)	White Admiral	*Limenitis arthemis arthemis*						S5	G5T5	N5						
OBA (2022)	Red-spotted Purple	*Limenitis arthemis astyanax*						S5	G5T5	N5					C	C
OBA (2022)	Mourning Cloak	*Nymphalis antiopa*						S5	G5	N5					VC	VC
OBA (2021)	Northern Crescent	*Phyciodes cocyta*						S5	G5	N5					UC	UC
OBA (2022), iNat (2023)	Eastern Comma	*Polygonia comma*						S5	G5	N5					VC	VC
OBA (2017)	Question Mark	*Polygonia interrogationis*						S5	G5	N5B,N4N5M					VC	VC
OBA (2022)	Great Spangled Fritillary	*Speyeria cybele*						S5	G5	N5					VC	VC
OBA (2021), iNat (2023)	Red Admiral	*Vanessa atalanta*						S5B	G5	N5B,N5M					VC	VC
OBA (2019)	Painted Lady	*Vanessa cardui*						S5B	G5	N5B,N5M					C	C
OBA (2017)	Giant Swallowtail	*Papilio cresphontes*						S4	G5	N4					C	UC
OBA (2013)	Eastern Tiger Swallowtail	*Papilio glaucus*						S5	G5	N4					VC	VC
OBA (2021)	Black Swallowtail	*Papilio polyxenes*						S5	G5	N5					VC	VC
OBA (2022)	Orange Sulphur	*Colias eurytheme*						S5	G5	N5B,N5M					VC	VC
OBA (2022), iNat (2022)	Clouded Sulphur	*Colias philodice*						S5	G5	N5					VC	VC
OBA (2022)	Cabbage White	*Pieris rapae*						SNA	G5	NNA					VC	VC

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	SCHEDULE	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	GRCA (date unk.)[10]	WATERLOO REGION (BUTTERFLIES & MOTHS) (LINTON, 2012)[11]	REGION OF WATERLOO (1986-2007)[12]
OBA (1968)	Little Yellow	*Pyrisitia lisa*						SNA	G5	NNA					R	R
iNat (2021)	Virginia Ctenucha	*Ctenucha virginica*						S5	G5	N5						
iNat (2023)	Common Looper Moth	*Autographa precationis*						S5	G5	N5						
iNat (2022)	Bristly Cutworm Moth	*Lacinipolia renigera*						S5	G5	N5						
iNat (2023)	Hummingbird Clearwing	*Hemaris thysbe*						S5	G5	N5						
iNat (2021)	Spongy Moth	*Lymantria dispar*						SNA	G5	NNA						
iNat (2018)	Isabella Tiger Moth	*Pyrrharctia isabella*						S5	G5	N5						
iNat (2021)	Carolina Sphinx	*Manduca sexta*						S2		N2						
iNat (2021)	Cecropia Moth	*Hyalophora cecropia*						S4S5		N5						
iNat (2018)	Bedstraw Hawkmoth	*Hyles gallii*						S5?	G5	N5						
iNat (2021)	Chickweed Geometer Moth	*Haematopis grataria*						S4S5	G5	N5						
iNat (2023)	Green Pug	*Pasiphila rectangulata*						SNA	G5	NNA						
iNat (2022)	Two-banded Petrophila	*Petrophila bifascialis*						S4S5	GNR	NNR						
iNat (2021)	Western Bean Cutworm Moth	*Striacosta albicosta*						S4S5	GNR	NU						
	DRAGONFLIES & DAMSELFLIES															
iNat (2020)	Widow Skimmer	*Libellula luctuosa*						S5	G5	N5						
iNat (2021)	Shadow Darner	*Aeshna umbrosa*						S5	G5	N5						
iNat (2019)	Twelve-spotted Skimmer	*Libellula pulchella*						S5	G5	N5						
	AMPHIBANS															
ORAA (2019), iNat (2019)	American Toad	*Anaxyrus americanus*						S5	G5	N5						
ORAA (2019), iNat (2009)	Gray Treefrog	*Hyla versicolor*						S5	G5	N5						
ORAA (1978)	American Bullfrog	*Lithobates catesbeianus*						S4	G5	N5	✓					R
ORAA (2019), iNat (2022)	Green Frog	*Lithobates clamitans*						S5	G5	N5						
ORAA (1978)	Northern Leopard Frog	*Lithobates pipiens*		NAR	NAR			S5	G5	N5						
ORAA (1989)	Wood Frog	*Lithobates sylvaticus*						S5	G5	N5						
ORAA (2018)	Eastern Red-backed Salamander	*Plethodon cinereus*						S5	G5	N5						R
ORAA (2018)	Mudpuppy	*Necturus maculosus*		NAR	NAR			S4	G5	N4N5						R
	SNAKES AND LIZARDS															

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ORAA (1971)	Milksnake	*Lampropeltis triangulum*	NAR	NAR	SC	SC	Schedule 1	S4	G5T5	N3						R
ORAA (2017)	Red-bellied Snake	*Storeria occipitomaculata occipitomaculata*						S5	G5	N5						R
ORAA (1978)	Eastern Gartersnake	*Thamnophis sirtalis sirtalis*						S5	G5T5	N5						
	TURTLES															
ORAA (2019), iNat (2023)	Snapping Turtle	*Chelydra serpentina*	NL	SC	SC	SC	Schedule 1	S4	G5T5	N4						
ORAA (1981)	Midland Painted Turtle	*Chrysemys picta marginata*	NAR	NAR	SC	SC	Schedule 1	S4	G5T5	N4						
ORAA (2006)	Pond Slider	*Trachemys scripta*						SNA	GNR	NNA						
	BIRDS															
OBBA, eBird (2023), iNat (2022)	Canada Goose	*Branta canadensis*						S5	G5	N5B,N5N,N5M				CP		
eBird (2021)	Mute Swan	*Cygnus olor*						SNA	G5	NNA						
OBBA, eBird (2023)	Wood Duck	*Aix sponsa*						S5B, S3N	G5	N5B,N4N5N,N5M						
OBBA	Blue-winged Teal	*Anas discors*						S3B,S4M	G5	N5B,N5M				CP		
OBBA, eBird (2023), iNat (2023)	Mallard	*Anas platyrhynchos*						S5	G5	N5B,N5N,N5M						
eBird (2023)	Bufflehead	*Bucephala albeola*						S5	G5	N5B,N5N,N5M						
iNat (2023)	Common Merganser	*Mergus merganser*						S5	G5	N5B,N5N,N5M	✓					R
OBBA, eBird (2023), iNat (2021)	Wild Turkey	*Meleagris gallopavo*						S5	G5	N5						
OBBA	Ruffed Grouse	*Bonasa umbellus*						S5	G5	N5				CP		
OBBA, eBird (2023), iNat (2023)	Rock Pigeon	*Columba livia*						SNA	G5	NNA						
OBBA, eBird (2023), iNat (2023)	Mourning Dove	*Zenaida macroura*						S5	G5	N5B,N5N,N5M						
OBBA, eBird (2021)	Black-billed Cuckoo	*Coccyzus erythropthalmus*						S4S5B	G5	N5B,N5M			✓	CP		R
OBBA	Yellow-billed Cuckoo	*Coccyzus americanus*						S4B	G5	N4B,NUM						R
OBBA	Common Nighthawk	*Chordeiles minor*	SC	SC	SC	THR	Schedule1	S4B	G5	N4B,N3M				CP		R
OBBA, eBird (2023)	Chimney Swift	*Chaetura pelagica*	THR	THR	THR	THR	Schedule1	S3B	G4G5	N4BN3M			✓			
OBBA, eBird (2023)	Ruby-throated Hummingbird	*Archilochus colubris*						S5B	G5	N5B,N5M				CP		R
OBBA, eBird (2023)	Killdeer	*Charadrius vociferus*						S4B	G5	N5B,N4N5N,N5M						
eBird (2023)	Least Sandpiper	*Calidris minutilla*						S4B,S5M	G5	N5B,N1N2N,N5M						
OBBA, eBird (2023)	American Woodcock	*Scolopax minor*						S4B	G5	N5B,N5M				CP		
OBBA, eBird (2023)	Spotted Sandpiper	*Actitis macularius*						S5B	G5	N5B,N3N,N5M				CP		

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eBird (2022)	Solitary Sandpiper	*Tringa solitaria*						S4B,S5M	G5	N5B,N5M						
eBird (2023)	Ring-billed Gull	*Larus delawarensis*						S5	G5	N5B,N5N,N5M						
eBird (2023)	Herring Gull	*Larus argentatus*						S4B,S5N	G5	N5B,N5N,N5M						
eBird (2023)	Caspian Tern	*Hydroprogne caspia*		NAR	NAR			S3B,S5M	G5	N4B,N4M						
eBird (2020)	Double-crested Cormorant	*Phalacrocorax auritus*		NAR	NAR			S5B,S4N	G5	N5M,N3N4N,N5M						
OBBA, eBird (2023), iNat (2023)	Great Blue Heron	*Ardea herodias*						S4	G5	N5B,N3N,N5M						R
eBird (2019)	Green Heron	*Butorides virescens*						S4B	G5	N4N5B,N3N4N,N4N5M				CP		R
OBBA, eBird (2023), iNat (2023)	Turkey Vulture	*Cathartes aura*						S5B, S3N	G5	N5B,N5M				CP		R
OBBA, eBird (2021), iNat (2019)	Osprey	*Pandion haliaetus*						S5B	G5	N5B,N5N,N5M				CP		R
OBBA	Northern Harrier	*Circus cyaneus*		NAR	NAR			S5B,S4N	G5	N5B,N4N	✓	>30ha	✓	CP		R
eBird (2023), iNat (2023)	Sharp-shinned Hawk	*Accipiter striatus*		NAR				S5	G5	N5B,N5N,N5M	✓	>30ha		CP		R
OBBA, eBird (2023), iNat (2022)	Cooper's Hawk	*Accipiter cooperii*		NAR	NAR			S4	G5	N5B,N5N,N4N5M	✓	>10ha		CP		R
OBBA, eBird (2023)	Bald Eagle	*Haliaeetus leucocephalus*		NAR	NAR			S4	G5	N5B,N5N,N5M	✓		✓			
eBird (2023)	Red-shouldered Hawk	*Buteo lineatus*		NAR	NAR			S4B,S2N	G5	N4N5B,N4N5M	✓	>100ha	✓	CP		R
eBird (2023)	Broad-winged Hawk	*Buteo platypterus*						S5B	G5	N5B,N5M	✓	>100ha		CP		R
OBBA, eBird (2023), iNat (2023)	Red-tailed Hawk	*Buteo jamaicensis*		NAR	NAR			S5	G5	N5B,N5N,N5M						
OBBA, iNat (2022)	Eastern Screech-Owl	*Megascops asio*		NAR	NAR			S4	G5	N4N5						
OBBA, eBird (2023)	Great Horned Owl	*Bubo virginianus*						S4	G5	N5						
OBBA, eBird (2023), iNat (2022)	Belted Kingfisher	*Megaceryle alcyon*						S5B,S4N	G5	N5B,N4N5N,N5M			✓			R
NHIC	Red-headed Woodpecker	*Melanerpes erythrocephalus*	END	END	END	END	Schedule1	S3	G5	N4B,N3M			✓			R
OBBA, eBird (2023), iNat (2022)	Red-bellied Woodpecker	*Melanerpes carolinus*						S5	G5	N4B,N4N,N3M				CP		R
eBird (2023)	Yellow-bellied Sapsucker	*Sphyrapicus varius*						S5B,S3N	G5	N5B,N5M	✓	2-5ha		CP		R
OBBA, eBird (2023), iNat (2023)	Downy Woodpecker	*Picoides pubescens*						S5	G5	N5						
OBBA, eBird (2023)	Hairy Woodpecker	*Picoides villosus*						S5	G5	N5B,N5N,NUM	✓	4-8ha				R
OBBA, eBird (2023)	Northern Flicker	*Colaptes auratus*						S5	G5	N5B,N5N,N5M			✓			
OBBA	Pileated Woodpecker	*Dryocopus pileatus*						S5	G5	N5	✓	>40ha		CP		R
OBBA, eBird (2022)	American Kestrel	*Falco sparverius*						S4	G5	N5B,N1N,N5M			✓	CP		
OBBA, eBird (2023)	Merlin	*Falco columbarius*		NAR	NAR			S5	G5	N5B,N5N,N5M						

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iNat (2022)	Peregrine Falcon	*Falco peregrinus*	SC	SC	SC	SC	Schedule1	S4	G4	N3N4B,N2N,N3N4M			✓			
OBBA, eBird (2023)	Great Crested Flycatcher	*Myiarchus crinitus*						S5B	G5	N5B,N5M						
OBBA, eBird (2023), iNat (2023)	Eastern Kingbird	*Tyrannus tyrannus*						S4B	G5	N5B,N5M			✓	CP		
eBird (2023), iNat (2023)	Olive-sided Flycatcher	*Contopus cooperi*	SC	SC	SC	THR	Schedule1	S4B	G4	N4B,N3M				CP		
NHIC, OBBA, eBird (2023)	Eastern Wood-Pewee	*Contopus virens*	SC	SC	SC	SC	No Schedule	S4B	G5	N5B,N5M			✓			
eBird (2020)	Yellow-bellied Flycatcher	*Empidonax flaviventris*						S5B	G5	N5B,N5M						
OBBA, eBird (2020)	Alder Flycatcher	*Empidonax alnorum*						S5B	G5	N5B,N5M				CP		R
OBBA, eBird (2023)	Willow Flycatcher	*Empidonax traillii*						S4B	G5	N5B,N5M			✓			R
OBBA, eBird (2023)	Least Flycatcher	*Empidonax minimus*						S5B	G5	N5B,N5M	✓	>100ha		CP		R
OBBA, eBird (2023), iNat (2023)	Eastern Phoebe	*Sayornis phoebe*						S5B	G5	N5B,N5M				CP		
OBBA	Blue-headed Vireo	*Vireo solitarius*						S5B	G5	N5B,N5M	✓	>100ha		CP		
OBBA, eBird (2023)	Warbling Vireo	*Vireo gilvus*						S5B	G5	N5B,N5M						R
OBBA, eBird (2023)	Red-eyed Vireo	*Vireo olivaceus*						S5B	G5	N5B,N5N,N5M						
OBBA, eBird (2023), iNat (2022)	Blue Jay	*Cyanocitta cristata*						S5	G5	N5B,N5N,NNRM						
OBBA, eBird (2023), iNat (2022)	American Crow	*Corvus brachyrhynchos*						S5	G5	N5B,N5N,N5M						
OBBA, eBird (2021)	Common Raven	*Corvus corax*						S5	G5	N5						
OBBA, eBird (2023), iNat (2022)	Black-capped Chickadee	*Poecile atricapillus*						S5	G5	N5				CP		
OBBA, eBird (2023)	Horned Lark	*Eremophila alpestris*						S4	G5	N5B,N5N,N5M				CP		
OBBA, eBird (2023)	Bank Swallow	*Riparia riparia*	THR	THR	THR	THR	No Schedule	S4B	G5	N5B,N5M			✓	CP		
OBBA, eBird (2023), iNat (2021)	Tree Swallow	*Tachycineta bicolor*						S4S5B	G5	N5B,N5M						
OBBA, eBird (2023)	Northern Rough-winged Swallow	*Stelgidopteryx serripennis*						S4B	G5	N5B,N5M				CP		
OBBA, eBird (2023)	Purple Martin	*Progne subis*						S3B	G5	N5B,N5M				CP		R
OBBA, eBird (2023)	Barn Swallow	*Hirundo rustica*	SC	SC	THR	THR	No Schedule	S4B	G5	N3N4B,N3N4M				CP		
OBBA, eBird (2020)	Cliff Swallow	*Petrochelidon pyrrhonota*						S4S5B	G5	N5B,N5M				CP		
eBird (2023)	Golden-crowned Kinglet	*Regulus satrapa*						S5	G5	N5B,N5N,N5M				CP		R
eBird (2023), iNat (2023)	Ruby-crowned Kinglet	*Corthylio calendula*						S5B,S3N	G5	N5B,N5N,N5M				CP		R
OBBA, eBird (2023)	Cedar Waxwing	*Bombycilla cedrorum*						S5	G5	N5B,N5N,N5M						
OBBA, eBird (2022)	Red-breasted Nuthatch	*Sitta canadensis*						S5	G5	N5B,N5N,N5M	✓	>10ha		CP		R

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OBBA, eBird (2023), iNat (2023)	White-breasted Nuthatch	*Sitta carolinensis*						S5	G5	N5	✓	>10ha				
OBBA, eBird (2021)	Brown Creeper	*Certhia americana*						S5	G5	N5B,N5N,N5M	✓	>30ha		CP		R
OBBA, eBird (2023), iNat (2023)	Blue-gray Gnatcatcher	*Polioptila caerulea*						S4B	G5	N4B,N4M	✓	>30ha		CP		R
OBBA, eBird (2023)	House Wren	*Troglodytes aedon*						S5B	G5	N5B,N5M						
eBird (2023)	Winter Wren	*Troglodytes troglodytes*						S5B,S4N	G5	N5B,N5M	✓	>30ha				R
OBBA, eBird (2023)	Gray Catbird	*Dumetella carolinensis*						S5B,S3N	G5	N5B,N5M				CP		
OBBA, eBird (2023)	Brown Thrasher	*Toxostoma rufum*						S4B	G5	N5B,NUN,N5M			✓	CP		R
OBBA, eBird (2023), iNat (2022)	European Starling	*Sturnus vulgaris*						SNA	G5	NNA						
OBBA, eBird (2023), iNat (2023)	Eastern Bluebird	*Sialia sialis*		NAR	NAR			S5B,S4N	G5	N5B,N5M				CP		R
OBBA, eBird (2023)	Veery	*Catharus fuscescens*						S5B	G5	N5B,N5M	✓	>10ha		CP		
eBird (2023)	Swainson's Thrush	*Catharus ustulatus*						S5B	G5	N5B,N5M						R
eBird (2022)	Hermit Thrush	*Catharus guttatus*						S5B,S4N	G5	N5B,NUN,N5M	✓	>100ha		CP		
NHIC, OBBA, eBird (2023)	Wood Thrush	*Hylocichla mustelina*	SC	SC	THR	THR	No Schedule	S4B	G4	N4B,NUM			✓			
OBBA, eBird (2023), iNat (2023)	American Robin	*Turdus migratorius*						S5	G5	N5B,N4N5N,N5M						
OBBA, eBird (2023), iNat (2023)	House Sparrow	*Passer domesticus*						SNA	G5	NNA						
OBBA, eBird (2023), iNat (2023)	House Finch	*Carpodacus mexicanus*						SNA	G5	N5						
eBird (2020)	Purple Finch	*Carpodacus purpureus*						S5	G5	N5B,N5N,N5M				CP		R
eBird (2021)	Common Redpoll	*Carduelis flammea*						S5	G5	N5B,N5N,N5M						
OBBA, eBird (2021)	Pine Siskin	*Carduelis pinus*						S5	G5	N5B,N5N,N5M						R
OBBA, eBird (2023), iNat (2023)	American Goldfinch	*Carduelis tristis*						S5	G5	N5B,N5N,N5M				CP		
eBird (2022)	Snow Bunting	*Plectrophenax nivalis*						S4N	G5	N5B,N5N,N5M						
OBBA, eBird (2023)	Chipping Sparrow	*Spizella passerina*						S5B,S3N	G5	N5B,N5M						
OBBA, eBird (2023)	Field Sparrow	*Spizella pusilla*						S4B,S3N	G5	N4B,NUM			✓	CP		
eBird (2023), iNat (2023)	American Tree Sparrow	*Spizella arborea*						S5	G5	N5B,N5N,N5M						
eBird (2023), iNat (2023)	Dark-eyed Junco	*Junco hyemalis*						S5	G5	N5B,N5N,N5M				CP		
eBird (2023)	White-crowned Sparrow	*Zonotrichia leucophrys*						S5B,S3N	G5	N5B,N5N,N5M						
OBBA,eBird (2023), iNat (2022)	White-throated Sparrow	*Zonotrichia albicollis*						S5	G5	N5B,N5N,N5M				CP		R
OBBA	Vesper Sparrow	*Pooecetes gramineus*						S4B	G5	N5B,N5M			✓	CP		R

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OBBA, eBird (2023)	Savannah Sparrow	*Passerculus sandwichensis*						S5B,S3N	G5	N5B,N4N,N5M	✓	>50ha	✓	CP		
OBBA, eBird (2023), iNat (2023)	Song Sparrow	*Melospiza melodia*						S5	G5	N5B,N5N,N5M						
eBird (2023)	Lincoln's Sparrow	*Melospiza lincolnii*						S5B	G5	N5B,N5N,N5M						
OBBA, eBird (2023), iNat (2023)	Swamp Sparrow	*Melospiza georgiana*						S5B,S4N	G5	N5B,NUN,N5M				CP		R
OBBA	Eastern Towhee	*Pipilo erythrophthalmus*						S4B,S3N	G5	N4N5B,N4M			✓	CP		
NHIC, OBBA	Bobolink	*Dolichonyx oryzivorus*	THR	THR	THR	THR	No Schedule	S4B	G5	N5B,N4N5M	✓	>10ha	✓	CP		
OBBA	Eastern Meadowlark	*Sturnella magna*	THR	THR	THR	THR	No Schedule	S4B,S3N	G5	N4B,NUM	✓	>10ha	✓	CP		
OBBA, eBird (2019)	Orchard Oriole	*Icterus spurius*						S4B	G5	N5B,N5M				CP		R
OBBA,eBird (2023)	Baltimore Oriole	*Icterus galbula*						S4B	G5	N5B,N5M			✓			
OBBA, eBird (2023), iNat (2023)	Red-winged Blackbird	*Agelaius phoeniceus*						S5	G5	N5B,N5N,N5M						
OBBA, eBird (2023), iNat (2022)	Brown-headed Cowbird	*Molothrus ater*						S5	G5	N5B,NUN,N5M						
eBird (2023), iNat (2023)	Rusty Blackbird	*Euphagus carolinus*	SC	SC	SC	SC	Schedule1	S4B,S3N	G4	N4B,NUN,N4M						
OBBA, eBird (2023), iNat (2022)	Common Grackle	*Quiscalus quiscula*						S5	G5	N5B,NUN,N5M						
OBBA	Ovenbird	*Seiurus aurocapilla*						S5B	G5	N5B,N5M	✓	>70ha		CP		R
OBBA	Northern Waterthrush	*Seiurus noveboracensis*						S5B	G5	N5B,N5M						R
OBBA, eBird (2023)	Black-and-white Warbler	*Mniotilta varia*						S5B	G5	N5B,N5M	✓	>100ha		CP		R
eBird (2023)	Tennessee Warbler	*Vermivora peregrina*						S5B	G5	N5B,N5M						
OBBA, eBird (2023)	Nashville Warbler	*Vermivora ruficapilla*						S5B	G5	N5B.N5M				CP		R
OBBA, eBird (2022)	Mourning Warbler	*Oporornis philadelphia*						S5B	G5	N5B,N5M				CP		R
OBBA, eBird (2023)	Common Yellowthroat	*Geothlypis trichas*						S5B,S3N	G5	N5B,N5M						
OBBA, eBird (2023)	American Redstart	*Setophaga ruticilla*						S5B	G5	N5B,N5M	✓	>100ha		CP		R
eBird (2019)	Northern Parula	*Parula americana*						S5B	G5	N5B,N5M	✓	>100ha				
OBBA, eBird (2022)	Magnolia Warbler	*Dendroica magnolia*						S5B	G5	N5B,N5M	✓	>30ha		CP		R
eBird (2022)	Bay-breasted Warbler	*Dendroica castanea*						S5B	G5	N5B,N5M						
eBird (2023), iNat (2023)	Blackburnian Warbler	*Dendroica fusca*						S5B	G5	N5B,N5M	✓	>50ha		CP		R
OBBA, eBird (2023), iNat (2023)	Yellow Warbler	*Dendroica petechia*						S5B	G5	N5B,N5M						
OBBA	Chestnut-sided Warbler	*Dendroica petechia*						S5B	G5	N5B,N5M						
eBird (2021)	Blackpoll Warbler	*Dendroica striata*						S5B	G5	N5B,N5M						

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eBird (2020)	Black-throated Blue Warbler	*Dendroica caerulescens*						S5B	G5	N5B,N5M	✓	>100ha		CP		
eBird (2020)	Western Palm Warbler	*Dendroica palmarum palmarum*						S5B	G5T5	N5B						
OBBA	Pine Warbler	*Dendroica pinus*						S5B,S3N	G5	N5B,N5M	✓	15-30ha		CP		R
OBBA, eBird (2023), iNat (2021)	Yellow-rumped Warbler	*Dendroica coronata*						S5B,S4N	G5	N5B,N4N,N5M				CP		R
OBBA, eBird (2023)	Black-throated Green Warbler	*Dendroica virens*						S5B	G5	N5B,N5M	✓	>30ha				R
eBird (2023)	Wilson's Warbler	*Wilsonia pusilla*						S5B	G5	N5B,N5M						
OBBA, eBird (2023), iNat (2023)	Scarlet Tanager	*Piranga olivacea*						S5B	G5	N5B,N4N5M	✓	>20ha		CP		R
OBBA, eBird (2023), iNat (2023)	Northern Cardinal	*Cardinalis cardinalis*						S5	G5	N5						
OBBA, eBird (2023), iNat (2023)	Rose-breasted Grosbeak	*Pheucticus ludovicianus*						S5B	G5	N5B,N5M			✓			
OBBA, eBird (2023)	Indigo Bunting	*Passerina cyanea*						S5B	G5	N5B,N5M						
	MAMMALS															
OMA	White-tailed Deer	*Odocoileus virginianus*						S5	G5	N5						
iNat (2015)	Coyote	*Canis latrans*						S5	G5	N5						S
OMA	Red Fox	*Vulpes vulpes*						S5	G5	N5						
OMA	Striped Skunk	*Mephitis mephitis*						S5	G5	N5						
OMA	American Mink	*Neovison vison*						S4	G5	N5						S
OMA	Northern Raccoon	*Procyon lotor*						S5	G5	N5						
OMA	Big Brown Bat	*Eptesicus fuscus*						S4	G5	N5						
OMA	Virginia Opossum	*Didelphis virginiana*						S4	G5	N4N5						R
OMA, iNat (2023)	Eastern Cottontail	*Sylvilagus floridanus*						S5	G5	N5						
OMA	Beaver	*Castor canadensis*						S5	G5	N5						S
OMA, iNat (2023)	Muskrat	*Ondatra zibethicus*						S5	G5	N5						
iNat (2022)	House Mouse	*Mus musculus*						SNA	G5	NNA						
iNat (2023)	Norway Rat	*Rattus norvegicus*						SNA	G5	NNA						
OMA, iNat (2023)	Woodchuck	*Marmota monax*						S5	G5	N5						
OMA, iNat (2023)	Eastern Gray Squirrel	*Sciurus carolinensis*						S5	G5	N5						
iNat (2022)	Eastern Chipmunk	*Tamias striatus*						S5	G5	N5						
OMA, iNat (2017)	Red Squirrel	*Tamiasciurus hudsonicus*						S5	G5	N5						

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	SCHEDULE	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	GRCA (date unk.)[10]	WATERLOO REGION (BUTTERFLIES & MOTHS) (LINTON, 2012)[11]	REGION OF WATERLOO (1986-2007)[12]
	FISH															
ARA (2020)	White Sucker	*Catostomus commersonii*						S5	G5	N5						
ARA (2020)	Northern Hog Sucker	*Hypentelium nigricans*						S4	G5	N4						
ARA (2012)	Central Stoneroller	*Campostoma anomalum*		NAR	NAR			S4	G5	N4						
ARA (2016)	Goldfish	*Carassius auratus*						SNA	G5	NNA						
ARA (2014)	Northern Redbelly Dace	*Chrosomus eos*						S5	G5	N5						
ARA 2020)	Common Carp	*Cyprinus carpio*						SNA	G5	NNA						
ARA (2014)	Brassy Minnow	*Hybognathus hankinsoni*						S5	G5	N5						
ARA (2020)	Common Shiner	*Luxilus cornutus*						S5	G5	N5						
ARA (2019)	Hornyhead Chub	*Nocomis biguttatus*		NAR	NAR			S4	G5	N4N5						
ARA (2016)	Golden Shiner	*Notemigonus crysoleucas*						S5	G5	N5						
ARA (2010)	Blacknose Shiner	*Notropis heterolepis*						S5	G5	N5						
ARA (2004)	Spottail Shiner	*Notropis hudsonius*						S5	G5	N5						
NHIC	Silver Shiner	*Notropis photogenis*	THR	THR	THR	THR	Schedule 1	S2S3	G5	N2N3						
ARA (2016)	Bluntnose Minnow	*Pimephales notatus*		NAR	NAR			S5	G5	N5						
ARA (2016)	Fathead Minnow	*Pimephales promelas*						S5	G5	N5						
ARA (2019)	Longnose Dace	*Rhinichthys cataractae*						S5	G5	N5						
ARA (2019)	Western Blacknose Dace	*Rhinichthys obtusus*						S5	G5	N5						
ARA (2019)	Creek Chub	*Semotilus atromaculatus*						S5	G5	N5						
ARA (2014)	Northern Pike	*Esox lucius*						S5	G5	N5						
ARA (2012)	Central Mudminnow	*Umbra limi*						S5	G5	N5						
ARA (2016)	Brook Stickleback	*Culaea inconstans*						S5	G5	N5						
ARA (2020)	Rock Bass	*Ambloplites rupestris*						S5	G5	N5						
ARA (2016)	Green Sunfish	*Lepomis cyanellus*		NAR	NAR			S4	G5	N4						
ARA (2016)	Pumpkinseed	*Lepomis gibbosus*						S5	G5	N5						
ARA (2020)	Bluegill	*Lepomis macrochirus*						S5	G5	N5						
ARA (2016)	Smallmouth Bass	*Micropterus dolomieu*						S5	G5	N5						
ARA (2010)	Largemouth Bass	*Micropterus salmoides*						S5	G5	N5						

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	SCHEDULE	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	GRCA (date unk.)[10]	WATERLOO REGION (BUTTERFLIES & MOTHS) (LINTON, 2012)[11]	REGION OF WATERLOO (1986-2007)[12]
ARA (2014)	White Crappie	*Pomoxis annularis*						S4	G5	N4						
ARA (2016)	Black Crappie	*Pomoxis nigromaculatus*						S4	G5	N5						
ARA (2019)	Greenside Darter	*Etheostoma blennioides*		NAR	NAR			S4	G5	N4						
ARA (2019)	Rainbow Darter	*Etheostoma caeruleum*						S4	G5	N4						
ARA (2019)	Iowa Darter	*Etheostoma exile*						S5	G5	N5						
ARA (2014)	Least Darter	*Etheostoma microperca*		NAR	NAR			S4	G5	N4						
ARA (2019)	Johnny Darter	*Etheostoma nigrum*						S5	G5	N5						
ARA (2016)	Brown Bullhead	*Ameiurus nebulosus*						S5	G5	N5						
ARA (2019)	Stonecat	*Noturus flavus*						S4	G5	N5						
	MUSSELS															
iNat (2022)	Wavy-rayed Lampmussel	*Lampsilis fasciola*	THR	THR	SC	SC	Schedule 1	S2	G5	N2						
iNat (2020)	Elktoe	*Alasmidonta marginata*						S3	G4	N3N4						
	SLUGS AND SNAILS															
iNat (2022)	Brown-lipped Snail	*Cepaea nemoralis*						SNA		NNA						

Legend:

COSSARO: Committee on Species at Risk Ontario
COSEWIC: Committee on the Status of Endangered Wildlife in Canada
SARA: Species at Risk Act
ESA: Endangered Species Act
END: Endangered
THR: Threatened
SC: Special Concern
NAR: Not At Risk
NL: Not listed
DD: Data Deficient

N- and S-Rank:

S1: Critically Imperiled—Critically imperiled in the jurisdiction (often 5 or fewer occurrences)
S2: Imperiled—Imperiled in the jurisdiction, very few populations (often 20 or fewer),
S3: Vulnerable—Vulnerable in the jurisdiction, relatively few populations (often 80 or fewer)
S4: Apparently Secure—Uncommon but not rare
S5: Secure—Common, widespread, and abundant in the jurisdiction
SX: Presumed Extirpated
SH: Possibly Extirpated (Historical)
SNR: Unranked
SU: Unrankable—Currently unrankable due to lack of information
SNA: Not Applicable—The species is not a suitable target for conservation activities
S#S#: Range Rank—Indicates a range of uncertainty about the status of the species
S#B- Breeding Status Rank
S#N- Non Breeding Status Rank
?: Indicates uncertainty in the assigned rank

G-Rank:

G1: Extremely rare globally
G1G2: Extremely rare to very rare globally
G2: Very rare globally
G2G3: Very rare to uncommon globally
G3: Rare to uncommon globally
G3G4: Rare to common globally
G4: Common globally
G4G5: Common to very common globally
G5: Very common globally; demonstrably secure
T: Denotes that the rank applies to a subspecies or variety

Source Codes

OBA: Ontario Butterfly Atlas
ORAA: Ontario Reptile and Amphibian Atlas
OMA: Ontario Mammal Atlas
OBBA: Ontario Breeding Bird Atlas
eBird: eBird
ARA: Aquatic Resource Area Survey Points
DFO: Department of Fisheries and Oceans Species at Risk Mapping
iNat: iNaturalist
NHIC: Natural Heritage Information Centre

Grand River Conservation Authority:

CP: Conservation Priority

Region of Waterloo Butterflies & Moths

VC: Very Common
C: Common
UC: Uncommon
R: Rare
PE: Possibly Extirpated

References:

1.COSSARO Status Endangered Species Act, 2007 (Bill 184). Schedules 1- 5. January 25, 2023.
2.Species at Risk in Ontario List. Endangered Species Act, 2007 (Ontario Regulation 230/08). January 25, 2023.
3.COSEWIC Status COSEWIC. 2014. Canadian Species at Risk. Committee on the Status of Endangered Wildlife in Canada. January 25, 2023.
4.Endangered Species Act, 2007 (Bill 184). Schedules 1- 5. January 25, 2023.
5.Provincial Rarity Rank. NatureServe. 2023.
6.Global Rarity Rank. NatureServe. 2023.
7.National Rank. NatureServe. 2023.
8.Significant Wildlife Habitat Technical Guide. Ontario Ministry of Natural Resources. 2000. Appendix C: A list of area sensitive species and key references.
9.Ontario Partners in Flight (PIF). 2008. Ontario Landbird Conservation Plan: Lower Great Lakes/St. Lawrence Plain (North American Bird Conservation Region 13), Priorities, Objectives and Recommended Actions. Environment Canada
10.GRCA. date unk. A Checklist of Birds in the Grand River Watershed.
11.Linton, Jessica. 2012.The Butterflies of Waterloo Region - An Annotated Checklist, a Species Scarcity Ranking, and a Transect-Based Analysis of Urban vs. Rural Populations

12.Regional Municipality of Waterloo, 1996. *Revisions to Waterloo Region's Significant Species List: Breeding Birds Component* . Report to Planning and Culture Committee PC-96-021.

APPENDIX 11

MECP & MNR Requests for Information

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GREEN ROOFS
CONTRACT ADMINISTRATION

EXPERT OPINION
OMB TESTIMONY
LEGAL PROCEEDINGS
PEER REVIEW
RESEARCH
EDUCATION

November 30, 2023

Our Project #: AA23-232A
Sent by email: SAROntario@ontario.ca

Ministry of the Environment, Conservation and Parks
Permissions and Compliance Section, Species at Risk Branch

Re: 1655 Scotch Line Road, Elmira, Township of Woolwich
Request for Species at Risk and Local Site Information

To whom it may concern:

Please accept this request for Information regarding Species at Risk.

Any other possible site constraints or information would also be greatly appreciated, as it applies to an Environmental Impact Study for a proposed industrial subdivision in the Township of Woolwich (*Figure 1*). The information provided will be used to inform the Environmental Impact Study, which will be prepared in consultation with the Grand River Conservation Authority (GRCA), Township of Woolwich, and Region of Waterloo.

Project Location

Town/City: Township of Woolwich

County/Region: Region of Waterloo

UTM Coordinates: 536531.77 E 4825190.05 N

Proposed Activity

The subject property is located at 1655 Scotch Line Road in the Township of Woolwich. The proponent requires an Environmental Impact Study prepared to the satisfaction of the Township, Region, and GRCA to develop a proposed industrial subdivision and associated Stormwater Management, streets, and an open space block.

Existing Site Conditions

The property and study area are partially within the GRCA Regulation Limit and contains wetlands and floodplain (*Figure 1*).

Background Information

A thorough background search has been completed; using available resources provided online related to the subject lands and adjacent lands and is listed below:

1. Review of the Ontario Reptile and Amphibian Atlas identified 14 species that are known to occur or have historically occurred within the 10 km x 10 km square that contains the study area (17NJ32). This list includes three species which are considered species of conservation concern: Midland Painted Turtle, Snapping Turtle, and Milksnake.

2. The Natural Heritage Information Center identified six SAR within the 1 km x 1 km squares that contains the study area and the surrounding squares (17NJ3726, 17NJ3725, 17NJ3724, 17NJ3723, 17NJ3626, 17NJ3526, 17NJ3623, 17NJ3523, 17NJ3624, 17NJ3524, 17NJ3625, 17NJ3525): Bobolink, Eastern Wood-pewee, Red-headed Woodpecker, Wood Thrush, Silver Shiner, and Gypsy Cuckoo Bumble Bee.

3. The Ontario Breeding Bird Atlas identified 82 species that are known to occur or have historically occurred in the 10 km x 10 km square that contains the study area (17NJ32). This list includes seven SAR: Bank Swallow, Barn Swallow, Bobolink, Chimney Swift, Eastern Meadowlark, Eastern Wood-pewee, and Wood Thrush.

4. The Ontario Mammal Atlas indicates 14 mammal species that are known to occur or have historically occurred in the 10 km x 10 km square that contains the study area (17NJ32). No SAR were identified, although it should be noted that SAR bats can be present anywhere in Ontario,

5. Review of the Atlas of the Butterflies of Ontario identified 31 species that are known to occur or have historically occurred in the 10 km x 10 km square that contains the study area (17NJ32), including one SAR: Monarch.

6. iNaturalist observations restricted to research grade within 1km of the subject property identified 302 species, eight of which are SAR: Olive-sided Flycatcher, Peregrin Falcon, Rusty Blackbird, Monarch, Wavy-rayed Lampmussel, Snapping Turtle, Dense Blazing Star,

and Butternut. It should be noted that some SAR locations are obscured in iNaturalist, and may not actually occur within the vicinity of the study area.

7. eBird records from the nearby Elmira-Lions Ring Trail Hotspot (750 m west from the centre of the site) indicate the recent presence of 123 species, including seven SAR: Bank Swallow, Barn Swallow, Chimney Swift, Eastern Wood-pewee, Olive-sided Flycatcher, Rusty Blackbird, and Wood Thrush.

8. The online Fisheries and Oceans Canada (DFO) mapping system was consulted in the background review. A review for SAR Critical Habitat and species presence was completed in a 1 km radius around the study area. No critical habitat for any species was identified in the search radius, and no SAR were identified as being present or potentially present.

9. The Aquatic Resources Area (ARA) Survey Point and Line Segment mapping indicated the presence of 36 species of fish within 1 km of the study area. None of these species were SAR.

Please contact the undersigned should you require additional information of the above.

Yours truly,

ABOUD & ASSOCIATES INC.

Heather Dixon, PhD
Aquatic Ecologist
heather@aboudtng.com

Attachment: Figure 1

LEGEND

- SUBJECT LANDS
- STUDY AREA
- CANAGAGIGUE CREEK
- WETLAND
- SIGNIFICANT WOODLAND
- ENGINEERED FLOODPLAIN
- ESTIMATED FLOODPLAIN
- GRCA REGULATION LIMIT

Information Sources:

1. Waterloo Region Orthophotography, Accessed October 2023.
2. Grand River Information Network, Accessed October 2023.
3. Land information Ontario, Accessed October 2023.

Title:

STUDY AREA

Project:

1655 SCOTCH LINE
ELMIRA, ON

Date: OCTOBER 2023

Project: AA23-232A

Scale: 1 : 7000

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Figure No: 1

Heather Dixon

From: Species at Risk (MECP) <SAROntario@ontario.ca>
Sent: Friday, December 1, 2023 9:43 AM
To: Heather Dixon; Species at Risk (MECP)
Cc: Cheryl-Anne Ross
Subject: RE: Request for SAR Information for 1655 Scotch Line Road, Elmira, ON (AA23-232A)
Attachments: Client Guide to Preliminary Screening.pdf

Caution. Outside Sender

Hello Heather,

Thank you for your submission to the Ministry of the Environment, Conservation and Parks (MECP) about species at risk (SAR).

MECP is responsible for the administration of the *Endangered Species Act, 2007* (ESA) (Endangered Species Act, 2007, S.O. 2007, c. 6 (ontario.ca)). The ESA provides for the protection and recovery of species on the Species at Risk in Ontario (SARO) List (O. Reg. 230/08: SPECIES AT RISK IN ONTARIO LIST). The ESA includes prohibitions against killing, harming, harassing, capturing or taking a living member of a species listed as extirpated, endangered, or threatened on the SARO List (section 9) and against damaging or destroying the habitat of a species listed as endangered or threatened on the SARO List (section 10), without an exemption or authorization.

Seeking an ESA authorization or exemption is a proponent-led process. **This means that the person carrying out an activity is responsible for determining whether SAR and their habitat are present on or around the site of the activity, and ultimately ensuring their actions do not contravene the ESA**.

For information about assessing which SAR may be present on or in the area of your site, please refer to the MECP's draft "Client's Guide to Screening for Species at Risk" (attached).

You may proceed with the screening on your own or you may wish to consider hiring a qualified professional to perform a screening on your behalf. MECP recommends that the services of a professional environmental consultant be retained to assist in the completion of a screening, field assessments and surveys. An environmental consultant will be able to provide advice and direction on the type of surveys that should be performed and will be able to interpret the results of any surveys carried out.

If after carrying out a thorough SAR screening, including any field assessments and surveys that might be necessary, there is **no evidence of SAR or SAR habitat located on or adjacent to the site of your activity** and your activity will therefore not cause any prohibited impacts, an exemption or authorization under the ESA would not be necessary to proceed. The ministry strongly recommends that you document your SAR screening and assessment and rationale for avoiding prohibited impacts for future reference if needed. Proponents are responsible for ensuring their actions do not contravene the ESA.

If there IS evidence of species a risk and/or habitat on or around the location of your activity, the ministry recommends that you carry out the work necessary to prepare

an Information Gathering Form (IGF). This includes consideration of all the elements in your SAR screening data collection and further levels of assessment of impacts and potential to minimize adverse effects.

After considering all the data and information in the IGF, if you have determined that the activity can be carried out in such a way that you WILL NOT have adverse impacts prohibited by sections 9 and/or 10 of the ESA, an exemption or authorization under the ESA would not be necessary to proceed if the activity is carried out in that way. Again, proponents are responsible for ensuring their actions do not contravene the ESA.

If after considering all the data and information in the IGF you have determined that the proposed activities COULD POTENTIALLY have adverse impacts prohibited by sections 9 and/or 10 of the ESA, an exemption or authorization may likely be required before you proceed. If there is no applicable exemption in regulations under the ESA, submit the IGF to the ministry at SAROntario@ontario.ca to seek a permit or agreement. Please visit How to get an Endangered Species Act permit or authorization | ontario.ca to obtain information on how to get an ESA permit or authorization.

Please consider in your project planning that it takes an average of 12-15 months from the submission of a complete IGF to a decision about a permit, if one is needed. This considers the time required to conduct the technical review of the application as well as to carry out public and Indigenous consultation, along with factors such as project complexity, seasonal nature of field survey and data collection required, volume of applications and quality of submissions. It is recommended that proponents submit a complete IGF well in advance of the activity's proposed start date. Failure to submit a complete and accurate IGF with supporting rationale and not allowing adequate time for review and the issuance of any required authorizations could result in delays to the activity's anticipated start date.

Thank you,

Species at Risk Branch

From: Heather Dixon <Heather@aboudtng.com>
Sent: Thursday, November 30, 2023 5:27 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>
Subject: Request for SAR Information for 1655 Scotch Line Road, Elmira, ON (AA23-232A)

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Good afternoon,

Please accept the attached request for SAR information for the proposed industrial subdivision located at 1655 Scotch Line Road, Elmira, Township of Woolwich, ON. Please contact me if you have any questions. We appreciate your prompt response to our request.

Many thanks,

Heather Dixon, PhD (she/her) . Aquatic Ecologist
ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
519.781.1581 www.aboudtng.com . heather@aboudtng.com

Aboud & Associates Inc. is located within the Between the Lakes Purchase (Treaty 3); the treaty lands and territory of the Mississaugas of the Credit.

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GREEN ROOFS
CONTRACT ADMINISTRATION

EXPERT OPINION
OMB TESTIMONY
LEGAL PROCEEDINGS
PEER REVIEW
RESEARCH
EDUCATION

November 30, 2023

Our Project #: AA23-232A
Sent by email: scp.guelph@ontario.ca

Ministry of Northern Development, Mines, Natural Resources and Forestry
Aylmer Guelph District
1 Stone Road West,
Guelph, ON N1G 4Y2

Re: 1655 Scotch Line Road, Elmira, Township of Woolwich
Request for Local Site Information

To whom it may concern,

Please accept this request for Information regarding:
☒ Wetland Mapping and/or Evaluation and Data Records
☒ Fish Dot Information
☐ ANSI Mapping and/or check-sheet
☒ Other:

Any other possible site constraints or information would also be greatly appreciated, as it applies to an Environmental Impact Study for a proposed industrial subdivision in the Township of Woolwich (*Figure 1*), including timing windows and thermal regime. The information provided will be used to inform the Environmental Impact Study, which will be prepared in consultation with the Grand River Conservation Authority (GRCA), Township of Woolwich, and Region of Waterloo. MECP will be contacted regarding species at risk.

Project Description

The subject property is located at 1655 Scotch Line Road in the Township of Woolwich. The proponent requires an Environmental Impact Study prepared to the satisfaction of the Township, Region, and GRCA to develop a proposed industrial subdivision and associated Stormwater Management, streets, and an open space block.

Existing Site Conditions

The property and study area are partially within the GRCA Regulation Limit and contains wetlands and floodplain (Figure 1).

Town/City: Township of Woolwich

County/Region: Region of Waterloo

UTM Coordinates: 536531.77 E 4825190.05 N

Background Information

A thorough background search has been completed; using available resources provided online related to the subject lands and adjacent lands and is listed below:

1. A review of the Land Information Ontario mapping (2007) indicates presence of unevaluated wetlands in the study area.

2. The Aquatic Resources Area (ARA) Survey Point and Line Segment mapping identified 36 fish species within 1 km of the study area. Northern Pike spawning was also identified as occurring in the vicinity of the project location.

3. A review of the Grand River Conservation Authority mapping indicates the presence of regulated area, unevaluated wetlands, and floodplains within the study area.

Please contact the undersigned should you require additional information of the above.

Yours truly,

ABOUD & ASSOCIATES INC.

Heather Dixon, PhD
Aquatic Ecologist
heather@aboudtng.com

Attachment: Figure 1

LEGEND

- SUBJECT LANDS
- STUDY AREA
- CANAGAGIGUE CREEK
- WETLAND
- SIGNIFICANT WOODLAND
- ENGINEERED FLOODPLAIN
- ESTIMATED FLOODPLAIN
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Figure No: 1

Heather Dixon

From: Denyes, David (MNRF) <David.Denyes@ontario.ca>
Sent: Friday, December 1, 2023 2:47 PM
To: Heather Dixon
Cc: Scientific Collection Permits Guelph (MNRF)
Subject: RE: Request for Site Information for 1655 Scotch Line Road, Elmira, ON (AA23-232A)

Caution. Outside Sender

Hello Heather,

Thank you for your request for information on natural heritage features.

Absence or lack of information for a given geographic area does not necessarily mean the absence of natural heritage features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. In addition, new species may be listed and new natural heritage features may be defined over time. For these reasons, the Ministry cannot provide a definitive statement on the presence, absence or condition of natural heritage features in all parts of Ontario.

At this time, the Ministry has the following information within the vicinity of your project location.

1. Canagagigue Creek tributary
    a. *Warm water thermal regime*
    b. Species (from ARA layer): *Blacknose Shiner, Common Shiner, Rock Bass, White Sucker*
    c. *Northern Pike Spawning Area (observed in drain in spring)*
    d. Restricted in-water work timing window: March 15th to June 30th (Note: Dates represent when in-water work should be avoided)
2. Several unevaluated wetlands
3. Species at Risk information is available through the Ministry of Environment, Conservation & Parks (MECP) – Please contact MECP at SAROntario@ontario.ca
4. Please reach out to Department of Fisheries and Oceans for any further aquatic SAR considerations. You can also view DFO's aquatic species at risk map at https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html

Thanks,

David

David Denyes
Management Biologist
Ministry of Natural Resources and Forestry
Vineland Field Office
4890 Victoria Avenue North
Vineland Station ON, L0R 2E0
Tel: (289) 241-6872
david.denyes@ontario.ca

From: Heather Dixon <Heather@aboudtng.com>
Sent: November 30, 2023 5:30 PM
To: Scientific Collection Permits Guelph (MNRF) <scp.guelph@ontario.ca>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>
Subject: Request for Site Information for 1655 Scotch Line Road, Elmira, ON (AA23-232A)

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Good afternoon,

Please see the attached request for information in regards to wetland and fish dot information for the proposed industrial subdivision located at 1655 Scotch Line Road, Elmira, Township of Woolwich, ON. Thank you for any additional information you can provide.

Many thanks,

Heather Dixon, PhD (she/her) . Aquatic Ecologist
ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
519.781.1581 www.aboudtng.com . heather@aboudtng.com

Aboud & Associates Inc. is located within the Between the Lakes Purchase (Treaty 3); the treaty lands and territory of the Mississaugas of the Credit.

APPENDIX 12

Incidental Species List

COMMON NAME	SCIENTIFIC NAME	TAXA	DATE	SIGNIFICANCE
American Toad	*Anaxyrus americanus*	Amphibians	June 17- Observed during second Grassland Breeding Bird Survey	None
Green Frog	*Lithobates clamitans*	Amphibians	May 9- Observed during Aquatic Habitat Assessment June 25-Observed during Summer Botanical	None
American Crow	*Corvus brachyrhynchos*	Bird	March 19- Observed during Bat Habitat Assessment May 29-Observed during first Breeding Bird Survey outside point count radius June 25-Observed during Summer Botanical	None
American Goldfinch	*Carduelis tristis*	Bird	March 19- Observed during Bat Habitat Assessment May 9- Observed during Aquatic Habitat Assessment and ELC investigations May 29-Observed during first Breeding Bird Survey outside point count radius June 25-Observed during Summer Botanical	GRCA conservation priority
American Robin	*Turdus migratorius*	Bird	March 19- Observed during Bat Habitat Assessment May 9- Observed during Aquatic Habitat Assessment and ELC investigations May 29-Observed during first Breeding Bird Survey outside point count radius June 17- Observed during second Grassland Breeding Bird Survey outside point count June 25-Observed during Summer Botanical	None
Baltimore Oriole	*Icterus galbula*	Bird	May 9- Observed during Aquatic Habitat Assessment May 29-Observed during first Breeding Bird Survey outside point count radius July 5-Observed during third Breeding Bird Survey outside point count radius	PIF species
Bald Eagle	*Haliaeetus leucocephalus*	Bird	May 29-Observed during first Breeding Bird Survey outside point count radius	Area sensitive. PIF species.
Barn Swallow	*Hirundo rustica*	Bird	May 9- Observed during Aquatic Habitat Assessment and ELC investigations June 17-Observed during second Breeding Bird Survey outside point count radius June 25-Observed during Summer Botanical	Special Concern under ESA and SARA. GRCA conservation priority.
Black-capped Chickadee	*Poecile atricapillus*	Bird	May 9- Observed during Aquatic Habitat Assessment	GRCA conservation priority

COMMON NAME	SCIENTIFIC NAME	TAXA	DATE	SIGNIFICANCE
Blue Jay	*Cyanocitta cristata*	Bird	May 29-Observed during first Breeding Bird Survey outside point count radius June 17- Observed during second Grassland Breeding Bird Survey outside point count	None
Bobolink	*Dolichonyx oryzivorus*	Bird	May 29-Observed during first Breeding Bird Survey outside point count radius	Threatened under ESA and SARA. Area sensitive. PIF species. GRCA conservation priority.
Canada Goose	*Branta canadensis*	Bird	March 19- Observed during Bat Habitat Assessment May 9- Heard during Aquatic Habitat Assessment	GRCA conservation priority
Chipping Sparrow	*Spizella passerina*	Bird	May 29-Observed during first Breeding Bird Survey outside point count radius	None
Common Grackle	*Quiscalus quiscula*	Bird	March 19- Observed during Bat Habitat Assessment	None
Common Raven	*Corvus corax*	Bird	May 29-Observed during first Breeding Bird Survey outside point count radius	None
Common Yellowthroat	*Geothlypis trichas*	Bird	May 9- Observed during Aquatic Habitat Assessment	None
Eastern Bluebird	*Sialia sialis*	Bird	March 19- Observed during Bat Habitat Assessment	GRCA conservation priority. Considered rare in Waterloo Region
Eastern Wood-pewee	*Contopus virens*	Bird	May 29-Observed during first Breeding Bird Survey outside point count radius July 5-Observed during third Breeding Bird Survey outside point count radius	Special Concern under ESA and SARA. PIF species
European Starling	*Sturnus vulgaris*	Bird	July 5-Observed during third Breeding Bird Survey outside point count radius	Invasive
Great Blue Heron	*Ardea herodias*	Bird	May 9- Observed during ELC investigations	Considered rare in Waterloo Region
Horned Lark	*Eremophila alpestris*	Bird	March 19- Observed during Bat Habitat Assessment May 9- Observed during Aquatic Habitat Assessment	GRCA conservation priority
House Sparrow	*Passer domesticus*	Bird	March 19- Observed during Bat Habitat Assessment	None
House Wren	*Troglodytes aedon*	Bird	May 9- Observed during Aquatic Habitat Assessment July 5-Observed during third Breeding Bird Survey outside point count radius	None

COMMON NAME	SCIENTIFIC NAME	TAXA	DATE	SIGNIFICANCE
Killdeer	*Charadrius vociferus*	Bird	March 19- Observed during Bat Habitat Assessment May 9- Observed during Aquatic Habitat Assessment and ELC investigations July 5-Observed during third Breeding Bird Survey outside point count radius	None
Least Flycatcher	*Empidonax minimus*	Bird	May 9- Observed during Aquatic Habitat Assessment June 25-Observed during Summer Botanical	GRCA conservation priority. Considered rare in Waterloo Region
Mourning Dove	*Zenaida macroura*	Bird	March 19- Observed during Bat Habitat Assessment May 29-Observed during first Breeding Bird Survey outside point count radius	None
Northern Cardinal	*Cardinalis cardinalis*	Bird	March 19- Observed during Bat Habitat Assessment May 29-Observed during first Breeding Bird Survey outside point count radius July 5-Observed during third Breeding Bird Survey outside point count radius	None
Northern Harrier	*Circus cyaneus*	Bird	March 19- Pair observed during Bat Habitat Assessment	GRCA conservation priority. Considered rare in Waterloo Region
Red-tailed Hawk	*Buteo jamaicensis*	Bird	May 29-Observed during first Breeding Bird Survey outside point count radius July 5-Observed during third Breeding Bird Survey outside point count radius	None
Red-winged Blackbird	*Agelaius phoeniceus*	Bird	May 9- Observed during Aquatic Habitat Assessment and ELC investigations May 29-Observed during first Breeding Bird Survey outside point count radius June 17-Observed during second Breeding Bird Survey outside point count radius June 25-Observed during Summer Botanical July 5-Observed during third Breeding Bird Survey outside point count radius	None
Rock Pigeon	*Columba livia*	Bird	March 19- Observed during Bat Habitat Assessment	None
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	Bird	May 9- Observed during Aquatic Habitat Assessment May 29-Observed during first Breeding Bird Survey outside point count radius June 17-Observed during second Breeding Bird Survey outside point count radius	PIF species

COMMON NAME	SCIENTIFIC NAME	TAXA	DATE	SIGNIFICANCE
Savannah Sparrow	*Passerculus sandwichensis*	Bird	May 29-Observed during first Breeding Bird Survey outside point count radius	Area sensitive. PIF species. GRCA conservation priority.
Song Sparrow	*Melospiza melodia*	Bird	March 19- Observed during Bat Habitat Assessment May 9- Observed during Aquatic Habitat Assessment and ELC investigations May 29-Observed during first Breeding Bird Survey outside point count radius June 17-Observed during second Breeding Bird Survey outside point count radius	None
Swamp Sparrow	*Melospiza georgiana*	Bird	May 9- Observed during Aquatic Habitat Assessment	GRCA conservation priority. Considered rare in Waterloo Region
Tree Swallow	*Tachycineta bicolor*	Bird	May 9- Observed during Aquatic Habitat Assessment and ELC investigations June 25-Observed during Summer Botanical	None
Turkey Vulture	*Cathartes aura*	Bird	May 9- Observed during Aquatic Habitat Assessment	GRCA conservation priority. Considered rare in Waterloo Region
Yellow-bellied Sapsucker	*Sphyrapicus varius*	Bird	March 19- Cavities observed during Bat Habitat Assessment	GRCA conservation priority. Considered rare in Waterloo Region
Yellow Warber	*Dendroica petechia*	Bird	May 9- Observed during Aquatic Habitat Assessment June 17-Observed during second Breeding Bird Survey outside point count radius	None
Fish	Species unknown	Fish	May 9- Observed during Aquatic Habitat Assessment	None
Cabbage White	*Pieris rapae*	Insect	May 9- Observed during ELC investigations June 25-Observed during Summer Botanical	Very common in Waterloo Region
Eastern Tailed Blue	*Cupido comyntas*	Insect	May 9- Observed during ELC investigations	Uncommon in Waterloo Region
Monarch	*Danaus plexippus*	Insect	July 5- Observed during third Grassland Breeding Bird Survey	Special Concern under ESA and SARA.
Red Admiral	*Vanessa atalanta*	Insect	May 9- Observed during ELC investigations	Very common in Waterloo Region
Eastern Chipmunk	*Tamias striatus*	Mammal	June 25-Observed during Summer Botanical	None
Eastern Cottontail	*Sylvilagus floridanus*	Mammal	June 17- Observed during second Grassland Breeding Bird Survey	None
Eastern Gray Squirrel	*Sciurus carolinensis*	Mammal	May 9- Observed during ELC investigations	None

COMMON NAME	SCIENTIFIC NAME	TAXA	DATE	SIGNIFICANCE
Ground Hog	*Marmota monax*	Mammal	May 9- Observed during Aquatic Habitat Assessment and ELC investigations May 29- Observed during first Grassland Breeding Bird Survey June 17- Observed during second Grassland Breeding Bird Survey June 25-Observed during Summer Botanical July 5- Observed during third Grassland Breeding Bird Survey	None
Muskrat	*Ondatra zibethicus*	Mammal	May 9- Dead individual observed during ELC investigations	None

APPENDIX 13

Site Photographs

Aquatic Habitat Assessment Site 1

Aquatic Habitat Assessment Site 2

Aquatic Habitat Assessment Site 3

Aquatic Habitat Assessment Site 4

Aquatic Habitat Assessment Site 5

Aquatic Habitat Assessment Site 6

Aquatic Habitat Assessment Site 7

Aquatic Habitat Assessment Site 8

Aquatic Habitat Assessment Site 9

Aquatic Habitat Assessment Site 10

Aquatic Habitat Assessment Site 11

Aquatic Habitat Assessment Site 12

Aquatic Habitat Assessment Site 13

Aquatic Habitat Assessment Site 14

Aquatic Habitat Assessment Site 15

Photo showing the traditional chimneys on the current farmhouse that may provide habitat for Chimney Swift.

APPENDIX 14

Project Impacts and Mitigation Table

ACTIVITY	PROJECT PHASE	POTENTIAL IMPACTS	INITIAL IMPACT RATING[1,3]	MITIGATION RECOMMENDATIONS/COMMENTS	FINAL IMPACT RATING[2,3]	PROPOSED IMPLEMENTATION PHASE	MONITORING/ FOLLOW-UP RECOMENDATIONS
Vegetation Removal – Clearing & Grubbing *Upland Area*	Site Preparation and Servicing	Loss of vegetation and wildlife habitat	Moderate	▪ Avoid significant wildlife habitat ▪ Design to avoid or minimize loss of vegetation and edge habitat. ▪ Implement compensation plan where possible, including Block 14, using native tree, shrub, and vegetative species.	Minor	Site Preparation and Servicing, Construction, Post-Construction/Site Restoration	Monitor restoration/ compensation plantings to ensure proper establishment
Vegetation Removal – Clearing & Grubbing *Upland Area*	Site Preparation and Servicing	Disturbance of wildlife species	Minor	▪ Avoid removal or destruction of animal movement corridors. ▪ Time activities to avoid wildlife disturbance during important life stages (generalized breeding bird nesting period (Apr 1- Aug 31) & Bat maternity period (Apr 1 – Sept 30).	None	Site Preparation and Servicing, Construction	
Vegetation Removal – Clearing & Grubbing *Upland Area*	Site Preparation and Servicing	Impacts to nesting birds protected under the Migratory Bird Convention Act	Moderate	▪ Complete all vegetation removal outside the Environment Canada breeding bird nesting window (April 1- August 31) ▪ Where vegetation removal must occur during the nesting window, conduct a bird nest survey to determine locations of active nests prior to construction works including installation of Erosion Sediment Control (ESC) fence and any site clearing. ▪ Create nest protection zones where active bird nests are found and monitor (as needed, e.g., weekly) until inactive. ▪ Implement required mitigation measures per ESA and SARA approvals.	None	Site Preparation and Servicing, Construction, Post-Construction/Site Restoration	Monitor active nests (as needed, e.g., weekly) until inactive.
Vegetation Removal – Clearing & Grubbing *Wetland Areas*	Site Preparation and Servicing	Increased erosion, sedimentation into wetland	Minor	▪ Develop & implement ESC plan ▪ Incorporate considerations from the Functional Stormwater Management Plan (SBM, 2025)	Minor-none	Site Preparation and Servicing, Construction, Post-Construction/Site Restoration	Monitor ESC fence weekly, and after a major storm event for any breaks, and repair.

ACTIVITY	PROJECT PHASE	POTENTIAL IMPACTS	INITIAL IMPACT RATING[1,3]	MITIGATION RECOMMENDATIONS/COMMENTS	FINAL IMPACT RATING[2,3]	PROPOSED IMPLEMENTATION PHASE	MONITORING/ FOLLOW-UP RECOMENDATIONS
Vegetation Removal – Clearing & Grubbing *Wetland Areas*	Site Preparation and Servicing	Decreased shade and cover	Minor	▪ Maintain or restore vegetative buffers ▪ Implement enhancement and restoration where possible, using locally-sourced native tree, shrub and herbaceous species.	None	Site Preparation and Servicing, Construction, Post-Construction/Site Restoration	Monitor restoration/ compensation plantings to ensure proper establishment.
Vegetation Removal – Clearing & Grubbing *Wetland Areas*	Site Preparation and Servicing	Reduced vegetation diversity	Minor	▪ Maintain or restore riparian vegetation where possible ▪ Implement enhancement and restoration where possible, using locally-sourced native tree, shrub and herbaceous species.	None	Site Preparation and Servicing, Construction, Post-Construction/Site Restoration	Monitor restoration/ compensation plantings to ensure proper establishment.
Vegetation Removal – Clearing & Grubbing *Wetland Areas*	Site Preparation and Servicing	Reduced habitat for sensitive species	Minor	▪ Create physical buffers (30 m wetland buffer)	None	Site Preparation and Servicing, Construction, Post-Construction/Site Restoration	Monitor restoration/ compensation plantings to ensure proper establishment.
Grading	Site Preparation and Servicing	Increased erosion, sedimentation, and turbidity	Moderate	▪ Maintain or restore vegetative buffers. ▪ Develop & implement ESC Plan per GGH Erosion and Sediment guidelines (TRCA, 2019)	None	Site Preparation and Servicing, Construction, Post-Construction/Site Restoration	Monitor restoration/ compensation plantings to ensure proper establishment. Monitor ESC fence weekly, and after a major storm event for any breaks, and repair.
Grading	Site Preparation and Servicing	Increase nutrient inputs and contaminants to waterbodies and wetlands	Minor	▪ Develop & implement ESC Plan per GGH Erosion and Sediment guidelines (TRCA, 2019) ▪ Designate areas for equipment storage as far as possible from natural features.	None	Site Preparation and Servicing, Construction, Post-Construction/Site Restoration	Monitor ESC fence weekly, and after a major storm event for any breaks, and repair.
Grading	Site Preparation and Servicing	Increased soil compaction	Moderate	▪ Control access and movement of equipment and people	Minor	Site Preparation and Servicing, Construction	

ACTIVITY	PROJECT PHASE	POTENTIAL IMPACTS	INITIAL IMPACT RATING[1,3]	MITIGATION RECOMMENDATIONS/COMMENTS	FINAL IMPACT RATING[2,3]	PROPOSED IMPLEMENTATION PHASE	MONITORING/ FOLLOW-UP RECOMENDATIONS
Grading	Site Preparation and Servicing	Changes to drainage	Minor	▪ Schedule grading to avoid high runoff volumes. ▪ Minimize changes to land contours and natural drainage	None	Site Preparation and Servicing, Construction	
Grading	Site Preparation and Servicing	Changes to surface runoff	Minor	▪ Maintain streams and timing, quantity of flows. ▪ Implement SWM measures as detailed in the Functional Stormwater Management Plan (SBM, 2025).	None	Site Preparation and Servicing, Construction	
Grading	Site Preparation and Servicing	Changes in soil moisture, tree cover and vegetation	Moderate	▪ Maintain streams and timing, quantity of flows. ▪ Implement SWM measures as detailed in the Functional Stormwater Management Plan (SBM, 2025).	Minor	Site Preparation and Servicing, Construction	
Grading	Site Preparation and Servicing	Disturbance to wildlife	Minor	▪ Time activities and conduct work outside timing windows of sensitive species and avoid sensitive periods (breeding birds, bat maternity)	None	Site Preparation and Servicing, Construction	
Grading	Site Preparation and Servicing	Alteration or destruction of wildlife habitat	Minor	▪ Identify sensitive species prior to work and design grading to avoid disturbing sensitive species.	Minor-None	Site Preparation and Servicing, Construction	
Grading	Site Preparation and Servicing	Wildlife entering construction areas	Minor	▪ Develop & implement ESC plan to exclude wildlife	None	Site Preparation and Servicing, Construction	Monitor ESC fence weekly, and after a major storm event for any breaks, and repair.
Installation of Services and utilities	Site Preparation and Servicing	Increased erosion, sedimentation, and turbidity	Minor	▪ Maintain vegetated buffers. ▪ Implement enhancement and restoration where able, using locally-sourced native tree, shrub and herbaceous species.	Minor-None	Site Preparation and Servicing, Construction, Post-construction/Site Restoration	Monitor ESC fence weekly, and after a major storm event for any breaks, and repair. Monitor restoration/ compensation plantings to ensure proper establishment.

ACTIVITY	PROJECT PHASE	POTENTIAL IMPACTS	INITIAL IMPACT RATING[1,3]	MITIGATION RECOMMENDATIONS/COMMENTS	FINAL IMPACT RATING[2,3]	PROPOSED IMPLEMENTATION PHASE	MONITORING/ FOLLOW-UP RECOMENDATIONS
Installation of Services and Utilities	Site Preparation and Servicing	Increased nutrient and contaminant inputs to waterbodies	Minor	▪ Develop & implement ESC Plan per GGH Erosion and Sediment guidelines (TRCA, 2019) ▪ Designate areas for equipment storage.	None	Construction, Post-Construction/ Site Restoration	Monitor ESC fence weekly, and after a major storm event for any breaks, and repair.
Installation of Services and Utilities	Site Preparation and Servicing	Disturbance to wildlife including sensitive species	Moderate	▪ Conduct work outside timing windows of sensitive species and time sensitive periods (Generalized breeding birdnesting period from Apr 1 to Aug 31 and the bat maternity window of Apr 1 to Sept 30).	None	Site Preparation and Servicing, Construction	
Installation of Services and Utilities	Site Preparation and Servicing	Hydrological changes	Moderate	▪ Implement appropriate stormwater management measures identified in the Functional Stormwater Management Report (SBM, 2025).	Minor-none	Construction, Post-Construction/ Site Restoration	
Installation of Services and Utilities	Site Preparation and Servicing	Wildlife entering construction areas	Minor	▪ Develop & implement ESC plan to exclude wildlife	None	Site Preparation and Servicing, Construction	Monitor ESC fence weekly, and after a major storm event for any breaks, and repair.
Building Construction (including accessory uses and amenities)	Construction	Increased erosion, sedimentation and turbidity	Moderate	▪ Implement ESC Plan per GGH Erosion and Sediment Guidelines (TRCA, 2019) ▪ Implement enhancement and restoration where able, using locally-sourced native tree, shrub and herbaceous species.	Minor-none	Construction, Post-Construction/ Site Restoration	Monitor restoration/ compensation plantings to ensure proper establishment.
Building Construction (including accessory uses and amenities)	Construction	Water contamination by oils, gasoline, grease and other materials	Minor	▪ Control water contamination through good housekeeping practices such as designated areas for parking and refuelling vehicles.	None	Construction	

ACTIVITY	PROJECT PHASE	POTENTIAL IMPACTS	INITIAL IMPACT RATING[1,3]	MITIGATION RECOMMENDATIONS/COMMENTS	FINAL IMPACT RATING[2,3]	PROPOSED IMPLEMENTATION PHASE	MONITORING/ FOLLOW-UP RECOMENDATIONS
Building Construction (including accessory uses and amenities)	Construction	Increased impervious surfaces causing increased runoff, reduced infiltration and groundwater discharge	Moderate	▪ Implement appropriate measures as identified in the Functional Stormwater Management Report (SBM, 2025).	Minor-none	Construction, Post-Construction/ Site Restoration	Monitor restoration/ compensation plantings to ensure proper establishment.
Building Construction (including accessory uses and amenities)	Construction	Disturbance to wildlife from sounds and activity associated with occupancy	Minor	▪ Restrict access and buffer natural areas to discourage landowner encroachment and improper use.	None	Construction, Post-Construction/ Site Restoration	Monitor restoration/ compensation plantings to ensure proper establishment.
Building Construction (including accessory uses and amenities)	Construction	Loss of wildlife (mortality) due to collisions with buildings	Minor	▪ Design buildings to minimize/prevent mortality	Minor-none	Construction	
Roads – Paving	Construction	Increased impervious surfaces	Moderate	▪ Minimize areas of paved surfaces ▪ Implement LID measures where appropriate, per the Functional Stormwater Management Report (SBM, 2025).	Minor-none	Construction	
Roads – Paving	Construction	Increased runoff	Moderate	▪ Control quantity and quality of stormwater using best management practices as identified in the Stormwater Management Report (SBM, 2025).	Minor-none	Construction	
Roads – Paving	Construction	Reduced infiltration, increased nutrient and contaminant inputs	Minor	▪ Design roads without curbs, gutters, and sidewalks to promote infiltration galleries and other infiltration devices	None	Construction	

ACTIVITY	PROJECT PHASE	POTENTIAL IMPACTS	INITIAL IMPACT RATING[1,3]	MITIGATION RECOMMENDATIONS/COMMENTS	FINAL IMPACT RATING[2,3]	PROPOSED IMPLEMENTATION PHASE	MONITORING/ FOLLOW-UP RECOMENDATIONS
Roads – Paving	Construction	Increased erosion, sedimentation, and turbidity	Moderate	▪ Maintain or provide vegetative buffers ▪ Implement ESC Plan per GGH Erosion and Sediment Guidelines (TRCA, 2019)	None	Construction, Post-Construction/ Site Restoration	Monitor restoration/ compensation plantings to ensure proper establishment. Monitor ESC fence weekly, and after a major storm event for any breaks, and repair.
Roads – Paving	Construction	Increased water temperatures	Minor	▪ Identify species sensitive to disturbance and time paving periods to avoid periods of wildlife habitat use. ▪ Ensure important corridors are not lost, develop alternate corridors, and cover where possible. ▪ Provide appropriate stormwater management systems	None	Construction, Post-Construction/ Site Restoration	
Roads – Paving	Construction	Loss of wildlife habitat	Moderate	▪ Minimize areas of paved surfaces	Minor-none	Construction	
Roads – Paving	Construction	Wildlife mortality on roads	Minor	▪ Design to reduce / prevent mortality	Minor-none	Construction	
Human Occupation	Post-Construction	Vegetation and soil compaction	Minor	▪ Minimize erosion by using gravel, stones or wood on paths	Minor-None	Construction, Post-construction/Site Restoration	
Human Occupation	Post-Construction	Noise and light pollution from facilities	Minor	▪ Implement Lighting Plan. ▪ Direct outdoor lighting downwards and only as bright as necessary. ▪ Provide landowner manual to promote stewardship	Minor-None	Construction, Post-Construction/Site Restoration	

LEGEND:

[1] *Initial Impact* is a relative rating of the expected impact to occur in the absence of any mitigation measures. It evaluates the impact based on the duration, reversibility, extend of influence, frequency, existing ecological site context, likelihood of occurring and cumulative effects.

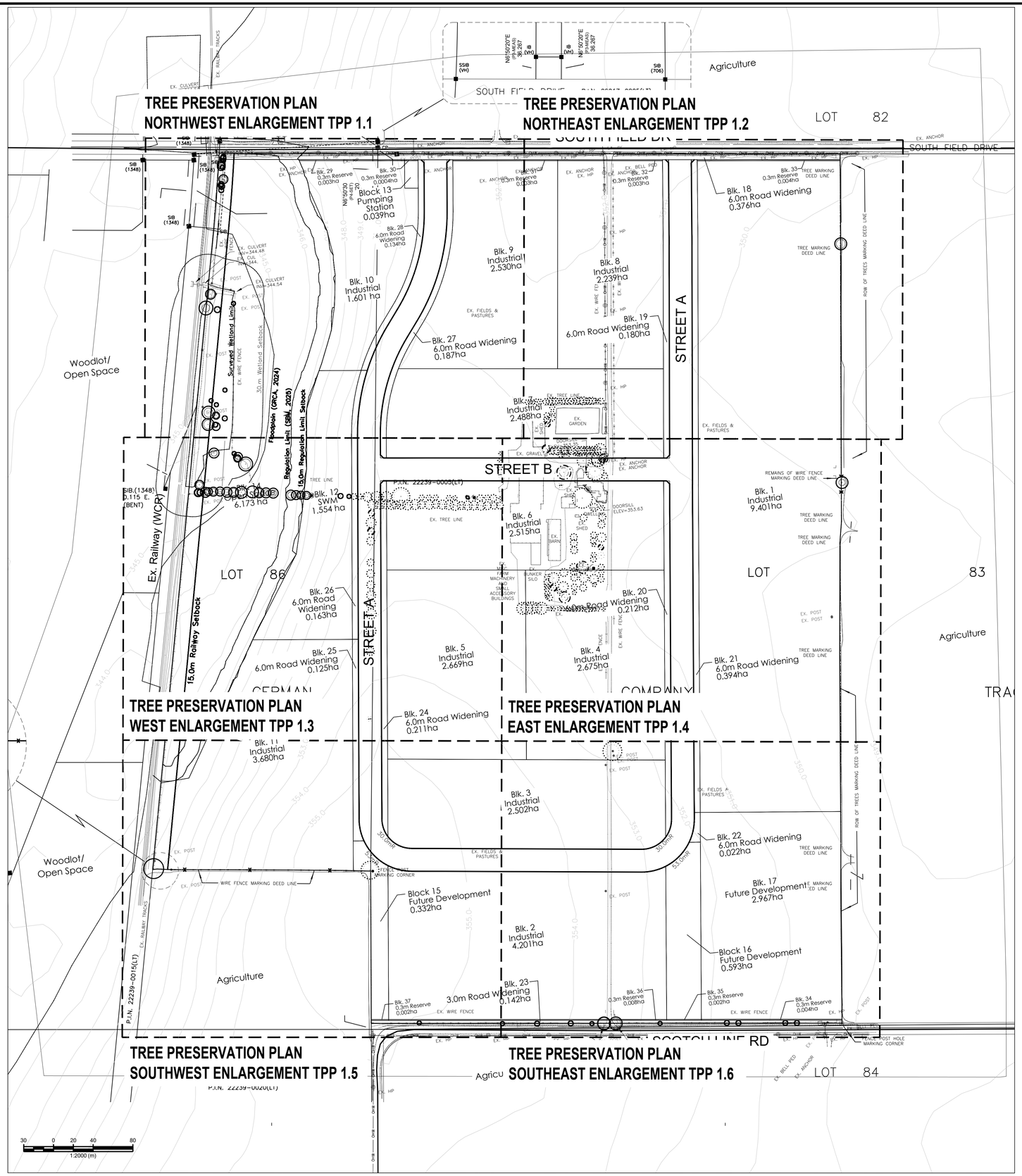
[2] *Actual Impact* is the expected impact in consideration of implementation of mitigation measures or where potential impact may cause little to no actual impact.

[3] *Impact Rating*

None: An event that, if it occurs, will cause no foreseeable impact.
Minor: An event that, if it occurs, will cause small, reversible, and geographically localized impact that can be easily mitigated.
Moderate: Significant but reversible, OR irreversible and geographically localized, impact that requires significant mitigation.
Severe: Significant AND irreversible impact on the environment, impacts cannot be fully mitigated.

APPENDIX 15

Tree Preservation Plan



GENERAL TREE NOTES

1. All arboricultural work performed on trees such as pruning of branches and roots shall be conducted by an ISA Certified Arborist.
2. Prune and mitigate limbs and roots damaged by construction work in accordance with ANSI A300 (Part 1) - 2008 Pruning and the Best Management Practices companion publication (revised 2008).
3. Tree Protection Fence to be erected prior to the commencement of any construction or grading, and maintained throughout the duration of the work.
4. Tree Protection Zone is delimited by Tree Protection Fence shown on the drawings.
5. No construction or activities including the following to occur within Tree Protection Zone: equipment parking or access, storage of supplies, topsoil or fill, and refueling.
6. Tree removals (if required) will be undertaken in compliance with the Migratory Birds Convention Act. Efforts will be made to remove vegetation outside the General Nesting period (April 1 - Aug 31) for regions C1 and C2 of Ontario. In the event vegetation must be removed within the General Nesting Period, a qualified avian biologist is to review the site prior to removal to ensure compliance with the Migratory Birds Convention Act.
7. Any soils and vegetation within tree protection zone damaged by the Contractor shall be restored to the satisfaction of the Municipality by the Contractor at no additional cost to the Owner.

CONSTRUCTION WITHIN MINIMUM TREE PROTECTION ZONE

1. An ISA Certified Arborist must be present on site during construction activities within MTPZ to confirm and/or modify mitigation measures for trees to be preserved.
2. Use trenchless methods (e.g. horizontal directional drilling) to install underground services (e.g. sanitary sewers and water lines) within Minimum Tree Protection Zones.

EXISTING UNDERGROUND SERVICES WITHIN TREE PROTECTION ZONES

1. Existing sanitary/storm sewers and watermains to be discontinued within tree protection zones will be filled (as needed) and abandoned.
2. Excavation and access for construction/removal of abandoned underground services will be conducted outside of tree protection zones.

FINISH GRADING WITHIN TREE PROTECTION ZONES

Where finish grading of cuts and fills, and including swales occurs within tree protection zones, the following steps are required.

Grade Cut:

1. Excavate by hand or Air-spade technology to a maximum depth of 100mm.
2. Roots encountered are to be assessed by the Project Arborist to determine the extent of roots to be pruned. Based on findings, other treatments may be required (e.g. crown reduction, tree removal), and which may require approval from the municipality.
3. Based on root findings, local, minor adjustments to grading within the tree protection zone may be required based on field consultation between the Project Arborist and Project Engineer.
4. No access by heavy equipment into tree protection zone is permitted. Fine grading to be carried out using light equipment and/or by hand.

Grade Fill:

5. Add topsoil to meet grade requirements to a maximum of 150mm.
6. No topsoil to be added onto trunk base or above-ground section of trunk base flare.
7. Maintain positive drainage away from trunk base.
8. Based on local conditions (e.g. surface drainage), local, minor adjustments to grading within the tree protection zone may be required based on field consultation between the Project Arborist and Project Engineer.

TREES OWNED BY OTHERS

1. Trees owned by others require permission (i.e. written consent) from the land owner(s) prior to activities that may damage or destroy trees. Trees owned by others are Offsite Trees and Shared Trees:
   a. Offsite Trees - Trees on property adjacent to the subject property;
   b. Shared (Boundary) Trees - Trees whose trunk including the basal trunk flare growing on the boundary between the subject property and adjoining property (from *Ontario Forestry Act*).

The Provincial Forestry Act, R.S.O. 1990 (Section 10):

10. (2) Every tree whose trunk is growing on the boundary between adjoining lands is the common property of the owners of the adjoining lands. 1990, c. 18 Sched. I, s. 21.
    (3) Every person who injures or destroys a tree growing on the boundary between adjoining lands without the consent of the land owners is guilty of an offence under this Act. 1998, c. 18, Sched. I, s. 21.

ROOT SENSITIVE EXCAVATION

All root sensitive excavation must be performed under the supervision of a qualified arborist. All roots exposed must be documented by the supervising arborist. Every effort should be made to preserve as many exposed roots as possible. Roots approved for pruning should be cleanly cut with a sharp, non-vibrating tool such as a handsaw, secateurs, chainsaw at face of trench such that no further disturbance of the roots are to be expected once mechanical excavation begins. All root pruning is to be performed by the arborist only, as per guidelines below.

1. When root sensitive excavation is performed in regards to the installation of a deep site feature such as a foundation, roots of less than 5cm diameter can be cut sharply, if necessary, unless an abundance of smaller roots are involved. If roots of 5cm diameter or greater or an abundance of smaller roots are exposed in the excavation areas inside or just outside the Tree Protection Zone (TPZ) of bylaw trees they should be preserved.

2. When root sensitive excavation is performed in regards to the installation of site features such as post holes, all roots exposed of under 5cm diameter may be cleanly cut at face of hole such that no further disturbance of the roots are to be expected once mechanical excavation begins for the lower portion of the holes (below hand dug area). If roots of 5cm diameter or greater are uncovered they should be preserved, the post holes filled in with viable soil and the hole moved at least 0.5 metre away to avoid significant roots.

3. When root sensitive excavation is performed in regards to the installation of site features such as driveways, walkways, curbs, etc. roots of less than 5cm diameter can be cut sharply, if necessary, unless an abundance of smaller roots are involved. If roots of 5cm diameter or greater or an abundance of smaller roots are exposed in the excavation areas inside or just outside the TPZ of bylaw trees they should be preserved

4. When root sensitive excavation is performed in regards to the installation of utilities such as water lines or sewers, every effort should be made to preserve as many exposed roots as possible by installing the utilities underneath the roots without root pruning. If roots of 5cm diameter or greater are uncovered they should be preserved.

1 / TPP-1 GENERAL TREE PRESERVATION

LEGEND:

- EXISTING TREE — ID NUMBER / OUTER CIRCLE DENOTES APPROX. CROWN RESERVE, INNER CIRCLE DENOTES MINIMUM TREE PROTECTION ZONE (MTPZ)
- PRESERVE TREE — TREE HAS MODERATE TO HIGH BIOLOGICAL HEALTH AND/OR STRUCTURAL CONDITION AND CAN BE INCORPORATED INTO THE PROPOSED DEVELOPMENT
- REMOVE TREE — TREE IS IN CONFLICT WITH PROPOSED DEVELOPMENT
- REMOVE TREE — TREE HAS LOW BIOLOGICAL HEALTH AND/OR LOW STRUCTURAL CONDITION
- REMOVE TREE — TREE HAS LOW BIOLOGICAL HEALTH AND/OR STRUCTURAL CONDITION AND IS IN CONFLICT WITH PROPOSED DEVELOPMENT
- TREE PROTECTION FENCE
- ROOT SENSITIVE EXCAVATION — REFER TO NOTES ON DRAWING TPP-2

INFORMATION SOURCES

1. Site Plan, revision 3, dated February 20, 2025, prepared by MHBC.
2. Tree locations collected by an Aboud & Associates Inc. ISA Certified Arborist on March 15, 2024.

No.	Description	By	Date
1	ISSUED FOR COORDINATION	JD	17 APR-25
0	ISSUED FOR COORDINATION	JD	08 OCT-24

REVISIONS: All previous issues of this drawing are superceded

ABOUD & ASSOCIATES INC.
Consulting Arborists • Ecologists • Landscape Architects
3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8 . 519.822.4839 . aboudtng.com

Title:

TREE PRESERVATION PLAN

Project:

1665 SCOTCH LINE RD, ELMIRA

TOWNSHIP OF WOOLWICH

Date: OCTOBER 2024	Designer: NB
Project: AA23-232A	Drawn: NB
Scale: 1:2,000	Checked: JD

NOT FOR CONSTRUCTION

Drawing No:

TPP-1

FILEPATH: S:\A-A PROJECTS\2023\APPROVED\23-232A 1665 SCOTCH LINE ELMIRA ES. TPP\DRAWING\23-232A 1665 SCOTCH LINE ELMIRA TP 2025-04-16.DWG CTB: ABOUD2007.ctb PLOTTED:17-Apr-25 3:00 PM

LEGEND:

EXISTING TREE
ID NUMBER / OUTER CIRCLE DENOTES APPROX. CROWN RESERVE, INNER CIRCLE DENOTES MINIMUM TREE PROTECTION ZONE (MTPZ)

PRESERVE TREE
TREE HAS MODERATE TO HIGH BIOLOGICAL HEALTH AND/OR STRUCTURAL CONDITION AND CAN BE INCORPORATED INTO THE PROPOSED DEVELOPMENT

REMOVE TREE
TREE IS IN CONFLICT WITH PROPOSED DEVELOPMENT

REMOVE TREE
TREE HAS LOW BIOLOGICAL HEALTH AND/OR LOW STRUCTURAL CONDITION

REMOVE TREE
TREE HAS LOW BIOLOGICAL HEALTH AND/OR STRUCTURAL CONDITION AND IS IN CONFLICT WITH PROPOSED DEVELOPMENT

TREE PROTECTION FENCE

ROOT SENSITIVE EXCAVATION
REFER TO NOTES ON DRAWING TPP-2

INFORMATION SOURCES

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3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8 . 519.822.6839 . aboudinc.com

Title:

TREE PRESERVATION PLAN NORTHWEST ENLARGEMENT

Project:

1665 SCOTCH LINE RD, ELMIRA

TOWNSHIP OF WOOLWICH

Date: OCTOBER 2024	Designer: NB
Project: AA23-232A	Drawn: NB
Scale: 1:500	Checked: JD

NOT FOR CONSTRUCTION

Drawing No:

TPP-1.1

LEGEND:

- EXISTING TREE — ID NUMBER / OUTER CIRCLE DENOTES APPROX. CROWN RESERVE, INNER CIRCLE DENOTES MINIMUM TREE PROTECTION ZONE (MTPZ)
- PRESERVE TREE — TREE HAS MODERATE TO HIGH BIOLOGICAL HEALTH AND/OR STRUCTURAL CONDITION AND CAN BE INCORPORATED INTO THE PROPOSED DEVELOPMENT
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- TREE PROTECTION FENCE
- ROOT SENSITIVE EXCAVATION — REFER TO NOTES ON DRAWING TPP-2

INFORMATION SOURCES

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Title:

TREE PRESERVATION PLAN - NORTHEAST ENLARGEMENT

Project:

1665 SCOTCH LINE RD, ELMIRA

TOWNSHIP OF WOOLWICH

Date: OCTOBER 2024	Designer: NB
Project: AA23-232A	Drawn: NB
Scale: 1:500	Checked: JD

NOT FOR CONSTRUCTION

Drawing No:

TPP-1.2

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LEGEND:

- EXISTING TREE
  ID NUMBER / OUTER CIRCLE DENOTES APPROX. CROWN RESERVE, INNER CIRCLE DENOTES MINIMUM TREE PROTECTION ZONE (MTPZ)
- PRESERVE TREE
  TREE HAS MODERATE TO HIGH BIOLOGICAL HEALTH AND/OR STRUCTURAL CONDITION AND CAN BE INCORPORATED INTO THE PROPOSED DEVELOPMENT
- REMOVE TREE
  TREE IS IN CONFLICT WITH PROPOSED DEVELOPMENT
- REMOVE TREE
  TREE HAS LOW BIOLOGICAL HEALTH AND/OR LOW STRUCTURAL CONDITION
- REMOVE TREE
  TREE HAS LOW BIOLOGICAL HEALTH AND/OR STRUCTURAL CONDITION AND IS IN CONFLICT WITH PROPOSED DEVELOPMENT
- TREE PROTECTION FENCE
- ROOT SENSITIVE EXCAVATION
  REFER TO NOTES ON DRAWING TPP-2

INFORMATION SOURCES

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3-5 Edinburgh Road South , Guelph , Ontario , N1H 5N8 , 519.822.6839 , aboudng.com

Title:

TREE PRESERVATION PLAN WEST ENLARGEMENT

Project:

1665 SCOTCH LINE RD, ELMIRA

TOWNSHIP OF WOOLWICH

Date: OCTOBER 2024	Designer: NB
Project: AA23-232A	Drawn: NB
Scale: 1:500	Checked: JD

NOT FOR CONSTRUCTION

Drawing No:

TPP-1.3

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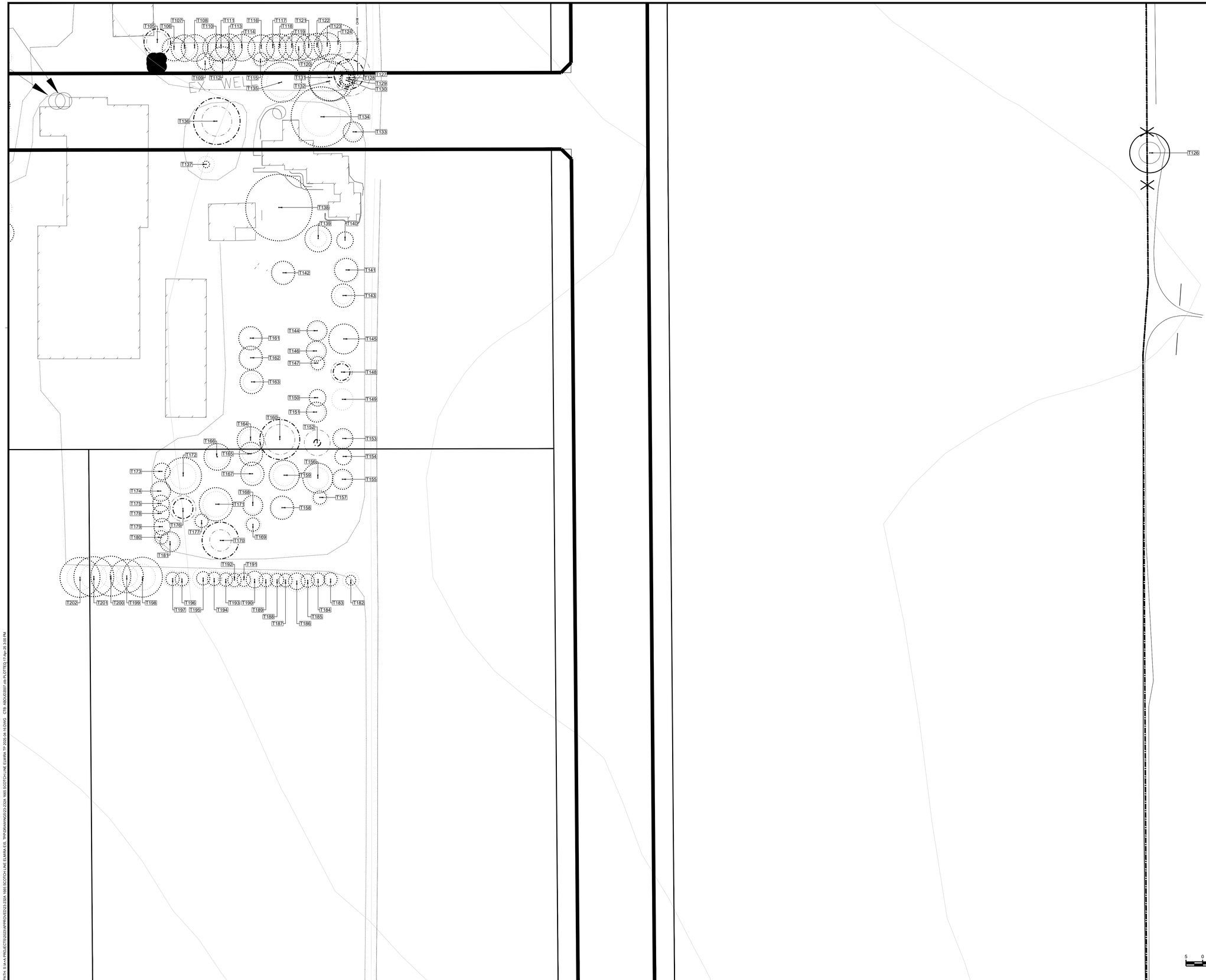
1:500 (m)

FILEPATH: S:\AA PROJECTS\2023\APPROVED\23-232A 1665 SCOTCH LINE ELMIRA ES_TPP\DRAWINGS\23-232A 1665 SCOTCH LINE ELMIRA TP 2025-04-16.DWG CTB: ABOUD2007.ctb PLOTTED:17-Apr-25 3:00 PM



5 0 5 10 20
1:500 (m)

LEGEND:

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0	ISSUED FOR COORDINATION	JD	08 OCT-24

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3-5 Edinburgh Road South , Guelph , Ontario , N1H 5N8 , 519.822.6839 , aboudtng.com

Title:

TREE PRESERVATION PLAN - EAST ENLARGEMENT

Project:

1665 SCOTCH LINE RD, ELMIRA

TOWNSHIP OF WOOLWICH

Date: OCTOBER 2024 | Designer: NB
Project: AA23-232A | Drawn: NB
Scale: 1:500 | Checked: JD

NOT FOR CONSTRUCTION

Drawing No:

TPP-1.4

FILEPATH: S:\AA PROJECTS\2023\APPROVED\23-232A 1665 SCOTCH LINE ELMIRA EIS, TPP\DRAWINGS\23-232A 1665 SCOTCH LINE ELMIRA TP-2025-04-16.DWG CTB: ABOUD2007.ctb PLOTTED: 17-Apr-25, 3:50 PM

INFORMATION SOURCES

1. Site Plan, revision 3, dated February 20, 2025, prepared by MHBC.
2. Tree locations collected by an Aboud & Associates Inc. ISA Certified Arborist on March 15, 2024.

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0	ISSUED FOR COORDINATION	JD	08 OCT-24

REVISIONS: All previous issues of this drawing are superceded

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3-5 Edinburgh Road South , Guelph , Ontario , N1H 5N8 , 519.822.6839 , aboudtng.com

Title:

TREE PRESERVATION PLAN SOUTHWEST ENLARGEMENT

Project:

1665 SCOTCH LINE RD, ELMIRA

TOWNSHIP OF WOOLWICH

Date: OCTOBER 2024	Designer: NB
Project: AA23-232A	Drawn: NB
Scale: 1:500	Checked: JD

NOT FOR CONSTRUCTION

Drawing No:

TPP-1.5

FILEPATH: S:\AA PROJECTS\2023\APPROVED\23-232A 1665 SCOTCH LINE ELMIRA EIS_TPP\DRAWINGS\23-232A 1665 SCOTCH LINE ELMIRA TP 2025-04-16.DWG CTB: ABOUD2007.ctb PLOTTED: 17-Apr-25 3:00 PM

T238
EX. POST
EX. POST
EX. POST
353.0
352.0
350.0
351.0
EX. FIELDS & PASTURES
30.0mR
53.0mR
ROW OF TREES MARKING DEED LINE
TREE MARKING DEED LINE
TREE MARKING DEED LINE
354.0
EX. POST
T242
T243
T244
T245
T246
T247
T248
T249
T250
T251
T252
EX. WIRE FENCE
EX. HP
EX. POST
EX. SIGN
EX. BELL P
0 5 10 20
1:500 (m)

LEGEND:

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INFORMATION SOURCES

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Title:

TREE PRESERVATION PLAN - SOUTHEAST ENLARGEMENT

Project:

1665 SCOTCH LINE RD, ELMIRA

TOWNSHIP OF WOOLWICH

Date: OCTOBER 2024	Designer: NB
Project: AA23-232A	Drawn: NB
Scale: 1:500	Checked: JD

NOT FOR CONSTRUCTION

Drawing No:

TPP-1.6

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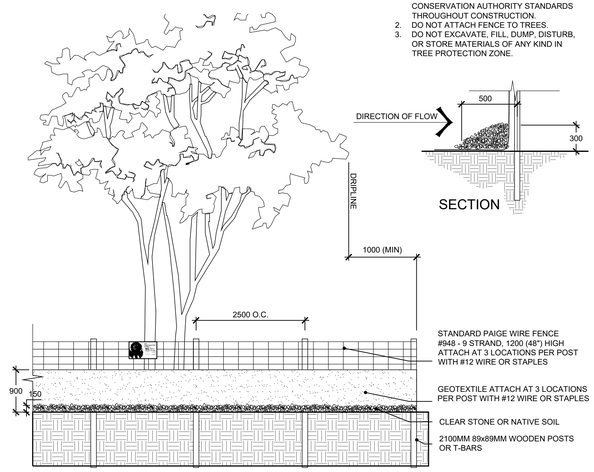
NOTES:
1. INSTALL FENCE PRIOR TO ANY CONSTRUCTION, MAINTAIN FENCE AND TREE PROTECTION ZONE CREATED BY FENCE AS PER MUNICIPAL/ CONSERVATION AUTHORITY STANDARDS THROUGHOUT CONSTRUCTION.
2. DO NOT ATTACH FENCE TO TREES.
3. DO NOT EXCAVATE, FILL, DUMP, DISTURB, OR STORE MATERIALS OF ANY KIND IN TREE PROTECTION ZONE.



1 TPP-2 TYPICAL TREE PROTECTION FENCE WITH SILT CONTROL DETAIL
N.T.S.

Tree No.	Tree Species	DBH (cm) 1, 2	Minimum Tree Protection Zone (m) (from outer trunk of tree) 3	Crown Reserve est. (m)	Biological Health (H, M, L)	Structural Condition (H, M, L)	Overall Condition (E, G, F, P, D)	Ownership: Private, Offsite, Municipal, Shared	Rec - Action - Condition: Preserve, Remove	Rec - Action - Downspacent: Preserve, Remove	Final Recommendation: Preserve, Remove	Observations/ Tree Preservation Notes
1	Populus tremuloides Trembling Aspen	15 [13.8]	2.4	5	M(H)	M	Good	P	P	P	P	Codominant stems from base.
2	Populus tremuloides Trembling Aspen	15	2.4	6	M(H)	M(H)	Good	P	P	P	P	
3	Populus tremuloides Trembling Aspen	12	2.4	4	M(H)	M(H)	Good	P	P	P	P	
4	Populus tremuloides Trembling Aspen	11	2.4	3	M(H)	M(H)	Good	P	P	P	P	
5	Acer negundo Manitoba Maple	26 [14, 12, 12,10,9]	2.4	8	M	M	Fair	P	P	P	P	Codominant stems from base, dieback minor.
6	Acer negundo Manitoba Maple	20 [11,9, 8,8,8]	2.4	8	M	M	Fair	P	P	P	P	Codominant stems from base, unbalanced crown.
7	Populus tremuloides Trembling Aspen	11	2.4	4	M(H)	M(H)	Good	P	P	P	P	Leaning.
8	Populus x canadensis Carolina Poplar	36	3	9	M(H)	M(H)	Good	P	P	P	P	
9	Populus tremuloides Trembling Aspen	14	2.4	5	M(H)	M(H)	Good	P	P	P	P	
10	Populus tremuloides Trembling Aspen	16 [12,10]	2.4	5	M(H)	M	Good	P	P	P	P	Codominant stems from base.
11	Acer saccharinum Silver Maple	13 [12,5]	2.4	6	M(H)	M(H)	Good	P	P	P	P	
12	Populus tremuloides Trembling Aspen	14	2.4	5	M(H)	M(H)	Good	P	P	P	P	
13	Acer negundo Manitoba Maple	58 [47,34]	3.6	10	M(L)	M(L)	Poor	P	P	P	P	Dieback moderate to severe, smaller dead broken stem.
14	Salix sp. Willow species	11	2.4	4	M	M	Fair	P	P	P	P	Dead wood minor, leaning, unbalanced crown.
15	Acer platanoides Norway Maple	23 [13,13, 11,9]	2.4	6	M(H)	M	Good	P	P	P	P	Codominant stems from base, included bark.
16	Acer saccharinum Silver Maple	54 [28,26, 24,23,19]	3.6	14	M(H)	M	Good	O	P	P	P	Codominant stems from base.
17	Thuja occidentalis Eastern White Cedar	13 [10,8]	2.4	4	M	M	Fair	P	P	P	P	Codominant stems from base.
18	Salix sp. Willow species	12	2.4	4	M	M(H)	Good	P	P	P	P	Vine on crown 30%
19	Acer saccharinum Silver Maple	11	2.4	4	M(H)	M(H)	Good	P	P	P	P	
20	Acer saccharinum Silver Maple	68 [50,29, 24,20,18]	4.2	13	M(H)	M(H)	Good	P	P	P	P	Codominant stems from base
21	Acer saccharinum Silver Maple	17	2.4	7	M(H)	M(H)	Good	P	P	P	P	
22	Quercus alba White Oak	14	2.4	5	M(H)	M(H)	Good	P	P	P	P	
23	Salix alba White Willow	53	3.6	8	M	M	Fair	P	P	P	P	Significant trunk wound.
24	Acer saccharinum Silver Maple	12	2.4	5	M(H)	M(H)	Good	P	P	P	P	
25	Acer saccharinum Silver Maple	63 [37,29, 25,25,23]	4.2	12	M	M	Fair	P	P	P	P	Multiple stems from base, included bark, central stem dead.
26	Acer saccharinum Silver Maple	35 [23,21, 13,11]	3	10	M(H)	M	Good	P	P	P	P	Codominant stems from base, included bark.
27	Thuja occidentalis Eastern White Cedar	16 [12,11]	2.4	4	M	M	Fair	P	P	P	P	Codominant stems
28	Acer saccharinum Silver Maple	22	2.4	9	M	M	Fair	P	P	P	P	Leaning
29	Acer saccharinum Silver Maple	21	2.4	7	M	M(H)	Good	P	P	P	P	Deback minor.
30	Acer saccharinum Silver Maple	75 [53.45, 17,16,16]	4.8	14	M(H)	M	Good	P	P	P	P	Codominant stems, included bark.
31	Acer saccharum ssp. saccharum Sugar Maple	34 [26,16, 16]	3	9	M	M	Fair	P	P	P	P	Codominant stems, included bark
32	Acer saccharinum Silver Maple	34 [26,15, 15,8]	3	8	M	M(H)	Fair	P	P	P	P	Codominant stems. Included bark
33	Acer negundo Manitoba Maple	18 [16.6, 4.4]	2.4	6	M	M	Fair	P	P	P	P	
34	Acer saccharinum Silver Maple	35	3	10	M	M(H)	Good	P	P	P	P	
35	Acer negundo Manitoba Maple	22 [14,13, 10]	2.4	8	M	M	Fair	P	P	P	P	
36	Acer saccharinum Silver Maple	38 [30.22, 8]	3	9	M	M	Fair	P	P	P	P	Codominant stems, included bark
37	Acer saccharinum Silver Maple	29	2.4	9	M	M(H)	Good	P	P	P	P	
38	Acer saccharinum Silver Maple	50 [27,26, 20,20,16]	3	10	M	M	Fair	P	P	P	P	Codominant stems , included bark
39	Acer saccharinum Silver Maple	58 [26,30, 22,22,16]	3.6	10	M	M	Fair	P	P	P	P	Codominant stems, included bark
40	Acer saccharinum Silver Maple	51	3.6	12	M	M	Fair	P	P	P	P	Girdling roots, minor to moderate decay in trunk
41	Acer saccharinum Silver Maple	89 [60.55, 34,12]	5.4	12	M	M(L)	Poor	P	P	P	P	One main stems dead, forked from base, poor development
42	Acer saccharinum Silver Maple	53 [33,30, 25,12,8]	3.6	10	M	M	Fair	P	P	P	P	Moderate to severe decay in trunk, codominant stems, included bark
43	Acer saccharinum Silver Maple	35	3	10	M	M(H)	Good	P	P	P	P	
44	Acer saccharinum Silver Maple	36 [35.8]	3	10	M	M(H)	Good	P	P	P	P	
45	Acer saccharinum Silver Maple	44 [38,17, 14]	3	10	M	M(H)	Good	P	P	P	P	
46	Acer saccharinum Silver Maple	31 [25,18]	2.4	9	M	M(H)	Good	P	P	P	P	
47	Acer saccharinum Silver Maple	26	2.4	8	M	M(H)	Good	P	P	P	P	
48	Acer saccharinum Silver Maple	27 [17,15, 14]	2.4	8	M	M(H)	Good	P	P	P	P	
49	Acer saccharum ssp. saccharum Sugar Maple	14	2.4	2	M	M	Fair	P	P	P	P	Moderate decay in trunk
50	Acer negundo Manitoba Maple	21 [15,14]	2.4	5	M	M(H)	Good	P	P	P	P	
51	Acer saccharum ssp. saccharum Sugar Maple	13	2.4	4	M	M(H)	Good	P	P	P	P	
52	Acer saccharinum Silver Maple	30 [28,12]	2.4	6	M	M(H)	Good	P	P	R	RD	Forked from base
53	Acer saccharinum Silver Maple	19	2.4	6	M	M(H)	Good	P	P	R	RD	
54	Acer saccharum ssp. saccharum Sugar Maple	11	2.4	2	M	M(H)	Good	P	P	R	RD	
55	Acer saccharinum Silver Maple	40 [25,23, 18,12]	3	9	M	M(H)	Good	P	P	R	RD	
56	Acer saccharinum Silver Maple	37 [23,21, 14,10,9]	3	11	M(H)	M	Good	P	P	R	RD	Codominant stems, included bark.
57	Acer saccharum ssp. saccharum Sugar Maple	11	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
58	Acer saccharinum Silver Maple	47 [24,23, 22,20,15]	3	10	M(H)	M	Good	P	P	R	RD	Codominant stems.
59	Acer saccharinum Silver Maple	102	6.6	18	M	M	Fair	P	P	R	RD	Significant cavity at main fork, dead wood moderate.
60	Acer saccharum ssp. saccharum Sugar Maple	19	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
61	Acer saccharum ssp. saccharum Sugar Maple	14	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
62	Acer saccharum ssp. saccharum Sugar Maple	13	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
63	Acer saccharum ssp. saccharum Sugar Maple	14	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
64	Acer saccharum ssp. saccharum Sugar Maple	10	2.4	4	M(H)	M(H)	Good	P	P	R	RD	Buckthorn adjacent
65	Acer saccharum ssp. saccharum Sugar Maple	14 [11,8]	2.4	3	L	M(L)	Very Poor	P	R	R	RCD	Deback severe

Tree No.	Tree Species	DBH (cm) 1, 2	Minimum Tree Protection Zone (m) (from outer trunk of tree) 3	Crown Reserve est. (m)	Biological Health (H, M, L)	Structural Condition (H, M, L)	Overall Condition (E, G, F, P, D)	Ownership: Private, Offsite, Municipal, Shared	Rec - Action - Condition: Preserve, Remove	Rec - Action - Downspacent: Preserve, Remove	Final Recommendation: Preserve, Remove	Comments / Observations
66	Acer saccharum ssp. saccharum Sugar Maple	11 [8,6]	2.4	2	L	M(L)	Dead	P	R	R	RCD	
67	Acer saccharum ssp. saccharum Sugar Maple	21 [19,7, 6,6]	2.4	6	M(H)	M(H)	Good	P	P	R	RD	
68	Acer saccharum ssp. saccharum Sugar Maple	24 [18,14, 6]	2.4	5	M	M	Fair	P	P	R	RD	Deback minor to moderate.
69	Acer saccharum ssp. saccharum Sugar Maple	28 [22,13, 12]	2.4	7	M(H)	M(H)	Good	P	P	R	RD	
70	Acer saccharum ssp. saccharum Sugar Maple	15	2.4	3	M(L)	M(L)	Poor	P	P	R	RD	Deback minor, significant trunk wounds.
71	Thuja occidentalis Eastern White Cedar	14 [8,8, 7,5]	2.4	2	M	M	Fair	P	P	R	RD	
72	Thuja occidentalis Eastern White Cedar	24 [12.1 1, 11,10,9]	2.4	5	M	M	Fair	P	P	R	RD	
73	Thuja occidentalis Eastern White Cedar	23 [11,11, 10,10,9]	2.4	3	M	M	Fair	P	P	R	RD	
74	Thuja occidentalis Eastern White Cedar	19 [10,9, 9,8,7]	2.4	3	M	M	Fair	P	P	R	RD	
75	Picea glauca White Spruce	21	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
76	Picea glauca White Spruce	17	2.4	4	M(H)	M(H)	Good	P	P	R	RD	
77	Picea glauca White Spruce	16	2.4	4	M(H)	M(H)	Good	P	P	R	RD	
78	Picea glauca White Spruce	24	2.4	6	M(H)	M(H)	Good	P	P	R	RD	
79	Picea glauca White Spruce	17	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
80	Picea glauca White Spruce	23	2.4	6	M(H)	M(H)	Good	P	P	R	RD	
81	Picea glauca White Spruce	25	2.4	7	M(H)	M(H)	Good	P	P	R	RD	
82	Picea glauca White Spruce	23	2.4	7	M(H)	M(H)	Good	P	P	R	RD	
83	Picea glauca White Spruce	26	2.4	7	M(H)	M(H)	Good	P	P	R	RD	
84	Picea glauca White Spruce	18	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
85	Picea glauca White Spruce	25	2.4	6	M(H)	M(H)	Good	P	P	R	RD	
86	Picea glauca White Spruce	22	2.4	6	M(H)	M(H)	Good	P	P	R	RD	
87	Picea glauca White Spruce	22	2.4	6	M(H)	M(H)	Good	P	P	R	RD	
88	Picea glauca White Spruce	25	2.4	6	M(H)	M(H)	Good	P	P	R	RD	
89	Picea glauca White Spruce	20	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
90	Picea glauca White Spruce	26	2.4	7	M(H)	M(H)	Good	P	P	R	RD	
91	Picea glauca White Spruce	26	2.4	7	M(H)	M(H)	Good	P	P	R	RD	
92	Picea glauca White Spruce	25	2.4	8	M(H)	M(H)	Good	P	P	R	RD	
93	Picea glauca White Spruce	21	2.4	6	M(H)	M(H)	Good	P	P	R	RD	
94	Picea glauca White Spruce	24	2.4	7	M(H)	M(H)	Good	P	P	R	RD	
95	Picea glauca White Spruce	26	2.4	7	M(H)	M(H)	Good	P	P	R	RD	
96	Picea glauca White Spruce	21	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
97	Picea pungens 'Glauca' Colorado Blue Spruce	15	2.4	4	M(H)	M(H)	Good	P	P	R	RD	
98	Picea abies Norway Spruce	20	2.4	6	M(H)	M(H)	Good	P	P	R	RD	
99	Acer saccharinum Silver Maple	12	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
100	Prunus sp. Cherry species	18	2.4	5	M	M	Fair	P	P	R	RD	Cherry tree. Vine on crown 50%.
101	Prunus sp. Cherry species	33 [22,20, 15]	3	7	M	M	Fair	P	P	R	RD	Cherry tree. Codominant stems from base, included bark.
102	Prunus sp. Cherry species	24	2.4	6	L	M	Poor	P	P	R	RD	Serious decline. Cherry tree.
103	Prunus sp. Cherry species	25	2.4	7	M	M	Fair	P	P	R	RD	Cherry tree.
104	Prunus sp. Cherry species	10	2.4	5	L	M	Very Poor	P	R	R	RCD	Serious declining. Peach tree.
105	Malus sp. Apple species	42 [31,26, 13]	3	8	M(L)	L	Very Poor	P	R	R	RCD	Base trunk hollowed, severe canker, tree decaying
106	Picea abies Norway Spruce	58	3.6	7	M	M(H)	Good	P	P	R	RD	
107	Picea abies Norway Spruce	34	3	8	M	M(H)	Good	P	P	R	RD	
108	Picea abies Norway Spruce	47	3	8	M	M(H)	Good	P	P	R	RD	
109	Pyrus sp. Pear	33 [32,9]	3	5	M(L)	M(L)	Poor	P	P	R	RD	Leader with moderate to severe decay, forked from base
110	Picea abies Norway Spruce	40	3	8	M	M(H)	Good	P	P	R	RD	
111	Picea abies Norway Spruce	43	3	8	M	M(H)	Good	P	P	R	RD	
112	Pyrus sp. Pear	29 [27,10]	2.4	8	M	M	Fair	P	P	R	RD	Moderate decay in crown and trunk
113	Picea abies Norway Spruce	44	3	8	M	M(H)	Good	P	P	R	RD	
114	Picea abies Norway Spruce	47	3	8	M	M(H)	Good	P	P	R	RD	
115	Prunus sp. Cherry species	15	2.4	4	M	M(H)	Good	P	P	R	RD	
116	Picea abies Norway Spruce	57	3.6	8	M	M(H)	Good	P	P	R	RD	
117	Picea abies Norway Spruce	38	3	8	M	M(H)	Good	P	P	R	RD	
118	Picea abies Norway Spruce	42	3	8	M	M(H)	Good	P	P	R	RD	
119	Picea abies Norway Spruce	42	3	8	M	M(H)	Good	P	P	R	RD	
120	Picea abies Norway Spruce	39	3	8	M	M(H)	Good	P	P	R	RD	
121	Picea abies Norway Spruce	40	3	8	M	M(H)	Good	P	P	R	RD	Girdling roots
122	Picea abies Norway Spruce	59	3.6	8	M	M(H)	Good	P	P	R	RD	Girdling roots
123	Picea abies Norway Spruce	36	3	8	M	M(H)	Good	P	P	R	RD	
124	Picea abies Norway Spruce	62	4.2	12	M	M(H)	Good	P	P	R	RD	
125	Fraxinus sp. Ash	62	4.2	12	L	L	Dead	S	P	P	P	
126	Acer saccharinum Silver Maple	44 [40,18, 6]	3	12	M	M	Fair	O	P	P	P	Forked from base , included bark , moderate decay in trunk
127	Prunus sp. Cherry species	100	6	9	M(L)	M(L)	Very Poor	P	R	R	RCD	Base trunk hollowed, just one branch alive, poor development, declining
128	Prunus sp. Cherry species	18	2.4	4	M	M	Fair	P	P	R	RD	Partially suppressed, minor leaning.
129	Prunus sp. Cherry species	12	2.4	4	M	M	Fair	P	P	R	RD	
130	Prunus sp. Cherry species	46	3	4	M(L)	M(L)	Very Poor	P	R	R	RCD	Leader broken, basal sprouts, declining

LEGEND:

No.	Description	By	Date
1	ISSUED FOR COORDINATION	JD	17 APR-25
0	ISSUED FOR COORDINATION	JD	08 OCT-24

REVISIONS: All previous issues of this drawing are superceded

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Title:
TREE PRESERVATION DATA AND DETAILS

Project:
1665 SCOTCH LINE RD, ELMIRA
TOWNSHIP OF WOOLWICH

Date: OCTOBER 2024 Designer: NB
Project: AA23-232A Drawn: NB
Scale: AS SHOWN Checked: JD

NOT FOR CONSTRUCTION

Drawing No:
TPP-2

ELEPATH: S:\AA PROJECTS\2023\APPROVED\23-232A 1665 SCOTCH LINE ELMIRA ES\ TPP\DRAWINGS\23-232A 1665 SCOTCH LINE ELMIRA TP 2025-04-16.DWG CTB: ABOUD2007.ctb PLOTTED:17-Apr-25 3:00 PM

Tree No.	Tree Species	DBH (cm) 1, 2	Minimum Tree Protection Zone (m) (from outer trunk of tree) 3	Crown Reserve est. (m)	Biological Health (H, M, L)	Structural Condition (H, M, L)	Overall Condition (E, G, F, P, D)	Ownership: Private, Offsite, Municipal, Shared	Rec. Action - Condition: Preserve, Remove	Rec. Action - Development: Preserve, Remove	Final Recommendation: Preserve, Remove	Comments / Observations
131	Prunus serotina Black Cherry	50 [45,21]	3	14	M	M	Fair	P	P	R	RD	Codominant stems from base, dead wood minor to moderate.
132	Prunus serotina Black Cherry	50	3	12	M(H)	M(H)	Good	P	P	R	RD	Unbalanced crown.
133	Acer platanoides 'Columnare' Columnar Norway Maple	14	2.4	6	M(H)	M(H)	Good	P	P	R	RD	Wound at base
134	Gleditsia triacanthos Honeylocust	84	5.4	18	M(H)	M(H)	Good	P	P	R	RD	Dead wood minor
135	Prunus sp. Cherry species	61 [45,30, 29]	4.2	12	M(L)	M(L)	Poor	P	P	R	RD	Forked from base, moderate to severe decay at base
136	Acer platanoides Norway Maple	63 [49,39]	4.2	14	M	L	Very Poor	P	R	R	RCD	Codominant stems from base, included bark, severe cavity/decay at base/fork.
137	Acer platanoides Norway Maple	15	2.4	2	M	M	Fair	P	P	R	RD	Minor decay at base, lack of vigour
138	Acer saccharinum Silver Maple	187	11.4	26	M(H)	M(H)	Good	P	P	R	RD	Codominant stems.
139	Acer saccharinum Silver Maple	21	2.4	8	M	M	Fair	P	P	R	RD	Minor to moderate decay in trunk
140	Picea pungens 'Glauca' Colorado Blue Spruce	19	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
141	Pyrus sp. Pear	58 [45,32, 19]	3.6	7	M	M(L)	Poor	P	P	R	RD	Codominant stems, significant trunk wound on main stem.
142	Malus sp. Apple species	35 [18,17, 15,13,13]	3	7	M	M	Fair	P	P	R	RD	Codominant stems.
143	Prunus sp. Cherry species	26 [19,18]	2.4	7	L	M	Poor	P	P	R	RD	Codominant stems, black knot moderate
144	Pyrus sp. Pear	30 [20,17, 15]	2.4	6	M	M(L)	Poor	P	P	R	RD	Codominant stems from base, severe wound/cavity at base of main stem.
145	Malus sp. Apple species	64 [40,38, 34]	4.2	9	M(H)	M(H)	Good	P	P	R	RD	Apple tree
146	Malus sp. Apple species	21	2.4	6	M(H)	M(H)	Good	P	P	R	RD	Apple tree.
147	Malus sp. Apple species	13	2.4	4	M	M(H)	Fair	P	P	R	RD	
148	Malus sp. Apple species	36	3	5	M(L)	L	Very Poor	P	R	R	RCD	Hollow trunk.
149	Malus sp. Apple species	39 [29,22, 10]	3	0	M(H)	M(H)	Good	P	P	R	RD	Apple tree.
150	Malus sp. Apple species	21	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
151	Malus sp. Apple species	22 [16,12, 10]	2.4	6	M(H)	M(H)	Good	P	P	R	RD	Apple tree.
152	Malus sp. Apple species	57 [40,35]	3.6	1	M	L	Very Poor	P	R	R	RCD	Apple tree. Codominant stems from base, main stem hollow.
153	Malus sp. Apple species	29 [17,14, 13,13]	2.4	6	M	M	Fair	P	P	R	RD	Codominant stems.
154	Malus sp. Apple species	18 [12,11]	2.4	5	M(H)	M(H)	Good	P	P	R	RD	Codominant stems.
155	Malus sp. Apple species	30 [27,13]	2.4	6	M	M	Fair	P	P	R	RD	Codominant stems.
156	Malus sp. Apple species	45 [30,29, 16]	3	9	M(H)	M(H)	Good	P	P	R	RD	Codominant stems.
157	Malus sp. Apple species	17 [11,10, 8]	2.4	4	M(H)	M(H)	Good	P	P	R	RD	
158	Malus sp. Apple species	44 [26,22, 20,16,11]	3	7	M(H)	M(H)	Good	P	P	R	RD	Codominant stems.
159	Malus sp. Apple species	42 [38,18]	3	9	M	M	Fair	P	P	R	RD	Codominant stems.
160	Malus sp. Apple species	82 [36,35, 30,22]	4.2	12	M(L)	L	Very Poor	P	R	R	RCD	Dead wood moderate to severe, one main stem collapsed from fork.
161	Malus sp. Apple species	40 [34,21]	3	7	M(H)	M(H)	Good	P	P	R	RD	Codominant stems.
162	Malus sp. Apple species	40 [23,23, 18,15]	3	7	M(H)	M	Good	P	P	R	RD	Codominant stems.
163	Malus sp. Apple species	28	2.4	7	M(H)	M(H)	Good	P	P	R	RD	
164	Malus sp. Apple species	42 [35,18, 16]	3	8	M	M	Fair	P	P	R	RD	Codominant stems.
165	Pyrus sp. Pear	29 [28,9]	2.4	7	M(H)	M(H)	Good	P	P	R	RD	
166	Malus sp. Apple species	40 [23,18, 18,15,15]	3	8	M(H)	M(H)	Good	P	P	R	RD	Codominant stems.
167	Malus sp. Apple species	31 [17,15, 13,13,9]	2.4	7	M(H)	M(H)	Good	P	P	R	RD	Codominant stems.
168	Malus sp. Apple species	22 [15,10, 10,8]	2.4	6	M(H)	M(H)	Good	P	P	R	RD	
169	Malus sp. Apple species	14 [11,9]	2.4	4	M(H)	M(H)	Good	P	P	R	RD	
170	Malus sp. Apple species	45 [38,18, 16]	3	11	M	L	Very Poor	P	R	R	RCD	Severe trunk cavity/decay.
171	Malus sp. Apple species	53 [49,20]	3.6	10	M	M(L)	Poor	P	P	R	RD	Significant trunk cavity.
172	Malus sp. Apple species	52 [28,27, 27,21]	3.6	11	M(H)	M(H)	Good	P	P	R	RD	Codominant stems.
173	Picea glauca White Spruce	22	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
174	Picea glauca White Spruce	28	2.4	6	M(H)	M(H)	Good	P	P	R	RD	
175	Picea glauca White Spruce	23	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
176	Malus sp. Apple species	55	3.6	6	M(L)	L	Very Poor	P	R	R	RCD	Hollow trunk.
177	Pyrus sp. Pear	14	2.4	4	M(H)	M(H)	Good	P	P	R	RD	
178	Picea glauca White Spruce	23	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
179	Picea glauca White Spruce	25	2.4	5	M(H)	M(H)	Good	P	P	R	RD	
180	Picea glauca White Spruce	22	2.4	4	M(H)	M(H)	Good	P	P	R	RD	
181	Rhus typhina Staghorn Sumac	16	2.4	6	M	M	Fair	P	P	R	RD	
182	Picea glauca White Spruce	14 [11,8]	2.4	3	M	M(H)	Good	P	P	R	RD	
183	Picea glauca White Spruce	26	2.4	4	M	M(H)	Good	P	P	R	RD	
184	Picea glauca White Spruce	26	2.4	4	M	M(H)	Good	P	P	R	RD	
185	Picea glauca White Spruce	30	2.4	4	M	M(H)	Good	P	P	R	RD	
186	Picea glauca White Spruce	32	3	5	M	M(H)	Good	P	P	R	RD	
187	Picea glauca White Spruce	15	2.4	4	M	M(H)	Good	P	P	R	RD	
188	Picea glauca White Spruce	19	2.4	4	M	M(H)	Good	P	P	R	RD	
189	Picea glauca White Spruce	17	2.4	4	M	M(H)	Good	P	P	R	RD	
190	Picea glauca White Spruce	34	3	5	M	M(H)	Good	P	P	R	RD	
191	Picea glauca White Spruce	16	2.4	4	M	M(H)	Good	P	P	R	RD	
192	Picea glauca White Spruce	16	2.4	4	M	M(H)	Good	P	P	R	RD	
193	Picea glauca White Spruce	22	2.4	4	M	M(H)	Good	P	P	R	RD	
194	Picea glauca White Spruce	20	2.4	4	M	M(H)	Good	P	P	R	RD	
195	Picea glauca White Spruce	34	3	4	M	M(H)	Good	P	P	R	RD	

Tree No.	Tree Species	DBH (cm) 1, 2	Minimum Tree Protection Zone (m) (from outer trunk of tree) 3	Crown Reserve est. (m)	Biological Health (H, M, L)	Structural Condition (H, M, L)	Overall Condition (E, G, F, P, D)	Ownership: Private, Offsite, Municipal, Shared	Rec. Action - Condition: Preserve, Remove	Rec. Action - Development: Preserve, Remove	Final Recommendation: Preserve, Remove	Comments / Observations
196	Picea glauca White Spruce	19	2.4	4	M	M(H)	Good	P	P	R	RD	
197	Picea glauca White Spruce	21	2.4	4	M	M(H)	Good	P	P	R	RD	
198	Picea abies Norway Spruce	60	3.6	12	M	M(H)	Good	P	P	R	RD	
199	Picea abies Norway Spruce	41	3	10	M	M(H)	Good	P	P	R	RD	
200	Picea abies Norway Spruce	44	3	12	M	M(H)	Good	P	P	R	RD	
201	Picea abies Norway Spruce	51	3.6	12	M	M(H)	Good	P	P	R	RD	
202	Picea abies Norway Spruce	60	3.6	12	M	M(H)	Good	P	P	R	RD	
203	Acer saccharinum Silver Maple	18	2.4	7	M	M(H)	Good	P	P	R	RD	
204	Acer saccharinum Silver Maple	30 [25,16]	2.4	7	M	M(H)	Good	P	P	R	RD	
205	Acer saccharinum Silver Maple	23	2.4	8	M	M(H)	Good	P	P	R	RD	
206	Acer saccharinum Silver Maple	29 [20,12, 11,10,9]	2.4	9	M	M(H)	Good	P	P	R	RD	
207	Acer saccharinum Silver Maple	22	2.4	9	M	M(H)	Good	P	P	R	RD	
208	Acer saccharinum Silver Maple	23 [18,14]	2.4	9	M	M(H)	Good	P	P	R	RD	
209	Acer saccharinum Silver Maple	26 [22,11, 8]	2.4	8	M	M(H)	Good	P	P	R	RD	
210	Acer saccharinum Silver Maple	35 [29,14, 11,11,10]	3	10	M	M(H)	Good	P	P	R	RD	
211	Acer saccharinum Silver Maple	28 [26,9. 7]	2.4	9	M	M(H)	Good	P	P	R	RD	
212	Acer saccharinum Silver Maple	29 [18,16, 13,6,6]	2.4	9	M	M(H)	Good	P	P	R	RD	Forked from base
213	Acer saccharinum Silver Maple	20	2.4	8	M	M(H)	Good	P	P	R	RD	
214	Acer saccharinum Silver Maple	29 [28,6]	2.4	9	M	M(H)	Good	P	P	R	RD	
215	Acer saccharinum Silver Maple	25	2.4	8	M	M(H)	Good	P	P	R	RD	Moderate deadwood in crown
216	Acer saccharinum Silver Maple	32 [26,12, 11,7,3]	3	10	M	M(H)	Good	P	P	R	RD	Forked from base
217	Acer saccharinum Silver Maple	28	2.4	10	M	M(H)	Good	P	P	R	RD	
218	Acer saccharinum Silver Maple	26	2.4	9	M	M(H)	Good	P	P	R	RD	
219	Acer saccharinum Silver Maple	28 [14,13, 13,12,9]	2.4	8	M	M(H)	Good	P	P	R	RD	Forked from base
220	Acer saccharinum Silver Maple	26	2.4	9	M	M(H)	Good	P	P	R	RD	
221	Acer saccharinum Silver Maple	25	2.4	9	M	M(H)	Good	P	P	R	RD	
222	Acer saccharinum Silver Maple	20	2.4	9	M	M(H)	Good	P	P	R	RD	Significant trunk wound already compartmentalized
223	Acer saccharinum Silver Maple	43 [25,24, 16,14,13]	3	10	M	M	Good	P	P	R	RD	Forked from base
224	Fraxinus sp. Ash	28 [26,6, 5,4,3]	2.4	6	M(L)	M(L)	Very Poor	P	R	R	RCD	Almost dead, basal sprouts
225	Acer saccharum ssp. saccharum Sugar Maple	44 [40,15, 7,6,6]	3	10	M	M(H)	Good	P	P	R	RD	
226	Fraxinus sp. Ash	29 [18,12, 12,11,9]	2.4	7	M(L)	M(L)	Very Poor	P	R	R	RCD	Leader dead, basal sprouts, declining
227	Acer saccharum ssp. saccharum Sugar Maple	36	3	8	M	M(H)	Good	P	P	R	RD	
228	Acer saccharum Silver Maple	18	2.4	7	M	M(H)	Good	P	P	R	RD	
229	Acer saccharum ssp. saccharum Sugar Maple	42	3	8	M	M(H)	Good	P	P	R	RD	
230	Acer saccharum ssp. saccharum Sugar Maple	36	3	8	M	M(H)	Good	P	P	R	RD	
231	Acer saccharinum Silver Maple	40 [28,9. 7]	3	9	M	M	Fair	P	P	R	RD	Codominant stems, included bark
232	Acer saccharinum Silver Maple	47 [36,30, 7,6,6]	3	9	M	M(H)	Good	P	P	R	RD	
233	Acer saccharinum Silver Maple	47 [35,24, 18,9]	3	10	M	M	Fair	P	P	R	RD	Included bark
234	Acer saccharinum Silver Maple	43	3	10	M	M	Fair	P	P	R	RD	
235	Acer saccharum ssp. saccharum Sugar Maple	11	2.4	2	M	M(H)	Good	P	P	R	RD	
236	Acer saccharinum Silver Maple	31 [30.5, 4]	2.4	8	M	M	Fair	P	P	R	RD	Oozing seam, basal sprouts
237	Acer saccharum ssp. saccharum Sugar Maple	11	2.4	2	M	M(H)	Good	P	P	R	RD	
238	Acer saccharinum Silver Maple	92	6	19	M(H)	M(H)	Good	P	P	R	RD	Dead wood minor
239	Acer saccharinum Silver Maple	132	8.4	20	M	M	Fair	P	P	P	P	Forked from base, codominant stems, included bark, exposed roots
240	Acer saccharinum Silver Maple	102	6.6	18	M	M	Fair	P	P	R	RD	Codominant stems, included bark, girdling roots
241	Acer saccharum ssp. saccharum Sugar Maple	11	2.4	4	M(H)	M(H)	Good	P	P	P	P	
242	Acer saccharum ssp. saccharum Sugar Maple	14	2.4	4	M(H)	M(H)	Good	O	P	P	P	
243	Acer saccharum ssp. saccharum Sugar Maple	15	2.4	5	M(H)	M(H)	Good	O	P	P	P	
244	Acer saccharum ssp. saccharum Sugar Maple	15	2.4	5	M(H)	M(H)	Good	S	P	P	P	
245	Acer saccharum ssp. saccharum Sugar Maple	11	2.4	4	M(H)	M(H)	Good	O	P	P	P	
246	Acer saccharum Silver Maple	83	5.4	13	M(H)	M(H)	Good	S	P	P	P	
247	Acer saccharinum Silver Maple	75 [64,40]	4.8	13	M(H)	M	Good	S	P	P	P	Codominant stems from base, included bark.
248	Acer saccharum ssp. saccharum Sugar Maple	11	2.4	4	M(H)	M(H)	Good	S	P	P	P	
249	Acer saccharum ssp. saccharum Sugar Maple	12	2.4	5	M(H)	M(H)	Good	P	P	P	P	
250	Acer saccharum ssp. saccharum Sugar Maple	11	2.4	5	M(H)	M(H)	Good	P	P	P	P	
251	Acer saccharum ssp. saccharum Sugar Maple	12	2.4	5	M(H)	M(H)	Good	P	P	P	P	
252	Acer saccharum ssp. saccharum Sugar Maple	13	2.4	5	M(H)	M(H)	Good	P	P	P	P	

Ownership				
Private (On Site) Trees	242			
Private (Off Site) Trees	5			
Municipal Trees	0			
Shared Trees	5			
Subtotal	**252**			
Recommendation Based on Condition				
Preserve Tree Based on Health & Structure		238		
Remove Tree Based on Health & Structure		14		
Subtotal		**252**		
Recommendation Based on Development				
Preserve/Transplant Tree Based on Development Impacts			66	
Remove Tree Based on Development Impacts			186	
Subtotal			**252**	

Final Recommendation	
Final Recommendation: Preserve (P)	66
Final Recommendation: Remove due to Condition (RC)	0
Final Recommendation: Remove due to Development (RD)	172
Final Recommendation: Remove due to Condition and Development (RCD)	14
Total	**252**

1. DBH (Diameter at breast height): Measurement of tree stem diameter at 1.4 meters above ground.

2. [ ] Denotes DBH's of Each Stem of Tree with Multiple Stems

3. Tree Protection Zones; adapted from Specifications Index for Tree Protection and Preservation (Spec. No. SS12A) City of Burlington (September, 2020).

Removal of trees owned by others (e.g. private off-site, municipal or shared/boundary trees) require approval from the owner.

LEGEND:

No.	Description	By	Date
1	ISSUED FOR COORDINATION	JD	17 APR-25
0	ISSUED FOR COORDINATION	JD	08 OCT-24

REVISIONS: All previous issues of this drawing are superceded

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Title:

TREE PRESERVATION DATA

Project:

1665 SCOTCH LINE RD, ELMIRA

TOWNSHIP OF WOOLWICH

Date: OCTOBER 2024	Designer: NB
Project: AA23-232A	Drawn: NB
Scale: AS SHOWN	Checked: JD

NOT FOR CONSTRUCTION

Drawing No:

TPP-3

FILEPATH: S:\AA PROJECTS\2023\APPROVED\23-232A 1665 SCOTCH LINE ELMIRA ES, TPP\DRAWING\23-232A 1665 SCOTCH LINE ELMIRA TP 2025-04-16.DWG CTB: ABOUD2007.ctb PLOTTED: 17-Apr-25 3:00 PM